

May 4, 2021

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 Technical Revision No. 148 (TR-148) Alluvial Points of Compliance Wells

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 technical revision 148 (TR-148) to Permit No. C-1981-019.

Stipulation 7 on Permit No. C-1981-019 requires Colowyo to submit a technical revision to the Division which provides an analysis for groundwater points of compliance at the Colowyo Mine in accordance with Rule 4.05.13(1). Stipulation 7 also states that this analysis needs to be conducted in consultation with the Division. TR-148 provides an alluvial groundwater investigation report for points of compliance at Colowyo to comply with Stipulation 7 on Colowyo's permit.

Tri-State has been working with the Division and providing updates on the alluvial groundwater investigation that has occurred. The report contained in Exhibit 7, Item 19 under TR-148 provides the results of the investigation, and also provides the results of previous discussions with the Division in relation to the propose locations for points of compliance wells and the proposed standards they will be required to meet. Proposed under TR-148 are two point of compliance wells, one along Goodspring Creek, and one down gradient of the confluence of Wilson and Taylor Creeks. With the submittal of this technical revision, it is requested that the Division document that Stipulation 7 has being complied with, and this stipulation be removed from Colowyo's permit.

Included in this technical revision is a change of index sheet to ease incorporation of this revision into the permit document, and a public notice for your review. If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 326-3560 at your convenience.

Sincerely,

Docusigned by: David (asiraro B70D69F114324DE... Daniel J. Casiraro Senior Manager Environmental Services

P.O. BOX 33695 DENVER, CO 80233-0695 303-452-6111 WWW.TRISTATE.COOP





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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 L.P.

Date: May 5, 2021

Permit Number: C-1981-019 Revision Description: TR-148 Alluvial Points of Compliance

Volume Number	Page, Map or other Permit Entry to be REMOVED	Page, Map or other Permit Entry to be ADDED	Description of Change
1	Table of Contents Pages i though v (5 pages)	Table of Contents Pages i though v (5 pages)	Table of Contents has been updated.
1	Page 2.03-3 (1 page)	Page 2.03-3 (1 page)	Section 2.03.3(1-5) has been updated.
1	Pages 2.03-11 through 2.03-15 (5 pages)	Pages 2.03-11 through 2.03-15 (5 pages)	Section 2.03.3(1-5) has been updated which caused a pagination shift.
1	Page 2.03-19 (1 page)	Page 2.03-19 (1 page)	Section 2.03.3(7) has been updated.
1	Page 4-15 through 4-23 (9 pages)	Page 4-15 through 4-23 (9 pages)	Section 4.05.12 has been updated.
2A			No Change
2B	Page Exh. 7-14TOC-1 (1 page)	Page Exh. 7-14TOC-1 (1 page)	Exhibit 7 Table of Contents has been updated.
2C	Page Exh. 7-14TOC-1 (1 page)	Page Exh. 7-14TOC-1 (1 page)	Exhibit 7 Table of Contents has been updated.
2C		Exhibit 7 Item 19 XX pages total	Exhibit 7 Item 19 has been inserted into the permit.
2D	Page Exh. 7-14TOC-1 (1 page)	Page Exh. 7-14TOC-1 (1 page)	Exhibit 7 Table of Contents has been updated.
2E	Page Exh. 7-14TOC-1 (1 page)	Page Exh. 7-14TOC-1 (1 page)	Exhibit 7 Table of Contents has been updated.
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

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

Mine Company Name: <u>Colowyo Coal Company L.P.</u> Date: May 5, 2021 Permit Number: C-1981-019 Revision Description: TR-148 Alluvial Points of Compliance

Volume Number	Page, Map or other Permit Entry to be REMOVED	Page, Map or other Permit Entry to be ADDED	Description of Change
15	Collom Rule 4 Page 10 through Rule 4 Page 13 (4 pages)	Collom Rule 4 Page 10 through Rule 4 Page 13 (4 pages)	Section 4.05.13 has been updated.
16			No Change
17			No Change
18A			No Change
18B			No Change
18C			No Change
18D			No Change
19			No Change
20			No Change
21	Map 10B	Map 10B	Map 10B has been updated.

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- 29. CTL/Thompson Geotechnical Evaluation
- 30. CDG Engineers Mine Planning, Postmining Topography, and Bonding
- 31. Cedar Creek Associates Vegetation, Wetlands, Widlife Surveys, and Reclamation Planning
- 32. Water Management Inc. Hydrologic Baseline Report and Model, Wate ResourcesFugro Horizons, Inc. – Aerial Surveys
- 33. Tetra Tech, Inc. Permit Preparation, Soils, Seismic Monitoring (Blasting) Dam Design, Hydrological Modeling, Geotechnical Design, Archaeology
- 34. Deep Samples, Inc Surface and Groundwater Hydrology
- 35. United States Geological Survey (USGS) Water Resources Division Stream Flow Anaylsis
- 37. TRC Mariah Associates, Inc. Culture Resource Inventory
- 38. Hatch Associates Consultants, Inc. Water Management Planning
- 39. Aqua Terra Consultants Land Use Planning
- 40. Agapito Associates, Inc. Geotehnical Engineering and Water Management
- 41. AECOM Alluvial Groundwater Invesigation

#### <u>References:</u>

#### <u>Soils</u>

Consolidation Coal Company. 1984. Soil Inventory Danforth Hills Project, Rio Blanco and Moffat Counties, December 17, 1984.

Draper, Shary. Colorado First. 2002. USDA-Natural Resources Conservation Service Craig Colorado Field Office, June 2002.

Loerch, Cameron J., State Soil Scientist 2002. Pre-Certified Soil Descriptions for Moffat County USDA-Natural Resources Conservation Service, June 2002.

Parks, Steve. Soil Data Quality Specialist. 2002. USDA-Natural Resources Conservation Service - MLRA Region 6 June, 2002.

Montana Department of State Lands - Reclamation Division and Coal/Uranium Bureau 1983. Soil and Overburden Guidelines, (Draft), February, 1983.

USDA- Natural Resources Conservation 1982. Soil Survey of Rio Blanco County Area, Colorado, May 1982.

Walsh, James P. 1984. Soil Inventory, Danforth Hills Project, Rio Blanco and Moffat Counties. December 17, 1984. Prepared for Consolidation Coal Company.

Wyoming Department of Environmental Quality - Land Quality Division 1996 Guideline No. 1, Topsoil and Overburden, http://deq.state.wy.us/lqd/guidelns/guide1.pdf, November, 1996.

Dennis, Brant A. 2001. Personal communication [Aug 13 memo to J. Garcia, Colowyo Coal Company, Meeker, Colorado. RE: Report on the Testing and Data Analysis of the 1996 Monitoring Wells.] Certified Petroleum Geologist, BD GeoEnvironmental Services, Franktown, Colorado. 5 pages.

Dennis, Brant A. 2004. Preliminary Hydrological Plan for Surface and Ground Water Monitoring, Proposed Surface and Underground Operations, Kennecott Energy, Colowyo Coal Company, Meeker, Colorado. Memorandum prepared for Colowyo Coal Company by Brant A. Dennis, Consulting Geologist. June 2004.

Engineering Science (ES), 1982. Chemical, Physical, and Biological Characteristics, Wilson, Taylor, and Good Springs Creeks. Prepared for Colowyo Coal Company, October 1982.

Hildebrand, R.T., R.S. Garrigues, R.F. Meyer, and M.C. Reheis. 1981. Geology and chemical analyses of coal and coal-associated rock samples, Williams Fork Formation (Upper Cretaceous), northwestern Colorado: U.S. Geological Survey Open-File Report 81-1348.

Reheis, Marith. 1981. Geologic Map and Coal Resources of the Easton Gulch Quadrangle, Moffat County, Colorado. U.S. Geological Survey Coal Investigations Map C-87.

Robson, S. G., and Michael Stewart. 1990. Geohydrologic evaluation of the upper part of the Mesaverde Group, northwestern Colorado. U.S. Geological Survey Water Resources Investigations Report 90-4020.

U.S. Geological Survey. 2004. Water Use in the United States [Web Page]. Located at http://water.usgs.gov/watuse/data/2000/coco2000.xls [Accessed: January 14, 2009.]

U.S. Geological Survey (USGS). 2009. Daily Streamflow for the Nation [Web Page]. Located at http://nwis.waterdata.usgs.gov/co/nwis/peak. [Accessed: January 14, 2009]

Utah International Inc. 1975. Regional Coal Geology Danforth Hills Area. Unpublished map, scale 1" = 4000'. January 1975.

Water Management Consultants (WMC), 2005. Collom Project Pre-Feasibility Hydrology Report. Prepared for Colowyo Coal Company, L.P. August 2005.

Water Management Consultants (WMC). 2006. Collom Pit Regional Hydrogeologic Model. Prepared for Colowyo Coal Company, L.P.. February 2006.

Agapito Associates, Inc. 2016 Collom Pit Dewatering Study. Prepared for Colowyo Coal Company L.P. November 2016.

AECOM, 2021 Points of Compliance Well Investigation Report - Colowyo Mine

#### Probable Hydrologic Consequences

Bishop, M., Kelly, K., Kimball, D. and G. Quinn 1982 Cumulative hydrologic assessment: Effects of coal mining on the Yampa River basin, Moffat and Routt Counties, Colorado. Report to U.S. Department of Interior Office of Surface Mining and Colorado Department of Natural Resources Mined Land Reclamation Division. KT-81-031 (R). January.

Dennis, Brant A. Geologist. Personal communications between June 24, 2002 and June 2006

Fetter, C.W. 2001. Applied Hydrogeology. Prentice Hall, Upper Saddle River, N.J. c2001. 4th ed. xvii, 598 p. : ill., maps ; 27 cm.; 1 computer optical disc

JBR Environmental Consultants, Inc. 1997. Kennecott Energy Colowyo Coal Company, L.P. Jurisdictional Waters Report, Springs and Seep Survey, Wetlands and Waters of the U.S. Survey and Riparian Habitats Survey: Study Areas A, B and C. Reno, Nevada.

Leonard Rice Consulting Water Engineers. Ground Water Quality, Colowyo Mine. October 1979. (Included as Exhibit 7, Item 1 of permit)

Parkhurst, D.L. 1995. User's Guide to PHREEQC: A computer program for speciation, reaction path, advective-transport, and inverse geochemical calculations. U.S. Dept. of the Interior, U.S. Geological Survey; Denver, CO. Open-File Reports Section.

Plummer, L. N., Jones, B. F., and Truesdell, A. H., 1976, WATEQF - A FORTRAN IV version of WATEQ, a computer program for calculating chemical equilibrium of natural waters (revised and reprinted, January, 1984): U.S. Geological Survey Water-Resources Investigations 76-13, 61 p.

Robson, S.G., Stewart, Michael. 1990. Geohydrologic Evaluation of the Upper Part of the Mesaverde Group, Northwestern Colorado. USGS Water Resources Investigations Report 90-4020.

VTN. 1975. Environmental Impact Assessment for the Proposed Colowyo Mine, Colowyo Coal Company. December 1975.

VTN. 1975. Colowyo Coal Company Colowyo Mine Hydrologic Baseline Report, August 1974-October 1975. undated.

VTN 1976. Water Resources Report for the Proposed Colowyo Mine, Colowyo Coal Company. July 1976.

Williams, Robert S., Gregory M. Clark and Norman E. Spahr. 1993. Climatic, soil water, groundwater, geologic, surface water, and water quality data for a surface coal mine in northwestern Colorado. U.S. Dept. of the Interior, U.S. Geological Survey, Denver. Open-file report 92-122. Williams, Robert S. and Gregory M. Clark. 1994. Hydrology and geochemistry of a surface coal mine in northwestern Colorado. U.S. Dept. of the Interior, U.S. Geological Survey, Water-resources investigations report; 92-4187. vi, 61 p. : ill., maps; 28 cm.

Water Management Consultants (WMC), 2005. Collom Project Pre-Feasibility Hydrology Report. Prepared for Colowyo Coal Company, L.P. August 2005.

Water Management Consultants (WMC). 2006. Collom Pit Regional Hydrogeologic Model. Prepared for Colowyo Coal Company, L.P.. February 2006.

Williams, Robert S. and Gregory M. Clark. 1994. Hydrology and geochemistry of a surface coal mine in northwestern Colorado. U.S. Dept. of the Interior, U.S. Geological Survey, Water-resources investigations report; 92-4187. vi, 61 p. : ill., maps; 28 cm.

#### <u>Alluvial Valley Floors</u>

Camp Dresser & McKee (CDM), Inc. 1985a. Final Groundwater Baseline Report, Consolidation Coal Company, Danforth Hills Property. Prepared for Consolidation Coal Company. Denver, Colorado. November 1985.

Dames & Moore. 1980. Danforth Hills Project, Alluvial Valley Floor Preliminary Identification and Evaluation. Prepared for Utah International, Inc., July 1980.

Dames & Moore. 1995. Colowyo Alluvial Valley Floor Analysis Report. Prepared for Colowyo Coal Company, December 5, 1995.

Tetra Tech, d.b.a. Maxim Technologies. 2005. Collom Permit Area, Preliminary Alluvial Valley Floor Assessment (Maxim Project Number 5520068.420), Letter to Mr. Jim Stark, Colorado Division of Minerals and Geology, from Mr. Keith Thompson, Project Manager. September 23, 2005.

Walsh, James P. & Associates (Walsh). 1984. Reconnaissance Alluvial Valley Floor Investigation – Lower Good Spring and Milk Creeks, Danforth Hills Project. Prepared for: Consolidation Coal Company. December 15, 1984.

Water Management Consultants (WMC), 2005. Collom Project Pre-Feasibility Hydrology Report. Prepared for Colowyo Coal Company, L.P. August 2005.

#### Historical and Archaeological

Arthur, C.S., and C.H. Jennings. 1977. Archaeological Reconnaissance of Proposed Coal Lease Areas in Moffat, Rio Blanco, and Routt Counties, Colorado. Laboratory of Public Archaeology, Colorado State University, Fort Collins.

Christensen, D. 1984. Cultural Resource Investigations in the Danforth Hills Proposed Coal Lease Area, Moffat and Rio Blanco Counties, Colorado. Nickens and Associates, Montrose, Colorado.

Consolidation Coal Company. 1984. Cultural Resource Investigations in Danforth Hills Proposed Coal Lease Area, Moffat & Rio Blanco Counties, Colorado, October 1984.

Fraser, Clayton, and Jennifer Strand 1997. Railroads in Colorado, 1858-1948, Multiple Property Listing. FRASERdesign, Loveland Colorado. Submitted to the Foundation for Colorado State Parks, Inc., and the Colorado Historical Society, Denver.

Husband, Michael B., 1984. Colorado Plateau Country Historic Context. Colorado Historical Society, Denver.

Lischka, J.J. 1975. Cultural and Paleontological Resource Inventory and Evaluation of the Proposed W.R. Grace and Co. Railroad Corridors and ColoWyo Mine Site, Moffat County, Colorado. Bureau of Anthropological Research, University of Colorado, Boulder.

Nickens, P.R. 1988. Cultural Resource Inventory of a Proposed Lease Addition and a Conveyor Corridor at the ColoWyo Mine, Moffat County, Colorado. Nickens and Associates, Montrose, Colorado.

Pool, K.J. and C.D. Späth. 1995. Colowyo Coal Company Danforth Hills 1995 Lease and Exploration Area, Drilling Program, and Conveyor System: Class III Cultural Resource Inventory, Moffat and Rio Blanco Counties, Colorado. Metcalf Archaeological Consultants, Inc., Eagle, Colorado. There are several small interim reports and addenda associated with this project addressing groups of exploratory drill holes, wells, and associated subtasks of the 1995 exploration program.

Reed, Alan D., and Michael D. Metcalf, 1999. Colorado Prehistory: A Context for the Northern Colorado River Basin. Colorado Council of Professional Archaeologists, Denver.

TRC Mariah Associates Inc. 2006. A Class III Cultural Resource Inventory for Colowyo Coal Company's Collom Mine Project, Moffat and Rio Blanco Counties, Colorado. Prepared for Colowyo Coal Company, L.P. Report Dated November 2006. 438 pp.

TRC Mariah Associates Inc. 2006. *Historic Properties Treatment Plan for Four Sites Within the Proposed Colowyo Collom Mine Expansion Project*, Moffat County, Colorado. Prepared for Colowyo Coal Company, L.P. Report Dated February 2006. 49 pp.

Western Archaeological Services, Inc. 2015. Terminal Segment of the Haul Road for the Colowyo Company's Proposed Collom Gulch Strip Mine, Class III Cultural Resrouce Inventory. Report dated January 7, 2015. 14 pp.

Tetra Tech. 2016. Cultural Resource Site Assessment for Colowyo Coal Company L.P.'s Collom Expansion Project, Moffat County Colorado. Prepared for the Colorado Office of Archaeology and Historic Preservation. Report Dated July 25, 2016. 152 pp.

#### 2.03.3(6) DRMS Application to Conduct Coal Mining

The application to conduct surface coal mining in Colorado has been previously provided to DRMS under a specific cover letter.

#### 2.03.3(7) Entities Consulted to Obtain Permit Information

During the initial permit application process and subsequent 40 plus years of operations, Colowyo has held numerous meetings with the Colorado Division of Reclamation Mining and Safety (DRMS) and the Office of Surface Mining Reclamation and Enforcment (OSMRE) to discuss different aspects of the mining and reclamation plans. Much of the technical work in this application proceeded in accordance with conversations and determinations with these agencies. The names, address, and position of officals of each private and academic research organization or governmental agency consulted in obtaining this permit information are as follows:

Land Uses:	Department of the Interior Bureau of Land Management P.O. Box 248 455 Emerson Street Craig, CO 81625
	Department of Agriculture Soil Conservation Service 356 Ranney Craig, CO 81625
	Steve Viert Cedar Creek Associates, Inc. 916 Wilshire Avenue Fort Collins, CO 80521
	Julie Gerlach Aqua Terra Constultants 1030 North Main Street Suite 201 Sheridan, Wyoming 82801
Soils:	Department of the Interior Bureau of Land Management P.O. Box 248 455 Emerson Street Craig, CO 81625
	Department of Agriculture Soil Conservation Service 356 Ranney Craig, CO 81625

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	Doug Bowman VTN, Colorado Inc. 2600 South Parker Road Denver, CO 80232
	Engineering Science 10 Lakeside Lane Denver CO 80212
	U.S. Geological Survey Water Resources Division Meeker, CO 81641
	Colorado Division of Water Resources Water Rights Database, 2005 http://165.127.23.116/website/lttools/
	BD GeoEnvironmental Services Brant Dennis, CPG 1371 Flintwood Drive Franktown, CO 80116
	AECOM 7595 Technology Way, Suite 200 Denver, CO 08237
Air Quality:	Sam Geer Enviro-Test, Ltd. P.O. Box 15225 Lakewood, CO 80215
	Bill Reefe Reefe & Associates 27800 Pine Drive Evergreen, CO 80439
	Donald Hadley Western Scientific Services, Inc. 328 Airpack Drive Fort Collins, CO 80521
	Gale Biggs W. Gale Biggs Associates P.O. Box 3344

Boulder, CO 80307

under the sandstones. No toxic concentrations of acid forming materials have been found in the overburden, reclaimed slopes or surface and ground water system associated with the Colowyo Mine. No adverse effects on groundwater quality are expected to occur due to mine excavations or backfilling.

#### 4.05.12 Protection of Groundwater Recharge Capacity

The reclamation plan as described in 2.05.4 will return the disturbed lands to approximately the pre-mining condition; therefore, ground water recharge capacity is expected to approximate the premining condition. Also, because of the minimal existence of ground water in the mining area, the mining operation and subsequent reclamation should have no adverse effect on the existing ground water recharge capacities.

The ground water monitoring plan is further documented in 4.05.13. The mine has established Point of Compliance locations for alluvial and valley fill aquifers. Please refer to Volume 2C, Exhibit 7, Item 19 for a description of the alluvial aquifer investigation report and the points of compliance wells for Goodspring, Taylor, and Wilson Creeks. There are not established points of compliance for any regional aquifers because of a lack of ground water. The following is provided to document this:

The aspect of monitoring ground water is dependent on whether or not there is a continuous, non-perched ground water layer/zone to monitor. Since active mining at Colowyo Mine began 30 years ago, the mining zone in both the East and West Pits have not encountered any significant ground water, except for perched ground water. Therefore, the following is presented to clarify the ground water conditions at the Colowyo Mine.

#### Geology/Topography

The Colowyo Mine is located in the Williams Fork Formation of the Cretaceous Mesaverde Group. The Williams Fork Formation is comprised of discordant beds/units of sandstone, siltstone and mudstone and coal seams, with an approximate thickness of 1,200 to 1,300 feet in the mine area. Deposited in a deltaic environment, the beds vary in thickness and lateral extent throughout the Colowyo Mine. The numerous coal seams also vary in thickness and lateral extent. The sandstones tend to be very fine grained to fine grained and poorly sorted, with various amounts of silt and clay. For the siltstones and mudstones, theses units contain various amounts of finer and coarser materials. The total mined sequence in both pits is up to 450 feet thick and is comprised principally of mudstones, siltstones and coals, with sandstone layers being least prevalent.

The Williams Fork Formation conformably overlies the Iles Formation. At the top of the Iles Formation is the Trout Creek Sandstone (TCSS). The TCSS is a massive, white to light gray, very fine to fine grained, moderately well sorted sandstone with a thickness of between 50 and 70 feet and is approximately 1,200 to 1,300 feet below the Colowyo Mine. This is the only mapped continuous unit in the area of the Colowyo Mine and has been noted as being an excellent marker bed for correlation work of the coal seams. Beneath the TCSS, the Iles Formation is comprised of sandstones, siltstones and marine shales.

Two major features, the Collom Syncline and the Danforth Hills Anticline/Wilson Dome, control the geologic structure in the area of Colowyo Mine. The axis of the Collom Syncline, located approximately 0.5 miles north of the north edge of the reclaimed East Pit, trends west-northwest (approximately N60°W) with a slight dip in the axis to the west-northwest. The Collom Syncline is sub-parallel to the Axial Anticline on the north and the Danforth Hills Anticline on the south. The Collom Syncline is asymmetrical, with the north flank of the syncline steeply dipping  $(20^\circ-40^\circ)$  to the south-southwest. The south flank dips to the north-northeast at around  $10^\circ\pm5^\circ$ . The Colowyo Mine is located on the south flank of the Collom Syncline. Therefore, based on the geologic structure of the area, the coal seams and non-coal beds of the Colowyo Mine dip to the north-northeast at approximately  $10^\circ$ . The southern portion of the Colowyo Mine is located on a structural high, an unnamed anticline, which is an offshoot of the Danforth Hills anticline.

Topographically, the mine is located on a topographic high, bordered on the east and west by deeply incised valleys. These valleys are Good Spring Creek and Wilson Creek, on the east and west respectively. The valleys slope from south to north, similar to the topographic slope at Colowyo Mine. The topography in the area of the Colowyo Mine ranges from 8000 feet on the south to 7150 feet on the north. The valleys have elevation ranges from approximately 7100 feet on the south to 6550 feet on the north. On the south, south of the Section 16 mine area, the topography drops off into the West Fork Good Spring Creek, a small tributary to Good Spring Creek.

#### Hydrology

Based on the above, the Colowyo Mine is located on both a topographic and structural high. Thus, these highs cause the mined units of the Colowyo Mine to be above any significant recharge source, e.g., surface water. This is because the bottoms of the pits are at an elevation higher than the elevation of the surface water in the creeks. Only when the units are at an elevation lower than the valleys does any significant recharge occur. Thus, the only source of recharge for the mined units in the pit areas of the Colowyo Mine is precipitation.

Precipitation is less than 22 inches (on average) per year. Evaporation rates approach 30 inches per year, with recharge rates in the Goodspring Creek and Taylor Creek basins being less than 0.35 inches per year. In addition, any surface water/precipitation on this topographic high has to percolate through the clayey soils, prevalent in the area of the Colowyo Mine, into the underlying bedrock. Any water that recharges the bedrock units tends to accumulate along unit contacts since these tend to be areas of least flow resistance. This is exhibited in the highwall of both pits of the Colowyo Mine, where any discharge is easily seen as issuing primarily from these contacts and has been the case since 1981.

Any ground water that has been discharged from the mine highwall has been found to evaporate from the pit floor or be consumed by pit highwall. Past hydrological studies also reveal the mined units tend to have low permeabilities (even the sandstones) and do not allow for large water movement, even if the ground water is present. This is also the case where the ground water is under confined or unconfined conditions (i.e. below the elevation of the valley bottoms).

If any ground water does percolate vertically through the discordant geologic units, it encounters a tonstein bed near the base of the Williams Fork Formation. This bed is approximately 150 feet above the top of the Trout Creek Sandstone and is approximately 400 feet below the bottom of the active pits. The tonstein bed has an approximate thickness of 2.5 feet. Permeability tests of this material show it has permeabilities greater than 1x10-10 centimeters per second. Thus, this bed is an effective aquiclude and prevents downward movement of any ground water to the underlying Trout Creek Sandstone.

#### Water Quality

The quality of the water in the area of the Colowyo Mine has been rated as poor by the USGS and designated for limited agricultural use. Since USGS testing in 1978, no water quality analysis performed at monitoring points at the Colowyo Mine have shown any significant difference in water quality compared with what the initial USGS work. The water is slightly saline, alkaline and definitely classified as 'hard' water. This can be seen in the water quality measurements for total dissolved solids (TDS) and electrical conductivity (eC). Both TDS and eC exceed the EPA secondary drinking water standards.

Since the water is alkaline, the pH is above 7, but rarely exceeding 8.4. Concentrations of heavy metals rarely exceed health limits, as stated in the USGS report. This has also been backed up by the shallow ground water monitoring performed since the Colowyo Mine began operation.

#### **Conclusions**

The Colowyo Mine has no single or multiple continuous geologic units in the mine that contains ground water under unconfined or confined conditions. The only ground water encountered is the discontinuous perched pockets of ground water. This lack of ground water, except for discontinuous perched ground water pockets, encountered during mining precludes the necessity to monitor ground water on a ridge top.

#### 4.05.13 Surface and Groundwater Monitoring

The current monitoring program can be found in Section 4.05.13 in Volume 15.

#### 4.05.14 Transfer of Wells

Colowyo does not plan to transfer any monitoring wells to water wells.

#### 4.05.15 Water Rights and Replacement

Colowyo, if necessary, will replace the water supply of any owner of interest in real estate who obtains all or part of a supply of water for domestic, agricultural, industrial or other legitimate use

from an underground or surface source where the water supply has been affected by the mining operation.

Colowyo does not anticipate that any water supply or water right of any owner of interest will be affected by the mining operation.

#### 4.05.16 Discharge of Water into an Underground Mine

No surface water will be diverted into any underground mine workings.

#### 4.05.17 Post-mining and Rehabilitation of Sedimentation Ponds, Diversions, Impoundments, and Treatment Facilities

No treatment facilities are planned. Approved permanent sedimentation ponds, stock ponds, and permanent diversions will be left in place. These structures will be maintained in an appropriate condition before the Permit area is abandoned by repairing any necessary portions, cleaning sediment and debris out, establishing appropriate vegetation and providing soil stabilization.

#### 4.05.18 Stream Buffer Zones

In accordance with Rule 4.05.18, no land within 100 feet, or greater if required by the Division, of a perennial stream, an intermittent stream, or an ephemeral stream with a drainage area greater than one square mile, shall be disturbed by surface and underground coal mining operations unless the Division specifically authorizes surface or underground mining operations closer to, or through such a stream. Additionally, the area not to be disturbed shall be designated a stream buffer zone and marked as specified in Section 4.02.5.

The locations of the disturbances that have occurred within 100' of a stream buffer zone are described below and are depicted on Map 10C.

#### Good Springs Creek

Streeter Pond was constructed within 100 feet of Good Springs Creek. During construction (sometime during the late 1970's) and to date this pond has not created any adverse impacts to Good Springs Creek. This structure is not anticipated to have any long-term impacts to Good Springs Creek.

Other structures have been constructed or previously existed within 100 feet of Goodsprings Creek and they include Colowyo's access road off of Highway 13 where it crossing Goodsprings Creek and Colowyo's guard shack. Colowyo constructed the access road to the mine and the guard shack at the beginning of the Colowyo Mine. To date the access road and guard shack have not created any adverse impacts to Good Springs Creek, and these long term structures are not anticipated to have any long term impacts to Good Springs Creek.

#### West Fork of Good Springs Creek

The access road to Section 28 Pond off of Highway 13 was not a new disturbance when Colowyo began using it to construct and access the Section 28 Pond. Rather it was premining,

pre-existing "ranch" road, that accessed an old ranch home and surrounding valley area. Colowyo made minor upgrades to the road when the Section 28 Pond was constructed. The majority of these upgrades were to allow proper draining through swales across the road. To date the pre-mining ranch road and upgrades have not created any adverse impacts to the West Fork of Good Springs Creek, and it is not anticipated that this road will have any long term impacts either to the West Fork of Good Springs Creek.

Colowyo also has two surface water monitoring and two groundwater monitoring structures (flumes and wells) installed within the stream buffer zone to the West Fork of Goodsprings Creek. This includes LWFGSC, UWFGSC, A-7 and A-8 as presented on Map 10C. All four monitoring structures have not and will not create any adverse impacts to the West Fork of Goodsprings Creek.

#### Taylor Creek

Colowyo constructed Haul Road A and B within the stream buffer zone which crosses Taylor Creek. During construction (late 1970's to early 1980's) and to date, the haul roads have not created any adverse impacts to Taylor Creek. These long term structures are also not anticipated to have any long term impacts to Taylor Creek.

In 2018, Haul Road A will be widened to facilitate equipment movement from the existing facilities and South Taylor Pit to the Collom area. Haul Road A will have mechanically stabilized earth (MSE) walls constructed in locations very near to Taylor Creek to limit disturbance and protect Taylor Creek within the stream buffer zone area that already contains the footprint of Haul Road A. Best management practices (BMPs) including silt fence, s-fence, wattles, or other items at the discretion of the field engineer will be installed and maintained during the widening of Haul Road A to protect Taylor Creek. Once Haul Road A outslope is stabilized the BMP's will be removed. Utilization of BMP's during construction and until the outslopes of the road are stabilize will minimize any potential impacts to Taylor Creek. It is anticipated that the Haul Road A footprint will not have any short or long-term impacts to Taylor Creek.

During the widening of Haul Road A, two light use roads will be constructed at the toe of the Haul Road A to provide access to the Taylor Pump Holding Pond and a water rights diversion structure on Taylor Creek. Both structures will have proper BMPs installed and maintained until construction and stabilization of the light use roads is complete. It is not expected that the light use road will have any short or long term impacts to Taylor Creek.

Two sediment ponds were constructed within the stream buffer zone on Taylor Creek. The West Pit Pond embankment lies within 100' of Taylor Creek, and the West Taylor Pond was constructed at the base of the West Taylor Fill and makes up part of Taylor Creek. During construction and to date these structures have not created any adverse impacts to Taylor Creek, and both structures are also not anticipated to have any long term impacts to Taylor Creek.

Much of the upper reaches of Taylor Creek above the West Taylor Pond will be directly impacted by the South Taylor Pit, and the permeant West Taylor Fill (see Map 23A). The West Taylor Pond will protect the lower reaches of Taylor Creek that will not be disturbed during mining and reclamation. It is expected that during mining the South Taylor Pit will intercept and hold surface water runoff thus providing less discharge through the West Taylor Pond. Once mining is complete the entire South Taylor Pit will be backfilled and the pre-mine profile and function of the upper reaches of Taylor Creek will be restored.

One best management practice structure (sediment sump) lies within the stream buffer zone on Taylor Creek. This structure manages storm water runoff from the haul road and provides a benefit to Taylor Creek by capturing stormwater runoff from the haul road. This structure is not anticipated to have any impacts to Taylor Creek, and provides a benefit in protecting stormwater runoff to Taylor Creek.

The Taylor Pump Holding Pond was constructed within 100' of Taylor Creek. The Taylor Pump Holding Pond is utilized to manage water movement from Wilson Reservoir to the active operation; therefore, an underground water pipeline that transports water to and the from the Taylor Pump Holding Pond was also constructed at various locations within 100' of Taylor Creek as shown on Map 10C. Neither of these structures has impacted Taylor Creek, and neither structure is expected to have any long term impacts to Taylor Creek.

A water diversion structure is constructed in Taylor Creek that allows Colowyo to divert water from Taylor Creek to exercise a water right. This structure would be utilized even if mining was not occurring at Colowyo, as Colowyo is the private surface landowner utilizing a privately held water right structure.

A light use road that was a premine "ranch" road follows along Taylor Creek. This road is utilized to access the West Pit, East Taylor, and West Taylor sediment ponds. The road has been improved upon from its premine condition to allow equipment access for dredging activities and continued environmental monitoring. The lower reach of the road where it begins off of the paved haul road up to the East Taylor Pond, snakes in and out of the 100' stream buffer zone off of Taylor Creek. The upper reach from the East Taylor Pond to the West Taylor Pond is almost exclusively within the 100' stream buffer zone due to steep topography. To date this road has not created any adverse impacts to Taylor Creek, and it is not anticipated to have any long term impacts to Taylor Creek.

The raw water pipeline to the Collom operation will be routed across Taylor Creek through an elevated structure. An elevated structure minimizes impacts within the stream buffer zone versus other routing options such as boring the pipeline under Taylor Creek, which requires large trenches and greater ground disturbances for equipment to bore under both sides of Taylor Creek. With the elevated structure small disturbances will occur within the stream buffer zone of Taylor Creek. Prior to ground disturbing activities proper best management practices (silt fence or other suitable sediment control measures) will be installed. Topsoil will be windowed and concrete footers will be poured which will provide the base for the structural stability needed to support the pipe over Taylor Creek. Once the pipe and structure steel is installed the limited disturbance areas have the topsoil windrows spread back out and the areas will be seeded. Sediment will be controlled during the construction of these structures and will negate any impacts to Taylor Creek while the ground is disturbed. The sediment control structures will be

left in place after reclamation until a suitable vegetative cover has been achieved. The water pipe line and associated infrastructure will not create any long term impacts to Taylor Creek.

For a discussion on stream buffer zones from Wilson Creek, Jubb Creek, and Little Collom Gulch please see Volume 15, Section 4.05.18.

#### 4.06 TOPSOIL

#### 4.06.1 General Requirements

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 Maps 28 and 28A.

#### 4.06.2 Removal

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 28 and 28A). This map has been greatly simplified from that of the original application to reflect actual on-the-ground operations. The techniques for removal of woody plant materials that otherwise would interfere with the usefulness of the topsoil is discussed in Section 2.05.3

Removal techniques for topsoil are described in Section 2.05.3.

A variance from topsoil removal was requested and approved by the Colorado Division of Reclamation, Mining and Safety for the following areas; construction of small structures such as power poles, signs or fence lines, areas of light traffic that do not destroy existing vegetation or cause erosion and areas where removal would result in needless damage to soil characteristics such as sediment control ditches and small water diversions. In most cases, especially on steep slopes, removal of topsoil prior to ditch construction needlessly damages large areas of topsoil, along with the adjacent natural vegetation. Implementation of the technique of cutting the ditches directly into the hillside without topsoil removal will limit needless topsoil disturbance, reduce unnecessary destruction of adjacent vegetation and will facilitate reclamation of the ditches at a future date.

It should also be clarified that consistent with Map 6, Soils – South and Exhibit 9, Volume 19, there will be small areas of rock outcrop, rocky steep slopes, etc. where the topsoil depth is 0 inches. Where this occurs there will not be an attempt to recover topsoil or otherwise disturb the area before disturbance by mining.

Colowyo does not plan to use overburden material for topsoil substitutes or as a supplement to topsoil. Colowyo will remove topsoil before any mining operations commence and always maintain a buffer zone between the area stripped of topsoil and the overburden drilling and blasting operations. As depicted on the Topsoil Handling Map (Map 28 & 28C), the topsoil handling program will result in an orderly sequence for the continuous removal, storage or reapplication of topsoil. The redistribution of topsoil will be done at a time when the physical and chemical

properties of the topsoil can be protected from alteration while minimizing the potential for erosion.

Topsoil and vegetation matter is typically windrowed, sloped and seeded during initial sediment pond construction and saved for reapplication when the pond is reclaimed at at future date.

The pond embankments are constructed utilizing in-place materials directly below the upper topsoil zone. This colluvial material is "topsoil" in nature and will be utilized at a future date for pond reclamation. Since the nature of the embankment material functions readily as a topsoil material, it is not anticpated that additional topsoil will be required for final reclamation of the site. However, if necessary, Colowyo will apply an appropriate amount of topsoil to pond embankments that do not readily revegetate post construction.

#### 4.06.3 Storage

The estimated quantity of topsoil in stockpile is found in Table 2.05-1, Topsoil Balance As Of October, 2005, and in Section 11 of the Annual Reclamation Report. Topsoil stockpiles exist for support facilities and the mining area. All of the existing or proposed stockpiles result where immediate redistribution will not be practical, either because redistribution areas are not available at the time of topsoil removal, or because more topsoil is being removed than what will be necessary for immediate redistribution. Any additional stockpiles may be placed on flat spoil backfill areas or stable portions of the permit area where stockpiles will be protected from external effects of both wind and water erosion. Stockpiles have also been placed to avoid disturbances other than those incidental to their deposition and removal.

Colowyo utilizes a variety of methods to protect topsoil stockpiles from erosion. Colowyo will utilize one or more of the following techniques to protect topsoil from erosion. Small catchment berms and ditches may be employed to route surface runoff away from stockpile areas. Small sumps or dozer basins may be employed to collect runoff. Adjacent disturbance areas may be ripped or otherwise roughened to reduce runoff. Topsoil stockpiles may be strategically placed and constructed to allow runoff to be routed around stockpile locations rather than pond against a stockpile.

Topsoil marker signs will be placed on each stockpile to prevent inadvertent disturbance, unnecessary compaction or contamination.

At the locations where topsoil piles are located on undisturbed land, in place topsoil and vegetation will not be removed prior to stockpiling topsoil. The topsoil stockpiles will be seeded with the following perennial seed mixture to control erosion.

Western wheatgrass	-	4 Lbs PLS/Acre
Thickspike wheatgrass*	-	4 Lbs PLS/Acre
Yarrow**	-	.15 Lbs PLS/Acre

\*option to replace Thickspike wheatgrass with Beardless bluebunch wheatgrass or Sheep fescue \*\*option to replace Yarrow with Cicer milkvetch Topsoil stockpiles will be drill seeded to the greatest extent possible. The remaining areas will be broadcast seeded.

In those areas where topsoil is stripped and hauled directly back to contoured backfill, some of the established native species can be expected to occur in the revegetated area.

Stockpiled topsoil will not be moved when required for redistribution on disturbed areas prior to seeding. An exception to this can occur to facilitate mining, construction of sediment control ditches, ponds, etc. Approval from the Division will occur prior to moving stockpiled topsoil for purposes other than seedbed preparation.

All topsoil stockpiles should be protected with a ditch and berm around their perimeter to conserve the resource.

#### 4.06.4 Redistribution

After the final grading is completed, the topsoil will be reapplied as shown on the disturbed land areas shown on the Topsoil Handling Map (Map 28 and 28A). Please see section 2.05.4 for topsoil redistribution depth replacement.

Where necessary, to prevent slippage surfaces and promote root penetration the spoil will be scarified by ripping and/or rough grading. This practice will assure a solid bond between the spoil and reapplied topsoil. To date, there is no evidence of topsoil slippage on reclaimed areas. A few small tension cracks resulting from settling of fill and topsoil have occurred in a few areas within a year or two after reclamation, but soon stabilize and begin to fill in.

Since all available topsoil existing on areas to be disturbed will be removed and reapplied, it will be fully capable of supporting growth necessary for the proposed post-mining land use. Compaction will be alleviated through chisel plowing. The method of topsoil replacement most often used at Colowyo, which makes use of dozers, leaves the surface in a rough condition which minimizes wind and water erosion. The use of a chisel plow following topsoil replacement and the construction of contour furrows at the time of seeding or before will also aid in erosion control.

#### 4.06.5 Reconditioning

Topsoil quality at Colowyo is excellent in terms of providing a suitable plant growth medium capable of supporting the approved post-mining land use and the revegetation requirements of Section 4.15. Soil testing has not indicated any deficiencies. Refer to Volume 3, Exhibit 10, Establishment of Native Shrubs on Disturbed Lands in the Mountain Shrub Vegetation Type. This study was conducted on the Colowyo Mine July 1975 through December 1979. Colowyo has the option to apply 50-70 pounds of phosphorus per acre to all safely accessible reclaimed mine areas prior to chiseling and seeding.

#### Exhibit 7 Hydrology Information

#### Volume 2B

- Ground Water Quality Colowyo Coal Mine, Leonard Rice Consulting Water Engineers, Inc., 1979
- 6) Hydrologic and Erosional Characteristics of Regraded Surface Coal Mined Land in Colorado, Striffler and Rhodes, 1981
- 7) Modification of both Surface Water Monitoring and Alluvial Groundwater Monitoring Locations, 1991
- 8) Geotechnical Assessment East Taylor Pond, CTL/Thompson, Inc. 1995
- 9) Haulroad Culvert Redesign, 1997
- 10) Stoker Crusher Ditch, 1997
- 12) Section 16 Taylor Ditch, 1997
- 14) Lower Administration Building Small Area Exemption
- 15) Haul Road A Upper and Lower Ditches

#### Volume 2C

- 14) Emergency Spillway, Temporary and Permanent Channel Designs, Existing Structures Summary Text
  Appendix Exh. 7-14A Emergency Spillway Outslope Channel Designs
  Appendix Exh. 7-14B Side Channel Designs (Temporary)
  Appendix Exh. 7-14E Streeter Gulch and Buckskin Draw Ditches (Permanent)
  Appendix Exh. 7-14F Coal Road Ditch
  Appendix Exh. 7-14P Small Area Exemption
  Appendix Exh. 7-14R East Pit Reclamation Area, Prospect Ditch, North Trib East Pit Ditch, Final East Pit Ditch
- 15) Stability Evaluation, Existing Sedimentation Pond Embankments, CTL/Thompson Inc. 1998
- 16) Adjudicated and permitted surface and groundwater locations within 1 mile of the Permit boundary
- 18) Gulch A Small Area Exemption
- 19) Point of Compliance Well Investigation Report Colowyo Mine, AECOM 2021

Exh. 7-14TOC-1

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  Appendix Exh. 7-14F Coal Road Ditch
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- 15) Stability Evaluation, Existing Sedimentation Pond Embankments, CTL/Thompson Inc. 1998
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- 19) Point of Compliance Well Investigation Report Colowyo Mine, AECOM 2021

Exh. 7-14TOC-1

## Exhibit 7 Item 19

# Point of Compliance Well Investigation Report Colowyo Mine

**AECOM, 2021** 



# Point of Compliance Well Investigation Report Colowyo Mine

Project No. 60614862

April 29, 2021

Prepared for: Elk Ridge Mining and Reclamation

Prepared by:

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### **Appendices**

- Appendix A Temporary Monitoring Well Construction Reports
- Appendix B October 2019 Well Development and Sampling Forms
- Appendix C Temporary Monitoring Well Abandonment Forms

### Acronyms

bgs	below ground surface
BSGW	Basic Standards for Ground Water
COC	Chain-of-custody
Colowyo	Colowyo Mine
Division	Colorado Division of Reclamation, Mining and Safety
EPA	Environmental Protection Agency
mg/L	milligrams per liter
Mine	Colowyo Mine
Ν	Nitrogen
ORP	oxidation-reduction potential
PVC	Polyvinylchloride
SM	Standard Method
TDS	Total Dissolved Solids
UTL	Upper Tolerance Limit

# 1. Introduction

#### 1.1 Background

The Colowyo Mine ("Colowyo" or "Mine") is located in western Colorado in Moffat and Rio Blanco counties immediately west of State Highway 13 (**Figure 1**). The Mine operates under Permit No. C-1981-019 issued by the Colorado Mined Land Reclamation Division, a precursor to the current regulatory agency, the Colorado Division of Reclamation, Mining and Safety (Division). Stipulation 7 of the Colowyo Mine Permit includes a provision to evaluate the need for groundwater points of compliance:

"The Colowyo Coal Company shall submit a technical revision to the Division which provides an analysis of groundwater points of compliance at the Colowyo Mine pursuant to Rule 4.05.13(1). This analysis will be done in consultation with the Division and will include a written determination of the need for groundwater points of compliance at the mine. If deemed appropriate, based on this analysis, Colowyo shall establish one or more points of compliance for the Colowyo Mine."

In an initial review of conditions at the Colowyo Mine, the Division (2006) evaluated three specific zones of groundwater that have the potential to be impacted by mining activities. These include bedrock groundwater systems, backfill and excess spoil groundwater systems, and alluvial groundwater systems. As part of their review, the Division determined that coal mining and reclamation activities at Colowyo do not have the potential to negatively impact bedrock groundwater, and therefore do not require bedrock monitoring point of compliance wells. This conclusion was based on the location of the nearest bedrock aquifer, the Trout Creek Sandstone, which is approximately 590 feet below the lowest coal seam to be mined in the South Taylor Pit. Another consideration was the many layers of lower permeability strata between the mined coal seams and the Trout Creek Sandstone, including shales, coals, and a laterally extensive clay layer. Due to these factors, the Division concluded it is unlikely that infiltration through the mined areas will impact bedrock groundwater.

The Division also determined that meteoric water accumulating within backfilled areas of the Mine and excess spoil piles is known to be of degraded quality and does not constitute a preexisting aquifer. Groundwater may locally develop in these areas due to the greater permeability of the backfill compared to the surrounding bedrock strata; however, any accumulated groundwater is not intended to be used as an aquifer. For these reasons, points of compliance are not required for backfill and excess spoils at Colowyo Mine. The Division also indicated that backfill seepage and spoil water discharge may have an impact on surface water or alluvial groundwater.

Finally, the Division stated that mining activities do have the potential to impact alluvial groundwater in the Taylor Creek, Wilson Creek, and Good Spring Creek drainages hydrologically downgradient from disturbed areas, discharges, seepage from within backfill and excess spoil areas, and from surface and subsurface flows from coal stockpiles at the Gossard Loadout. If needed, point-of-compliance locations for the Mine would therefore be established in the alluvial groundwater systems within these drainages.

#### **1.2 Previous Studies**

To address Stipulation 7, Colowyo previously completed a review of existing groundwater quality data for the Mine (Peterson Hydrologic, LLC 2015). The objectives of this review were as follows:

- Characterize the shallow groundwater systems in Wilson Creek, Taylor Creek, and Good Spring Creek drainages in the vicinity of the Mine;
- Determine whether there is evidence that mining- and reclamation-related activities have had detrimental impacts to water quality in the groundwater systems in these drainages;
- Determine the likelihood that impacts to these groundwater systems may occur in the future as a result of the mining- and reclamation-related activities at Colowyo Mine; and
- Provide recommendations regarding the need for groundwater points of compliance.

The Petersen Hydrologic report concluded that groundwater points of compliance were not required due to several factors including exceedances of water quality standards in upgradient areas, lack of domestic and agricultural wells in the downgradient alluvial valleys, limited potential for vertical groundwater migration, low recharge to the alluvium, mitigation through post-mining reclamation, and lack of significant impacts to sampled groundwater in the alluvial valleys.

An expanded Points of Compliance Evaluation Report was subsequently prepared by AECOM (2018). The AECOM report included further analysis of hydrologic data collected both prior to and after the 2015 Peterson Hydrologic report. The study also evaluated specific considerations for establishing points of compliance as contained in the Rules and Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (1980 et seq.), Rule 4.05.13(1)(b). Based on the data analyzed and AECOM's interpretation of the rule, it was concluded that groundwater points of compliance were not needed for Colowyo Mine. This conclusion was reached considering the degraded water quality in alluvial groundwater upgradient from the Mine; the lack of water supply wells downgradient of the Mine in the alluvial valleys; the success of reclamation at the Mine and lack of increasing trends in constituent concentrations since 2006; and the low risk of lateral and vertical migration of alluvial groundwater into the surrounding bedrock.

The Division responded on November 6, 2018 with an adequacy review of the AECOM report but did not agree to remove the permit stipulation requiring point of compliance wells. In March 2019, AECOM assisted the Mine in preparing a response letter discussing key details of the Points of Compliance Evaluation report. After submittal of this response letter, the Division reiterated their stance that compliance wells were needed. In a letter dated April 2, 2019, the Division requested that Colowyo provide updated text and maps as necessary including point of compliance well locations to satisfy Rule 4.05.13.

#### 1.3 2019-2021 Groundwater Investigation Approach and Objectives

Colowyo already has three downgradient monitoring wells at the Mine: Gossard Well in the Wilson Creek drainage, MT-95-02 in the Taylor Creek drainage, and NGSW in the Good Spring Creek drainage (**Figure 1**). However, these wells are known to contain elevated concentrations of some monitored constituents, and therefore may not be suitable as permanent point of compliance wells. Rule 4.05.13(1)(b) also states that "points of compliance shall be monitoring locations in addition to any other monitoring points required by the Division", implying that separate point of compliance wells are needed to meet the intent of the Rule. Colowyo thus

decided to undertake a groundwater characterization study of the Wilson Creek, Taylor Creek, and Good Spring Creek alluvial groundwater systems to identify appropriate point of compliance well locations on land owned by the Mine. This groundwater study, initiated in 2019, consisted of installing several temporary monitoring wells within each drainage, and sampling each well for a period of one year to establish baseline chemistry. Baseline sampling of the temporary wells was conducted from October 2019 to November 2020. Results from the alluvial groundwater investigation and baseline sampling program are presented in this report.

The 2019-2020 alluvial groundwater characterization study had four main objectives:

- 1. To understand spatial trends in alluvial groundwater chemistry within the Wilson, Taylor, and Good Spring Creek drainages;
- 2. To establish site-specific background concentrations for alluvial groundwater using data from Colowyo's upgradient and downgradient monitoring wells;
- To define comparison values for assessing groundwater compliance using a hybrid approach that combines site background concentrations and table value standards from the Water Quality Control Commission's Regulation No. 41 – The Basic Standards for Ground Water (5 CCR 1002-41); and
- 4. To identify permanent compliance well locations on land owned by the Mine where the alluvial groundwater chemistry would generally meet compliance standards.

These objectives are addressed in this report, and recommendations are made for permanent point of compliance well locations.
# 2. Field Data Collection

#### 2.1 Temporary Well Installation and Development

The point of compliance groundwater investigation began with the installation of 16 temporary monitoring wells in the alluvium downgradient of Colowyo Mine (**Figure 1**). Notice of Intent to construct the temporary wells was provided to the State Engineer's Office on October 2, 2019. The temporary well borings were advanced by Cascade Environmental using direct-push technology. The borings were completed over a period of five days from October 8 through October 12, with the installation depths ranging from 11 to 32 feet below ground surface (bgs). The diameter of each borehole was 2.5 inches. As shown in **Table 1**, a total of seven borings were installed in the Good Spring Creek drainage, two were installed in the Taylor Creek drainage, and seven were installed in the Wilson Creek drainage. An AECOM geologist was present on site during the drilling program to coordinate with the client, monitor the investigation progress, and log the cores recovered by the direct-push rig. The lithology encountered while drilling generally consisted of silt, sand, silty sand, lean clay, and gravel (**Table 1**).

Upon completion of each borehole, a temporary monitoring well was installed using 1-inch inner diameter polyvinylchloride (PVC) well casing with ten feet of pre-packed 0.010-slot PVC well screen. The construction details and static water level for each well are summarized in **Table 1**. The wells were generally constructed with one to two feet of casing stickup to provide access for sampling, and were fitted with a well cap at the top of the casing to seal the well. The drilling contractor also added a small amount of bentonite chips in the annular space near the top of each boring to prevent surface runoff from entering the open boreholes. Well Construction and Yield Estimate Reports for each temporary well are provided in **Appendix A**.

The temporary monitoring wells were developed the following week from October 14 through October 16, 2019. Well development was conducted using a bailer or peristaltic pump to purge a minimum of three casing volumes from each well. During development, the water temperature, pH, oxidation-reduction potential (ORP), specific conductance, turbidity, dissolved oxygen content, and total volume purged were measured at regular intervals. The field parameter readings are recorded on the groundwater purge log forms contained in **Appendix B**.

#### 2.2 Baseline Sampling

AECOM personnel collected the first set of baseline groundwater samples from the new wells in October 2019 immediately after well development. The samples were collected by pouring or pumping water directly from the bailer or pump discharge line into laboratory-supplied sample containers. Sample water was slowly poured or pumped into each container until it was appropriately filled, taking care not to overfill the container or spill the laboratory preservative contained in pre-preserved sample bottles. Samples collected for dissolved metals were field-filtered using a disposable 0.45-micron filter. The sample containers were then labeled and placed on ice in a sample cooler. At the conclusion of sampling, the samples were shipped under chain-of-custody (COC) control to Pace Analytical located in Sheridan, Wyoming.

After the initial sampling event in October 2019, all subsequent samples from the temporary wells were collected by a Colowyo contractor following similar purging and sampling procedures. Up to six additional baseline samples were collected per well, with monitoring events occurring in March, April, June, July, September, and November 2020. Exceptions include POC-9, which only contained enough water to sample on two occasions, and POC-4,

which was consistently dry during the baseline monitoring period. Additionally, Colowyo decided to stop sampling POC-7 after the April 2020 monitoring event due to the high total dissolved solids (TDS) concentration in the well (21,000 to 45,700 milligrams per liter [mg/L]), and its location as the farthest downgradient temporary monitoring point, making it an unlikely location for a permanent compliance well.

#### 2.3 Analytical Program

Groundwater samples collected from the temporary wells were analyzed for the groundwater constituent list contained in Section 4.05.13 of the Mine Permit. The analytical constituents and laboratory methods are listed below:

- pH by Standard Method (SM) 4500 HB;
- Electrical Conductivity by SM 2510B;
- TDS by SM 2540;
- Alkalinity by SM 2320B
- Hardness by SM2340B;
- Ammonia as Nitrogen (N) by Environmental Protection Agency (EPA) Method 350.1;
- Nitrate as N, nitrite as N, nitrate + nitrite as N, orthophosphate as phosphorus, and sulfate by EPA Method 300.0;
- Total Phosphorus by EPA Method 200.7;
- Calcium, magnesium, and sodium by EPA Method 200.7;
- Dissolved Metals by EPA Methods 200.7 and 200.8; and
- Mercury by EPA Method 245.1.

Colowyo also added chloride and potassium to the analyte list for the 2020 sampling events to complete the analytical suite for major ion chemistry. Chloride was analyzed by EPA Method 300.0, and potassium was analyzed by EPA Method 200.7.

#### 2.4 Temporary Well Abandonment

Consistent with Colorado Division of Water Resources permit requirements for monitoring and observation holes, the temporary monitoring wells were abandoned within 18 months of installation. Cascade Environmental abandoned the temporary wells on March 29, 2021. The Well Abandonment forms are provided in **Appendix C**.

# 3. Data Analysis

#### 3.1 Establishing Site Background Values

To evaluate the temporary well constituent concentration data, it was necessary to establish groundwater threshold values for comparison. Numeric standards for unclassified groundwater in Colorado are contained in Regulation No. 41 – The Basic Standards for Ground Water (5 CCR 1002-41). Per 41.5.C.6. of Regulation No. 41, the "Interim Narrative Standard" is applicable to all groundwater, to which standards have not already been assigned in the state, with the exception of those areas where the TDS is equal to or exceeds 10,000 mg/L. The Interim Narrative Standard applies to alluvial groundwater at Colowyo Mine because the groundwater TDS is typically less than 10,000 mg/L, and site-specific standards have not been established. Section 41.5.C.6. of the regulation goes on to state that:

"Until such time as use classifications and numerical standards are adopted for the ground water on a site-specific basis throughout the state...ground-water quality shall be maintained for each parameter at whichever of the following levels is less restrictive:

- (A) existing ambient quality as of January 31, 1994, or
- (B) that quality which meets the most stringent criteria set forth in Tables 1 through 4 of "The Basic Standards for Ground Water."

The simplest interpretation of the Interim Narrative Standard is that groundwater at the Mine could be required to meet the "most stringent criteria set forth in Tables 1 through 4 of The Basic Standards for Ground Water" (BSGW). **Table 2** lists the potentially applicable human health, drinking water, and agricultural standards for constituents monitored by Colowyo, and identifies the most stringent value for comparison (the table only includes constituents with defined groundwater criteria). However, the approach of selecting the most stringent criteria may not be appropriate for Colowyo Mine because past studies have shown that upgradient, ambient groundwater unaffected by mining does not always meet the BSGW for certain constituents (AECOM 2018; Peterson Hydrologic, LLC 2015). In such cases, compliance with the most stringent groundwater standard is not achievable, and an alternate method is needed to establish comparison standards for point of compliance wells.

Ambient groundwater quality for the site was evaluated using statistics to develop background comparison values that were based on site-specific data. Two different approaches were used for the background statistics. The first approach relied on concentration data from the Mine's upgradient monitoring wells to calculate site-specific comparison values. Analytical data collected from upgradient wells A-6 and A-8 between 1984 and 2017 were pooled to form a background dataset, and were used to develop statistical upper tolerance limits (UTLs) with 95 percent confidence. The second approach used was to estimate existing ambient water quality in the downgradient site area prior to January 31, 1994, as prescribed in Section 41.5.C.6.b.i.A of Regulation No. 41. Under this method, AECOM compiled pre-1994 concentration data from the NGSW and Gossard Well locations, and again developed UTLs for the combined dataset with 95 percent confidence.

ProUCL software (Version 5.1) published by the EPA was used for the statistical analyses (EPA 2015). For both the upgradient and pre-1994 datasets, background concentrations were developed by calculating parametric or nonparametric UTLs for each constituent based on the frequency of non-detect values and whether the background dataset for that constituent

exhibited a normal, log-normal, or nonparametric distribution. Any non-detect concentrations in the background data were represented for statistical purposes as equal to the detection limit. Calculation of UTLs was limited to constituents with groundwater standards listed in Regulation 41 since these constituents will be the primary driver for determining compliance in future point-of-compliance wells.

The site-specific background concentrations estimated using both upgradient and pre-1994 data are summarized in **Table 2** alongside the BSGW. Results of the statistical evaluation show that for several constituents, the UTLs calculated are higher than the most stringent groundwater threshold contained in Regulation 41. For example, both the upgradient (0.09 mg/L) and pre-1994 (0.75 mg/L) background values for manganese are higher than the most stringent manganese groundwater standard (0.05 mg/L). A similar relationship exists between the groundwater standard and at least one background UTL for iron, nitrate as N, combined nitrate plus nitrite as N, selenium, and sulfate. Instances where the background UTL for a constituent are higher than the groundwater.

#### 3.2 Temporary Well Concentration Results

The next step after establishing groundwater comparison thresholds was to analyze baseline concentration data from the temporary monitoring wells. The concentration datasets were analyzed by calculating summary statistics for each constituent at each well, including the minimum, maximum, and average concentration values. These statistics are summarized by constituent in **Tables 3** through **15**. The baseline sampling data were then compared to the groundwater threshold values listed in **Table 2**. For most constituents, three different comparisons were made:

- 1. The temporary well concentration data were first compared to the most stringent Regulation No. 41 standard for human health, drinking water, or agricultural uses.
- 2. The second comparison made was to the background UTLs established using concentration data from the Mine's upgradient background wells (A6 and A8).
- 3. The final comparison made was to the background UTLs calculated using pre-1994 baseline data from the downgradient Gossard Well and NGSW.

**Tables 3** through **15** present results of the comparison for each constituent. The data in the tables are organized from upstream to downstream within each drainage to help illustrate spatial trends across the site. Concentration data for the permanent monitoring wells NGSW, MT-95-02, and Gossard Well are also included in the tables to illustrate how these wells compare to the temporary monitoring well statistics. Average, minimum, and maximum concentrations for the permanent wells were calculated using the approved Mine groundwater monitoring data collected quarterly in accordance with the Mine Permit between January 2015 and March 2020.

The comparison to the three groundwater thresholds is represented in the tables as the percentage of concentration values within each well dataset that exceeds the respective comparison standard. For example, the data in **Table 7** indicate that 100 percent of manganese samples collected at POC-8 exceeded the most stringent Regulation No. 41 groundwater standard. However, when the manganese concentrations from this well are compared to the upgradient well background value and the pre-1994 downgradient well background value, the percent of manganese concentrations exceeding these thresholds drops to 86 percent and 29 percent, respectively. In this way, the tables are helpful for evaluating whether a future well

sample from an individual location would achieve compliance with the various comparison thresholds that could apply to the monitoring program.

AECOM also created comparison figures (**Figures 2** through **12**) illustrating which temporary well locations meet the BSGW. Figures were prepared for the constituents that had at least one sample result from a temporary well that exceeded the most stringent Regulation 41 criteria. This list includes arsenic, pH, iron, manganese, nitrite as N, selenium, sulfate, and TDS. On each figure, the well symbols are shown in green if the average concentration value for the well is below the standard, and are coded in red if the average concentration exceeds the standard. The label for each well location also lists the average and maximum concentrations reported in the monitoring dataset, and the percentage of values that exceed the standards. For any figure that had a "red-coded" well indicating a consistent exceedance of the groundwater standard, AECOM also created a second figure comparing the average concentration values to the background UTL for that constituent. A brief summary of each figure is provided below.

- **Figure 2 Dissolved Arsenic**: The wells on this figure are consistently coded green because the average arsenic concentration at each well meets the Regulation 41 arsenic standard. Arsenic will therefore have minimal influence on the siting of future compliance wells.
- **Figure 3 Field pH**: Like arsenic, the wells on this figure are coded green because the average pH value at each well meets the Regulation 41 standard. Therefore, pH will have minimal influence on the siting of future compliance wells.
- Figures 4 and 5 Dissolved Iron: The average dissolved iron concentration at two wells in the Good Spring Creek drainage (POC-8 and POC-9) exceeds the 0.3 mg/L Regulation 41 iron standard (Figure 4). When the upgradient background UTL is used for comparison, only the result from POC-9 exceeds the background value (Figure 5). No comparison could be made to pre-1994 baseline concentrations because there were no pre-1994 iron data available from the Gossard Well or NGSW to calculate background UTLs (Table 2).
- Figures 6, 7a, and 7b Dissolved Manganese: Average dissolved manganese concentrations in the temporary monitoring wells were consistently above the most stringent Regulation No. 41 criteria. As a result, all of the temporary well symbols on Figure 6 are coded red. When the upgradient background UTL is used for comparison (Figure 7a), compliance with the threshold value is only achieved at one temporary well location: POC-3 in the Taylor Creek Drainage. However, further analysis shows that at ten of the temporary wells, average manganese concentrations are below the background value calculated using pre-1994 baseline data from Gossard Well and NGSW (Figure 7b). The only wells that do not meet this higher threshold include POC-5 and POC-6 in the Wilson Creek drainage, and POC-9 and POC-12 in the Good Spring Creek drainage.
- **Figure 8 Nitrite**: The wells on this figure are coded green because the average nitrite concentration at each well meets the Regulation 41 nitrite standard. Nitrite therefore will not influence the siting of future compliance wells.
- **Figure 9 Dissolved Selenium**: Average selenium concentrations generally meet the most stringent Regulation 41 criteria except at POC-16 in the Wilson Creek drainage. However, POC-16 is located over a mile downgradient of the Mine Permit boundary, and is unlikely to be selected as a permanent point-of-compliance well location. AECOM did not prepare a UTL comparison figure for selenium because the selenium background values shown in **Table 2** are the same or lower than the groundwater standard.
- **Figures 10, 11a, and 11b Sulfate**: Average sulfate concentrations exceed the Regulation 41 standard in both the temporary and permanent wells (**Figure 10**). However, as shown

on **Figure 11a**, the average sulfate concentration is lower than the upgradient background UTL at five temporary wells in the Good Spring Creek and Wilson Creek drainages. This figure also shows that average sulfate concentrations tend to be higher farther downgradient in both drainages than they are closer to the Mine site. Finally, using the pre-1994 baseline UTL for comparison (**Figure 11b**) results in eight of the temporary well locations falling below the higher threshold value (997 mg/L). Average sulfate concentrations at NGSW, MT-95-02, and Gossard Well are also below the pre-1994 baseline UTL.

Figures 12a and 12b - TDS: Based on data from A-6 and A-8, the upgradient background UTL for TDS is 1,360 mg/L. Per Regulation 41, the groundwater standard for TDS was calculated as 1.25 times the site background value (1,360 \* 1.25 = 1,700 mg/L). AECOM used the 1,700 mg/L TDS standard as the basis for comparison on Figure 12a. This figure illustrates that like sulfate, average TDS concentrations tend to be higher farther downgradient from the Mine than they are near the permit boundary. A trend of increasing TDS downgradient was also documented by baseline sampling data presented in the Mine Permit, which found that TDS increased by 40 to 50 mg/L per mile due to natural factors such as agricultural drainage, dissolution of soluble minerals, and the concentrating effect of evaporation (Colowyo Coal Company 1981 et seq.). The current spatial trend of TDS concentrations is therefore consistent with baseline results. The temporary well locations most likely to meet the 1700 mg/L TDS standard include POC-1 and POC-2 in the Wilson Creek drainage, and POC-8, POC-9, POC-10, and POC-11 in the Good Spring Creek drainage. Using pre-1994 baseline data to calculate background increases the TDS threshold even further to 1,840 mg/L, but does not change the temporary wells that would meet the threshold value.

Overall, the comparative analysis provided in **Tables 3** through **14** and depicted on **Figures 2** through **12** indicates that manganese, sulfate, and TDS are the constituents most likely to exceed standards in future point of compliance wells. The probability of meeting standards for these constituents will be highest when background UTLs calculated based on pre-1994 baseline data are used for comparison. This occurs because the pre-1994 baseline UTLs for manganese, sulfate, and TDS are higher than the most stringent Regulation 41 standard, as well as the upgradient background UTLs (**Table 2**).

#### 3.3 Point of Compliance Well Recommendations

Based on the analysis presented above, AECOM recommends installing two permanent point of compliance well locations in the downgradient site area. Our recommended well locations are shown on **Figure 13**. The first permanent compliance well should be installed in the Wilson Creek drainage near the present location of POC-2. A permanent well in this area could serve as the groundwater point of compliance for the both the Wilson Creek and Taylor Creek alluvial groundwater systems. The recommendation to install a permanent well in this area is based on the relatively low average concentrations of dissolved manganese (0.39 mg/L), sulfate (597 mg/L), and TDS (1,427 mg/L) compared to other temporary monitoring well locations in the Wilson Creek drainage, including some that are farther downgradient of the Mine Permit boundary. This location is also consistent with the recommended location for a permanent compliance well in the Division's adequacy review of Permit Revision 02 (Division of Reclamation, Mining and Safety 2006, 2007), which states:

...the Division is recommending two locations for additional alluvial monitoring wells to be utilized as points of compliance for alluvial groundwater as follows: one should be located in the Quaternary alluvium below the juncture of East Taylor Creek and Wilson Creek, and the other should be located in the Quaternary alluvium along Good Spring Creek at some point down hydraulic gradient from the mining impact areas. [Comment 109]

AECOM estimates that on average, a permanent well near POC-2 has an 85 to 95 percent chance of meeting groundwater standards, depending on which of the three threshold values defined in this report is used for determining compliance.

Similar to the Division's recommendation, AECOM also suggests installing a second permanent compliance well in the Good Spring Creek drainage near the present location of POC-10 (**Figure 13**). This recommendation is based on the relatively low average concentrations of dissolved manganese (0.29 mg/L), sulfate (610 mg/L), and TDS (1,331 mg/L) compared to the other temporary monitoring well locations, including some that are farther downgradient in the Good Spring Creek valley. We estimate that on average, a permanent well near POC-10 has an 85 to 99 percent chance of meeting groundwater standards, depending on which groundwater threshold value is used for comparison.

If the Division accepts these proposed point of compliance well locations, we recommend installing the permanent wells within 10 to 20 feet of the existing temporary wells. The permanent wells should also be drilled to a similar depth as the temporary wells to ensure an adequate water column for sampling. This will likely require drilling the permanent well near POC-2 about five feet deeper than the temporary boring (30 feet total) since POC-2 only contained five feet of water at the time of installation (**Table 1**). The permanent well near POC-10 can be drilled to the same depth as the temporary well (25 feet) because POC-10 contained over ten feet of water when it was first installed.

AECOM recommends installing 2-inch wells for the permanent point of compliance locations. The permanent wells should be completed using 2-inch inner diameter, flush-threaded, Schedule 40 PVC well casing and 0.010-inch factory-slotted PVC screen. We recommend installing the well screens across the lower 10 feet of each boring. Consistent with the Rules and Regulations for Water Well Construction (2 CCR 402-2), the point of compliance wells should be completed with a silica sand filter pack that extends from the bottom of the boring to 2 feet above the top of the well screen. A 3-foot thick bentonite seal should be placed on top of the filter pack and hydrated prior to adding grout. After the bentonite seal has had sufficient time to hydrate, the remaining annular space in each wellbore should be grouted from the top of the bentonite seal to ground surface using cement-bentonite grout.

AECOM recommends constructing each well as an above-grade completion with approximately two feet of casing stickup secured by a lockable steel well cover. The inner PVC casing should be sealed with an expandable J-plug well cap, or similar. AECOM also recommends constructing a concrete well pad around the steel cover that is at least 4 inches thick and slopes away from the wellhead. The concrete pad should extend at least two feet laterally in all directions from the outside of the steel cover. Following construction, the new point of compliance wells should be developed in accordance with Rule 10.6 of the Rules and Regulations for Water Well Construction (2 CCR 402-2) to remove drill cuttings and fines from the well screen and filter pack.

#### 3.4 Proposed Compliance Standards

The analysis presented in this report identified three different comparison standards that were used to evaluate concentration data from the temporary monitoring wells. However, once permanent point of compliance wells are installed at the Mine, a single comparison standard needs to be established to determine if groundwater quality in the permanent compliance wells

meets the standard values. According to the Interim Narrative Standard described in Section 41.5.C.6. of Regulation 41:

"...ground-water quality shall be maintained for each parameter at whichever of the following levels is *less restrictive* [emphasis added]:

- (A) existing ambient quality as of January 31, 1994, or
- (B) that quality which meets the most stringent criteria set forth in Tables 1 through 4 of "The Basic Standards for Ground Water."

It has been shown for Colowyo Mine that existing ambient water quality as of January 31, 1994 was in many cases higher (and therefore less restrictive) than the most stringent criteria set forth in Tables 1 through 4 of the BSGW. As such, AECOM believes that a hybrid approach for establishing groundwater compliance standards is appropriate for the Mine. The applicable standard for each regulated groundwater constituent included in the Mine Permit should be the higher of the most stringent groundwater quality criteria or the pre-1994 background UTL. Following this approach, proposed groundwater compliance standards for the monitored constituents are shown in **Table 16**. The table also indicates whether each proposed standard is derived from Regulation 41 or from the pre-1994 background UTL. Using the pre-1994 background value as the standard is proposed for manganese, sulfate, and TDS. Compliance criteria for the remaining constituents would be evaluated using the most stringent groundwater standard from Regulation 41.

# 4. Conclusions

AECOM conducted a groundwater investigation at Colowyo Mine to better understand alluvial groundwater chemistry downgradient of the Mine and to identify suitable locations for permanent point of compliance wells. The study objectives were as follows:

- 1. To understand spatial trends in alluvial groundwater chemistry within the Wilson, Taylor, and Good Spring Creek drainages;
- 2. To establish site-specific background concentrations for alluvial groundwater using data from Colowyo's upgradient and downgradient monitoring wells;
- To define comparison values for assessing groundwater compliance using a combination of site background concentrations and table value standards from the Water Quality Control Commission's Regulation No. 41 – The Basic Standards for Ground Water (5 CCR 1002-41); and
- 4. To identify permanent compliance well locations on land owned by the Mine where the alluvial groundwater chemistry would generally meet compliance standards, in accordance with Regulation 41 and Rules 4.05.13(1)(b)(i)(C) and 4.05.13(1)(b)(ii) of the Rules and Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (1980 et seq.), which allow many different factors to be considered when siting permanent compliance wells.

The study objectives were achieved by installing 16 temporary monitoring wells in the alluvium associated with Wilson, Taylor, and Good Spring creeks, and sampling the temporary wells over a one-year period to characterize the groundwater chemistry. The temporary well concentration datasets were evaluated by comparing the results to site-specific background values as well as Regulation 41 groundwater standards.

Two different approaches were used to estimate background concentrations for the Mine's alluvial groundwater. The first approach relied on concentration data from upgradient wells A-6 and A-8 to calculate site-specific comparison values. AECOM used ProUCL to calculate upper tolerance limits (UTLs) for the upgradient well dataset with 95 percent confidence. The second approach used was to estimate existing ambient water quality in the downgradient Mine area prior to January 31, 1994, as prescribed in Section 41.5.C.6.b.i.A of Regulation 41. Under this method, AECOM compiled pre-1994 concentration data from the NGSW and Gossard Well locations, and again developed UTLs for the combined dataset with 95 percent confidence. Results of the statistical evaluation show that for several constituents, the UTLs calculated are higher than the most stringent groundwater threshold contained in Regulation 41.

Evaluation of the temporary well concentration datasets revealed two main findings:

- 1. Contrary to our initial hypothesis, the temporary monitoring well data showed that alluvial groundwater chemistry tends to be better closer to the Mine Permit boundary and decreases downgradient. This is especially true for sulfate and TDS, where the highest average concentrations occurred at downgradient locations such as POC-14 and POC-16.
- 2. Manganese, sulfate, and TDS were the constituents most likely to exceed comparison thresholds in the temporary monitoring wells.

AECOM used results of the temporary well evaluation to identify permanent compliance well locations where the alluvial groundwater chemistry would generally be expected to meet compliance standards. Recommended permanent well locations are shown on **Figure 13**. The first permanent well should be installed in the Wilson Creek drainage near the location of POC-2. A permanent well in this area could serve as the groundwater point of compliance for both the Wilson Creek and Taylor Creek alluvial groundwater systems. The recommendation to install a permanent well in this area is based on the relatively low average concentrations of dissolved manganese (0.39 mg/L), sulfate (597 mg/L), and TDS (1,427 mg/L) compared to the other temporary monitoring well locations, including some that are farther downgradient. This location is consistent with the recommended location for a permanent compliance well in the Division's adequacy review of Permit Revision 02 (Division of Reclamation, Mining and Safety 2006, 2007).

Similar to the Division's recommendation for Good Spring Creek, AECOM also recommends installing a second permanent compliance well in the Good Spring Creek drainage near the present location of POC-10. This recommendation is based on the relatively low average concentrations of dissolved manganese (0.29 mg/L), sulfate (610 mg/L), and TDS (1,331 mg/L) compared to the other temporary monitoring wells. If the Division accepts these proposed point of compliance well locations, we recommend installing the permanent wells within 10 to 20 feet of the temporary wells at similar total depths.

Given language contained in Regulation 41, which allows consideration of existing ambient water quality when establishing groundwater comparison values, AECOM believes that a hybrid approach for defining compliance standards is appropriate for the Mine. The applicable standard for each regulated groundwater constituent in the Mine Permit should be the higher of the pre-1994 background UTL and the most stringent groundwater quality criteria from Tables 1 through 4 of Regulation 41. Following this approach, proposed groundwater compliance standards for the Mine are shown in **Table 16**. Except for manganese, sulfate, and TDS, the proposed standards are identical to the most stringent Regulation 41 criteria.

# 5. References

AECOM. (2018). Colowyo Mine Points of Compliance Evaluation. September.

- Colorado Division of Reclamation, Mining and Safety. (2006). Interoffice Memorandum from Mike Boulay to Jim Stark regarding Colowyo Mine (Permit no. C-81-019), Permit Revision No. 2 (PR-02).
- Colorado Division of Reclamation, Mining and Safety. (2006). Colowyo Mine C-1981-019 Permit Revision 02 (PR-02) – South Taylor Baseline and Mine Plan and Lower Wilson Baseline – Preliminary Adequacy Letter.
- Colorado Division of Reclamation, Mining and Safety. (2007). Colowyo Mine C-1981-019 Permit Revision 02 (PR-02) – South Taylor Baseline and Mine Plan and Lower Wilson Baseline – Second Adequacy Letter.
- Colorado Mined Land Reclamation Board. (1980 et seq.). Rules and Regulations of the Colorado Mined Land Reclamation Board for Coal Mining. Department of Natural Resources.
- Colorado Water Quality Control Commission. (2020). Regulation No. 41 The Basic Standards for Groundwater. Department of Public Health and Environment.

Colowyo Coal Company. (1981 et seq.). Colowyo Mine Permit Application C-1981-019.

Environmental Protection Agency (EPA). (2015). ProUCL Version 5.1 User Guide.

Petersen Hydrologic, LLC. (2015). Points of Compliance Evaluation for Alluvial Groundwaters in the Taylor Wilson and Good Spring Creek Drainages at Colowyo Mine. Meeker, CO: Colowyo Coal Company.

Tables

# Table 1Temporary Monitoring Well Construction Details<br/>Colowyo Mine, Meeker, Colorado

			Installation	Installation Depth	Well Screen Interval	Depth to Water	Measured Total Depth	
Drainage	Well Name	Permit No.	Date	(ft. bgs)	(ft. bgs)	(ft. btoc) <sup>(1)</sup>	(ft. btoc) <sup>(1)</sup>	Well Screen Lithology
Good Spring	POC-8	60097-MH	10/12/2019	20	10 - 20	10.69	21.85	Olive silt with sand
Good Spring	POC-9	60078-MH	10/12/2019	11	1 - 11	Dry		Olive silty sand; olive lean clay with sand
Good Spring	POC-10	60079-MH	10/12/2019	25	15 - 25	12.05	25.50	Olive lean clay with sand
Good Spring	POC-11	60080-MH	10/12/2019	24	14 - 24	11.29	25.50	Olive silt with sand; olive lean clay with sand; olive silty sand
Good Spring	POC-12	60075-MH	10/11/2019	30	20 - 30	13.36	29.60	Brown silty sand
Good Spring	POC-13	60076-MH	10/11/2019	30	20 - 30	21.95	29.25	Olive silty sand; olive lean clay with sand; olive sand
Good Spring	POC-14	60077-MH	10/12/2019	25	15 - 25	17.43	25.85	Olive lean clay with sand; olive sand
Taylor	POC-4	60074-MH	10/11/2019	30	20 - 30	Dry		Yellowish brown sand; dark yellowish brown silt and clay
Taylor	POC-3	60072-MH	10/11/2019	20	10 - 20	13.39	24.80	Dark yellowish-brown clay with sand
Wilson	POC-1	60071-MH	10/11/2019	20	10 - 20	11.65	20.00	Dark gray silt with sand; grayish brown silty sand
Wilson	POC-2	60070-MH	10/9/2019	25	15 - 25	21.35	26.60	Light brown silt with sand; tan gravel and sand
Wilson	POC-5	60073-MH	10/9/2019	23	13 - 23	14.41	24.75	Pale olive sand and gravel; dark brown silt with sand
Wilson	POC-16	60069-MH	10/9/2019	32	22 - 32	8.74	31.90	Olive silt with sand; olive fine to medium gravel
Wilson	POC-6	60096-MH	10/9/2019	13	3 - 13	5.52	14.00	Dark reddish gray silt with sand; olive clay with trace fines
Wilson	POC-15	60099-MH	10/9/2019	25	15 - 25	6.71	26.03	Olive lean clay with trace sand; olive silt with sand
Wilson	POC-7	60095-MH	10/8/2019	32	22 - 32	26.39	32.50	Olive lean clay

Notes:

ft. bgs = feet below ground surface

ft. btoc = feet below top of casing

(1) Represents depth to water and total depth measured at the time of installation in October 2019.

# Table 2Comparison of the Regulation No. 41 Basic Standards for Ground Water to Site Background Concentrations<br/>Colowyo Mine, Meeker, Colorado

Constituent	Units	Regulation 41 Human Health Standard <sup>(1)</sup>	Regulation 41 Drinking Water Standard <sup>(1)</sup>	Regulation 41 Agricultural Standard <sup>(1)</sup>	Most Stringent Regulation 41 Standard	Upgradient Background (A-6 + A-8) 95/95 UTL	Pre-1994 Data (Gossard + NGSW) 95/95 UTL
Arsenic	mg/L	0.01		0.1	0.01	0.005	0.007
Chloride	mg/L		250		250	(2)	(2)
Field pH	s.u.		6.5 - 8.5	6.5 - 8.5	6.5 - 8.5	8.50	8.40
Iron	mg/L		0.3	5	0.3	1.48	No Data
Manganese	mg/L		0.05	0.2	0.05	0.09	0.75
Mercury	mg/L	0.002		0.01	0.002	0.001	0.001
Nitrate (as N)	mg/L	10.0			10.0	12.2	1.62
Nitrate+Nitrite (as N)	mg/L	10.0		100	10.0	12.2	2.9
Nitrite (as N)	mg/L	1.0		10	1.0	0.1	0.14
Selenium	mg/L	0.05		0.02	0.02	0.022	0.006
Sulfate	mg/L		250		250	626	997
Total Dissolved Solids <sup>(3)</sup>	mg/L		1,700		1,700	1,360	1,840
Zinc	mg/L		5	2	2	0.052	0.39

Notes:

mg/L = milligrams per liter

s.u. = standard units

UTL = upper tolerance limit

(1) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(2) No background data were available because chloride is not a monitored constituent in Colowyo's Mine Permit.

(3) Per Regulation 41, the standard for total dissolved solids (TDS) was calculated as 1.25 times the Upgradient Background UTL.

## Table 3 Dissolved Arsenic Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

						Dissolved A	rsenic Concent	ration					
									Upgradient	Downgradient		% Exceeding	% Exceeding
									Well Site	Well Site	% Exceeding	Upgradient	Downgradient
		No. of					Groundwater		Background	Background	Groundwater	Well	Well
Drainage	Well Name	Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Standard <sup>(2)</sup>	Standard Type	Value <sup>(3)</sup>	Value <sup>(4)</sup>	Standard	Background	Background
Good Spring	NGSW	21	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.004	0.002	0.009	0.01	Human Health	0.005	0.007	0%	29%	14%
Good Spring	POC-9	2	mg/L	0.006	0.002	0.011	0.01	Human Health	0.005	0.007	50%	50%	50%
Good Spring	POC-10	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Good Spring	POC-14	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Taylor	MT-95-02	21	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Taylor	POC-3	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-1	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-2	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-5	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-16	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-6	7	mg/L	0.002	0.002	0.004	0.01	Human Health	0.005	0.007	0%	0%	0%
Wilson	POC-15	7	mg/L	0.002	0.002	0.002	0.01	Human Health	0.005	0.007	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved arsenic concentrations reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved arsenic concentrations reported at NGSW and Gossard Well using Pre-1994 data.

# Table 4Chloride Concentration Statistics in Temporary Site Monitoring Wells<br/>Colowyo Mine, Meeker, Colorado

				Chl	oride Conce	ntration				
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Site Background Value <sup>(3)</sup>	% Exceeding Groundwater Standard
Good Spring	POC-8	6	mg/L	23.5	12.0	30.0	250	Drinking Water	-	0%
Good Spring	POC-9	2	mg/L	20.0	13.0	27.0	250	Drinking Water	-	0%
Good Spring	POC-10	6	mg/L	31.5	30.0	34.0	250	Drinking Water	-	0%
Good Spring	POC-11	6	mg/L	32.5	23.0	40.0	250	Drinking Water	-	0%
Good Spring	POC-12	6	mg/L	58.0	51.0	63.0	250	Drinking Water	-	0%
Good Spring	POC-13	6	mg/L	33.0	28.0	36.0	250	Drinking Water	-	0%
Good Spring	POC-14	6	mg/L	54.3	42.0	99.0	250	Drinking Water	-	0%
Taylor	POC-3	6	mg/L	87.2	82.0	95.0	250	Drinking Water	-	0%
Wilson	POC-1	6	mg/L	39.0	28.0	45.0	250	Drinking Water	-	0%
Wilson	POC-2	6	mg/L	51.0	45.0	63.0	250	Drinking Water	-	0%
Wilson	POC-5	6	mg/L	46.3	26.0	55.0	250	Drinking Water	-	0%
Wilson	POC-16	6	mg/L	56.5	52.0	60.0	250	Drinking Water	-	0%
Wilson	POC-6	6	mg/L	71.7	16.0	92.0	250	Drinking Water	-	0%
Wilson	POC-15	6	mg/L	42.2	36.0	49.0	250	Drinking Water	-	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) No background data were available because chloride is not a monitored constituent in Colowyo's Mine Permit.

#### Table 5 Field pH Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

							Field pH						
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	s.u.	7.5	7.1	8.0	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-8	7	s.u.	7.5	6.7	8.3	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-9	2	s.u.	7.6	7.6	7.7	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-10	7	s.u.	7.4	6.6	7.7	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-11	7	s.u.	7.3	6.7	7.6	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-12	7	s.u.	7.4	7.1	7.6	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Good Spring	POC-13	7	s.u.	7.9	7.2	10.6	8.5	Drinking Water	8.5	8.4	14%	14%	14%
Good Spring	POC-14	7	s.u.	7.4	7.1	7.7	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Taylor	MT-95-02	20	s.u.	7.4	7.1	7.7	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Taylor	POC-3	7	s.u.	7.6	7.2	7.8	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	GOSSARD WELL	21	s.u.	7.7	7.6	8.0	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	POC-1	7	s.u.	7.6	7.3	7.8	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	POC-2	7	s.u.	7.5	6.9	7.7	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	POC-5	7	s.u.	7.4	6.8	7.7	8.5	<b>Drinking Water</b>	8.5	8.4	0%	0%	0%
Wilson	POC-16	7	s.u.	7.3	6.7	7.6	8.5	<b>Drinking Water</b>	8.5	8.4	0%	0%	0%
Wilson	POC-6	7	s.u.	7.5	6.9	8.0	8.5	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	POC-15	7	s.u.	7.6	7.2	8.0	8.5	Drinking Water	8.5	8.4	0%	0%	0%

#### Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020. (3) Site Background Value represents the 95 percent Upper Tolerance Limit for pH reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for pH reported at NGSW and Gossard Well using Pre-1994 data.

## Table 6 Dissolved Iron Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

					Dissol	ved Iron Cond	entration					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater Standard	
Good Spring	NGSW	21	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Good Spring	POC-8	7	mg/L	0.678	0.025	2.950	0.3	Drinking Water	1.48	-	57%	14%
Good Spring	POC-9	2	mg/L	6.555	0.110	13.000	0.3	Drinking Water	1.48	-	50%	50%
Good Spring	POC-10	7	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Good Spring	POC-11	7	mg/L	0.060	0.025	0.270	0.3	Drinking Water	1.48	-	0%	0%
Good Spring	POC-12	7	mg/L	0.194	0.025	1.210	0.3	Drinking Water	1.48	-	14%	0%
Good Spring	POC-13	7	mg/L	0.030	0.025	0.060	0.3	Drinking Water	1.48	-	0%	0%
Good Spring	POC-14	7	mg/L	0.073	0.025	0.360	0.3	Drinking Water	1.48	-	14%	0%
Taylor	MT-95-02	21	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Taylor	POC-3	7	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Wilson	POC-1	7	mg/L	0.084	0.025	0.440	0.3	Drinking Water	1.48	-	14%	0%
Wilson	POC-2	7	mg/L	0.031	0.025	0.070	0.3	Drinking Water	1.48	-	0%	0%
Wilson	POC-5	7	mg/L	0.124	0.025	0.720	0.3	Drinking Water	1.48	-	14%	0%
Wilson	POC-16	7	mg/L	0.025	0.025	0.025	0.3	Drinking Water	1.48	-	0%	0%
Wilson	POC-6	7	mg/L	0.094	0.025	0.350	0.3	Drinking Water	1.48	-	14%	0%
Wilson	POC-15	7	mg/L	0.047	0.025	0.180	0.3	Drinking Water	1.48	-	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020. (3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved iron reported at upgradient wells A-6 and A-8.

(4) No pre-1994 iron data were available to calculate background for Gossard and NGSW.

## Table 7 Dissolved Manganese Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

					Diss	solved Mang	anese Concentr	ation					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater		% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.75	0.03	1.32	0.05	Human Health	0.09	0.75	81%	76%	62%
Good Spring	POC-8	7	mg/L	0.58	0.08	1.24	0.05	Human Health	0.09	0.75	100%	86%	29%
Good Spring	POC-9	2	mg/L	1.50	0.20	2.80	0.05	Human Health	0.09	0.75	100%	100%	50%
Good Spring	POC-10	7	mg/L	0.29	0.06	0.41	0.05	Human Health	0.09	0.75	100%	86%	0%
Good Spring	POC-11	7	mg/L	0.49	0.32	0.66	0.05	Human Health	0.09	0.75	100%	100%	0%
Good Spring	POC-12	7	mg/L	0.82	0.68	1.21	0.05	Human Health	0.09	0.75	100%	100%	43%
Good Spring	POC-13	7	mg/L	0.49	0.34	0.55	0.05	Human Health	0.09	0.75	100%	100%	0%
Good Spring	POC-14	7	mg/L	0.48	0.23	0.70	0.05	Human Health	0.09	0.75	100%	100%	0%
Taylor	MT-95-02	21	mg/L	0.02	0.02	0.02	0.05	Human Health	0.09	0.75	0%	0%	0%
Taylor	POC-3	7	mg/L	0.06	0.02	0.08	0.05	Human Health	0.09	0.75	57%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.05	0.02	0.67	0.05	Human Health	0.09	0.75	5%	5%	0%
Wilson	POC-1	7	mg/L	0.26	0.15	0.46	0.05	Human Health	0.09	0.75	100%	100%	0%
Wilson	POC-2	7	mg/L	0.39	0.09	0.67	0.05	Human Health	0.09	0.75	100%	86%	0%
Wilson	POC-5	7	mg/L	0.96	0.50	1.37	0.05	Human Health	0.09	0.75	100%	100%	86%
Wilson	POC-16	7	mg/L	0.33	0.27	0.56	0.05	Human Health	0.09	0.75	100%	100%	0%
Wilson	POC-6	7	mg/L	1.27	0.16	3.44	0.05	Human Health	0.09	0.75	100%	100%	71%
Wilson	POC-15	7	mg/L	0.40	0.28	0.63	0.05	Human Health	0.09	0.75	100%	100%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from CDPHE Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved manganese reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved manganese reported at NGSW and Gossard Well using Pre-1994 data.

## Table 8 Dissolved Mercury Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

					D	issolved Me	cury Concentra	tion					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Well Site Background	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-9	2	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-10	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Good Spring	POC-14	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Taylor	MT-95-02	21	mg/L	0.001	0.001	0.005	0.002	Human Health	0.001	0.001	5%	5%	5%
Taylor	POC-3	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-1	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-2	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-5	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-16	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-6	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%
Wilson	POC-15	7	mg/L	0.001	0.001	0.001	0.002	Human Health	0.001	0.001	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved mercury reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved mercury reported at NGSW and Gossard Well using Pre-1994 data.

### Table 9 Nitrate (as N) Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

						Nitrate (as	N) Concentratio	n					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.12	0.05	0.90	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.10	0.05	0.40	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-9	2	mg/L	0.05	0.05	0.05	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-10	7	mg/L	0.05	0.05	0.05	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.05	0.05	0.05	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.05	0.05	0.05	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.46	0.05	1.30	10	Human Health	12.2	1.62	0%	0%	0%
Good Spring	POC-14	7	mg/L	0.12	0.05	0.40	10	Human Health	12.2	1.62	0%	0%	0%
Taylor	MT-95-02	21	mg/L	0.48	0.40	0.60	10	Human Health	12.2	1.62	0%	0%	0%
Taylor	POC-3	7	mg/L	0.06	0.05	0.10	10	Human Health	12.2	1.62	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.70	0.10	1.00	10	Human Health	12.2	1.62	0%	0%	0%
Wilson	POC-1	7	mg/L	0.35	0.05	0.70	10	Human Health	12.2	1.62	0%	0%	0%
Wilson	POC-2	7	mg/L	0.34	0.10	0.70	10	Human Health	12.2	1.62	0%	0%	0%
Wilson	POC-5	7	mg/L	0.29	0.05	1.30	10	Human Health	12.2	1.62	0%	0%	0%
Wilson	POC-16	7	mg/L	5.33	4.80	5.80	10	Human Health	12.2	1.62	0%	0%	100%
Wilson	POC-6	7	mg/L	0.74	0.05	4.90	10	Human Health	12.2	1.62	0%	0%	14%
Wilson	POC-15	7	mg/L	0.05	0.05	0.05	10	Human Health	12.2	1.62	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrate reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrate reported at NGSW and Gossard Well using Pre-1994 data.

## Table 10 Nitrate+Nitrite (as N) Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

					Nit	rate+Nitrite (	as N) Concentra	ation					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.14	0.05	0.90	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.19	0.05	0.70	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-9	2	mg/L	0.13	0.05	0.20	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-10	7	mg/L	0.08	0.05	0.20	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.06	0.05	0.10	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.05	0.05	0.05	10	Human Health	12.2	2.9	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.84	0.05	3.40	10	Human Health	12.2	2.9	0%	0%	14%
Good Spring	POC-14	7	mg/L	0.26	0.05	1.10	10	Human Health	12.2	2.9	0%	0%	0%
Taylor	MT-95-02	21	mg/L	0.50	0.40	0.80	10	Human Health	12.2	2.9	0%	0%	0%
Taylor	POC-3	7	mg/L	0.06	0.05	0.10	10	Human Health	12.2	2.9	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.73	0.10	1.00	10	Human Health	12.2	2.9	0%	0%	0%
Wilson	POC-1	7	mg/L	0.50	0.20	0.80	10	Human Health	12.2	2.9	0%	0%	0%
Wilson	POC-2	7	mg/L	0.49	0.10	1.00	10	Human Health	12.2	2.9	0%	0%	0%
Wilson	POC-5	7	mg/L	0.31	0.05	1.30	10	Human Health	12.2	2.9	0%	0%	0%
Wilson	POC-16	7	mg/L	5.64	5.10	6.40	10	Human Health	12.2	2.9	0%	0%	100%
Wilson	POC-6	7	mg/L	0.82	0.05	5.20	10	Human Health	12.2	2.9	0%	0%	14%
Wilson	POC-15	7	mg/L	0.06	0.05	0.10	10	Human Health	12.2	2.9	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrate+nitrite reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrate+nitrite reported at NGSW and Gossard Well using Pre-1994 data.

## Table 11 Nitrite (as N) Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

						Nitrite (as N	I) Concentration	ı					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater		% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.05	0.05	0.05	1.0	Human Health	0.1	0.14	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.11	0.05	0.30	1.0	Human Health	0.1	0.14	0%	29%	29%
Good Spring	POC-9	2	mg/L	0.13	0.05	0.20	1.0	Human Health	0.1	0.14	0%	50%	50%
Good Spring	POC-10	7	mg/L	0.08	0.05	0.20	1.0	Human Health	0.1	0.14	0%	14%	14%
Good Spring	POC-11	7	mg/L	0.06	0.05	0.10	1.0	Human Health	0.1	0.14	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.05	0.05	0.05	1.0	Human Health	0.1	0.14	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.40	0.05	2.10	1.0	Human Health	0.1	0.14	14%	43%	43%
Good Spring	POC-14	7	mg/L	0.19	0.05	0.80	1.0	Human Health	0.1	0.14	0%	29%	29%
Taylor	MT-95-02	21	mg/L	0.06	0.05	0.20	1.0	Human Health	0.1	0.14	0%	5%	5%
Taylor	POC-3	7	mg/L	0.05	0.05	0.05	1.0	Human Health	0.1	0.14	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.05	0.05	0.05	1.0	Human Health	0.1	0.14	0%	0%	0%
Wilson	POC-1	7	mg/L	0.15	0.05	0.20	1.0	Human Health	0.1	0.14	0%	57%	57%
Wilson	POC-2	7	mg/L	0.16	0.05	0.30	1.0	Human Health	0.1	0.14	0%	57%	57%
Wilson	POC-5	7	mg/L	0.06	0.05	0.10	1.0	Human Health	0.1	0.14	0%	0%	0%
Wilson	POC-16	7	mg/L	0.31	0.05	0.60	1.0	Human Health	0.1	0.14	0%	71%	71%
Wilson	POC-6	7	mg/L	0.11	0.05	0.30	1.0	Human Health	0.1	0.14	0%	29%	29%
Wilson	POC-15	7	mg/L	0.06	0.05	0.10	1.0	Human Health	0.1	0.14	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrite reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for nitrite reported at NGSW and Gossard Well using Pre-1994 data.

## Table 12 Dissolved Selenium Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

					Dis	solved Sele	nium Concentra	ation					
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-8	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-9	2	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-10	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Good Spring	POC-14	7	mg/L	0.003	0.003	0.007	0.02	Agricultural	0.022	0.006	0%	0%	14%
Taylor	MT-95-02	21	mg/L	0.003	0.003	0.006	0.02	Agricultural	0.022	0.006	0%	0%	0%
Taylor	POC-3	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.004	0.003	0.009	0.02	Agricultural	0.022	0.006	0%	0%	24%
Wilson	POC-1	7	mg/L	0.007	0.003	0.010	0.02	Agricultural	0.022	0.006	0%	0%	86%
Wilson	POC-2	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Wilson	POC-5	7	mg/L	0.005	0.003	0.016	0.02	Agricultural	0.022	0.006	0%	0%	14%
Wilson	POC-16	7	mg/L	0.026	0.023	0.027	0.02	Agricultural	0.022	0.006	100%	100%	100%
Wilson	POC-6	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%
Wilson	POC-15	7	mg/L	0.003	0.003	0.003	0.02	Agricultural	0.022	0.006	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020. (3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved selenium reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved selenium reported at NGSW and Gossard Well using Pre-1994 data.

## Table 13 Sulfate Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

Sulfate Concentration													
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater Standard	-	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	884	674	997	250	Drinking Water	626	997	100%	100%	0%
Good Spring	POC-8	7	mg/L	293	115	603	250	Drinking Water	626	997	57%	0%	0%
Good Spring	POC-9	2	mg/L	422	220	623	250	Drinking Water	626	997	50%	0%	0%
Good Spring	POC-10	7	mg/L	610	592	654	250	Drinking Water	626	997	100%	14%	0%
Good Spring	POC-11	7	mg/L	647	334	731	250	Drinking Water	626	997	100%	86%	0%
Good Spring	POC-12	7	mg/L	1594	1360	1720	250	Drinking Water	626	997	100%	100%	100%
Good Spring	POC-13	7	mg/L	1149	815	1330	250	Drinking Water	626	997	100%	100%	71%
Good Spring	POC-14	7	mg/L	1696	1340	3030	250	Drinking Water	626	997	100%	100%	100%
Taylor	MT-95-02	21	mg/L	949	842	1170	250	Drinking Water	626	997	100%	100%	14%
Taylor	POC-3	7	mg/L	1084	1020	1180	250	Drinking Water	626	997	100%	100%	100%
Wilson	GOSSARD WELL	21	mg/L	801	629	1030	250	Drinking Water	626	997	100%	100%	5%
Wilson	POC-1	7	mg/L	578	277	661	250	Drinking Water	626	997	100%	29%	0%
Wilson	POC-2	7	mg/L	597	483	645	250	Drinking Water	626	997	100%	14%	0%
Wilson	POC-5	7	mg/L	886	414	1100	250	Drinking Water	626	997	100%	86%	29%
Wilson	POC-16	7	mg/L	1933	1760	2160	250	Drinking Water	626	997	100%	100%	100%
Wilson	POC-6	7	mg/L	1330	267	2610	250	Drinking Water	626	997	100%	86%	86%
Wilson	POC-15	7	mg/L	648	602	715	250	Drinking Water	626	997	100%	57%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for sulfate reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for sulfate reported at NGSW and Gossard Well using Pre-1994 data.

## Table 14 Total Dissolved Solids Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

Total Dissolved Solids Concentration													
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard using Upgradient Well Background <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	1934	1720	2190	1700	Drinking Water	1360	1840	100%	100%	71%
Good Spring	POC-8	7	mg/L	1080	440	1570	1700	Drinking Water	1360	1840	0%	14%	0%
Good Spring	POC-9	2	mg/L	1060	640	1480	1700	Drinking Water	1360	1840	0%	50%	0%
Good Spring	POC-10	7	mg/L	1331	750	1560	1700	Drinking Water	1360	1840	0%	57%	0%
Good Spring	POC-11	7	mg/L	1596	900	1790	1700	Drinking Water	1360	1840	43%	86%	0%
Good Spring	POC-12	7	mg/L	3093	2600	3480	1700	Drinking Water	1360	1840	100%	100%	100%
Good Spring	POC-13	7	mg/L	2313	1780	2750	1700	Drinking Water	1360	1840	100%	100%	86%
Good Spring	POC-14	7	mg/L	3213	2590	5370	1700	Drinking Water	1360	1840	100%	100%	100%
Taylor	MT-95-02	21	mg/L	2303	2080	2600	1700	Drinking Water	1360	1840	100%	100%	100%
Taylor	POC-3	7	mg/L	2391	2310	2500	1700	Drinking Water	1360	1840	100%	100%	100%
Wilson	GOSSARD WELL	21	mg/L	1839	1640	2200	1700	Drinking Water	1360	1840	90%	100%	33%
Wilson	POC-1	7	mg/L	1436	830	1590	1700	Drinking Water	1360	1840	0%	86%	0%
Wilson	POC-2	7	mg/L	1427	1290	1500	1700	Drinking Water	1360	1840	0%	86%	0%
Wilson	POC-5	7	mg/L	1920	1020	2400	1700	Drinking Water	1360	1840	86%	86%	86%
Wilson	POC-16	7	mg/L	3753	3360	4130	1700	Drinking Water	1360	1840	100%	100%	100%
Wilson	POC-6	7	mg/L	2694	630	5110	1700	Drinking Water	1360	1840	86%	86%	86%
Wilson	POC-15	7	mg/L	1577	1400	2000	1700	Drinking Water	1360	1840	14%	100%	14%

#### Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

Per Regulation 41, the standard for total dissolved solids (TDS) was calculated as 1.25 times the Upgradient Well Site Background Value.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for total dissolved solids reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for total dissolved solids reported at NGSW and Gossard Well using Pre-1994 data.

## Table 15 Dissolved Zinc Concentration Statistics in Temporary Site Monitoring Wells Colowyo Mine, Meeker, Colorado Colorado

Dissolved Zinc Concentration													
Drainage	Well Name	No. of Samples <sup>(1)</sup>	Unit	Average	Minimum	Maximum	Groundwater Standard <sup>(2)</sup>	Standard Type	Upgradient Well Site Background Value <sup>(3)</sup>	Downgradient Well Site Background Value <sup>(4)</sup>	% Exceeding Groundwater	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well Background
Good Spring	NGSW	21	mg/L	0.029	0.025	0.110	2.0	Agricultural	0.052	0.39	0%	5%	0%
Good Spring	POC-8	7	mg/L	0.029	0.025	0.050	2.0	Agricultural	0.052	0.39	0%	0%	0%
Good Spring	POC-9	2	mg/L	0.108	0.025	0.190	2.0	Agricultural	0.052	0.39	0%	50%	0%
Good Spring	POC-10	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Good Spring	POC-11	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Good Spring	POC-12	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Good Spring	POC-13	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Good Spring	POC-14	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Taylor	MT-95-02	21	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Taylor	POC-3	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	GOSSARD WELL	21	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-1	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-2	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-5	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-16	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-6	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%
Wilson	POC-15	7	mg/L	0.025	0.025	0.025	2.0	Agricultural	0.052	0.39	0%	0%	0%

Notes:

mg/L = milligrams per liter

(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.

(2) Groundwater standard obtained from Colorado Department of Public Health and the Environment (CDPHE) Regulation No. 41, The Basic Standards for Ground Water (BSGW), adopted May 11, 2020, and effective June 30, 2020.

(3) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved zinc reported at upgradient wells A-6 and A-8.

(4) Site Background Value represents the 95 percent Upper Tolerance Limit for dissolved zinc reported at NGSW and Gossard Well using Pre-1994 data.

Parameter	Units	Proposed Compliance Standard	Standard Source
Arsenic	mg/L	0.01	Reg. 41 Human Health Standard
Field pH	s.u.	6.5 - 8.5	Reg. 41 Drinking Water Standard
Iron	mg/L	0.3	Reg. 41 Drinking Water Standard
Manganese	mg/L	0.75	Pre-1994 Data Background UTL
Mercury	mg/L	0.002	Reg. 41 Human Health Standard
Nitrate (as N)	mg/L	10.0	Reg. 41 Human Health Standard
Nitrate+Nitrite (as N)	mg/L	10.0	Reg. 41 Human Health Standard
Nitrite (as N)	mg/L	1.0	Reg. 41 Human Health Standard
Selenium	mg/L	0.02	Reg. 41 Agricultural Standard
Sulfate	mg/L	997	Pre-1994 Data Background UTL
Total Dissolved Solids	mg/L	1,840	Pre-1994 Data Background UTL
Zinc	mg/L	2	Reg. 41 Agricultural Standard

# Table 16Proposed Groundwater Compliance Standards<br/>Colowyo Mine, Meeker, Colorado

Notes:

mg/L = milligrams per liter

s.u. = standard units

UTL = upper tolerance limit

**Bold** values represent upper tolerance limits calculated using pre-1994 baseline data from Gossard Well and NGSW.

Figures
































Appendix A

Temporary Monitoring Well Construction Reports

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

December 31, 2019

Sent via email: DWRpermitsonline@state.co.us

State of Colorado Office of the State Engineer 1313 Sherman Street, Room 821 Denver, CO 80203

## RE: Colowyo Coal Company L.P. Well Construction Report (GWS-31)

To Whom It May Concern:

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 the enclosed Well Construction and Yield Estimate Reports (GWS-31 forms) for sixteen temporary monitoring wells that Colowyo drilled in October of 2019.

If you should have any further questions regarding these well construction and yield reports, please feel free to contact Tony Tennyson at (970) 824-1232 or <u>ttennyson@tristategt.org</u>.

Sincerely,

for

Michael G. Sorensen Sr. Manager, Fuels and Water Resources

MGS:TT:jr

Enclosure

cc: Chris Gilbreath (via email) Angela Aalbers (via email) Tonia Folks (via email) File: C. F. 51.3

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

CRAIG STATION P.O. BOX 1307 CRAIG, CO 81626-1307 970-824-4411 ESCALANTE STATION P.O. BOX 577 PREWITT, NM 87045 505-876-2271 NUCLA STATION P.O. BOX 698 NUCLA, CO B1424-0698 970-864-7316

A Touchstone Energy Cooperative 🌾

	\ \	VELL CONSTRU					For	Office Use (	Dnly
Form No.			rado, Office o						
GWS-31	1313	Sherman St., Ro				581			
02/2017	<u>ww</u>	w.water.state.o	co.us and dwr	permitsonlin	e@state.co.u	<u>2L</u>			
1. Well Permi	it Number: 60071-	٨H	Receipt N	lumber:					
2. Owner's We	ell Designation: PO	C-1							
3. Well Owne	r Name: Colowyo C	oal Company L.	Ρ.						
4. Well Locati	ion Street Address	: 5731 State Hig	hway 13 Meel	ker, CO 8164	1				
	S Well Location (re								
	Location: <u>SE</u> 1	/4, <u>NE</u> 1/4,	Sec., <u>15</u>	Twp. <u>4</u>	💽 N or S [	, Range _93	E or	- W 💽, <u>6</u>	P.M.
County: <u></u>					, Lot <u>8</u>	_, Block	, Fili	ng (Unit)	
7. Ground Sur	rface Elevation: 6,	322 fee	t Date Com	pleted: 10/	11/2019	Drilling Meth	od: Direct Pu	sh	
8. Completed	Aquifer Name :			otal Depth:		eet Dep	th Completed	: 20	feet
9. Advance No	otification: Was N	otification Requ	ired Prior to (	Construction	? 🖸 Yes 🗌	No, Date No	tification Give	en: <u>10/02/2</u>	019
10. Aquifer T	ype: Type I	(One Confining I	_ayer)	Type I (	Multiple Con	fining Layers)	Laramie-	Fox Hills	
(Check or	ne) 🔲 Type II	(Not overlain b	y Type III)	Type II	Overlain by		Type III (	alluvial/coll	uvial)
11. Geologic					12. Hole D	iameter (in.)	Fron	n (ft)	To (ft)
Depth	Туре	Grain Size	Color	Water Loc.		2.5	-		
2-4	Sand and gravel	med to coarse	Dark gray				-		
4-7	Sand	fine to coarse	olive				÷		
7-18	Silt with sand	very fine to fi	*		13. Plain C			- (6)	To (ft)
18-20	Silty Sand	Very fine to fi	Grayish Brow		OD (in)	Kind V PVC	Vall Size (in)	From (ft)	To (ft) 10
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					-				
					Perforat	od Casing Case			
					OD (in)	e <mark>d Casing</mark> Scre Kind V	vall Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	10	20
			-						
	·								
					14. Filter P	ack:	15. Pack	er Placemer	nt:
					Material	sand	Туре	pre pac	:k
					Size	10/20			
					Interval	10-20	Depth	10	
					16. Groutir	ng Record			
					Material	Amount	Density	Interval	Method
Remarks:									
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	ion: Type None					d Not Applica		M. II. Y. 1	
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	Estimate Method:	Not Tested			2 - 1 -1 -( )				
Static Leve					ield (gpm) _				
	e measured:			Estimate Le	ngth (hrs) _	· · · · · · · · · · · · · · · · · · ·			
Remarks:									
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Company Nam Tri-State G&T			Email: mgsorensen@	tristated o	ra	Phone w/area	a code: 54-3208	License Nu	mber:
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1 ka	Milon	> for	michael G	. sorensen -	si. manager,	Fuels and Wat	ter Resources	12-3	31-19

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GWS-31	1313	Sherman St., Ro				581			
02/2017	<u>ww</u>	w.water.state.	co.us and dwr	permitsonlin	e@state.co.u	<u>s</u>			
1. Well Permi	t Number: 60070-/	мн	Receipt I	Number:					
2. Owner's We	ell Designation: PC	)C-2							
	r Name: Colowyo C								
4. Well Locati	on Street Address	: 5731 State Hig	hway 13 Mee	ker, CO 8164	1				
	S Well Location (r					Northing: 44			
	Location: <u>NW</u> 1	/4, <u>SE</u> 1/4,	Sec., <u>14</u>	_Twp. <u>4</u>	• N or S	, Range <u>93</u>	E or	W 💽, <u>6</u>	P.M.
County: / Subdivision: _	Noffat				Lot <u>8</u>	_, Block	———, Filin	g (Unit)	
7 Ground Sur	face Elevation: 6,	297 fee	t Date Com	nleted 10/	1122		od: Direct Push		
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					Size	10/20			
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					16. Groutin	g Record			
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Remarks:				•	1		-		
					3.				
	ion: Type None					d Not Applica			
	l Estimate Data:		Check bo	ox if Test Dat	a is submitte	d on Form Nur	mber GWS-39, \	Well Yield To	est Report
Well Yield	Estimate Method:	Not Tested				-			
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Date/Time	e measured:			Estimate Le	ngth (hrs)				
Remarks:									
19. I have read t	the statements made	herein and know t	he contents the	reof, and they	are true to my	knowledge. This	document is sign	ed (or name e	ntered if
filing online) and	certified in accordan	ce with Rule 17.4	of the Water We	ell Construction	n Rules, 2 CCR 4	022. The filing	of a document th	at contains fa	lse
	iolation of section 37			-	-		of the contracting	license. If fil	ing online
the State Enginee	er considers the entry	or the licensed co	ntractor's name	e to de complia	nce with Rule 1	/.4.			
Company Name			Email:			Phone w/area		License Nur	nber:
Tri-State G&T	Inc.		mgsorensen@	<pre>@tristategt.o</pre>	rg	(303) 2	54-3208		
Mailing Addres	s: P.O. Box 33695 I	Denver, CO 8023	33-0695						
Sign (or enter	name if filing onlin	ne)	Print Nam	e and Title				Date:	
	· all	for	Michael C	G.Sorensen -	Sr. Manager,	Fuels and Wat	er Resources	12-3	1-101
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1. Well Permit	t Number: 60072-/	٨H	Receipt	lumber:						
2. Owner's We	ell Designation: PO	C-3								
3. Well Owner	r Name: Colowyo C	oal Company L.	Ρ.							
	on Street Address			ker, CO 8164	1					
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6. Legal Well	Location: SW 1.	/4, SW 1/4,	Sec., 14	Twp. 4	N or S			EorW 🔳, 6	P.M.	
County: _^	Moffat				in the second seco					
Subdivision:					Lot <u>9</u>	Block _		Filing (Unit) _		
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Company Name			Email:			Phone w/are	a code:	License N	umber:	
Tri-State G&T			mgsorensen@	tristated o	rø		254-3208	License N		
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	s: P.O. Box 33695 [									
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1ha	Hartin	> for	Michael G	-Sorensen -	Sr. Manager,	Fuels and W	ater Resour	د-2/   <sup>ces</sup>	1-19	

				For C	Office Use Onl	v I			
Form No.	'	VELL CONSTRU							·
GWS-31	4242	State of Cold Sherman St., Ro	orado, Office o			501			
02/2017	1		•						
		w.water.state.			le@state.co.u	5			
	t Number: 60074-M		Receipt N	lumber:					
2. Owner's We	ell Designation: PO	C-4					]		
3. Well Owner	r Name: Colowyo C	oal Company L.	Ρ.						
4. Well Locati	on Street Address	: 5731 State Hig	hway 13 Meek	ker, CO 8164	11		I		
5. As Built GP	S Well Location (re	equired): 🔲 Zo	one 12 💽 Zor	ne 13 Eastin	g: 261847.1	Northing: 446	5439.5		
6. Legal Well	Location: NE 1	/4, <u>SE</u> 1/4,	Sec., 22	Twp. <u>4</u>	N or S	, Range 93	E or	W 💽, <u>6</u>	P.M.
County: _	Noffat								
Subdivision:					Lot <u>5</u>	_, Block	——, Filin	g (Unit)	
7 Crown d Cur	free Fleurtiers (	205 604	et Date Com			Drilling Metho			
	face Elevation: <u>6,</u>					-			fact
8. Completed	Aquifer Name : _			otal Depth:			Completed:		feet
	otification: Was N								<u>*</u>
10. Aquifer Ty	the second is a first second sec	(One Confining	1				Laramie-F		N.
(Check on		(Not overlain b	y Type III)	Пуре II	(Overlain by		• Type III (a		
11. Geologic					-	ameter (in.)	From		o (ft)
Depth	Туре	Grain Size	Color	Water Loc.		2.3	0		30
0-13	Silt with sand	very fine to fi							
13-23	sand	fine	yellowish bro						
23-30	silt and clay	fine	dark yellowis		13. Plain Ca	-			<b>T</b> ((1))
					OD (in)		all Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	0	20
					0				
					Perforate	ed Casing Scree	n Slot Size (ir	n): <u>0.010</u>	
•					OD (in)		all Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	20	30
· · · · · · · · · · · · · · · · · · ·									
					14. Filter P	ack:	15. Packe	r Placement:	
					Material	Sand	Туре	Pre Pack	
					Size	10/20	1.76-		
					Interval	20-30	Depth	20	
					16. Groutin		Depair		
					Material	Amount	Density	Interval	Method
Demonstrat						Amount	Density	mervat	Methou
Remarks:					*				
					-				
					L		1		
	ion: Type None					d Not Applicab		и. П. M. ( ) —	+ D
	Estimate Data:	M	Check bo	ox if Test Da	ta is submitte	d on Form Num	per GWS-39,	well Yield Tes	st keport
	Estimate Method:	Not lested				<u> </u>			
Static Leve	el:		-	Estimated `	rield (gpm) _				
Date/Time	e measured:			Estimate Le	ength (hrs)				
Remarks:									
	the statements made	herein and know t	he contents the	reof. and they	are true to my	knowledge. This a	ocument is sign	ed (or name en	tered if
	certified in accordan				-	-			
	violation of section 37					-			
the State Engine	er considers the entry	of the licensed co	ontractor's name	to be complia	ance with Rule 1	7.4.			
Company Mam	0.		Email:			Phone w/area	code:	License Num	her:
Company Nam Tri-State G&T			mgsorensen@	tristatent o	ησ	(303) 25		LICENSE NUIT	
				su blategi.t	"5	(303)23	. 5200	<u> </u>	
	s: P.O. Box 33695			: :				ID. (	
Sign (or enter	name if filing onlir		010000000	e and Title			_	Date:	
	: Hulo		Michael G	Sorensen -	Sr. Manager,	Fuels and Wate	er Resources	12-31-1	'9
1 cm	- / milli	Ť	01					1,, ,	1

	. v	VELL CONSTRU	CTION AND Y		TE REPORT		For	Office Use Only	
Form No.	'		orado, Office o						
GWS-31	1313	Sherman St., R			-	581			
02/2017		w.water.state.							
1. Well Permit	t Number: 60073-۸	ΛH	Receipt N	Number:					
2. Owner's We	ell Designation: PO	C-5		100					
	Name: Colowyo C								
4. Well Locati	on Street Address	: 5731 State Hig	hway 13 Meel	ker, CO 8164	1				
5. As Built GP	S Well Location (re	equired): 🔲 Zo	one 12 💽 Zor	ne 13 Eastin	g: 262851.8	Northing: 4	1467271.3		
	Location: <u>NW</u> 1/	'4, <u>NE</u> 1/4,	Sec., <u>14</u>	Twp. <u>4</u>	N or S	, Range _9	3 E or	W 💽, <u>6</u> F	P.M.
County: <u>^</u> Subdivision: _	Moffat				Lot <u>2</u>	_, Block _	———, Filir	ıg (Unit)	
7 Ground Sur	face Elevation: 6,2	787 fee					hod: Direct Pus		
	Aquifer Name : L			otal Depth:		-	pth Completed:		t
9. Advance No	otification: Was No	otification Requ	ired Prior to (	Construction	? 🖸 Yes 🗌	No, Date M	<b>Notification</b> Give	n: <u>10/02/2019</u>	
10. Aquifer Ty	/pe: 🗖 Type I (	One Confining	Layer)	Type I (	Multiple Cont	fining Layers)	🔲 🗖 Laramie-F	ox Hills	
(Check on	e) 🗖 Type II	(Not overlain b	y Type III)	Type II	(Overlain by	Type III)	Type III (a	lluvial/colluvial)	
11. Geologic	Log:				12. Hole D	iameter (in.)	From	(ft) To (1	ft)
Depth	Туре	Grain Size	Color	Water Loc.		2.5	C	25	;
0-5	silt with sand	fine-coarse	olive		· · · · · · · · · · · · · · · · · · ·		~		
5-16.5	sand and gravel	fine - coarse	pale olive						
16.5-23.5	silt with sand	fine - coarse	dark brown		13. Plain Ca	asing			
23.5-25	gravel with silt	fine - coarse	brown matrix		OD (in)	Kind	Wall Size (in)	From (ft) To	(ft)
					1 1.3	PVC	.18	0 1	13
					a 0				
					÷ 0				
	· · · · · · · · · · · · · · · · ·								
					Perforate	ad Casing Co	reen Slot Size (i	-). 0.010	
					OD (in)		Wall Size (in)	From (ft) To	(ft)
					1.3	PVC	.18		23
·						FVC	.10	15 2	
			·		- a				
					14. Filter P	ack:	15 Dack	er Placement:	
					Material	Sand		Pre Pack	
	-				-	-	Туре	FIE Fack	
					Size	10/20	Depth	13	
		1			Interval	13-23	Depth		
					16. Groutin	-	Density	Internet Mat	
Demerikat					Material	Amount	Density	Interval Met	thod
Remarks:					2				
17 Disinfact	ant Tune Maria				Amt Hr-	d Net Anal'	able		
and the second se	ion: Type None		Charlet	wif Test D-		d Not Applic		Wall Viald Tark D	opert
	Estimate Data:	Not Testad		ix ii Test Dat	la is sudmitte	u on rorm N	umber GWS-39,	Well Yield Test R	eport
	Estimate Method:			Estimate 12					
Static Leve					'ield (gpm) _				
Date/Time	measured:			Estimate Le	ength (hrs)				
Remarks:									
	the statements made l								d if
	certified in accordance								
The second s	iolation of section 37						n of the contracting	license. If filing or	line
-	er considers the entry	or the licensed co		to be complia	ince with Rule 1			15	
Company Name Tri-State G&T			Email: mgsorensen@		ro	Phone w/are	ea code: 254-3208	License Number:	:
				anstategt.0	'5	L (202)	237 3200		
	s: P.O. Box 33695 E			1					
sign (or enter	name if filing onlin			e and Title				Date:	
hin	Instant	for	-   Michael G	.Sorensen -	Sr. Manager,	Fuels and W	ater Resources	12-71-19	7

	1							0///	
Form No.	v		JCTION AND Y		_		For	Office Use (	Dnly
GWS-31			orado, Office o						
			loom 821, Den				1		
02/2017			.co.us and dwr		ne@state.co.	us	1		
1. Well Permi	it Number: 60096-N	\H	Receipt I	Number:					
2. Owner's We	ell Designation: PO	C-6							
3. Well Owne	r Name: Colowyo Co	oal Company L	P.						
	ion Street Address:			ker, CO 8164	41				
	S Well Location (re					Northing: 4	468759.1		
	Location: <u>SE</u> 1/						3Еог	· W • , 6	P.M.
County: Subdivision:					Lot <u>6</u>		Fili	ng (Unit)	
7. Ground Sur	rface Elevation: 6,2	36 fo	et Date Com				od: Direct Pu		
0	Aquifer Name : U			otal Depth:		-	th Completed		feet
	otification: Was No								
10. Aquifer Ty		One Confining				fining Layers)			019
(Check or		(Not overlain b			(Overlain by				nd al V
11. Geologic		(NOL OVERTAIN L	by Type III)	Пуреп		viameter (in.)		n (ft)	
Depth	and the second se	Grain Size	Color	Water Loc.	-	2.5		0	To (ft) 13
	Type			water Loc.		2.5	Q	0	13
0-9.25	Silt with sand	fine	Dark reddish				8		
9.25-13	clay with trace fi	very fine	olive		42 Dista C		8		
					13. Plain C	-		<b>F</b> (0)	To (ft)
					OD (in)	Kind ۱ PVC	Wall Size (in)	From (ft)	
					1.3	PVC	.18	0	3
					Perforat	ed Casing Scr	een Slot Size (		
				j	OD (in)	Kind \	Wall Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	3	13
					1.2				
	50,		· · · · · · · · · · · · · · · · · · ·		14. Filter F	Pack:	15. Pack	er Placemer	nt:
					Material	Sand	Туре	Pre Pac	:k
					Size	10/20	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	·	
					Interval	3-13	Depth	3	
					16. Grouti		- Depth		
					Material	Amount	Density	Interval	Method
Remarks:					Material	Amount	Density	merval	Method
Nemarks;					) <u> </u>				
47 84 6 1	· · · · ·					All and a second s			
	ion: Type None					d Not Applica			
	Estimate Data:	Ned Tests 4	Check bo	ox if Test Dat	ta is submitte	ed on Form Nu	mber GWS-39,	Well Yield T	est Report
-	Estimate Method:	NOT Tested		<b>F</b>					
Static Leve	el:			Estimated \	/ield (gpm) _				
Date/Time	e measured:			Estimate Le	ngth (hrs)				
Remarks:									
	the statements made h	erein and know t	the contents ther	eof, and they	are true to my	knowledge. This	s document is sig	ned (or name e	entered if
	certified in accordance								
12512	violation of section 37 9					-			
the State Enginee	er considers the entry of	of the licensed co	ontractor's name	to be complia	nce with Rule	17.4.			
Company Name	e.		Email:			Phone w/area	a code:	License Nu	mber:
Tri-State G&T			mgsorensen@	tristatest o	ro		254-3208		mber.
				ranstategt.0	'5	L (303) 2	_JT J200		
	s: P.O. Box 33695 D	••••••••••••••••						1-	
Sign (or enter	name if filing online	2	Print Name					Date:	
the	i Thator	- for	Michael G	.Sorensen -	Sr. Manager,	Fuels and Wa	ter Resources	12-3	1-19

Form No.       State of Colorado, Office of the State Engineer         03/2017       Www.water, state.co.us and dwperrmitsonline@state.co.us         1. Well Permit Number: 60095-MH       Receipt Number:         2. Owner's Well Designation: POC-7									For Office Use Only	
UV3-31 V2/2017       1313 Sheman St.2, Room & 21, Denver, CO 80203 303, 866, 3581 V2/2017         1. Well Permit: Number:: 60005, MMI       Receipt Number:: 2. Owner's Well Degination: POC. 7         2. Work Well Degination: POC. 7	Form No.									,
02/2017       www.wtaterstate.co.us       and dervermitsuntine®state.co.us         1. Well Permit Number: 60095 MH       Receipt Number:         2. Owner's Well Designation: POC.7	GWS-31	1313					581			
1. Well Permit Number: 60095.MH       Receipt Number:         2. Owner's Well Designation; POC 7         3. Well Owner Name: Colonyo Coal Company L.P.         4. Well Location; RUC 731 State Highway 13 Meeker, C0 81641         5. A Subit CPS Well Location; Wull 1/4, IWU 1/4, Sec., 31 Twp. 5       N or S Rege 92         6. Legal Well Location; WW 1/4, IWU 1/4, Sec., 31 Twp. 5       N or S Rege 92         County: Morital	02/2017									
2. Owner's Well Designation: POC-7         3. Well Owner Name: Colomyo Coal Company L.P.:         4. Well Location Street Address: 373 i State Highway 13 Weeker, CO 81641         3. As Built CPS Well Location (required): Cone 12 [2] Cone 13 Easting: 264964.0 Northing: 4469688.7         6. Legal Well Location (required): Cone 14 [2] [2] Cone 13 Easting: 264964.0 Northing: 4469688.7         6. Legal Well Location (required): Cone 15 Easting: 264964.0 Northing: 4469688.7         7. Ground Surface Elevation: 5,208feet Date Completed: 10/08/2019 Drilling Method: Direct Dath         7. Ground Surface Elevation: 5,208feet Date Completed: 10/08/2019 Drilling Method: Direct Dath         8. Completed Aquifer Name : Unnamedfreet Date Completed: 10/08/2019 Drilling Method: Direct Dath         9. Advance Natification: Was Notification Required Prior to Construction? ] Yes [Wo, Date Notification Given: 30/02/2019 []         10. Aquifer Type: ]Type II (Not overlain by Type III)Type II (Nottigle Confining Layer)Itype III)Type III (Notivacium)	1 Wall Darmi	1								
3. Well Ovmer Name: Colonyo Coal Company L.P.         4. Well Location (required):       Zone 12       Zone 13       Easting: 264964.0       Northing: 446988.7         6. Legal Well Location (required):       Zone 12       Zone 13       Easting: 264964.0       Northing: 446988.7         6. Legal Well Location (required):       Zone 12       Zone 13       Easting: 264964.0       Northing: 446988.7         6. Legal Well Location (required):       Zone 12       Top: 5       I Nor 5       Renge 92       E or W [ * , 6 , P.M.         Conung::       Morta				Receipt	Number.					
4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641         5. As Built GSW (meguinde)] "Zlow [2] "Zone 15 Easting: 24964.0         6. Legal Well Location: NW 1/4, NW 1/4, Sec., 31 Twp. 5         7. Ground Surface Elevation; 5,208         6. Logal Well Location: NUM 1/4, NM 1/4, Sec., 31 Twp. 5         7. Ground Surface Elevation; 5,208         6. Completed Audirer Name: Unamed         7. Ground Surface Elevation; 5,208         8. Completed Audirer Name: Unamed         Total Depth         9. Advance Notification: Was Notification Required Prior to Construction?         10. Aquifer Type:         10. Aquifer Type:         11. Geologic Log:         Depth       Type Grain Size         12. Note Dameter (In.)         13. Platin Casing         00 (in)       Kind Wall Size (in)         13. Platin Casing         00 (in)       Kind Wall Size (in)         13. Platin Casing         13. Platin Casing         13. Platin Casing         13. Platin Casing         14. Fitter Pack:      <				<b>D</b>						
5. As Built GPS Well Location (regurined): □Zone 12 □ Zone 13 Easting: 264964.0       Northing: 446988.7         6. Legal Well Location: NW       1/4, NW       1/4, Sec., 31       Twp.5       IN or S       Range 92       E or W ■ 6       P.M.         County:       Moffat										
6. Legal Well Location: NV       1/4, NV       1/4, Sec., 31       Twp. 5       N or S       , Range 92       E or W       6       P.M.         County:       Morfat.       , Lot 11       Block       Filling (Unit)								000 7		
County:       Moffat										
Subdivision:			4, <u>INW</u> 174,	Sec., <u>31</u>	_ iwp. <u>&gt;</u>	IN OF S	, kange <u>92</u>		w[•], <u>o</u>	P.M.
8. Completed Aquifer Name :       Unnamed			<u>P</u>			, Lot <u>11</u>	, Block	, Filir	ng (Unit)	
9. Advance Notification: Was Notification Required Prior to Construction? Yet Not Note Notification Given: <u>10/20/2019</u> 10. Aquifer Type: Type i (Not overlain by Type III) (Not overlain by Type IIII) (Not overlain by Type IIII) (Not overlain by Type IIII) (Not ove	7. Ground Su	face Elevation: 6,2	.08 fe	et Date Com	pleted: 10/	08/2019	<b>Drilling Method</b>	: Direct Pus	h	
10. Aquifer Type:       Type I (One Confining Layer)       Type II (Wultiple Confining Layers)       Type II (alluvial/colluvial)         11. Geologic Log:       Type II (Not overtain by Type III)       Type II (Overtain by Type III)       Type II (Dype II (alluvial/colluvial)         11. Geologic Log:       Interview II (Dype II (Not overtain by Type III)       Type II (Dype II (Dype II (Dype II (alluvial/colluvial)         0-5       sitt with fine sand       fine       otive       2.5       0       32         5-32       lean clay       fine       otive       13. Plain Casing       0       00 (in)       find       Vall Size (in)       From (ft)       To (ft)         11.3       PVC       .18       0       22	8. Completed	Aquifer Name : L	Innamed	т	otal Depth:	32	feet Depth	Completed:	32	feet
10. Aquifer Type:       Type I (One Confining Layer)       Type II (Wultiple Confining Layers)       Type II (alluvial/colluvial)         11. Geologic Log:       Type II (Not overtain by Type III)       Type II (Overtain by Type III)       Type II (Dype II (alluvial/colluvial)         11. Geologic Log:       Interview II (Dype II (Not overtain by Type III)       Type II (Dype II (Dype II (Dype II (alluvial/colluvial)         0-5       sitt with fine sand       fine       otive       2.5       0       32         5-32       lean clay       fine       otive       13. Plain Casing       0       00 (in)       find       Vall Size (in)       From (ft)       To (ft)         11.3       PVC       .18       0       22	9. Advance N	otification: Was No	tification Req				No, Date Notif	fication Give	en: 10/02/2	019
(Check one)       Type II (Not overlain by Type III)         11. Geologic Log:       From (ft)       To (ft)       To (ft)       To (ft)         0-5       sitk with fine sand       fine       olive       2.5       0       32         0-5       sitk with fine sand       fine       olive       2.5       0       32         0-5       sitk with fine sand       fine       olive       2.5       0       32         0-5       sitk with fine sand       fine       olive       2.5       0       32         1       lean Clay       fine       olive       13. Plain Casing       0       0       0       22         1       lean Clay       in       in       in       Perforated Casing Screen Slot Size (in)       from (ft)       To (ft)         1.3       PVC       .18       22       32         1.4       fitter Pack:       Type Pre Pack       Size (in)       from (ft)       To (ft)       1.3       PVC       .18       22       22       22       22       22       22       22       22       22 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
11. Geologic Log:       12. Hole Diameter (in.)       From (ft)       To (ft)         0-5       slit with fine sanc       fine       olve       2.5       0       32         5-32       lean clay       fine       olve       13. Plain Casing       0       02         0-5       slit with fine sanc       fine       olve       13. Plain Casing       00       0.1         0       13. Plain Casing       00 (in)       Kind       Wall Size (in)       From (ft)       To (ft)         1.3       PVC       .18       0       22       0.1			(Not overlain b	y Type III)						uvial)
Depth       Type       Grain Size       Color       Water Loc.       2.5       0       32         0-5       silt with fine sand       fine       olive       13. Plain Casing			<b>`</b>							
0.5       silt with fine sanc       fine       olive       iiii olive         5-32       lean clay       fine       olive       iiii olive         13. Plain Casing       OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         1.3       PVC       .18       0       22         1.1       PVC       .18       0       22         1.3       PVC       .18       22       32         1.1       Filter Pack:       Type       Pre Pack         Size       10/20       16.       Grouting Record         Material       Amount       Density       Interval       Method         1.4       Well Yield Estimate Data:			Grain Size	Color	Water Loc.	-				
5-32       lean clay       fine       olive       13. Plain Casing								8		
13. Plain Casing         00 (in)       Kind Wall Size (in)       From (ft)       To (ft)         1.3       PVC       .18       0       22         1.3       PVC       .18       22       32         1.4       Filter Pack:       To/70       To/70       To/70         1.4       Filter Pack:       To/70       To/70       To/70       To/70         1.4       Filter Pack:       To/70       To/70       To/70       To/70       To/70         1.5       Facer Placement:       Type       Pre Pack       Depth       22         1.5       Grouting Record       Material       Amount       Density       In		*3515*						3. 		A
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Second		(our only		- Cure		13. Plain C	asing			
1.3       PVC       .18       0       22         1.3       PVC       .18       22       32         1.4       Fitter Pack:       Type       Pre Pack         2.2       10/20       22.32       0       0         1.4       Fitter Pack:       Type       22       0         1.5       Disinfection:       Type None       Amt. Used Not Applicable       0       0         1.4       Mell Yield Estimate Method:						-	-	l Size (in)	From (ft)	To (ft)
Image: Section of the statements made herein and know the contents thereof, and they are true to my knowledge. This document this signed (or name entered if filling online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filling of a document that contains false statements is a volation of section 37 91 1081(9); C.R.S., and is purchased with Rule 17.4.					1	-			. ,	22
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Strate					-	3 <u>———</u>				
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Strate										
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Strate			1			-0				
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Strate		·				Perforat	od Casing Career	Clat Cine /i	-)- 0.010	
1.3       PVC       .18       22       32         1.4       Filter Pack:										To (ft)
Image: State Length (hrs)       Image: State Length (hrs)				·	<u> </u>	-				
Image: State of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online)       Type       Pre Pack 22         10/20       Interval       22-32       Depth       22         10       10/20       Interval       22-32       Depth       22         10       10       10       10/20       Depth       22         11       11       11       11       11       11       11         12       16       Grouting Record       Material       Amount       Density       Interval       Method         13       Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report       Method       Meterial       Meterial       Meterial       Meterial       Meterial       Method       Meterial       Method				· · · · · · · · · · · · · · · · · · ·		1.3	FVC	,10	22	52
Image: State of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online)       Type       Pre Pack 22         10/20       Interval       22-32       Depth       22         10       10/20       Interval       22-32       Depth       22         10       10       10       10/20       Depth       22         11       11       11       11       11       11       11         12       16       Grouting Record       Material       Amount       Density       Interval       Method         13       Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report       Method       Meterial       Meterial       Meterial       Meterial       Meterial       Method       Meterial       Method	2			·						
Image: State of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online)       Type       Pre Pack 22         10/20       Interval       22-32       Depth       22         10       10/20       Interval       22-32       Depth       22         10       10       10       10/20       Depth       22         11       11       11       11       11       11       11         12       16       Grouting Record       Material       Amount       Density       Interval       Method         13       Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report       Method       Meterial       Meterial       Meterial       Meterial       Meterial       Method       Meterial       Method										
Image: State of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online)       Type       Pre Pack 22         10/20       Interval       22-32       Depth       22         10       10/20       Interval       22-32       Depth       22         10       10       10       10/20       Depth       22         11       11       11       11       11       11       11         12       16       Grouting Record       Material       Amount       Density       Interval       Method         13       Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report       Method       Meterial       Meterial       Meterial       Meterial       Meterial       Method       Meterial       Method						4.4. Filher I	De else	AE Dealer	n Dia anno 1	
Size       10/20         Interval       22         Interval       22-32         Depth       22         Interval       Depth         Interval </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>244 747</td> <td></td> <td></td> <td></td>						-	244 747			
Interval       22.32       Depth       22         Interval       Interval       Corversion       Material       Amount       Density       Interval       Method         Remarks:       Interval       Amt. Used       Not Applicable       Interval       Method       Interval       Interval       Interval       Interval       Method         Static Level:				·		-	0	Туре	Pre Pac	СК
Image: State Control of State Content State Conten State Content Content Content Content State Content State Conten				· · · · ·		-	/ <u> </u>		22	
Remarks:       Material Amount Density Interval Method         17. Disinfection: Type None       Amt. Used Not Applicable         18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method: Not Tested         Static Level:								Depth	3 <u></u>	S
Remarks:	-					-		_		
17. Disinfection: Type None       Amt. Used Not Applicable         18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method: Not Tested         Static Level:       Estimate Method: Mot Tested         Date/Time measured:       Estimate Length (hrs)         Pate/Time measured:       Estimate Method: Not Tested         P. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email: mgsorensen@tristategt.org       Phone w/area code: (303) 254-3208       License Number:         Tri-State G&T Inc.       Print Name and Title       Date:						Material	Amount	Density	Interval	Method
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested	Remarks:									
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested										
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested										
Well Yield Estimate Method:       Not Tested         Static Level:										
Static Level:				Check bo	ox if Test Da	ta is submitt	ed on Form Numb	er GWS-39,	Well Yield 1	est Report
Date/Time measured:       Estimate Length (hrs)         Remarks:         19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       goorensen@tristategt.org       (303) 254-3208       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Fint Name and Title       Date:	Well Yield	Estimate Method:	Not Tested							
Remarks:         19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       goorensen@tristategt.org       (303) 254-3208       License Number:         Sign (or enter name if filing online)       Print Name and Title       Date:	Static Leve	el:			Estimated \	/ield (gpm) _	0			
Remarks:         19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       goorensen@tristategt.org       (303) 254-3208       License Number:         Sign (or enter name if filing online)       Print Name and Title       Date:	Date/Time	e measured:			Estimate Le	ength (hrs) 🚈				
19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       goorensen@tristategt.org       (303) 254-3208       License Number:         Sign (or enter name if filing online)       Print Name and Title       Date:						- 、 / -				
filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false         statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online         the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:         Tri-State G&T Inc.       Phone w/area code:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695         Sign (or enter name if filing online)       Print Name and Title	ACTIVATION AND AND AND AND AND AND AND AND AND AN	the statements made h	erein and know t	the contents the	reof and they	are true to my	knowledge This de	cument is sign	ned (or name i	entered if
statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       (303) 254-3208       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Print Name and Title       Date:	Concerning and the second se									
the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       mgsorensen@tristategt.org       (303) 254-3208       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Print Name and Title       Date:	CO. MARKET STATES AND						-			
Tri-State G&T Inc.       mgsorensen@tristategt.org       (303) 254-3208         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Sign (or enter name if filing online)       Print Name and Title         Date:       Date:	- 43									J
Tri-State G&T Inc.       mgsorensen@tristategt.org       (303) 254-3208         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Sign (or enter name if filing online)       Print Name and Title         Date:       Date:	Company Nam	۵,		Email			Phone w/area	ode:	license Nu	mber:
Mailing Address: P.O. Box 33695 Denver, CO 80233-0695         Sign (or enter name if filing online)         Print Name and Title         Date:					Otristatent o	ra				mber.
Sign (or enter name if filing online)         Print Name and Title         Date:	The trace in other				subtategt.0	י <u>א</u>	(303) 234	J200		
		All constructions and a second s	ras falls har being caudio and						15	
Michael G. Sorensen - Sr. Manager, Fuels and Water Resources 12-31-19	sign (or enter	name if filing online	2)					_		
		in The	L.	Michael C	Sorensen -	Sr. Manager	, Fuels and Water	Resources	12-3	7-17

					TEDEDODT		Eor (	Office Use O	nlv
Form No.	`	VELL CONSTRU							i ky
GWS-31	4242	State of Colo			-	04			
02/2017		Sherman St., Ro							
		w.water.state.c			le@state.co.u	5			
	t Number: 60097-A		Receipt I	Number:					
	ell Designation: PO								
3. Well Owner	r Name: Colowyo C	oal Company L.	Ρ.						
4. Well Locati	on Street Address	: 5731 State Hig	hway 13 Mee	ker, CO 8164	11				
	S Well Location (re					Northing: 4		1	
	Location: <u>NE</u> 1	/4, <u>SW</u> 1/4,	Sec., <u>35</u>	_Twp. <u>4</u>	N or S	, Range _9	3 🔲 E or	W 💽, <u>6</u>	P.M.
County: / Subdivision:					, Lot <u>9</u>	_, Block	, Filir	ng (Unit)	
7. Ground Sur	face Elevation: 6,4	496 foo	t Date Com		- Charles -		hod: Direct Pus		
	Aquifer Name : _			otal Depth:		-	pth Completed:		feet
	otification: Was N								
10. Aquifer Ty		One Confining L					Laramie-F		///
(Check on	1.51.51.52.22.2	(Not overlain by			(Overlain by 1		Type III (a		(leiva
11. Geologic	terrent in the second second	(Not Overtain b)	y type m)	Пуреп		iameter (in.)			To (ft)
		Grain Size	Color	Water Loc.	-	2.5	, 110/11	• •	20
Depth	Туре			Water Loc.	-	2.3			
0-20	Silt with sand	fine - medium	olive		- 2		· · · · · · · · · · · · · · · · · · ·		
					13. Plain Ca	cina			
					-	-	Wall Size (in)	From (ft)	To (ft)
					OD (in) 1.3	PVC	Wall Size (in) .18	From (ft) 0	10 (10)
						110	.10		
				ļ					
			· · · · · · · · · · · · · · · · · · ·						
· · · · · · · · · · · · · · · · · · ·							reen Slot Size (ii		To (ft)
					OD (in)		Wall Size (in)	From (ft)	
					1.3	PVC	.18	10	20
					14. Filter P			er Placemen	
					Material	sand	Туре	Pre Pac	ĸ
					Size	10/20		10	
					Interval	10-20	Depth		
					16. Groutin	g Record			
					Material	Amount	Density	Interval	Method
Remarks:									
	( alas) / P				<u></u>				
	ion: Type None		-			d Not Applic			
	Estimate Data:		Check be	ox if Test Dat	ta is submitte	d on Form N	umber GWS-39,	Well Yield T	est Report
Well Yield	Estimate Method:	Not Tested				_			
Static Leve	el:			Estimated Y	/ield (gpm)				
Date/Time	e measured:			Estimate Le	ength (hrs)				
Remarks:	1								
	the statements made	herein and know t	he contents the	reof, and thev	are true to mv	knowledge. Th	nis document is sign	ned (or name e	entered if
	l certified in accordan					-	-		
10.00-00-02-00-02	riolation of section 37		· ·	-	•		n of the contracting	g license. If fi	ling online
the State Engine	er considers the entry	of the licensed co	ntractor's name	e to be complia	ance with Rule 1	7.4.			
Company Name	e:		Email:			Phone w/are	ea code:	License Nu	mber:
Tri-State G&T				<pre>@tristategt.o</pre>	rg		254-3208		
	s: P.O. Box 33695 [	Denver (0.8023			_			L	
	name if filing oplin			e and Title				Date:	
Sign (or encer					Cr Monager	Fuels and W	ator Porourooc		
Kh	" Mulor	n fi	Michael	J.SUPERSEN -	sr. manager,	ruets and Wa	ater Resources	12-3	1-19

r	1						1	06	No. 1
Form No.	V V	VELL CONSTRU					For	Office Use C	oniy
GWS-31				of the State I					
		Sherman St., Ro		the second secon					
02/2017	ww	w.water.state.	co.us and dw	rpermitsonlin	e@state.co.u	15			
1. Well Permi	it Number: 60078-M	AH	Receipt	Number:					
	ell Designation: PO						_		
	r Name: Colowyo Co		D						
	ion Street Address				4				
						Marcal Provide	4440000 5		
	S Well Location (re					Northing:			
	Location: <u>SE</u> 1/	4, <u>SW</u> 1/4,	Sec., <u>20</u>	_ Iwp. <u>4</u>		, Range		W 💽, <u>6</u>	P.M.
County: Subdivision:					, Lot <u>11</u>	_, Block _	, Filir	ng (Unit)	
7. Ground Su	rface Elevation: <u>6,4</u>	174 fee	t Date Con	npleted: 10/	12/2019	Drilling Met	hod: Direct Pus	h	
	Aquifer Name :			otal Depth:		-	pth Completed:		feet
	otification: Was No								
10. Aquifer T		One Confining I			Multiple Conf				
(Check or		(Not overlain b			(Overlain by <sup>-</sup>				u da D
		(NOL OVERTAIN D	y Type III)	Пурен			• Type III (a		
11. Geologic			- <u>.</u>		12. Hole Di	•		. ,	To (ft)
Depth	Туре	Grain Size	Color	Water Loc.		2.5		)	11
0-9.5	Silty sand	fine	olive						
9.5-11	lean clay with sar	fine - medium	olive		-		-		
					13. Plain Ca	asing			
					OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	0	1
		·	5						
					R				
				6 ac	Perforate	ad Casing Ca	reen Slot Size (i		
						Kind			To (ft)
					OD (in)	PVC	Wall Size (in)	From (ft)	11
					1.3	PVC	.18	1	
			r						
					<u> </u>				
					14. Filter P	ack:	15. Packe	er Placemen	it:
					Material	sand	Type	Pre Pac	k
					Size	10/20			
					Interval	1-11	Depth	1	
					16. Groutin				
-					Material	Amount	Density	Interval	Method
Remarks:			-		Materia	Amount	Density	mervar	Method
Remarks:									
	221-10								
	ion: Type None					d Not Applie			
	Estimate Data:		Check b	ox if Test Dat	a is submitte	d on Form N	umber GWS-39,	Well Yield T	est Report
Well Yield	Estimate Method:	Not Tested							
Static Leve	el:			Estimated Y	'ield (gpm) _		·		
Date/Time	e measured:			Estimate Le	ngth (hrs)				
Remarks:					J (				
	the statements and - I	oroin and los of	ha contanta ti	roof and the		knowlada - T	in dogument i= -'	and (or no	ntored if
Shitt/7	the statements made h I certified in accordanc					-	-		
and the second	riolation of section 37 S				•		-		
1.20	er considers the entry			-	•		i or the contractility	succise. If th	ing ontine
	-							<b>I</b>	
Company Nam			Email:			Phone w/ar		License Nur	mber:
Tri-State G&T	Inc.		mgsorensen@	<pre>@tristategt.ol</pre>	rg	(303)	254-3208		
Mailing Addres	is: P.O. Box 33695 D	enver, CO 8023	33-0695						
Sign (or enter	name if filing online	e)	Print Nam	ne and Title				Date:	
1	1. 11	<b>3</b>			Sr. Manager	Fuels and W	ater Resources	1	10
A	no Mit	> for		etter entrem -	s., munugel,		atter resources	12-3	1-11

	v	VELL CONSTRUC			TIMATE REPORT			For Office Use Only	
Form No.	<b> </b>	State of Colora							
GWS-31	1313 :	Sherman St., Roc			-	581			
02/2017		w.water.state.co							
1. Well Permi	it Number: 60079- <i>N</i>	\H	Receipt I	Number:			-		
	ell Designation: PO						-		
	r Name: Colowyo Co								
	ion Street Address:			ker, CO 8164	1				
	S Well Location (re					Northing: 4	463750.2		
	Location: NE 1/						3 🔲 E o	r W 💽, 🤞	P.M.
County: Subdivision:					, Lot <u>1</u>	_, Block	, Fili	ng (Unit)	
7. Ground Su	rface Elevation: 6,4	101 feet	Date Com			-	nod: Direct Pu		
	Aquifer Name :			otal Depth:		-	th Completed		feet
	otification: Was No								
10. Aquifer T		One Confining La					Laramie-		
(Check or		(Not overlain by	• •			Type III)		alluvial/coll	uvial)
11. Geologic		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				iameter (in.)		n (ft)	To (ft)
Depth	Type	Grain Size	Color	Water Loc.	-	2.5		0	25
0-10	silt with sand	fine	olive				0 <del>-</del>		
10-25	lean clay with sar	fine	olive		· · · · · · · · · · · · · · · · · · ·				
					13. Plain Ca	sing			
					OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	0	15
					5 C				
					s k				
					Perforate	ed Casing Scr	een Slot Size (	in): 0.010	
					OD (in)		Wall Size (in)	From (ft)	To (ft)
					1 1.3	PVC	.18	15	25
·									
					14. Filter P	ack:	15. Pack	er Placemer	nt:
					Material	sand	Type	Pre Pac	:k
					Size	10/20			
					Interval	15-25	Depth	15	
					16. Groutin	g Record			
					Material	Amount	Density	Interval	Method
Remarks:				•	1		-		
					3				
									_
17. Disinfect	ion: Type None				Amt. Use	d Not Applica	able		
18. Well Yield	d Estimate Data:		Check bo	ox if Test Dat	ta is submitte	d on Form Nu	mber GWS-39,	Well Yield T	est Report
Well Yield	Estimate Method:	Not Tested							
Static Leve	el:			Estimated \	/ield (gpm) _				
Date/Time	e measured:			Estimate Le	ength (hrs)				
Remarks:					<b>J</b>	2			
	the statements made h	perein and know the	contents the	reof and they	are true to my	knowledge Thi	is document is sig	aned (or name a	entered if
and the second se	d certified in accordance					-			
CPC/0179-09-	violation of section 37 9				-		-		
the State Engine	er considers the entry	of the licensed con	ractor's name	e to be complia	nce with Rule 1	7.4.			
Company Nam	ne:	lF	mail:			Phone w/are	a code:	License Nu	mber:
Tri-State G&T				otristategt.o	rg		254-3208		
	ss: P.O. Box 33695 D								
	name if filing online			e and Title				Date:	
Sign (or enter					Cr. Manager	Fuels and Wa	tor Porourcos		
14	in Mater	for		. sorensen -	sr. manager,	ruets and Wa	iter Resources	12-31-	.19

	v	VELL CONSTRUC	TION AND Y		TE REPORT		Fo	r Office Use (	Only
Form No.		State of Color							
GWS-31	1313	Sherman St., Ro				3581			
02/2017		w.water.state.c							
1 Well Permi	I it Number: 60080-M	AH	Receipt	Number:		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	-		
	ell Designation: PO		Receipe	dinber,			-		
	r Name: Colowyo Co						-		
	ion Street Address			Kor CO 914	44				
	S Well Location (re					Northing: 4	46 4229 2		
	Location: <u>NE</u> 1/							or W 💽, 6	P.M.
County:		4, <u>1110</u> 174,	sec., <u>20</u>	_ twp. <u>+</u>		, Kalige <u>-75</u>			P.M.
	Monal				, Lot <u>1</u>	, Block	, Fil	ing (Unit)	
7. Ground Su	rface Elevation: <u>6,</u> 3	371 feet	Date Com	pleted: 10/	12/2019	<b>Drilling Meth</b>	od: Direct Pu	ısh	
8. Completed	ا Aquifer Name: <u>ا</u>	Innamed	т	otal Depth:	24	feet Dep	th Complete	d: <u>24</u>	feet
9. Advance N	otification: Was No	tification Requi	red Prior to	Construction	? • Yes	No, Date No	otification Giv	/en: 10/02/2	019
10. Aquifer T	ype: Type I (	One Confining L	ayer)	Type I	Multiple Con	fining Layers)	Laramie	-Fox Hills	
(Check or	ne) 🗖 Type II	(Not overlain by	Type III)		(Overlain by			(alluvial/coll	uvial)
11. Geologic	Log:				12. Hole D	Diameter (in.)		m (ft)	To (ft)
Depth	Туре	Grain Size	Color	Water Loc.	-	2.5		0	24
0-17	Silt with sand	fine	olive				-		
17-22	lean clay with sar	fine	olive		-		·		
22-24	Silty sand	fine	olive		13. Plain C	asing	-		
					OD (in)	-	Vall Size (in)	From (ft)	To (ft)
-					1.3	PVC	.18	0	14
					Dorforat	ad Casing c	<u> </u>		
-						ed Casing Scre			To (ft)
					OD (in)		Vall Size (in)	From (ft)	
					1.3	PVC	.18	14	24
-									
					14. Filter F			ker Placemei	nt:
					Material	Sand	Туре	Pre Pac	:k
					Size	10/20		14	
					Interval	14-24	Depth	14	8
					16. Grouti	ng Record			
					Material	Amount	Density	Interval	Method
Remarks:					1		-		
17. Disinfect	ion: Type None				Amt. Use	ed Not Applica	ble		
	d Estimate Data:		Check bo	ox if Test Dat		ed on Form Nu		, Well Yield 1	est Report
	Estimate Method:	Not Tested						,	
Static Leve				Estimated V	(ield (anm)				
1						· · · · · · · · · · · · · · · · · · ·			
	e measured:			Estimate Le	ength (hrs)				
Remarks:									
	the statements made h								
	certified in accordance								
CM20.0-5	violation of section 37 9			-	•		of the contracti	ng license. If fi	ling online
the State Engine	er considers the entry	of the licensed con	tractor's name	to be complia	ince with Rule	17.4.			
Company Nam	e:	1	Email:			Phone w/area	a code:	License Nu	mber:
Tri-State G&T			mgsorensen@	tristategt.o	rg	(303) 2	54-3208		
	ss: P.O. Box 33695 D								
	name if filing online			e and Title				Date:	
					Cr. Managar		tor Deserves		
1 km	o Halow	- fo	michael G	. sorensen -	or. manager,	, Fuels and Wat	ter Resources	/2-3	1-19

					TE DEDODT		-	For	Office Use (	Dnlv
Form No.	v v	VELL CONSTRU						101	onnee ose t	Jiky
GWS-31	4343	State of Cold Sherman St., Re	orado, Office o			581				
02/2017										
		w.water.state.			le@state.co.	us				
	t Number: 60075-N		Receipt N	Number:						
2. Owner's W	ell Designation: PO	C-12								
	r Name: Colowyo Co									
4. Well Locati	ion Street Address	5731 State Hig	shway 13 Meel	ker, CO 8164	11					
5. As Built GP	S Well Location (re	equired): 🔲 Zo	one 12 💽 Zor	ne 13 Eastin	g: 264045.4	Northing:	44649	46.8		
	Location: <u>SW</u> 1/	4, <u>NE</u> 1/4,	Sec., <u>24</u>	Twp. <u>4</u>	• N or S	, Range	93	E or	W 💽, 6	P.M.
County:	Moffat									
Subdivision: _					, Lot <u>_8</u>	—, Block —		, Filii	ng (Unit)	
7. Ground Su	face Elevation: 6,3	15 fee	et Date Com	nleted: 10/	12	Drilling Met				
	Aquifer Name : <u>L</u>			otal Depth:		-		ompleted		feet
	otification: Was No									
10. Aquifer T		One Confining				fining Layers				Q12
(Check or		(Not overlain b			(Overlain by					
		(NOL OVERTAIL D	y type iii)	Піреп					alluvial/coll	
11. Geologic		Cusin Si	Calar	Mater 1 -	-	iameter (in.	,		n (ft)	To (ft)
Depth	Туре	Grain Size	Color	Water Loc.		2.5			)	30
0-4	sand	med - coarse	dark gray							
4-10	clayey sand	fine	dark grayish					-		
10-16	lean clay with sar	fine	dark gray		13. Plain C	•				To (6)
16-30	silty sand	fine	brown		OD (in)	Kind		Size (in)	From (ft)	To (ft)
					1.3	PVC		.18	0	20
			· · · · · · · · · · · · · · · · · · ·							
					Perforat	ed Casing Sc	reen S	Slot Size (i	n): <u>0.010</u>	
					OD (in)	Kind	Wall	Size (in)	From (ft)	To (ft)
					1.3	PVC		18	20	30
			·							
					14. Filter F	Pack:		15. Pack	er Placemei	nt:
					Material	Sand		Type	Pre Pac	:k
					Size	10/20	-		3 <del></del>	
					Interval	20-30	-	Depth	20	
					16. Groutir					
					Material	Amount	D	ensity	Interval	Method
Remarks:						Amount		chility	meervat	meenou
					S <b></b>					
17 Disinfact	ion: Type None				Amt Lice	d Not Applie	able			
	Estimate Data:		Check bo	v if Test Da		ed on Form N		- GWS-20	Well Viold T	est Report
	Estimate Method:	Not Tested	L_Check bu	in rest Da			unibel	0113-37,	mette nette i	cat nepurt
				Estimated \	(iold (com)	_		_	_	
Static Leve										
Date/Time	e measured:			Estimate Le	ength (hrs)					
Remarks:										
04357	the statements made h				-	-		-		
Company of the second second second	certified in accordance						-			
	violation of section 37				•		n of the	e contractin	g license. If f	iling online
the State Engine	er considers the entry	or the licensed co	ntractor's name	to be complia	ince with Rule	1/.4.				
Company Nam	e:		Email:			Phone w/ar	ea coo	le:	License Nu	mber:
Tri-State G&T			mgsorensen@	tristategt.o	rg	(303)	254-3	208		
	s: P.O. Box 33695 D	enver. CO 802	33-0695							
	name if filing onlin		Print Nam	e and Title					Date:	
	1 11				Sr Managor	, Fuels and W	ator C	esourcos		
KA	is Math	> _	~ michael G	. 201612611 -	J. Manager,		ater P	resoni ces	/2-3	1-19

	v	VELL CONSTRU			TE REPORT		For	Office Use Only
Form No.	'	State of Colo						
GWS-31	1313	Sherman St., Ro				581		
02/2017	ww	w.water.state.c	co.us and dw	rpermitsonlir	ne@state.co.u	15		
1. Well Permi	t Number: 60076-M	\H	Receipt	Number:				
2. Owner's We	ell Designation: PO	C-13						
3. Well Owner	r Name: Colowyo Co	oal Company L.	Ρ.					
4. Well Locati	on Street Address	5731 State Hig	hway 13 Mee	ker, CO 8164	41			
5. As Built GP	S Well Location (re	equired): 🔲 Zo	one 12 💽 Zo	ne 13 Eastin	g: 264381.6	Northing: 4	465440.8	
	Location: <u>NW</u> 1/	'4, <u>NE</u> 1/4,	Sec., <u>2</u> 4	_ Twp. <u>4</u>	N or S	, Range 9	3 📃 E or	W 💽, <u>6</u> P. <i>M</i>
County: <u>/</u> Subdivision: _					Lot <u>1</u>	_, Block	, Filir	ng (Unit)
7. Ground Sur	face Elevation: 6,2	299 fee	t Date Con				nod: Direct Pus	
	Aquifer Name :			otal Depth:		-	oth Completed:	
	otification: Was No					No, Date N	otification Give	n: 10/02/2019
10. Aquifer Ty		One Confining I					Laramie-F	
(Check on	A COMPANY AND A CO	(Not overlain b			(Overlain by			lluvial/colluvial)
11. Geologic						iameter (in.)		
Depth	Туре	Grain Size	Color	Water Loc.		2.5	0	30
0-8	Sand	medium - Coa	olive		1		2	
8-21	silty sand	fine	olive				,	
21-26.5	lean clay with sar	fine	olive		13. Plain Ca	asing		
26.5-30	sand	fine	olive		OD (in)		Wall Size (in)	From (ft) To (ft
					1.3	PVC	.18	0 20
1								
					-			
					Perforate	ed Casing Sci	een Slot Size (i	n): <u>0.010</u>
					OD (in)		Wall Size (in)	From (ft) To (ft
					1.3	PVC	.18	20 30
					14. Filter P	ack:	15. Packe	er Placement:
					Material	sand	Туре	Pre Pack
					Size	10/20		
					Interval	20-30	Depth	20
					16. Groutin	g Record	12 - 2 - 2	
		·			Material	Amount	Density	Interval Metho
Remarks:								
					3			
17. Disinfecti	ion: Type None				Amt. Use	d Not Applic	able	
	l Estimate Data:		Check b	ox if Test Da	ta is submitte	d on Form Nu	umber GWS-39,	Well Yield Test Repo
Well Yield	Estimate Method:	Not Tested						
Static Leve	el:			Estimated \	/ield (gpm) _			
Date/Time	e measured:			Estimate Le	ength (hrs) 🔔			
Remarks:								
1990 CHARGE CONTRACTOR	the statements made I	nerein and know t	he contents the	reof, and they	are true to my	knowledge. Th	is document is sign	ned (or name entered if
9127CD	certified in accordance				-	-	-	
1.22							of the contracting	license. If filing online
the State Engine	er considers the entry	of the licensed co	ntractor's nam	e to be complia	ance with Rule 1	7.4.		
Company Name			Email:			Phone w/are		License Number:
Tri-State G&T				<pre>@tristategt.o</pre>	rg	(303)	254-3208	
	s: P.O. Box 33695 [							
Sign (or enter	name if filing onlin	e)	Print Nan	ne and Title				Date:
the	. Mula	5 4	Michael	G.Sorensen -	Sr. Manager,	Fuels and Wa	ater Resources	12-31-19

r								0.00	
Form No.	v	VELL CONSTRU					For	Office Use O	nly
GWS-31			orado, Office o						
		Sherman St., R							
02/2017	ww	w.water.state.	co.us and dwr	permitsonlin	e@state.co.u	15			
	it Number: 60077-N		Receipt	Number:					
2. Owner's W	ell Designation: PO	C-14							
	r Name: Colowyo Co					<u>Ω</u>			
4. Well Locat	ion Street Address	5731 State Hig	ghway 13 Meel	ker, CO 8164	1				
5. As Built GP	S Well Location (re	equired): 🔲 Zo	one 12 💽 Zor	ne 13 Eastin	g: 264728.5	Northing: 4	465705.5		
	Location: <u>NE</u> 1/	4, <u>NW</u> 1/4,	Sec., <u>24</u>	Twp. <u>4</u>	• N or S [	, Range _9	3 🔲 E or	W 💽, <u>6</u>	P.M.
County: _ Subdivision: _					Lot <u>1</u>	_, Block	, Filir	ng (Unit)	
7 Ground Su	rface Elevation: 6,2	786 for	at Date Com	nleted: 10/	- 10.V		hod: Direct Pus		
	Aquifer Name : _			otal Depth:		-	oth Completed:		feet
	otification: Was No								· · · · · · · · · · · · · · · · · · ·
10. Aquifer T		One Confining			Multiple Conf				///
(Check or	Contraction of the second s	(Not overlain b			(Overlain by		Type III (a		(leiv
11. Geologic		(not overtain b	y type iii)	Пурси		iameter (in.)			To (ft)
Depth	Туре	Grain Size	Color	Water Loc.	-	2.5	0		25
0-11.5	Silt with sand	fine	light brownis		6 S <del>.</del>	2.5	2		
11.5-17.5	lean clay with sar	fine	olive				3		
17.5-20	sand	fine	olive		13. Plain Ca	asing			
20-25	lean clay with sar	fine	olive		OD (in)	•	Wall Size (in)	From (ft)	To (ft)
20-23	lean clay with sai	The	00100		1.3	PVC	.18	0	15
					·				
·					Perforate	ad Casing Ca	reen Slot Size (i	-). 0.010	
					OD (in)		Wall Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	15	25
					· · · · · ·	110	.10	15	20
					- 2				
·					14. Filter P	ack:	15 Packe	er Placemen	<b>+</b> •
					Material	Sand	Туре	Pre Pac	
					Size	10/20	Type		N .
÷					Interval	15-25	Depth	15	
					16. Groutin		Depti		_
					Material	Amount	Density	Interval	Method
Remarks:					Material	Amount	Density	interval	Methou
Remarks.									
					3				
17 Disinfact	ions Tuno Mana				Amt Has	d Mat Applia	ahla		
	ion: Type None		Check he	wif Tast D-+		d Not Applic	able umber GWS-39, 1		oct Poport
	Estimate Data: Estimate Method:	Not Tested		ix ii Test Dat	a is sudmitte	U UN FUIM N	umber Gw5-39,	well field fi	est Report
		not rested		Estimated V	'ield (gpm) _	_			
Static Leve									
	e measured:			Estimate Le	ngth (hrs)				
Remarks:									
	the statements made h								
1155316	I certified in accordance						-		
	violation of section 37 9 er considers the entry (			-	•		i or the contracting	g acense. It fil	ing online
			·	co oc comptia				r	
Company Nam			Email:			Phone w/are		License Nur	nber:
Tri-State G&T			mgsorensen@	etristategt.o	rg	(303)	254-3208		
	s: P.O. Box 33695 D								
Sign (or enter	name if filing online	e)	Print Nam	e and Title				Date:	
1	· ola	2 fo	Michael G	i.Sorensen -	Sr. Manager,	Fuels and Wa	ater Resources	12-31	1-19
1 hn	6 Mutt	10						110-01	1

Form No.       WELL CONSTRUCTION AND YELD ESTIMATE REPORT       Tor Office of the State Engineer         02/2017       Unit and Colorado Office of the State Engineer       133 Sherman St., Room 821, Denver, CO 80203 303.866.3581         02/2017       Unit Marker State co.ous and dwirgermitodinessitate.co.us       Image: Colorado Office of the State Engineer         1. Well Permit Number: (2009).WH       Receipt Number:       Image: Colorado Office of the State Engineer         3. Well Owner Name: (cloursy Coal Company L.P.       Image: Colorado Office of the State Colorado Office		ſ .						For (	Office Use O	nlv
0.W5-31 02/2017       113 Sherman St., Room 821, Denver, C0 8020 303 866.381         0.Well Permit Number: 60099 AM       Receipt Number:         2. Owner's Well Designation; PCC-15	Form No.	۷ ۱								i ky
02.2017       www.water.state.co.us and dwypermitsonline@state.co.us         1: Well Performit Number:       2.0mer's Well Designation: POC:15         3: Well Owner Name:.clowyo Coal Company L.P.		1242					E01			
1. Well Permi Number: 60099-04H       Receipt Number:         2. Owner's Well Designation: POC-15	02/2017									
2. Owner's Well Designation: POC-15  Well Uncert Street Address: 5731 State Highway 13 Meeker, C0 81641  4. Well Location Street Address: 5731 State Highway 13 Meeker, C0 81641  5. As Built GPS Well Location (required): Zone 12 [20ne 13 Easting: 264497.4 Northing: 4469299.9  6. Legal Well Location: Ke 1/4, Sec. 74,						le@state.co.t	12	_		
3. Well Location Yee Address 2731 State Highway 13 Meeker, C0 81641         5. As Built GPS Well Location (required): 20ne 12 i Zone 13 Easting: 264497.4 Northing: 4469299.9         6. Legal Well Location (required): 1/4, Sec. , 36 Wp				Receipt	Number:					
4. Well Location Street Address: 573 i State Highway 13 Meeker, C0 81641  5. As Built Geby Well Location required 1: 2007 12 2 _ 20ne 13 Easting: 26497.4 Northing: 446299.9  6. Legal Well Location required 1: 2007 2019 Easting: 26497.4 Northing: 446299.9  6. Legal Well Location required 1: 2007 2019 Easting: 26497.4 Northing: 446299.9  6. Legal Well Location required 1: 2007 2019 Easting: 26497.4 Northing: 446299.9  6. Legal Well Location required 1: 2007 2019 Easting: 26497.4 Northing: 446299.9  6. Legal Well Location required 1: 2007 2019 Easting: 26497.4 Northing: 446299.9  7. Ground Surface Elevation: 6,218.5 feet Date Completed: 10/09/2019 Diffing Method: Direct Bush 6. Completed Adurfer Name: Unnamed Total Depth: 25 feet 9. Advance Notification: Was Notification Required Prior to Construction 1: 19 Yee 100 Certain by Type 110 17 Upe 11 (Autiple Confining Layer) Erype 14 (One Confi										
5. As Built GPS Well Location: Ne_1/4, Se_1/4, Sec., 36       Twp.5_       N or S       Range 93       E or W • 6       P.A.         County:       Moffat										
6. Legal Well Location: NE       1/4, SE       1/4, Sec., 36       Twp. 5       • N or S       Range 93       E or W       6       P.M.         County:       Moffat										
Compty:       Modifation:										
StuddWishin:			'4, <u>SE</u> 1/4,	Sec., <u>36</u>	Twp. <u>5</u>	• N or S	, Range _9	3 📃 E or	W 💽, <u>6</u>	P.M.
7. Ground Surface Elevation: 6,218.5       feet       Date Completed: 10/09/2019       Diffing Method: Direct Push         8. Completed Aquifer Name :       Unnamed       Total Depth: 25       feet       Depth Completed: 25       feet         9. Advance Notification: Wash Notification Required Prior to Construction?       Type II (One Confining Layer)       Type II (Not overlain by Type III)       Type III  (Not overlain by Type III)       Type IIII (Not overlain by Type III)       Type III (Not overlain by Type III)       Type IIII (Not overlain by Type III)       Type IIII (Not overlain by Type III)       Type IIIIIIII       Type IIIIIIIIIIIIII       Type IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII						, Lot <u>7</u>	_, Block	, Filin	ıg (Unit)	
8. Completed Aquifer Name : Unnamed       Total Depth: 25       feet       Depth Completed: 23       feet         9. Advance Notification Required Prior to Construction?       Tyse : No. Date Notification Given: :: 10/02/2019       Check one)       Check one)       Check one)       Type II (Not confining Layer)       Type II (Not confining Layer)       Check one)       Check one)       Type II (Not confining Layer)       Check one)       Type II (Not confining Layer)       Check one)       Type III (Not confining Layer)       Total Depth: Type IIII (Not confining Layer)       Total Depth: Type IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	7. Ground Su	face Elevation: 6	18.5 fee	at Date Con		the second frame and the second second				
9. Advance Notification: Was Notification Required Prior to Construction? ■ Yes ■ No. Date Notification Given: <u>10/02/2019</u> 10. Aquifer Type: □ Type II (One Confining Layer) □ Type II (Not vorkain by Type III) □ Type III (Not vorkain by Type III) □ Type III (Not vorkain by Type I										feet
10. Aquifer Type:       Type I (One Confining Layer)       Type II (Not overtain by Type III)       To (ft)         0-6       Sand with sith       fine       olive       13. Plain Casing       0       25.         2.5.25       sitt with sand       fine       olive       13. Plain Casing       0       15.         2.5.25       sitt with sand       fine       olive       13. Plain Casing       0       15.         2.5.25       sitt with sand       fine       olive       13. Plain Casing       0       15.         0       0       (in)       Kind       Wall Size (in)       From (ft)       To (ft)         1.3       PVC       .18       0       15       15.         1.4       Filter Pack:       14. Filter Pack:       15. Packer Placement:       Type Pre Pack         1.3       PVC       .18       15. Social Size (in)       Fore 15.       15.         1.4										
Check one)       Type II (Not overlain by Type III)       Type II (Overlain by Type III)       Type III (alluvial/colluvial)         11. Geologic Log:       12. Hole Diameter (in.)       From (it)       To (it)         0-6       Sand with siti       frine       Olive       2.5         0-6       Sand with siti       frine       Olive       2.5         22.5-25       sitt with sand       frine       Olive       13. Plain Casing         22.5-25       sitt with sand       frine       Olive       13. Plain Casing         22.5-25       sitt with sand       frine       Olive       13. Plain Casing       OD (in)       Kind Wall Size (in)       From (it)       To (ft)         1.3       PVC       .18       0       15         1.4       Interval       Material       Size       Interval       Interval       Method         12.       Disinfection:       Type None       Amt. Used Not Applicable       Interval       Method         13.       Pick Testade       Size       10/20       Interval       Method         13. <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>/17</td>										/17
11. Geologic Log:       12. Hole Diameter (in)       From (ft)       To (ft)         Depth       Type       Gran Size       Color       Water Loc.       2.5       0       25         6-22.5       tean clay with tra       medium       olive       13. Plain Casing		the second se	-	• ·	A REAL PROPERTY AND A REAL					vial)
Depth       Type       Grain Size       Color       Water Loc.         0-6       Sand with silt       fine       olive	and the second sec			y type iii)	Пуреп					
0-6       Sand with silt       fine       olive		1	Crain Siza	Color	Waterles	-				
6-22.5       tean clay with train medium olive       13. Plain Casing				-	water Loc.	- S	2.5			ZJ
22.5-25       silt with sand       fine       olive       13. Plain Casing         00 (in)       Kind       Wall Size (in)       From (ft)       To (ft)         1.3       PVC       .18       0       15         1.3       PVC       .18       15       25         1.4       Filter Pack:       15       15       15         1.3       PVC       .18       0720       15       15         1.3       PVC       .18       0720       15       15         1.4	-			-		E 0		7		
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: Instruction of the statements in add herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4.       OD (in)       Kind Wall Size (in)       From (ft)       To (ft)         Image: Instruction of the statements in add the statement is addition of the Water is the statement is is addition of the Water is the statement is addition of section of the Water is the statement is addition of section of the Water is the statement is addition of section of the Water is the construction Rules, 12 (CA 402.2. The is ing ad adcument this contains false statement is addition of section of the Water is the statement is addition of section of the Water is the construction Rules, 12 (CA 402.2. The is contains the contains false statement is addition of section of the Water is the statement is addition of section of the Water is the statement is addition of section of the Water is the statement is addition of section of the Water is the state is contained in accordance with Rule 17.4 of the Water Wetil Construction Rules			the second se							
Image: State Level:       Image: State Level:<	22.5-25	silt with sand	fine	olive		-	-		F (6)	To (ft)
Image: Sector of the sector				-		-				. ,
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: State St						1.3	PVC	.18	0	15
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: State of the state of the state with a state of the state of										
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: State of the state of the state with a state of the state of										
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: State St										
OD (in)       Kind       Wall Size (in)       From (ft)       To (ft)         Image: State St						Perforate	ed Casing Scr	een Slot Size (ir	n): <u>0.010</u>	
Image: State Control of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filling online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filling of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and or revocation of the contracting license. If filling online the state Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.										To (ft)
Image: State Level:       Perescience         State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4 of the Water Statements is a violation of section 37 the line section of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Type       Pre Pack Depth         Provide State Contracting State Contracting State Contracting State Contracting License Number:       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Estimate Vield (gpm)       Interval       Method         Static Level:       Interval       Estimate Vield (gpm)       Interval       Estimate Length (hrs)       Interval						1.3	PVC	.18	15	25
Image: State Level:       Perescience         State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4 of the Water Statements is a violation of section 37 the line section of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Type       Pre Pack Depth         Provide State Contracting State Contracting State Contracting State Contracting License Number:       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Estimate Vield (gpm)       Interval       Method         Static Level:       Interval       Estimate Vield (gpm)       Interval       Estimate Length (hrs)       Interval										
Image: State Level:       Perescience         State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4 of the Water Statements is a violation of section 37 the line section of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Type       Pre Pack Depth         Provide State Contracting State Contracting State Contracting State Contracting License Number:       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Estimate Vield (gpm)       Interval       Method         Static Level:       Interval       Estimate Vield (gpm)       Interval       Estimate Length (hrs)       Interval						s 6:				
Image: State Level:       Perescience         State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4 of the Water Statements is a violation of section 37 the line section of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Type       Pre Pack Depth         Provide State Contracting State Contracting State Contracting State Contracting License Number:       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Estimate Vield (gpm)       Interval       Method         Static Level:       Interval       Estimate Vield (gpm)       Interval       Estimate Length (hrs)       Interval						: 8 				
Image: State Level:       Perescience         State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4 of the Water Statements is a violation of section 37 the line section of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Type       Pre Pack Depth         Provide State Contracting State Contracting State Contracting State Contracting License Number:       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Material       Amount       Density       Interval       Method         Remarks:       Interval       Interval       Interval       Static Level:       Interval       Estimate Vield (gpm)       Interval       Method         Static Level:       Interval       Estimate Vield (gpm)       Interval       Estimate Length (hrs)       Interval						14. Filter P	ack:	15, Packe	r Placemen	t:
Image: Size interval inter						Material	sand	Type	Pre Pac	k
Interval       15-25       Depth       15         Interval       15-25       Depth       15         Image: State St				-	<u> </u>	-	10/20	1.76-		
Image: State of the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       Phone w/area code:       License Number:         Sign (or enter name if filing online)       Print Name and Title       Print Name and Title       Date:					1	-		Depth	15	
Remarks:       Material       Amount       Density       Interval       Method         17. Disinfection:       Type None       Amt. Used       Not Applicable         18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report         Well Yield Estimate Method:       Not Tested         Static Level:       Estimated Yield (gpm)         Date/Time measured:       Estimate Length (hrs)         Pate/Time measured:       Estimate Length (hrs)         Remarks:       19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       Phone w/area code:       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Sign (or enter name if filing online)       Print Name and Title       Date:								Depair		
Remarks:						-	-	Doncity	Interval	Method
17. Disinfection: Type None       Amt. Used Not Applicable         18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method: Not Tested         Static Level:	Pomarke						Amount	Density	Interval	Method
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested       Static Level:	Remarks:					s				
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested       Static Level:						3				
18. Well Yield Estimate Data:       Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method:         Not Tested       Static Level:	17 Diel (	1					I I Rectored			
Well Yield Estimate Method:       Not Tested         Static Level:										
Static Level:			Mat To d	Check b	ox if Test Dat	ta is submitte	ed on Form Nu	imber GWS-39, V	well Yield Te	est Report
Date/Time measured:			NOT LESTED							
Remarks:         19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       gsorensen@tristategt.org       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Print Name and Title       Date:	Static Leve	el:			Estimated Y	/ield (gpm) _				
19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.         Company Name:       Email:       Phone w/area code:       License Number:         Tri-State G&T Inc.       Email:       (303) 254-3208       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Print Name and Title       Date:	Date/Time	e measured:			Estimate Le	ength (hrs)				
filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4. Company Name: Tri-State G&T Inc. Email: Tri-State G&T Inc. Email: Mailing Address: P.O. Box 33695 Denver, CO 80233-0695 Sign (or enter name if filing online) Print Name and Title Hickney Contractor State Contra	Remarks:				÷					
filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4. Company Name: Tri-State G&T Inc. Email: Tri-State G&T Inc. Email: Mailing Address: P.O. Box 33695 Denver, CO 80233-0695 Sign (or enter name if filing online) Print Name and Title Hickney Contractor State Contra	19.   have read	the statements made h	nerein and know t	he contents the	reof, and they	are true to my	knowledge. Thi	s document is sign	ed (or name e	ntered if
statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.       Itemail:       Phone w/area code: (303) 254-3208       Itemail:         Company Name:       Email:       mgsorensen@tristategt.org       Phone w/area code: (303) 254-3208       Itemail:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Print Name and Title       Date:										
Company Name: Tri-State G&T Inc.       Email: mgsorensen@tristategt.org       Phone w/area code: (303) 254-3208       License Number:         Mailing Address: P.O. Box 33695 Denver, CO 80233-0695       Sign (or enter name if filing online)       Print Name and Title       Date:										
Tri-State G&T Inc.     mgsorensen@tristategt.org     (303) 254-3208       Mailing Address: P.O. Box 33695 Denver, CO 80233-0695     Sign (or enter name if filing online)     Print Name and Title       Date:     Michael C. Serensen, Sr. Henreer, Fuels and Water Deseureer     Date:	the State Engine	er considers the entry	of the licensed co	ntractor's name	e to be complia	nce with Rule 1	17.4.			
Tri-State G&T Inc.     mgsorensen@tristategt.org     (303) 254-3208       Mailing Address: P.O. Box 33695 Denver, CO 80233-0695     Sign (or enter name if filing online)     Print Name and Title       Date:     Michael C. Serensen, Sr. Henreer, Fuels and Water Deseureer     Date:	Company Nam	e:		Email			Phone w/are	a code:	License Nur	nber:
Mailing Address: P.O. Box 33695 Denver, CO 80233-0695 Sign (or enter name if filing online) Print Name and Title Date: Date:					atristategt o	rø			LICCIDE NUL	
Sign (or enter name if filing online) Print Name and Title Date:					sumurgi.U	'5	(303)	231 9200		
Michael C. Coronana, Sr. Hanagar, Evals and Water Desources										
Michael G. Sorensen - Sr. Manager, Fuels and Water Resources 17-31-19	sign (or enter	name if filing online	e)						Date:	
	1h	in Halton	$\rightarrow$ 4		G.Sorensen -	Sr. Manager,	Fuels and Wa	ter Resources	17-31	-19

Form No.	l v	WELL CONSTRU	CTION AND Y	IELD ESTIMA	TE REPORT		For	Office Use C	Dnly
GWS-31		State of Colo							
		Sherman St., Ro							
02/2017	WW	w.water.state.o	co.us_and_dwr	permitsonlin	ne@state.co.	us			
1. Well Permi	t Number: 60069-/	νH	Receipt	Number:					
2. Owner's W	ell Designation: PC	C-16							
3. Well Owne	r Name: Colowyo C	oal Company L.	Ρ.						
	ion Street Address			ker, CO 8164	11				
	S Well Location (r					Northing: 446	58136.3		
	Location: NE 1							W 💽, 6	P.M.
County:									
7. Ground Su	face Elevation: <u>6</u> ,	250 foo	t Date Com						
	Aquifer Name :	C6			32		h Completed:		feet
	otification: Was N		irod Drior to	Construction		INO Data Not			
10. Aquifer T		(One Confining I				fining Layers)			019
(Check or		(Not overlain by	• •		(Overlain by				
11. Geologic		(NOL OVERTAIN D	(Type III)	Пуреп		Piameter (in.)	Type III (a From	the second s	11
	Type	Grain Size	Color	Water Loc.	-	2.5	С	• •	To (ft) 32
Depth	N 97.1 1967			water Loc.		2.5			32
0-10	sandy silt	fine - very fine	olive						
10-25	silt with sand	very fine	olive		42 Dista C				
25-32	gravel	fine - medium	olive	-	13. Plain C	•		Erone (ft)	To (ft)
					OD (in)	Kind W PVC	all Size (in)	From (ft)	22
					1.3	PVC	.18	0	
					1.0				
					Perforat	ed Casing Scree			
					OD (in)	Kind W	all Size (in)	From (ft)	To (ft)
					1.3	PVC	.18	22	32
				1					
					14. Filter F	Pack:	15. Packe	r Placemer	nt:
					Material	sand	Туре	Pre Pac	:k
					Size	10/20			
				1	Interval	22-32	Depth	22	
				f	16. Groutin		Depen	-	
				ł	Material	Amount	Density	Interval	Method
Remarks:					Materiat	Amount	Density	merval	Method
Kenidi Ka,									
					- 31 <del></del>				
17 Disinfact	ion: Type None				Arme Lice				
	Estimate Data:		Chack by	w if Test De		ed Not Applicated on Form Num		Wall Viald T	ort Pepart
		Not Testad		an rest Da	ia is submitte		ider GW3-39,	weit neta	est Report
	Estimate Method:	not resteu		Tration - t1 Y	(iald (r=)				
Static Leve	el:								
Date/Time	e measured:			Estimate Le	ength (hrs)				
Remarks:									
19. I have read	the statements made	herein and know th	ne contents the	reof, and they	are true to my	knowledge. This	document is sigr	ed (or name e	entered if
	l certified in accordan								
	iolation of section 37				•		f the contracting	license. If fi	ling online
the State Engine	er considers the entry	of the licensed co	ntractor's name	e to be complia	nce with Rule	17.4.			
Company Nam	e:		Email:			Phone w/area	code:	License Nu	mber:
Tri-State G&T			mgsorensen@	otristategt.o	rg	(303) 25			
	s: P.O. Box 33695 I	enver CO 8023	-			1			
	name if filing onlin			e and Title				Date:	
		3 (B)			Cr Honoro-		Porouroor		
1hr	The	- fo	r Michael C	. Solensen -	si. manager,	Fuels and Wate	er Resources	12-31	1.19

Appendix B

October 2019 Well Development and Sampling Forms

Office Address:	COM		W	Site Na	ame: <u>Lol</u>	ration POC-Y1 Page 1 of 1							
Project Numbe	r:	6061468	2		1.00								
Site Name:		0061760	2		- 6 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Sampled By:	SF	-					
Location:		_ Colowyo		and the second		Sample ID:							
		CMP				manage Sharman	_ <u>P0</u>	POC-1 10/14/19					
					_	Sample Date:			and a second				
		A second second				Sample Time:	_074	5					
Equipment		the second second					1.00						
	Purging Method/Ec		-	10.		Field Parameters							
			3 vol	1 Per									
	Sampling Equipme		Horaba	Per	1.00		Water Temp. (	(C)	Q				
	Filtering Equipment	t	0.45	1100		Initial (							
				2010	-	Initial (	Conductance (	(mS/cm):					
urging Informa	tion						nce Point						
	Casing I.D. [a] (in.):		1.0			Length of Co.			<u>^</u>				
	Unit Casing Volume	[b] (gal/ft)	0.04	1	-	Length of Static W	ater Column [	e] = [d] - [c] (ft):	_2.35				
	Depth to Water [c] (	ft, bgs):	11,60		-01	Casing Water Volu	me [f] = [b] x [	e] (gal)	0.39				
	Depth to Bottom of V	Well (d) (ft. bos):	20,0		-	Total Purged Volun	ne [g] (gal):		15				
		(-) (·, ogo).	_2010	1	- L	Number of Purged	Volumes (h) -	[n] / [f]-	73				
Time	Water Level	Volume Purged	Temp					ra1, [i]:	13				
- Alego -	(ft bgs)	(gal)		pH	ORP	Conductance	Turbidity	DO					
0725	-	(gui)	(C)		m۷	(mS/cm)	(NTU)	(mg/L	Water Description				
8540	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100	00	9.10	7.07	172	1.44	7999	8.15					
0731	-	0.5	10.11	7.07	110	1.43	>100		Initial				
	~	1.0	9.96	7.29	40	1.41	111	8.62	and the second				
0734	-	1.5	10.01	7.29			7099	873					
		Wil			5	1.40	7999	9.71	and the second se				
		V (I	War	- for	tarbid.	he to go	Jown	Inc Co	sampling				
						9		WCIO/	sampling				
	6 B B B								and the second				
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		-											
						_							
d Dry (Y/N):	N												
Volume													
, . orume				Ad	ditional Rema	rko							
Casing I.	D.	Unit Casing Volur	10			farbidity							
(in.) 1.0		Gal/Lin. Ft.)			tinal	tarbidihi	:500	1-1					
1.0		0.04											
2.0		0.09											
2.2 3.0		0.20											
4.0		0.37		-									
4.3		0.65											
5.0		1.00											
7.0		1.55											
8.0		6.00											

Office Address:	СОМ	*	We	Site Nar	dwater Pur ne: <u>Lolo</u> cation f	rge Log wye OC-Z	*	Page	_1of			
			. ( <b>b</b>				11.7	1.000				
Project Number Site Name:		606146	82	_	-	Sampled By:	SF	SIF POC-Z				
Location:		- Colowi	10		-	Sample ID: Sample Date:	10/1					
		q	-14			Sample Time:		0835	1			
Equipment		1.1		1.		Field Parameters						
	Purging Method/Eq	uipment	3001	Per.	1.1.1.1		Vater Temp. (	C)	Л			
	Sampling Equipmen		-Hor,	ulper.		Initial p	H:					
	Filtering Equipment		_0,45	NM		Initial C	onductance (r	nS/cm):				
						Referer	nce Point		_/			
Purging Informa												
	Casing I.D. [a] (in.): Unit Casing Volume		0,0	24		Length of Static Wa						
	Depth to Water [c] (i		21.39	-	-	Casing Water Volu		e] (gal)	0.21			
	Depth to Bottom of V		26.6			Total Purged Volun Number of Purged		(a) / (f);	1.5			
Time			12			thanber of Fulged	voidilies [ii] =	[8] / [1]-				
Time	Water Level (ft bgs)	Volume Purged (gal)	Temp	pН	ORP	Conductance	Turbidity	DO	Water Description			
1580	(11090)	(gai)	(C) 8.39	7.88	mV 35	(mS/cm)	(NTU)	(mg/L	1.1			
P580		0.5	8.26	9-266	44	1.08	2999 2999	2.30	initial			
7580		1.0	8.44	6.87	46	1.07	477	2.10				
0830	1. A.	1.5	8.50	6.87	47	1.07	400	2.17				
	10 10 10 10 10		L.						a principal de la construcción d			
			_						Part Andrews			
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	1.000		1.1		-							
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-	1				1000							
		1.1.1					_		-108			
						6			18			
1						In the second second						
rged Dry (Y/N):	N											
asing Volume					Additional Re	marke						
Casi	ng I.D.	Unit Casing Vo	lume 1	10 <b>- 1</b> 0					R			
	in.) 1.0	Gal/Lin. Ft 0.04										
1	1.5	0.09		10.00								
2	2.2	0.16 0.20										
4	3.0 4.0	0.37						4	Press Contract			
	1.3 5.0	0.75										
	6.0	1.55										
	.0	2.00										

Office Address:	СОМ		We	Site Nan	Iwater Pur ne: ation	lowyo		Page	of			
Project Number Site Name: Location:	lame: <u>Coloury o</u> ion: <u>CMP</u>					Sampled By: Sample ID: Sample Date: Sample Time:	P(	SF FOC-3 IDII4[19 0640				
Equipment	Purging Method/Equ Sampling Equipmen Filtering Equipment ation Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (f Depth to Bottom of V	t [b] (gal/ft) t, bgs):		7	Suolyne		onductance (m ice Point ater Column [e] me [f] = [b] × [e ne [g] (gal):	11.41 0.45 1.5 73				
Time	Water Level	Volume Purged	Temp	pH	ORP	Conductance	Turbidity	DO	Water Descrip	otion		
0625	(ft bgs)	(gal) 	(C)	1.72	mV 112	(mS/cm)	(NTU)	(mg/L 7.84	1.1.1	_		
8500		0.5	10.83	7,09	39	2.15	7920	10 21	initial			
0631	-	1.0	10.55	7.25	53	2.13	7022	10.06				
0634		1.5	9.58	7,19	68	2.04	7909	10.36		-		
	will.	wait	for	furti	e.y			o cfore	sampling			
		4429										
1												
					1							
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0 0										_		
Purged Dry (Y/N	): <b>N</b>											
Casing Volume					Additional R	emarks						
	sing I.D. (in.) 1.0 1.5 2.0 2.2 3.0 4.0	Unit Casing V Gal/Lin. F 0.04 0.09 0.16 0.20 0.37 0.65			Fine	emarks hl turbiðih	1: 22	250				
	4.3 5.0	0.75		10.00	er seel 🔤							
	6.0 7.0	1.55										
	8.0	2.60										

Office Address:	СОМ		We	Ground Site Nam Il Identifica	lwater Pur ne: <u>66</u>	rge Log <u>aryd</u> POC-5-		Page	of		
	-		We	an identifica		100 3			_/ of		
Project Number		606 84	862	A		Sampled By:	SF				
Site Name:		Colonie	D	in the first		Sample ID:	Poc-	<			
Location:		- Colonie CMP				Sample Date:	Iolis	-110	191		
						Sample Time:		0901			
Equipment	n.								and the second second		
	Purging Method/Equ	uioment	3 uol	mi		Field Parameters	: 89. 22. 112		0		
	Sampling Equipmen	2. C. 21. 1991 1994		alperi	-		/ater Temp. (C	;)			
	Filtering Equipment			15 MM	101000	Initial p					
	- moning Equipment			15.111)			onductance (m nce Point	nS/cm):			
ourging Information	ition					heleler	ice Point				
	Casing I.D. [a] (in.):		1.0			Length of Static Wa	ater Column Ie	[-[d] - [c] (4)	10,34		
	Unit Casing Volume	[b] (gal/ft)	0.0	4		Casing Water Volu					
	Depth to Water [c] (f		14.4			Total Purged Volun		g (gai)	0.41		
	Depth to Bottom of		24.			Number of Purged		ol / #2:			
						Number of Purged	volumes [h] =	[g] / [t]:	_75		
Time	Water Level	Volume Purged	Temp	рН	ORP	Conductance	Turbidity	DO	Water Description		
0849	(ft bgs)	(gal)	(C)		mV	(mS/cm)	(NTU)	(mg/L			
0853	1	0.5	8.20	6.82	31	1.77	79019	3.52	initial		
		0.5	8.47	6.80	19	1.75	7999	2.24	- in mark		
0857		1.0	8.55	6.79	19	1.75	2999	2.21			
0901	1	1.5	8.48	6.79	18	1.73	782	2.17	14 A		
		1									
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sing Volume				A	dditional Rer						
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	.5	0.09			1	0. 5					
2	.2	0.20			Ta	0 X 5	OUNTU	bet	are sampling		
4	.0	0.37						1			
	.3	0.75									
	.0	1.00	1	1111							
	.0	2.00									

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AE	сом			Ground Site Nan	dwater Pur ne:(	ge Log Blowy D	1.1		- 12 T	
Office Address:			We	II Identific	ation	POC-6		Page	of	_
Project Numbe	r:	606146	58			Sampled By:	SF			
Site Name:						Sample ID:	P0C	-6		
Location:					-	Sample Date:	_i011	6/19		
£						Sample Time:	-0	630		
Equipment	1.00			-		Field Parameters	s			
	Purging Method/Equ	ipment	1.1.1.1.1		· · · · · · · · · · · · · · · · · · ·	Initial	Water Temp. ((	C)	$\cap$	
	Sampling Equipmen	t			1.1	Initial			¥	
	Filtering Equipment				20000	Initial	Conductance (r	nS/cm):		- 10 m 1
							ence Point			
ourging Information										
	Casing I.D. [a] (in.):		1.0			Length of Static W	Vater Column fe	e] = [d] - [c] (ft):	8.48	are a
	Unit Casing Volume	D. COLORED STOLEN AND	0.00	1		Casing Water Vol			0.34	5 S U
	Depth to Water [c] (f		5.52			Total Purged Volu	ume [g] (gal):	-	1.5	218
	Depth to Bottom of V	Vell [d] (ft, bgs):	14.00	)	1.1	Number of Purgeo		[g] / [f]:	1.5	
Time	Water Level	Volume Purged	Temp	рH	ORP					
	(ft bgs)	(gal)	(C)	pii	mV	Conductance (mS/cm)	Turbidity	DO	Water Descrip	tion
0616		-	1171	647	110	1.80	(NTU) 351	(mg/L \$5-1		
0619	1 - 1 - 1 - L	0.5	10.95	6.70	170	1.79	0.0	2.13	TW6: >999	- 25
0622		1.0	10.90	6,88	91	1.70	7999	1).07	(01511)	
0625		1.5	10.89	6.90	85	1.83	2909	10.12		-
									Contraction of the second	
1										
10 B.S.										1.1.1
1 m	10 10 10 10 10 10 10 10 10 10 10 10 10 1		_		_				1995. 1997	
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	1.0								1.00	
	12									
			3	2. 20			-			
		1.65	12 5				1			- CO.
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	1							-		ALC: NO
						1. A. C.				E.
-			1.11							1
rged Dry (Y/N):	N				1					1
sing Volume					dditional Ren	atko				Agent
Casir	ng I.D.	Unit Casing Vo	uma	ŕ	dunional Hen	arks				1910
(i	n.)	Gal/Lin. Ft.								1 Mar
1	.0	0.04								1
2	2.0	0.16								50
3	0.0 .0	0.37								
4	.3	0.65								
6	.0	1.00								
~	.0	2.00								

Office Address:	СОМ		Site Nam	Iwater Pur ne: <u>Col</u> ation <u>P</u>	ge Log owy 0 0C-7		Page of				
Project Number Site Name: Location:		6061462 Colowyi CMP	52			Sampled By: Sample ID: Sample Date: Sample Time:	51 69(	F - 7- 6 [ 19			
Equipment Purging Informa	Purging Method/Equ Sampling Equipmen Filtering Equipment ation Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (f Depth to Bottom of V	t [b] (gal/ft) ft, bgs):	3 001 Horb 0.45 1.0 0.04 76.7 77.	39		Initial pi Initial C Referen Length of Static Wa Casing Water Volur Total Purged Volur	onductance (m ice Point iter Column [e] me [f] = [b] x [e] ne [g] (gal):		6.11 0.24		
Time	Water Level	Volume Purged	Temp	pH	ORP	Number of Purged	Turbidity	g] / [f]:	Water Description		
	(ft bgs)	(gal)	(C)		mV	(mS/cm)	(NTU)	(mg/L			
			-								
_											
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12	P. State										
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			10 C								
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11 A A											
8											
urged Dry (Y/N	): <u>Y</u>		- 115		- per la						
asing Volume					Additional Re	marks		_			
	ing I.D.	Unit Casing Vo			2	1.1	1				
	(in.) 1.0	Gal/Lin. Ft 0.04	)		Da.	led san went full	npe	Immed	istely.		
	1.5 2.0	0.09			Lall	1101	àc	Sec. +	1.		
	2.2	0.20			well	wor	0/4	Jusi	Syori		
	3.0 4.0	0.37			of	£.11	1	٥			
	4.3 5.0	0.75			01	1011	500	C			
	6.0	1.55									
	7.0 8.0	2.00									

Office Address:	COM		Wel	Ground Site Nam I Identifica	water Pur e: <u>6</u>	ge Log <u>0140</u> 0(-8		Page	of _	1	
Project Number: Site Name: Location:		606140 Colowy CMP				Sampled By: Sample ID: Sample Date: Sample Time:					
Equipment	4	1.1			v	Field Parameters					
(\$) <sup>1</sup>	Purging Method/Equ Sampling Equipmen Filtering Equipment		3 vol Horba 0.45		5 61	Initial pl	Vater Temp. (C H: onductance (n nce Point			/	
Purging Informat	ion								1.1.1.1.1.1.1		
	Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (f Depth to Bottom of V	t, bgs):	2 10.61	0 0,04 5 10,69 85		Length of Static Wa Casing Water Volun Total Purged Volun Number of Purged	me [f] = [b] x [e ne [g] (gal):	e] (gal)	11,16 0.44 84 7-5 2 73	8 	
Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pН	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mail	Water	Description	
0-76073	-		9.23	6.78	79	1.26	7999	(mg/L 2.11	initial		
0740		0.75	9.64	6.69	-18	1.27	7999	2.24	minal		
0744		1.5	9.59	6.69	-59	1.29	612	2.08			
0747	1	2	9.68	6.68	-71	1.7.8	511	2.02			
						8					
	N									9	
Purged Dry (Y/N):											
Casing Volume				ľ	Additional Re	marks			-		
(i 1 2 2 3 3 4 4 5	ng I.D. n.) .0 .5 .0 .2 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	Unit Casing Vo Gal/Lin. Ft 0.04 0.09 0.16 0.20 0.37 0.65 0.75 1.00									
7	.0	1.55 2.00									
	.0	2.60									

Office Address:	СОМ		We	Site Nan	dwater Pur ne: ation	rge Log <u>Néwya</u> OC-10	13	Page	of			
Project Number Site Name: Location:	r.	606146 Colomyz CMP				Sampled By: Sample ID: Sample Date: Sample Time:	Sample ID: Sample Date: j0(1510)					
Equipment Purging Informa	Purging Method/Equ Sampling Equipmen Filtering Equipment ation Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (f Depth to Bottom of V	t [b] (gal/ft) t, bgs):	   	siper sum		Initial p	Vater Temp. ( iH: Conductance ( nnce Point ater Column [ ime [f] = [b] x me [g] (gal):	'mS/cm): e] = [d] - [c] (ft): [e] (gal)	13.45 0.54 2.0 >3			
Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description			
0630 D634 0638 0642		- 0.75 ).5 Z	8.27 9.16 9.13 8.10	6.35	1/9 91 83 80	1.18 1.18 1.18 1.17 1.17 1.17	408 404	9.8 9.7 9.7 3.90 3.60	in tral			
urged Dry (Y/N) asing Volume	:N				Additional Re	marks						
	ng I.D. in.) 1.0 1.5 2.0 2.2 3.0 4.0 4.3 5.0 6.0 7.0 8.0	Unit Casing V. Gal/Lin, F 0.04 0.09 0.16 0.20 0.37 0.65 0.75 1.00 1.55 2.00 2.60				12 Jupli	cale	collec	Led			

A.
Office Address:	COM		We		water Pur ne: <u>Col</u> ation <u>P</u>	The manage of the second		Page	of
Project Number: Site Name: Location:		CMP	1434 6061468Z			Sampled By: Sample ID: Sample Date: Sample Time:	SF 	-119 -725	
Equipment Purging Informa	Purging Method/Equ Sampling Equipment Filtering Equipment		<u>3 vol</u> <u>Horba</u> 0. 45	/ per lper		Initial pl	Vater Temp. (( H: onductance (r nce Point		2
	Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (f Depth to Bottom of V	t, bgs):	1.0 0.0 11.29 25.5			Length of Static Wa Casing Water Volu Total Purged Volun Number of Purged	me [f] = [b] x [ ne [g] (gal):	e] (gal)	14.21 0.57 2.0 73
Time	Water Level	Volume Purged	Temp	рН	ORP	Conductance	Turbidity	DO	Water Description
0708	(ft bgs)	(gal)	(C) 8.69	1 77	mV 20	(mS/cm)	(NTU)	(mg/L	- 1.1
0712		0.75	2.93	6.72	69	1.35	7999	2.91	Initial
0716		1.5	8.97	6.65	63	1.33	7999	2.58	
0719		7.0	8.72	6.65	59	1.33	800	2.44	
Pursed Dr. Arts	ν. Λ)								
Purged Dry (Y/N	): <u>tv</u>	E 1 1 E 1		1115					
	sing I.D. (in.) 1.0 1.5	Unit Casing Gal/Lin. 0.04 0.09		]	Additional F		turbi	dily	to reach sampling
	2.0 2.2 3.0 4.0 4.3 5.0 6.0 7.0 8.0	0.16 0.20 0.65 0.65 1.00 1.55 2.00 2.60			X	, 500m	) be	etane.	sampling

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AEC Office Address:	Groundwater Purg Site Name: Well Identification							Page of			
Project Number: Site Name: Location:	ite Name: Loloc		468Z 6			Sampled By: Sample ID: Sample Date: Sample Time:	SF POC-1Z 10/14/19 1000		)		
Equipment <sup>D</sup> urging Informat	Sampling Equipmen Filtering Equipment	ng Equipment O.45.00 Initial Conductance (mS/cr Reference Point		3 volfper Horbafper 0.450m		nS/cm):	Did not record initial				
Unit Casing Volume [b] (gal/ft) Depth to Water [c] (ft, bgs): Depth to Bottom of Well [d] (ft, bgs):		t, bgs):	0.04 13.36 29.60			Length of Static Water Column [e] = [d] - [c] ( Casing Water Volume [f] = [b] x [e] (gal) Total Purged Volume [g] (gal): Number of Purged Volumes [h] = [g] / [f]:			0.65 2 73		
Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pН	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description		
0940	-	0.75	12.20	7.14	67	2.68	>990	6.84			
6945	~	1.5	12.14	7.06	77	7.69	7999	5.22			
०९५१		2.0	12.20	7.07	79	7.65	7999	5.71			
	ér (		3			3					
				and T		N Si					
				1			-				
urged Dry (Y/N):	N	Provide 11	- 13		195				9		
asing Volume	4				Additional Rer	marks					
(	ng I.D. in.) 1.0	Unit Casing V Gal/Lin. F 0.04	olume t.)	in the second se	Wa	aited fo	r tu	vbidil	ry to		
	1.5 2.0 2.2 3.0 4.0 1.3 5.0 5.0	0.09 0.16 0.20 0.37 0.65 0.75 1.00 1.55			drop Sau	narks aited fe to to t	270	DO NI TU	Lefare		
7.0 <u>2.00</u> 8.0 <u>2.60</u>			1922								

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	СОМ			Site Nam	lwater Pur			Page	,	1
Office Address:			Wel	Identifica	ation	00-15		1	_/ of _	<u> </u>
Project Numbe	r:	6061462	58			Sampled By:	SE			
Site Name:		Celowyo			2	Sample ID:	Poc-I	2	1.	
Location:		CMP		-	-	NORM BARRAN			10	
			-			Sample Date: Sample Time:	<u>    iol</u> [4	114		
Equipment		1.1.1.1		1		Field Parameters		1		
	Purging Method/Equ	upment	Jud	001		Initial V	Vater Temp. (C	,		2
	Sampling Equipmen	t	Hack	al Art	1.000	Initial p			-35	
	Filtering Equipment		0,45	at post				0/	12	/
	r nonig equipment		_07.5	and			Conductance (m nce Point	15/cm):	- /	
Purging Inform			1.0							
	Casing I.D. [a] (in.):					Length of Static W				
	Unit Casing Volume		0.0			Casing Water Volu	ime [f] = [b] x [e	] (gal)	0.29	
	Depth to Water [c] (		21.9		-	Total Purged Volur				2. Side
	Depth to Bottom of V	Well [d] (ft, bgs):	- 29.2	25		Number of Purged	Volumes [h] = [	[g] / [f]:	>3	
Time	Water Level	Volume Purged	Temp	pН	ORP	Conductance	Turbidity	DO	Water	Description
	(ft bgs)	(gal)	(C)		mV	(mS/cm)	(NTU)	(mg/L		
	-	-	8.10	7.15	112	2.65	7999	7.49	initial	
		A Dec								
						and the second				1.000
-										154
			-				123			
	191									
						i i i i i i i i i i i i i i i i i i i				1000
							1		1000	-
	ALC: NOT THE REAL					1		· · · · ·	10.01	
	1.12	per ser segretario				The second second				
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									-	The second
_									11	
Contraction of the second										
						A DATE OF STREET			<b>1</b>	100
8. · · ·										
5	1211									
Purged Dry (Y/N	1): N		- 20			1				
Casing Volume					Additional Re	marks				
Cas	sing I.D.	Unit Casing V						001		
	(in.) 1.0	Gal/Lin. F			Da	iled 1.c 11, samp a, ler	gall	ons	out of	
	1.5	0.04		-		0			in the second	
	2.0	0.16		-	we	Il, Sama	6 10	llert	2.11	
	2.2 3.0	0.20					eu	- cru	~~/	
	4.0	0.65			1	lor			/	
	4.3	0.75			60	and a				
	6.0	1.55								
	7.0 8.0	2.00								

Office Address:	COM	Groundwater Pur Site Name: Well Identification						Page	) of _/
Project Number Site Name: Location:		6061468 colow10 cMQ	2		-	Sampled By: Sample ID: Sample Date: Sample Time:	SF POC-1 10/14	4 19 125	
Equipment Purging Informa	Purging Method/Equ Sampling Equipmen Filtering Equipment	t	Jud Horibo	peri peri sun		Initial pl	Vater Temp. (C H: onductance (n nce Point		2
	Casing I.D. [a] (in.): Unit Casing Volume Depth to Water [c] (i Depth to Bottom of V	[b] (gal/ft) ft, bgs):	1,0 0,0 17,43 25.8			Length of Static Wa Casing Water Volu Total Purged Volun Number of Purged	me [f] = [b] x [e ne [g] (gal):	e] (gal)	8.42 0.34 1.5 z3
Time	Water Level	Volume Purged	Temp	рH	ORP	Conductance	Turbidity	DO	Water Description
20000	(ft bgs)	(gal)	(C)	7 21	mV	(mS/cm)	(NTU)	(mg/L	
0960	~	-	8.25	7,3	175	2.50	>999	11.16	Initial water
0905	-	0.5	_	7.06	167	7.61	7999	6.09	
0910		1.0	10.01	7.03	173	2.63	728	3.81	
0915	-	1.5	10.25	7.10	179	2.60	415	3.12	and the second second second
						-	1.1.1		and the second
I				1.144					3
							N 1820	A	
1.1.1.1							41	12 m	
									-
					1	•			
						34		1.1.1	
				0.					
Purged Dry (Y/N	): _ <b>\)</b>								A 92X
Casing Volume	8				Additional R	lemarks			
Cas	sing LD.	Unit Casing V	/olume	1	5	nal Turb:	la '	27	50
	(in.) Gal				F .)		erey .	· · · ·	30
	1.0	0.04		10.00	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				
	2.0	0.16							
	3.0	0.37							
	4.0 4.3	0.65		1					
	5.0 6.0	1.00							
	7.0	1.55							
	8.0	2.60							

AECOM Groundwater P						urge Log 0 10 Jy 0					
Office Address:		<u> </u>		I Identific	ation <u>PC</u>	06-15		Page	of	<u> </u>	
Project Number:		60614 CM	582	1	_	Sampled By:	SE				
Site Name:		CMP	V			Sample ID:	209	21-			
ocation:				1.00	5	Sample Date:	10/1	119	1		
			-1.24			Sample Time:	07	250			
Equipment		1		-		1.11.2.11.00.000					
-quipment	Purging Method/Equ	ipment	low	flow	ne).	Field Parameters	Vater Temp. ((	-			
	Sampling Equipment		Hack	alver	U	Initial p		·/ .	- 4		
	Filtering Equipment		0.45	win	Contraction of		Conductance (r	nS/cm):	/		
				50/01				ns/cm):			
Purging Informat	ion					Referen	nce Point				
	Casing I.D. [a] (in.):		1.0			Length of Static W	ater Column [e	e] = [d] - [c] (ft):	19.32		
	Unit Casing Volume		0.0		-	Casing Water Volu	ime [f] = [b] x [	e] (gal)	0.77		
	Depth to Water [c] (fi	, bgs):	_6.7		-	Total Purged Volur	ne [g] (gal):		3	1.0	
	Depth to Bottom of W	/ell [d] (ft, bgs):	_ 26	.03		Number of Purged	Volumes [h] =	[g] / [f]:	73		
Time	Water Level	Volume Purged	Temp	pH	ORP	Conductance	Turbidity	DO	Water Desc	ription	
in the second	(ft bgs)	(gal)	(C)		mV	(mS/cm)	(NTU)	(mg/L	Water Desci	ipuon	
6737	7	1	7.21	7.51	157	1.31	5.80	173			
0742		7	7.57	7.34	137	1.29	441	7.06			
0747		3	7.76	7.24	120		ZIL				
VIII	100		7. +0	TICY	100	1.29	616	6.12	14		
		(	1.1.1				-			and the second second	
1 The						×			1		
1.10								1000	IN CONTRACTOR	LY.	
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urged Dry (Y/N):	_N					· · · · · ·					
asing Volume	1			1	Additional Re	marks				_	
	ng I.D.	Unit Casing V	olume		5 T. R						
(	<b>n.)</b> 1.0	Gal/Lin. F	t.)								
	2.0	0.09			-						
2	2.2	0.16		- 2							
	3.0	0.37 0.65	-14								
	1.3	0.65			1. 1. 1. 1. 1.						
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5	5.0	1.00		- 515	and the second second						

AE	COM	2.575		Site Nan	dwater Pu ne: <u>Colo</u> c	N10_			
Office Address:			We	ell Identific	ation P	06-16		Page	of
Project Number		606146	82			Sampled By:	SF		
Site Name:		Colourgo	0			Sampled By: Sample ID:	POC-	16	
Location:		CMP		1 12		Sample Date:	10/15/		
				1		Sample Time:	0941		
Equipment						Field Parameters			
	Purging Method/Equ	lipment	1000 :	Flow/3	100			0	0
	Sampling Equipmen		Hach	alleri	00		Water Temp. (	C)	
	Filtering Equipment		-FWIN	SNM		Initial	Service and the service of the servi		
	0.17		_0.	CIVIT			Conductance (	mS/cm):	
Purging Informa	tion					Hetere	ence Point		
arging morma			1 0						
	Casing I.D. [a] (in.):		1.0		States of the	Length of Static V			
	Unit Casing Volume		9.0	٦	-	Casing Water Vol		e] (gal)	<u> </u>
	Depth to Water [c] (f		8.74			Total Purged Volu	ime [g] (gal):		
	Depth to Bottom of V	Vell [d] (ft, bgs):	31.90		de ar b	Number of Purgeo	d Volumes [h] =	[g] / [f]:	- 73
Time	Water Level	Volume Purged	Temp	pH	ORP	l Cart I	1		
	(ft bgs)	(gal)	(C)	ph	mV	Conductance	Turbidity	DO	Water Description
0918	-	-	8,99	6.88	84	(mS/cm) Z.6]	(NTU) >999	(mg/L	1.1.1
5500	1	1	7.97	6.77	88	7.54	7999	2.62	initial
8500		7	80.0	6.77					
0933		3	9.19		101	2.53	780	1.91	
- 05		2	4.19	6.71	113	2.55	171	1.92	
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mand D	N		-		-				
rged Dry (Y/N):									
sing Volume					Additional Re	emarks			
	ng I.D. n.)	Unit Casing Gal/Lin.	/olume						
	.0	0.04	-u)						
	.5	0.09		1.11					
2		0.20							
	.0	0.37							
4	.3	0.75							
	.0	1.00							
7	.0	2.00							
	.0	2.60							

The Support

Appendix C

**Temporary Monitoring Well Abandonment Forms** 

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60071-MH or MH File Number MH-	
Owners Well Designation- POC-1SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s) <u>Cascade Drilling</u> License # <u>1566</u>	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: (970) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of the second sec	).6
6. Legal Location: SE 1/4 of the NE 1/4, Sec 15, Twp 4 N or S , Range	e93 □ E or W 🔳 ,6_ P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	rom 🔲 E or W 🔲 Line.
Subdivision Name Lot, Block	, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number 60071-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>	
8. Aquifer Type: (check one)       Type I (One Confining Layer)       Type I (Multiple Confining UType II)         Image: Type I (Not Overlain by Type III)       Type I (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from <u>0</u> feet to <u>5</u> feet, from feet to feet, from	om feet to feet,
from <u>5</u> feet to <u>10</u> feet, from <u>feet to</u> feet, from <u>feet to</u> feet, from	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.68 cubic feet clean sandPouredfro	Interval m <u>5</u> feet to <u>20</u> feet
	m $0$ feet to $5$ feet
	m feet to feet
fro	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	2. The filing of a document that contains d/or revocation of the contracting license. If vith Rule 17.4
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike Martin, SR Operations Manager,	"4500
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60070-MH or MH File Number MH	
Owners Well Designation- POC-2SSSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)     Cascade Drilling     License # 1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( 303 ) 423-2547 Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( <u>970</u> ) <u>824-1200</u> Email: <u>ttennyson@tristategt.org</u>	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	.9
6. Legal Location: NW 1/4 of the SE 1/4, Sec 14, Twp 4 N or S , Range	93 E or W 🔳 , _6_ P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	
Subdivision Name Lot, Block	_, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>I' The well was plugged and sealed as required under Well Permit Number 60070-MH</li> </ul>	
The well was not in use and was plugged and sealed.	
Other (please explain)	
8. Aquifer Type: □ Type I (One Confining Layer) □ Type I (Multiple Confining Layer) □ Type II (Not Overlain by Type III) □ Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from <u>0</u> feet to <u>5</u> feet, from feet to feet, from	om feet to feet,
from <u>5</u> feet to <u>10</u> feet, from <u>feet to</u> feet, from <u>feet to</u> feet, from	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.85 cubic feet clean sandPoured	Interval
	m <u>5</u> feet to <u>25</u> feet m <u>0</u> feet to <u>5</u> feet
110	m feet to feet
	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	. This document is signed (or name entered 2. The filing of a document that contains I/or revocation of the contracting license. If
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinSR Operations Manager	
Mike Martin MUKE MOWUM Mike Martin, SR Operations Manager, a	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. The	a Wall Construction Contractoria

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60072-MH or MH File Number MH	
Owners Well Designation- POC-3SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)       Cascade Drilling       License #       1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of County	5.1
6. Legal Location: SW 1/4 of the SW 1/4, Sec 14, Twp 4 IN or S , Range	93 🔲 E or W 🔳 , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	om 🔟 E or W 🔲 Line.
Subdivision Name Lot, Block	, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>The well was plugged and sealed as required under Well Permit Number60072-MH</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li> </ul>	
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from feet to feet, from feet to feet, from	om feet to feet,
from <u>5</u> feet to <u>10</u> feet, from <u>feet to</u> feet, from <u>feet to</u> feet, from	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.68 cubic feet clean sandPoured	Interval m <u>5</u> feet to <u>20</u> feet
	m feet to feet
	m feet to feet
	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If rith Rule 17.4.
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike Martin, SR Operations Manager, H	#4.500
	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

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WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60074-MH or MH File Number MH	
Owners Well Designation- POC-4SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s) Cascade Drilling License # 1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( <u>970</u> ) <u>824-1200</u> Email: <u>ttennyson@tristategt.org</u>	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	9.5
6. Legal Location: <u>NE</u> 1/4 of the <u>SE</u> 1/4, Sec <u>22</u> , Twp <u>4</u> N or S , Range	93 🔲 E or W 🔳 , _6_ P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	om 🔲 E or W 🔲 Line.
Subdivision Name Lot, Block	, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>The well was plugged and sealed as required under Well Permit Number60074-MH</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li> </ul>	
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from <u>0</u> feet to <u>5</u> feet, from <u>feet to </u> feet, from <u>feet to feet</u> , from <u>feet</u> , feet, f	om feet to feet,
	om feet to feet,
10. Amount and Type of MaterialMethod of Placement1.02 cubic feet clean sandPoured	Interval m <u>5</u> feet to <u>30</u> feet
	m $0$ feet to $5$ feet to $5$
	m feet to feet
from	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If rith Rule 17.4.
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinMike MartinMike Martin, SR Operations Manager, F	#4.500
	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. The responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

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WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60073-MH or MH File Number MH	
Owners Well Designation- POC-5SSSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)       Cascade Drilling       License #       1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat UTM Zone 12 or Zone 13 Easting <u>262851.8</u> Northing <u>4467271</u>	.3
6. Legal Location: NW 1/4 of the NE 1/4, Sec 14, Twp 4 N or S , Range	93 🔲 E or W 🔳 , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	om 🔟 E or W 🔲 Line.
Subdivision Name Lot, Block	, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number60073-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>	
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from <u>0</u> feet to <u>5</u> feet, from <u>feet to </u> feet, from <u>feet to feet</u> , from <u>feet</u> , feet, from <u>feet</u> , feet,	om feet to feet,
from feet to feet, from feet to feet, from	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.85 cubic feet clean sandPoured	Interval m <u>5</u> feet to <u>25</u> feet
	m $\underline{\qquad}$ feet to $\underline{\qquad}$ feet to $\underline{\qquad}$ feet
	m feet to feet
fro	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If rith Rule 17.4.
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinMike MartinMike MartinSR Operations Manager, S	#4.500
Mike Martin Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

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WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60096-MH or MH File Number MH	
Owners Well Designation- POC-6SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)       Cascade Drilling       License #       1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat UTM Zone 12 or Zone 13 Easting <u>264025.5</u> Northing <u>4468759</u>	9.1
6. Legal Location: SE 1/4 of the SW 1/4, Sec 36, Twp 5 N or S , Range	93 🔲 E or W 🔳 , _6_ P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	om 🔲 E or W 🔲 Line.
Subdivision Name Lot, Block	, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number60096-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>	
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from feet to feet, from feet to feet, from	om feet to feet,
from feet to feet, from feet to feet, fro	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.44 cubic feet clean sandPoured	Interval m <u>5</u> feet to <u>13</u> feet
	m <u>0</u> feet to <u>5</u> feet
	m feet to feet
	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	<ul> <li>This document is signed (or name entered</li> <li>The filing of a document that contains</li> <li>d/or revocation of the contracting license. If</li> <li>the Rule 17.4.</li> </ul>
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinMike MartinMike MartinSR Operations Manager, and State	#4.500
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

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WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60095-MH or MH File Number MH	
Owners Well Designation- POC-7SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)       Cascade Drilling       License #       1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of the second sec	3.7
6. Legal Location: NW 1/4 of the NW 1/4, Sec 31, Twp 4 N or S , Range	92 🔲 E or W 🔳 , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	rom <u> </u>
Subdivision Name Lot, Block	_, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number60095-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>	
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)	
9. Intervals of Casing Removed/Ripped:	
from feet to feet, from feet to feet, from	om feet to feet,
from feet to feet, from feet to feet, fro	om feet to feet,
10. Amount and Type of MaterialMethod of Placement1.09 cubic feet clean sandPoured	Interval m <u>5</u> feet to <u>32</u> feet
	m <u>0</u> feet to <u>5</u> feet
	m feet to feet
	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If rith Rule 17.4.
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike MartinStructureMike MartinMike MartinMike Martin	
	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is

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WELL ABANDONMENT REPORT				
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side				
1. Well Permit Number of plugged well 60097-MH or MH File Number MH				
Owners Well Designation- POC-8SSSSSSSSSSSSS Receipt Number:				
2. Individual/Company responsible for plugging and sealing the well:				
Name(s)     Cascade Drilling     License # 1566				
Mailing Address 1380 South Cherokee Street				
City, St., Zip Denver, CO 80233				
Phone ( <u>303</u> ) <u>423-2547</u> Email				
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.				
Phone: ( <u>970</u> ) <u>824-1200</u> Email: <u>ttennyson@tristategt.org</u>				
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641				
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641				
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	5.0			
6. Legal Location: $\frac{NE}{1/4}$ of the $\frac{SW}{1/4}$ , Sec $\frac{35}{.}$ , Twp $\frac{4}{.}$ IV or S , Range				
Distance from Section Lines Ft. From N or S , Ft. Fr				
Subdivision Name reference Lot, Block, Filing/Unit				
7. I/we report the existing well/hole was plugged and sealed on				
The well was not in use and was plugged and sealed. Other (please explain)				
<b>8. Aquifer Type:</b> Type I (One Confining Layer)	ng Layer) 🔲 Laramie-Fox Hills			
(check one) Type II (Not Overlain by Type III) Type II (Overlain by Type	e III 🔹 Type III (alluvial)			
9. Intervals of Casing Removed/Ripped:	fact to fact			
from feet to feet, from feet to feet to feet, from feet to	om feet to feet,			
10. Amount and Type of Material       Method of Placement	Interval			
	m <u>5</u> feet to <u>20</u> feet			
	m0 feet to5 feet			
fro	m feet to feet			
fro	m feet to feet			
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	2. The filing of a document that contains d/or revocation of the contracting license. If			
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinMike MartinMike MartinStructureStructure				
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021			
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e well construction contractor is			

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WELL ABANDONMENT REPORT			
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side			
1. Well Permit Number of plugged well 60078-MH or MH File Number MH			
Owners Well Designation- POC-9SSSSSSSSSSS Receipt Number:			
2. Individual/Company responsible for plugging and sealing the well:			
Name(s) Cascade Drilling License # 1566			
Mailing Address 1380 South Cherokee Street			
City, St., Zip Denver, CO 80233			
Phone ( <u>303</u> ) <u>423-2547</u> Email			
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.			
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org			
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641			
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641			
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of the second sec	2.5		
6. Legal Location: SE 1/4 of the SW 1/4, Sec 26, Twp 4 IN or S , Range	e <u>93</u> 🔲 E or W 🔳 , <u>6</u> P.M.		
Distance from Section Lines Ft. From N or S , Ft. From E or W Line.			
Subdivision Name Lot, Block	, Filing/Unit		
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number 60078-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>			
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)			
9. Intervals of Casing Removed/Ripped:			
from <u>0</u> feet to <u>11</u> feet, from <u>feet to feet, from <u>feet</u> feet to <u>feet</u> feet, from <u>feet</u> feet for the feet feet feet feet feet feet feet </u>	om feet to feet,		
from feet to feet, from feet to feet, from	om feet to feet,		
10. Amount and Type of MaterialMethod of Placement0.37 cubic feet clean sandPouredfro	Interval m <u>5</u> feet to <u>11</u> feet		
	m $0$ feet to $5$ feet		
	m feet to feet		
fro	m feet to feet		
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If vith Rule 17.4		
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike MartinSR Operations Manager, S	"4500		
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021		
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is		

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60079-MH or MH File Number MH	
Owners Well Designation- POC-10SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)     Cascade Drilling     License #     1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: (970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	0.2
6. Legal Location: NE 1/4 of the SW 1/4, Sec 26, Twp 4 IN or S , Range	<u>93</u> E or W <b>.</b> , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	
Subdivision Name Lot, Block	_, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>The well was plugged and sealed as required under Well Permit Number 60079-MH</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li></ul>	
8. Aquifer Type: Description: Type I (One Confining Layer) Description: Type I (Multiple Confining Layer)	
(check one) Type II (Not Overlain by Type III) Type II (Overlain by Typ 9. Intervals of Casing Removed/Ripped:	e III 🔹 Type III (alluvial)
from <u>0</u> feet to <u>5</u> feet, from <u>feet to feet, from <u>6</u> feet to <u>5</u> feet, from <u>6</u> feet to <u>6</u> feet, from feet to <u>6</u> feet to <u>6</u> feet, from <u>6</u> feet to feet to feet</u>	om feet to feet,
from feet to feet, from feet to feet, from	om feet to feet,
10. Amount and Type of MaterialMethod of Placement0.85 cubic feet clean sandPouredfromfrom	Interval m <u>5</u> feet to <u>25</u> feet
110	m $0$ feet to $5$ feet to
	m feet to feet
	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 f false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	. This document is signed (or name entered 2. The filing of a document that contains I/or revocation of the contracting license. If
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinSR Operations Manager, and State	
Mike Martin MUKe MOUTUN Mike Martin, SR Operations Manager, a	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. The	Well Construction Contractor is
is the responsibility of the well owner to have the well/hole property plugged and sealed. The	

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60080-MH or MH File Number MH	
Owners Well Designation- POC-11SSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)     Cascade Drilling     License #     1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: (970 ) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	3.2
6. Legal Location: NE 1/4 of the NW 1/4, Sec 26, Twp 4 N or S , Range	93 🔲 E or W 🔳 , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S , Ft. Fr	
Subdivision Name Lot, Block	_, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number60080-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>	
8. Aquifer Type: Type I (One Confining Layer) Type I (Multiple Confining	ng Layer) 🔲 Laramie-Fox Hills
(check one) Type II (Not Overlain by Type III) Type II (Overlain by Type	e III 🔹 Type III (alluvial)
9. Intervals of Casing Removed/Ripped:	and fact to fact
from <u>0</u> feet to <u>5</u> feet, from <u>feet to feet, from <u>feet to feet</u>, from <u>feet</u>, fro</u>	om feet to feet,
10. Amount and Type of Material       Method of Placement	Interval
	m <u>5</u> feet to <u>24</u> feet
	m0 feet to5 feet
fro	m feet to feet
fro	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	2. The filing of a document that contains d/or revocation of the contracting license. If
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike Martin, SR Operations Manager, 3	"1500
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e well construction Contractor IS

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only
WELL ABANDONMENT REPORT	
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	
1. Well Permit Number of plugged well 60075-MH or MH File Number MH	
Owners Well Designation- POC-12SSSSSSSSSSSSSSSS Receipt Number:	
2. Individual/Company responsible for plugging and sealing the well:	
Name(s)   Cascade Drilling   License #   1566	
Mailing Address 1380 South Cherokee Street	
City, St., Zip Denver, CO 80233	
Phone ( <u>303</u> ) <u>423-2547</u> Email	
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.	
Phone: (970) 824-1200 Email: ttennyson@tristategt.org	
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641	
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641	
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Construction of the second	.8
6. Legal Location: SW 1/4 of the <u>NE</u> 1/4, Sec <u>24</u> , Twp <u>4</u> N or S , Range	93 E or W 🔳 , <u>6</u> P.M.
Distance from Section Lines Ft. From N or S, Ft. Fr	
Subdivision Name Lot, Block	_, Filing/Unit
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>The well was plugged and sealed as required under Well Permit Number 60075-MH</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li></ul>	
8. Aquifer Type:	ng Layer) 🗖 Laramie-Fox Hills
(check one) Type II (Not Overlain by Type III) Type II (Overlain by Type	
9. Intervals of Casing Removed/Ripped:	
from <u>0</u> feet to <u>5</u> feet, from <u>feet to feet, from feet to feet, feet to feet, from feet to feet, feet to feet, from feet to feet, from feet to feet, feet to feet to feet, feet to fe</u>	
from feet to feet, from feet to	om feet to feet, Interval
	m $5$ feet to $30$ feet
	m feet to feet
fro	m feet to feet
fro	m feet to feet
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	2. The filing of a document that contains I/or revocation of the contracting license. If
11. Signature(s)Please Print the Name, Title, & LicenseMike MartinMike MartinMike MartinMike Martin, SR Operations Manager, and Statement	
Mike Martin Mike Martin, SR Operations Manager,	#1566 03/30/2021
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th	Well Construction Contractor in

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only		
WELL ABANDONMENT REPORT			
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side			
1. Well Permit Number of plugged well 60076-MH or MH File Number MH			
Owners Well Designation- POC-13SSSSSSSSSSS Receipt Number:			
2. Individual/Company responsible for plugging and sealing the well:			
Name(s)       Cascade Drilling       License #       1566			
Mailing Address 1380 South Cherokee Street			
City, St., Zip Denver, CO 80233			
Phone ( <u>303</u> ) <u>423-2547</u> Email			
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.			
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org			
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641			
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641			
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of the second sec	).8		
6. Legal Location: NW 1/4 of the NE 1/4, Sec 24, Twp 4 N or S , Range	93 🔲 E or W 🔳 , <u>6</u> P.M.		
Distance from Section Lines Ft. From N or S , Ft. From E or W Line.			
Subdivision Name Lot, Block	_, Filing/Unit		
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>The well was plugged and sealed as required under Well Permit Number60076-MH</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li> </ul>			
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)			
9. Intervals of Casing Removed/Ripped:			
from <u>0</u> feet to <u>5</u> feet, from <u>feet to </u> feet, from <u>feet to feet</u> , from <u>feet</u> , feet, from <u>feet</u> , feet,	om feet to feet,		
from <u>5</u> feet to <u>10</u> feet, from <u>feet to</u> feet, from	om feet to feet,		
10. Amount and Type of MaterialMethod of Placement0.85 cubic feet clean sandPouredfrom	Interval m <u>5</u> feet to <u>25</u> feet		
	m <u>0</u> feet to <u>5</u> feet		
	m feet to feet		
fro	m feet to feet		
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance we	2. The filing of a document that contains d/or revocation of the contracting license. If rith Rule 17.4.		
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike Martin, SR Operations Manager, F			
	#1566 03/30/2021		
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is		

Form No GWS-09STATE OF COLORADO, OFFICE OF THE STATE ENG 1313 Sherman St., Room 821, Denver, CO 80203 303.8 dwr.colorado.gov and dwrpermitsonline@state.co.us03/2017			
WELL ABANDONMENT REPORT			
Use to report plugging and sealing of permitted wells, monitoring and o or print in black or blue ink. Instructions and plugging standards are on			
1. Well Permit Number of plugged well 60077-MH or MH File Number /			
Owners Well Designation- POC-14SSSSSSSSSSSS Receipt Number	·		
2. Individual/Company responsible for plugging and sealing the we	ell:		
Name(s) <u>Cascade Drilling</u> License # <u>1566</u>			
Mailing Address 1380 South Cherokee Street			
City, St., Zip Denver, CO 80233			
Phone ( 303 ) 423-2547 Email			
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.			
Phone: (970 ) <u>824-1200</u> Email: <u>ttennyson@tr</u>	stategt.org		
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 8	641		
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641			
<b>5. GPS Well Location:</b> County Moffat UTM 2 Zone 12 or 2 Zone 13 Easting 264728.5	Northing 4465705.5		
6. Legal Location: <u>NE</u> 1/4 of the <u>NW</u> 1/4, Sec <u>24</u> , Twp <u>4</u>			
Distance from Section Lines Ft. From N or S ,			
Subdivision Name Filing/Unit Lot, Block, Filing/Unit			
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on</li> <li>The well was plugged and sealed as required under Well Permit N</li> <li>The well was not in use and was plugged and sealed.</li> <li>Other (please explain)</li> </ul>			
8. Aquifer Type: D Type I (One Confining Layer) D Type	I (Multiple Confining Layer) Laramie-Fox Hills II (Overlain by Type III II Type III (alluvial)		
9. Intervals of Casing Removed/Ripped:			
from <u>None</u> feet to feet, from feet to			
from feet to feet, from feet to			
10. Amount and Type of Material Method of Pla None - Well was impacted by			
a wildfire Casing was melted and	from feet to feet		
broke off at ground level. Well was			
collasped.	from feet to feet from feet to feet		
I have read the statements made herein and know the contents thereof, and they are			
if filing online) and certified in accordance with Rule 17.4 of the Water Well Construct false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by filing online the State Engineer considers the entry of the licensed contractor's name	tion Rules, 2 CCR 402 2. The filing of a document that contains fines up to \$1,000 and/or revocation of the contracting license. If		
	ne, Title, & License No. Date		
Mike Martin Mike Martin Mike Martin, SR Ope	erations Manager, #1566 03/30/2021		
It is the responsibility of the well owner to have the well/hole properly plug responsible for notifying the owner of this requirement in writing.	ged and sealed. The Well Construction Contractor is		

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WELL ABANDONMENT REPORT				
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side				
1. Well Permit Number of plugged well 60099-MH or MH File Number MH-				
Owners Well Designation- POC-15SSSSSSSSSSS Receipt Number:				
2. Individual/Company responsible for plugging and sealing the well:				
Name(s) <u>Cascade Drilling</u> License # <u>1566</u>				
Mailing Address 1380 South Cherokee Street				
City, St., Zip Denver, CO 80233				
Phone ( <u>303</u> ) <u>423-2547</u> Email				
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.				
Phone: (970) 824-1200 Email: ttennyson@tristategt.org				
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641				
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641				
5. GPS Well Location: County Moffat         UTM       Zone 12 or         Image: Contract of the second sec	9.9			
6. Legal Location: NE 1/4 of the SE 1/4, Sec 36, Twp 5 N or S, Range	e93 □ E or W 🔳 ,6_ P.M.			
Distance from Section Lines Ft. From N or S , Ft. From E or W Line.				
Subdivision Name Lot, Block	, Filing/Unit			
<ul> <li>7. I/we report the existing well/hole was plugged and sealed on03/29/2021</li> <li>✓ The well was plugged and sealed as required under Well Permit Number 60099-MH</li> <li>☐ The well was not in use and was plugged and sealed.</li> <li>☐ Other (please explain)</li> </ul>				
8. Aquifer Type:       Type I (One Confining Layer)       Type I (Multiple Confining Layer)         (check one)       Type II (Not Overlain by Type III)       Type II (Overlain by Type III)				
9. Intervals of Casing Removed/Ripped:				
from <u>0</u> feet to <u>5</u> feet, from feet to feet, from	om feet to feet,			
from feet to feet, from feet to feet, from	om feet to feet,			
10. Amount and Type of MaterialMethod of Placement0.85 cubic feet clean sandPouredfro	Interval m <u>5</u> feet to <u>25</u> feet			
	m <u>0</u> feet to <u>5</u> feet			
	m feet to feet			
fro	m feet to feet			
I have read the statements made herein and know the contents thereof, and they are true to my knowledge if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance w	2. The filing of a document that contains d/or revocation of the contracting license. If			
11. Signature(s)Please Print the Name, Title, & LicensMike MartinMike MartinMike MartinMike Martin, SR Operations Manger, #	1500			
Mike Martin Mike Martin, SR Operations Manger, #	1566 03/30/2021			
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. Th responsible for notifying the owner of this requirement in writing.	e Well Construction Contractor is			

Form NoSTATE OF COLORADO, OFFICE OF THE STATE ENGINEERGWS-091313 Sherman St., Room 821, Denver, CO 80203 303.866.358103/2017dwr.colorado.govanddwrpermitsonline@state.co.us	For Office Use Only		
WELL ABANDONMENT REPORT	-		
Use to report plugging and sealing of permitted wells, monitoring and other holes. Type or print in black or blue ink. Instructions and plugging standards are on reverse side	_		
1. Well Permit Number of plugged well 60069-MH or MH File Number MH	_		
Owners Well Designation- POC-16SSSSSSSSSSSSS Receipt Number:			
2. Individual/Company responsible for plugging and sealing the well:	-		
Name(s) Cascade Drilling License # 1566			
Mailing Address 1380 South Cherokee Street			
City, St., Zip Denver, CO 80233			
Phone ( 303 ) 423-2547 Email			
3. Well (Hole) Owner: Name(s): Colowyo Coal Company L.P.			
Phone: ( 970 ) 824-1200 Email: ttennyson@tristategt.org			
Mailing Address, City, St., Zip: 5731 State Highway 13 Meeker, CO 81641			
4. Well Location Address: 5731 State Highway 13 Meeker, CO 81641			
5. GPS Well Location: County Moffat	4.2		
UTM $\Box$ Zone 12 or $\blacksquare$ Zone 13 Easting <u>263616.4</u> Northing <u>446813</u>			
6. Legal Location: <u>NE</u> 1/4 of the <u>SE</u> 1/4, Sec <u>11</u> , Twp <u>4</u> ■ N or S , Range <u>93</u> E or W <u>9</u> , <u>6</u> P.M. Distance from Section Lines Ft. From <u>1</u> N or S <u>1</u> , Ft. From <u>1</u> E or W <u>1</u> Line.			
Subdivision Name Ft. From K or S , Ft. From E or W Line.			
7. I/we report the existing well/hole was plugged and sealed on (date) for the following reason(s):			
$\checkmark$ The well was plugged and sealed as required under Well Permit Number <u>60069-MH</u> .			
The well was not in use and was plugged and sealed.			
Other (please explain) 8. Aquifer Type:  Type I (One Confining Layer)  Type I (Multiple Confining Layer)  Laramie-Fox Hills			
(check one) Type II (Not Overlain by Type III) Type II (Overlain by Type III)			
9. Intervals of Casing Removed/Ripped:			
from <u>0</u> feet to <u>5</u> feet, from <u>feet to </u> feet, fr			
	rom feet to feet,		
10. Amount and Type of MaterialMethod of Placement1.09 cubic feet clean sandPoured	Interval om <u>5</u> feet to <u>32</u> feet		
	$0 \qquad 0 \qquad \text{feet to } \underline{5} \qquad \text{feet to } \underline{5} \qquad \text{feet}$		
	om feet to feet		
	feet to feet		
I have read the statements made herein and know the contents thereof, and they are true to my knowledg if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 ar filing online the State Engineer considers the entry of the licensed contractor's name to be in compliance of the state for the	2. The filing of a document that contains nd/or revocation of the contracting license. If		
11. Signature(s)     Please Print the Name, Title, & Licent       Mike Martin     D. Operations	4500		
Mike Martin Mike Martin Mike Martin, SR Operations Manger, #	<sup>#1566</sup> 03/30/2021		
It is the responsibility of the well owner to have the well/hole properly plugged and sealed. T	he Well Construction Contractor is		
responsible for notifying the owner of this requirement in writing.			

# Exhibit 7 Hydrology Information

## Volume 2B

- Ground Water Quality Colowyo Coal Mine, Leonard Rice Consulting Water Engineers, Inc., 1979
- 6) Hydrologic and Erosional Characteristics of Regraded Surface Coal Mined Land in Colorado, Striffler and Rhodes, 1981
- 7) Modification of both Surface Water Monitoring and Alluvial Groundwater Monitoring Locations, 1991
- 8) Geotechnical Assessment East Taylor Pond, CTL/Thompson, Inc. 1995
- 9) Haulroad Culvert Redesign, 1997
- 10) Stoker Crusher Ditch, 1997
- 12) Section 16 Taylor Ditch, 1997
- 14) Lower Administration Building Small Area Exemption
- 15) Haul Road A Upper and Lower Ditches

## Volume 2C

- 14) Emergency Spillway, Temporary and Permanent Channel Designs, Existing Structures Summary Text
   Appendix Exh. 7-14A Emergency Spillway Outslope Channel Designs
   Appendix Exh. 7-14B Side Channel Designs (Temporary)
   Appendix Exh. 7-14E Streeter Gulch and Buckskin Draw Ditches (Permanent)
   Appendix Exh. 7-14F Coal Road Ditch
   Appendix Exh. 7-14P Small Area Exemption
   Appendix Exh. 7-14R East Pit Reclamation Area, Prospect Ditch, North Trib East Pit Ditch, Final East Pit Ditch
- 15) Stability Evaluation, Existing Sedimentation Pond Embankments, CTL/Thompson Inc. 1998
- 16) Adjudicated and permitted surface and groundwater locations within 1 mile of the Permit boundary
- 18) Gulch A Small Area Exemption
- 19) Point of Compliance Well Investigation Report Colowyo Mine, AECOM 2021

Exh. 7-14TOC-1

# Exhibit 7 Hydrology Information

## Volume 2B

- Ground Water Quality Colowyo Coal Mine, Leonard Rice Consulting Water Engineers, Inc., 1979
- 6) Hydrologic and Erosional Characteristics of Regraded Surface Coal Mined Land in Colorado, Striffler and Rhodes, 1981
- 7) Modification of both Surface Water Monitoring and Alluvial Groundwater Monitoring Locations, 1991
- 8) Geotechnical Assessment East Taylor Pond, CTL/Thompson, Inc. 1995
- 9) Haulroad Culvert Redesign, 1997
- 10) Stoker Crusher Ditch, 1997
- 12) Section 16 Taylor Ditch, 1997
- 14) Lower Administration Building Small Area Exemption
- 15) Haul Road A Upper and Lower Ditches

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- 14) Emergency Spillway, Temporary and Permanent Channel Designs, Existing Structures Summary Text
   Appendix Exh. 7-14A Emergency Spillway Outslope Channel Designs
   Appendix Exh. 7-14B Side Channel Designs (Temporary)
   Appendix Exh. 7-14E Streeter Gulch and Buckskin Draw Ditches (Permanent)
   Appendix Exh. 7-14F Coal Road Ditch
   Appendix Exh. 7-14P Small Area Exemption
   Appendix Exh. 7-14R East Pit Reclamation Area, Prospect Ditch, North Trib East Pit Ditch, Final East Pit Ditch
- 15) Stability Evaluation, Existing Sedimentation Pond Embankments, CTL/Thompson Inc. 1998
- 16) Adjudicated and permitted surface and groundwater locations within 1 mile of the Permit boundary
- 18) Gulch A Small Area Exemption
- 19) Point of Compliance Well Investigation Report Colowyo Mine, AECOM 2021

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- 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 upgradient 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.
- 13. LGSW-1 Located along Good Spring Creek, this site represents the down gradient condition below mining activities, and is designated as a "Point of Compliance" well for the alluvial aquifer on Good Spring Creek.
- 14. LWCW-1 Located below the confluence of Wilson and Taylor Creeks, this site respresents the down gradient condition below mining activities and is designated as a "Point of Compliance" well for the alluvial aquifer on Wilson and Taylor Creek.

рН	Conductivity at 25°C	Total Dissolved Solids	Bicarbonate (HCO <sub>3</sub> -) <sup>D</sup>	Calcium (Ca <sup>+2</sup> ) <sup>D</sup>
Magnesium (Mg <sup>+2</sup> ) <sup>D</sup>	Ammonia (NH <sub>3</sub> ) <sup>D</sup>	Nitrate <sup>D</sup>	Phosphate (PO <sub>4</sub> - <sup>3</sup> as P) <sup>D</sup>	Sodium (Na <sup>+</sup> ) <sup>D</sup>
Sulfate (SO <sub>4</sub> <sup>-2</sup> ) <sup>D</sup>	Arsenic (As) <sup>D</sup>	Iron (Fe) <sup>D</sup>	Lead (Pb) <sup>D</sup>	Manganese (Mn) <sup>D</sup>
Mercury (Hg) <sup>D</sup>	Selenium (Se) <sup>D</sup>	Zinc (Zn) <sup>D</sup>		
		D = Dissolved		

#### **Groundwater Laboratory Parameters**

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.

<u>Groundwater Fill Piezometers</u> - Monitoring of the West Pit fill piezometer 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 premine 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 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.