TRI-STATE

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:
Daniel Casiraro
B70D69F114324DE...

Daniel J. Casiraro
Senior Manager
Environmental Services

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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.**

Permit Number: **C-1981-019**

Date: **May 5, 2021**

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: **Colowyo Coal Company L.P.**

Permit Number: **C-1981-019**

Date: **May 5, 2021**

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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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
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39. Aqua Terra Consultants – Land Use Planning
40. Agapito Associates, Inc. – Geotehnical Engineering and Water Management
41. AECOM – Alluvial Groundwater Invesigation

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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 Reclamaiton 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 201A
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

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°-40°) to the south-southwest. The south flank dips to the north-northeast at around 10°±5°. 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°. 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

1) 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

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Exhibit 7 Item 19

Point of Compliance Well Investigation Report
Colowyo Mine

AECOM, 2021

AECOM Imagine it. Delivered.

Point of Compliance Well Investigation Report
Colowyo Mine

Project No. 60614862

April 29, 2021

Prepared for:

Elk Ridge Mining and Reclamation

Prepared by:

AECOM
7595 Technology Way
Denver, CO 80237
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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
N	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 pre-existing 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;

3. 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 standard are common at sites with naturally-occurring, poor quality 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;
3. 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

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Tables

Table 1 Temporary Monitoring Well Construction Details
Colowyo Mine, Meeker, Colorado

Drainage	Well Name	Permit No.	Installation Date	Installation Depth (ft. bgs)	Well Screen Interval (ft. bgs)	Depth to Water (ft. btoc)[1]	Measured Total Depth (ft. btoc)[1]	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 2 **Comparison of the Regulation No. 41 Basic Standards for Ground Water to Site Background Concentrations**
Colowyo Mine, Meeker, Colorado

Constituent	Units	Regulation 41 Human Health Standard[(1)]	Regulation 41 Drinking Water Standard[(1)]	Regulation 41 Agricultural Standard[(1)]	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[(3)]	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

				Dissolved Arsenic Concentration									
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background	% Exceeding Downgradient Well 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

Table 4 **Chloride Concentration Statistics in Temporary Site Monitoring Wells**
Colowyo Mine, Meeker, Colorado

Chloride Concentration										
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Site Background Value[3]	% 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.
(4) Non-detect sample results were assigned one-half of the reporting limit.

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

Field pH													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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	Drinking Water	8.5	8.4	0%	0%	0%
Wilson	POC-16	7	s.u.	7.3	6.7	7.6	8.5	Drinking Water	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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Dissolved Iron Concentration												
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background
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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Dissolved Manganese Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Dissolved Mercury Concentration														
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Nitrate (as N) Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Nitrate+Nitrite (as N) Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Nitrite (as N) Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Dissolved Selenium Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Sulfate Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% Exceeding Upgradient Well Background	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Total Dissolved Solids Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard using Upgradient Well Background[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

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

Dissolved Zinc Concentration													
Drainage	Well Name	No. of Samples[1]	Unit	Average	Minimum	Maximum	Groundwater Standard[2]	Standard Type	Upgradient Well Site Background Value[3]	Downgradient Well Site Background Value[4]	% Exceeding Groundwater Standard	% 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%

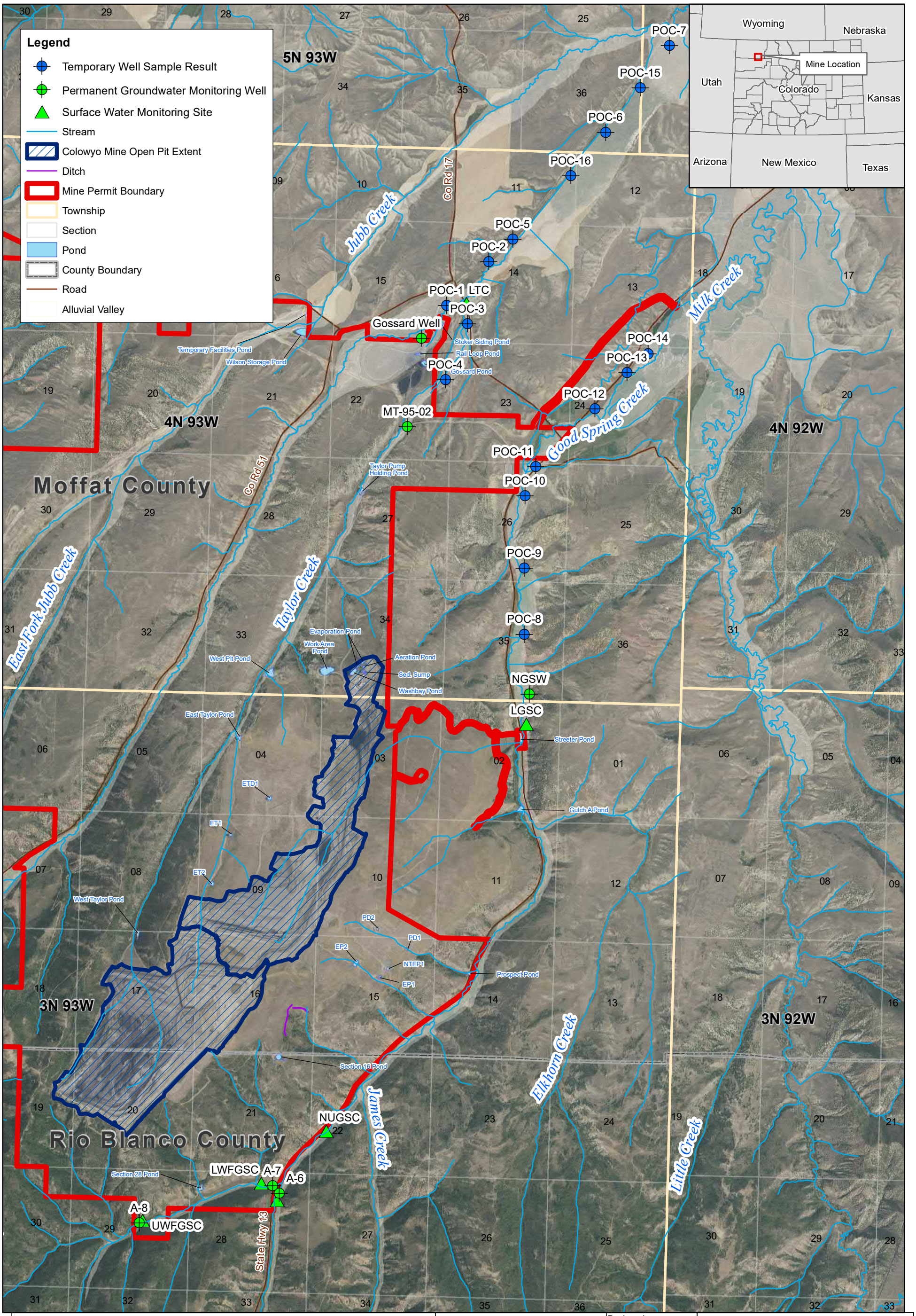
Notes:
mg/L = milligrams per liter
(1) The period of record used to calculate statistics was January 2015 through March 2020 for the existing permanent monitoring wells, and October 2019 through November 2020 for the temporary wells.
(2) Groundwater standard obtained from Colorado Department of Public 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.
(5) Non-detect sample results were assigned one-half of the reporting limit.

Table 16 Proposed Groundwater Compliance Standards
Colowyo Mine, Meeker, Colorado

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

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



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet

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Scale in Feet

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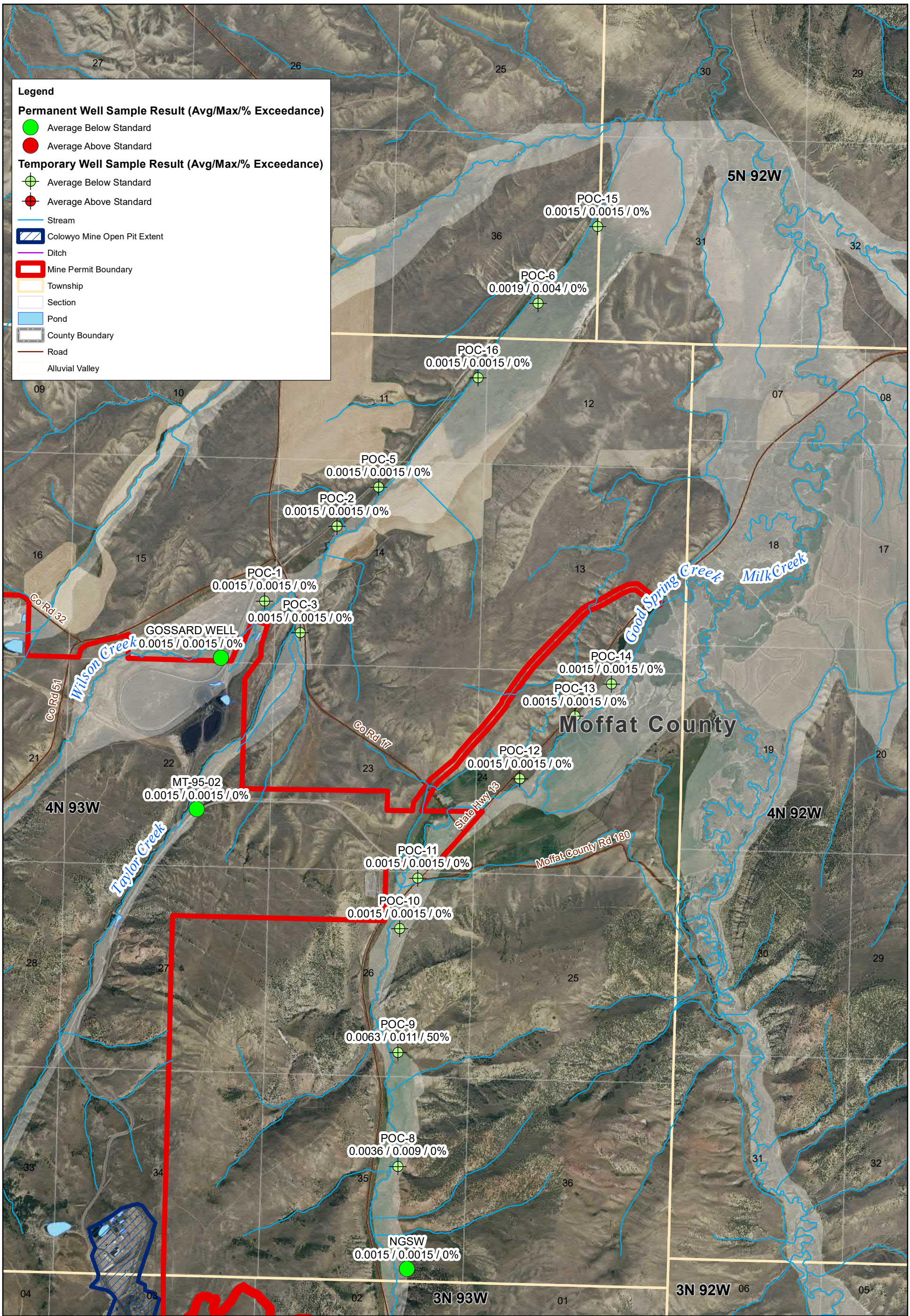
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 1
Colowyo Mine
Monitoring Well Network

Rio Blanco and Moffat Counties, Colorado
April 2021



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Dissolved Arsenic Concentrations Compared to
Human Health Groundwater Standard = 0.01 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

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Figure 2
Colowyo Mine
Temporary Monitoring Wells
Dissolved Arsenic Statistics
October 2019 to November 2020

Rio Blanco and Moffat Counties, Colorado
January 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
7.62 / 7.96 / 0%

POC-6
7.49 / 8.02 / 0%

POC-16
7.31 / 7.56 / 0%

POC-5
7.44 / 7.69 / 0%

POC-2
7.46 / 7.70 / 0%

POC-1
7.56 / 7.84 / 0%

POC-3
7.56 / 7.84 / 0%

GOSSARD WELL
7.74 / 8.01 / 0%

POC-14
7.41 / 7.66 / 0%

POC-13
7.93 / 10.60 / 14%

POC-12
7.37 / 7.55 / 0%

MT-95-02
7.42 / 7.68 / 0%

POC-11
7.34 / 7.60 / 0%

POC-10
7.42 / 7.68 / 0%

POC-9
7.62 / 7.67 / 0%

POC-8
7.53 / 8.27 / 0%

NGSW
7.51 / 8.01 / 0%

Wilson Creek
Good Spring Creek
Milk Creek
Taylor Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180
Moffat County

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Field pH Compared to
Drinking Water Groundwater Standard = 6.5 to 8.5 standard units
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

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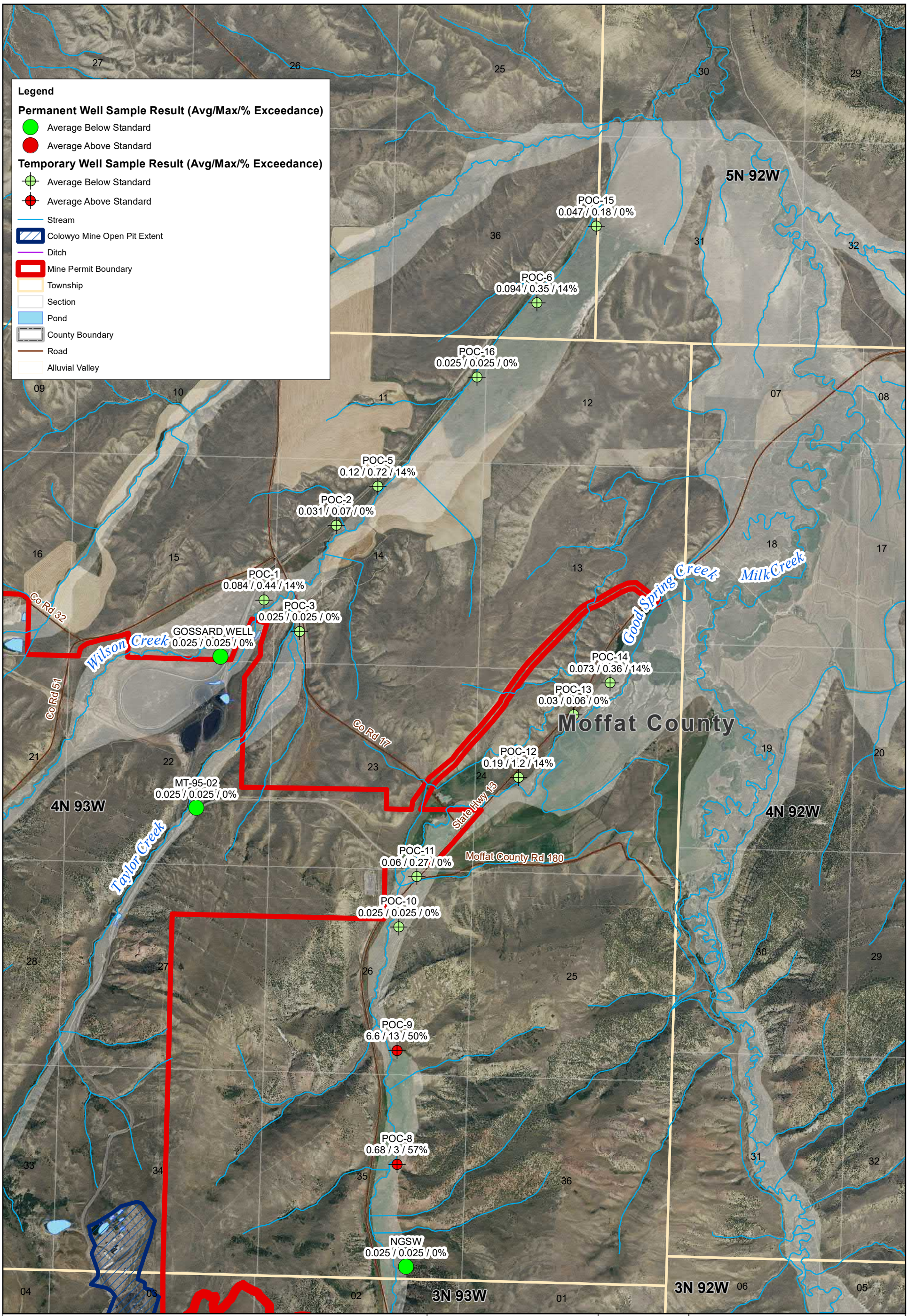
Figure 3
Colowyo Mine
Temporary Monitoring Wells
Field pH Statistics
October 2019 to November 2020

Rio Blanco and Moffat Counties, Colorado
January 2021



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Dissolved Iron concentrations compared to
Drinking Water Groundwater Standard = 0.3 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

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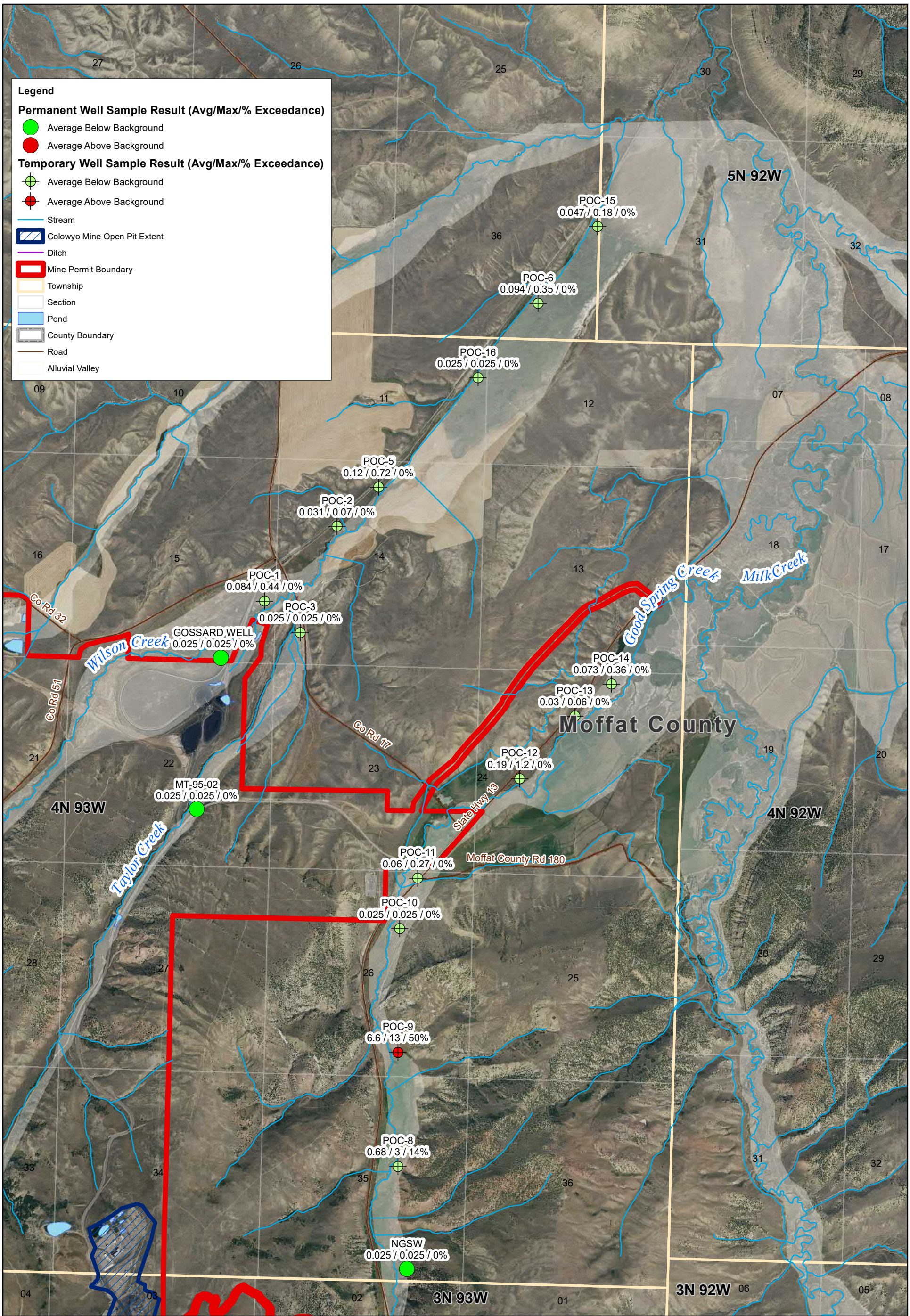
Figure 4
Colowyo Mine
Temporary Monitoring Wells
Dissolved Iron Statistics
(Regulation 41 Comparison)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
January 2021



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Dissolved Iron Concentrations compared to
Background UTL= 1.48 mg/l
UTL = Upper Tolerance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

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Scale in Feet

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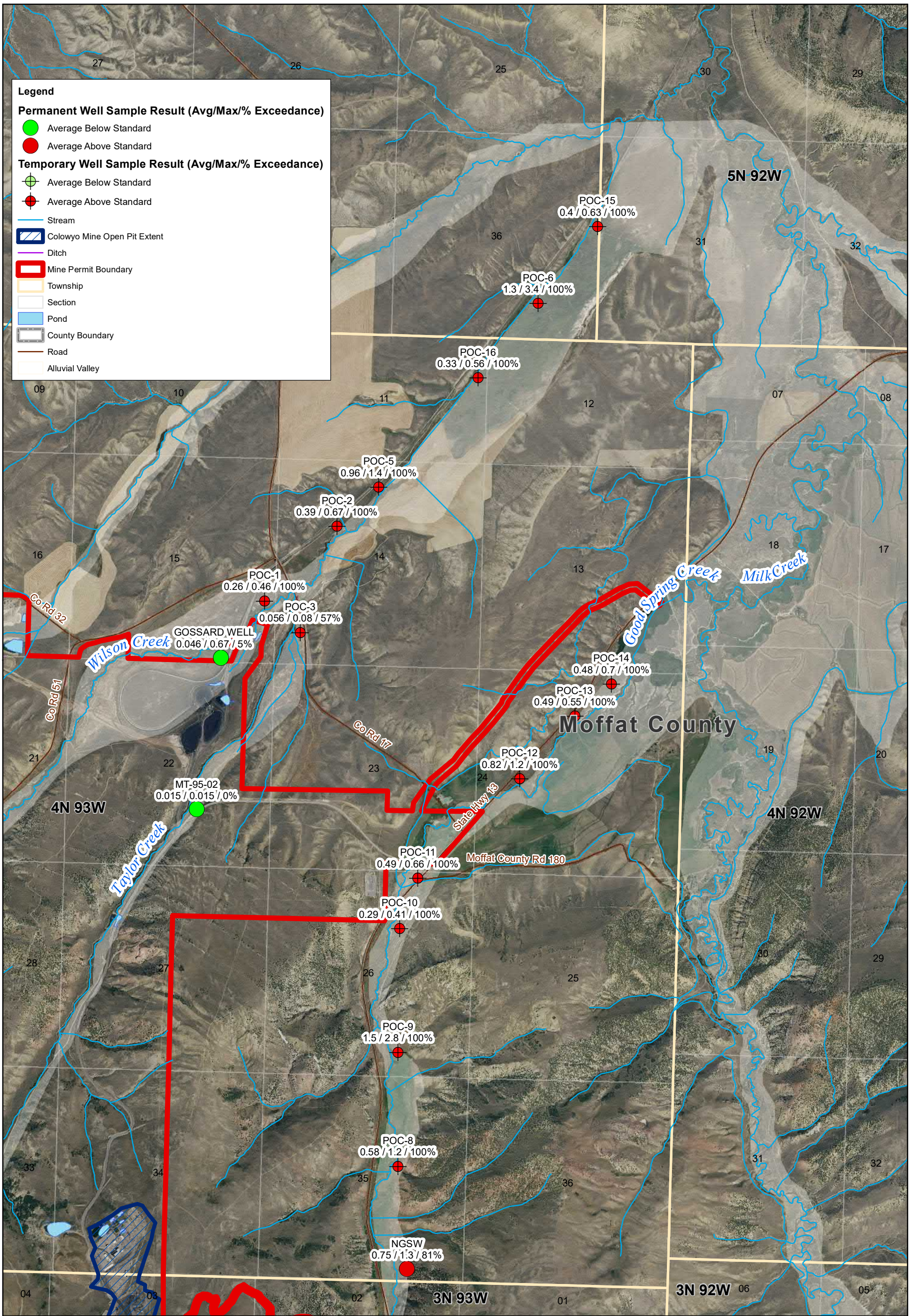
Figure 5
Colowyo Mine
Temporary Monitoring Wells
Dissolved Iron Statistics
(Upgradient Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
January 2021



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Manganese Concentrations compared to
Human Health Groundwater Standard = 0.05 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

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Scale in Feet

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Figure 6
Colowyo Mine
Temporary Monitoring Wells
Dissolved Manganese Statistics
(Regulation 41 Comparison)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
January 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
0.4 / 0.63 / 100%

POC-6
1.3 / 3.4 / 100%

POC-16
0.33 / 0.56 / 100%

POC-5
0.96 / 1.4 / 100%

POC-2
0.39 / 0.67 / 86%

POC-1
0.26 / 0.46 / 100%

POC-3
0.056 / 0.08 / 0%

GOSSARD WELL
0.046 / 0.67 / 5%

MT-95-02
0.015 / 0.015 / 0%

POC-14
0.48 / 0.7 / 100%

POC-13
0.49 / 0.55 / 100%

POC-12
0.82 / 1.2 / 100%

POC-11
0.49 / 0.66 / 100%

POC-10
0.29 / 0.41 / 86%

POC-9
1.5 / 2.8 / 100%

POC-8
0.58 / 1.2 / 86%

NGSW
0.75 / 1.3 / 76%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Manganese Concentrations compared to
Background UTL = 0.09 mg/l
UTL = Upper Tolerance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

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Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 7a
Colowyo Mine
Temporary Monitoring Wells
Dissolved Manganese Statistics
(Upgradient Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
0.4 / 0.63 / 0%

POC-6
1.3 / 3.4 / 71%

POC-16
0.33 / 0.56 / 0%

POC-5
0.96 / 1.4 / 86%

POC-2
0.39 / 0.67 / 0%

POC-1
0.26 / 0.46 / 0%

POC-3
0.056 / 0.08 / 0%

GOSSARD WELL
0.046 / 0.67 / 0%

MT-95-02
0.015 / 0.015 / 0%

POC-14
0.48 / 0.7 / 0%

POC-13
0.49 / 0.55 / 0%

POC-12
0.82 / 1.2 / 43%

POC-11
0.49 / 0.66 / 0%

POC-10
0.29 / 0.41 / 0%

POC-9
1.5 / 2.8 / 50%

POC-8
0.58 / 1.2 / 29%

NGSW
0.75 / 1.3 / 62%

Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180
Moffat County

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Manganese Concentrations compared to
Downgradient Well Background UTL = 0.75 mg/l
UTL = Upper Tolerance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

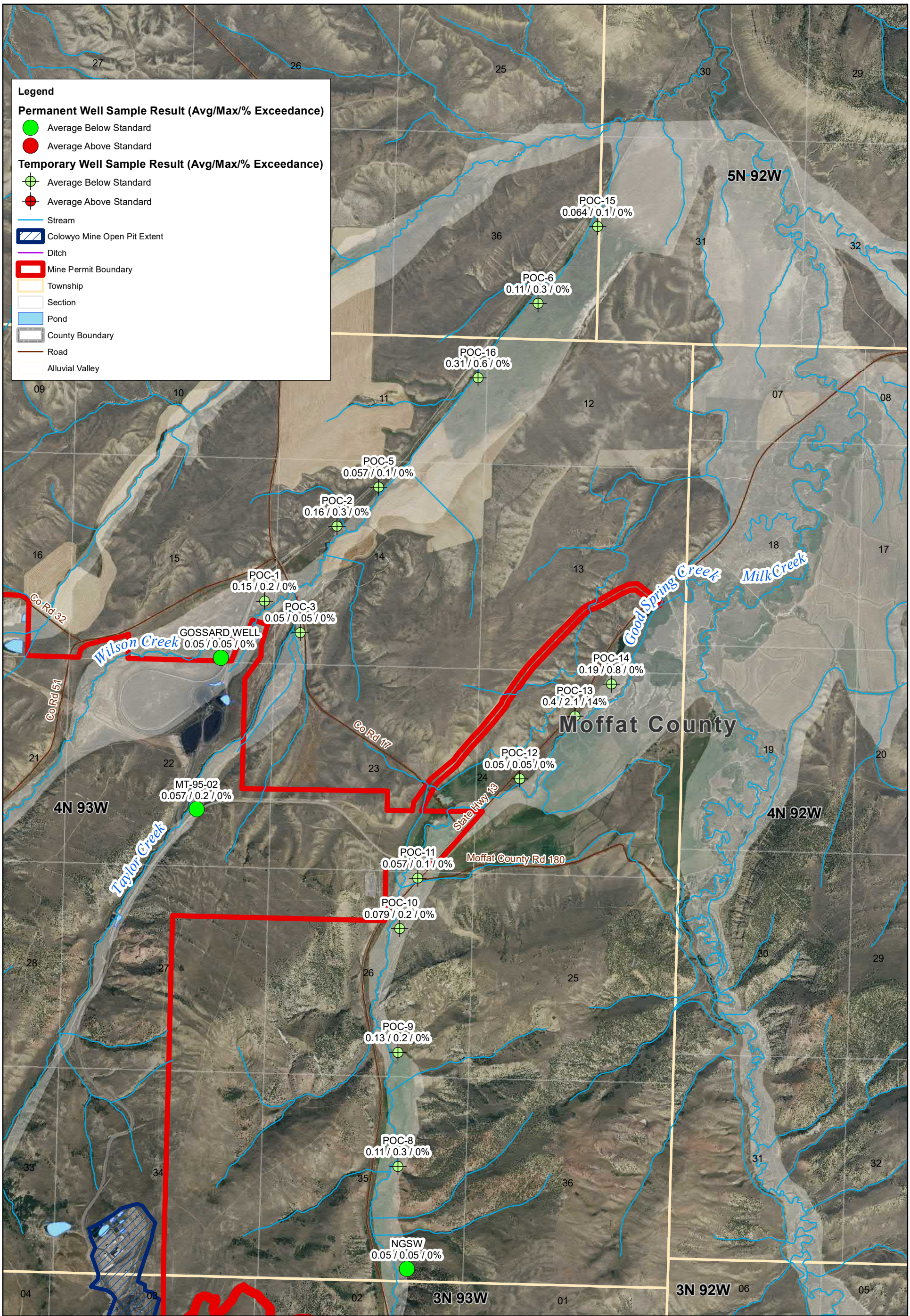
N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 7b
Colowyo Mine
Temporary Monitoring Wells
Dissolved Manganese Statistics
(Pre-1994 Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021



Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Nitrite (as N) Concentrations compared to
Human Health Groundwater Standard = 1.0 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N
W E
S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 8
Colowyo Mine
Temporary Monitoring Wells
Nitrite (as N) Statistics
October 2019 to November 2020

Rio Blanco and Moffat Counties, Colorado
January 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
0.0025 / 0.0025 / 0%

POC-6
0.0025 / 0.0025 / 0%

POC-16
0.026 / 0.027 / 100%

POC-5
0.0051 / 0.016 / 0%

POC-2
0.0025 / 0.0025 / 0%

POC-1
0.0071 / 0.01 / 0%

POC-3
0.0025 / 0.0025 / 0%

GOSSARD WELL
0.0044 / 0.009 / 0%

MT-95-02
0.0027 / 0.006 / 0%

POC-14
0.0031 / 0.007 / 0%

POC-13
0.0025 / 0.0025 / 0%

POC-12
0.0025 / 0.0025 / 0%

POC-11
0.0025 / 0.0025 / 0%

POC-10
0.0025 / 0.0025 / 0%

POC-9
0.0025 / 0.0025 / 0%

POC-8
0.0025 / 0.0025 / 0%

NGSW
0.0025 / 0.0025 / 0%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Good Spring Creek
Milk Creek
Taylor Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Selenium Concentrations compared to
Agricultural Groundwater Standard = 0.02 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 9
Colowyo Mine
Temporary Monitoring Wells
Dissolved Selenium Statistics
October 2019 to November 2020

Rio Blanco and Moffat Counties, Colorado
January 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
650 / 720 / 100%

POC-6
1300 / 2600 / 100%

POC-16
1900 / 2200 / 100%

POC-5
890 / 1100 / 100%

POC-2
600 / 650 / 100%

POC-1
580 / 660 / 100%

POC-3
1100 / 1200 / 100%

GOSSARD WELL
800 / 1000 / 100%

POC-14
1700 / 3000 / 100%

POC-13
1100 / 1300 / 100%

POC-12
1600 / 1700 / 100%

MT-95-02
950 / 1200 / 100%

POC-11
650 / 730 / 100%

POC-10
610 / 650 / 100%

POC-9
420 / 620 / 50%

POC-8
290 / 600 / 57%

NGSW
880 / 1000 / 100%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Sulfate Concentrations compared to
Drinking Water Groundwater Standard = 250 mg/l
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 10
Colowyo Mine
Temporary Monitoring Wells
Sulfate Statistics
(Regulation 41 Comparison)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
January 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
648 / 715 / 57%

POC-6
1330 / 2610 / 86%

POC-16
1933 / 2160 / 100%

POC-5
886 / 1100 / 86%

POC-2
597 / 645 / 14%

POC-1
578 / 661 / 29%

POC-3
1084 / 1180 / 100%

GOSSARD WELL
801 / 1030 / 100%

POC-14
1696 / 3030 / 100%

POC-13
1149 / 1330 / 100%

POC-12
1594 / 1720 / 100%

MT-95-02
949 / 1170 / 100%

POC-11
647 / 731 / 86%

POC-10
610 / 654 / 14%

POC-9
422 / 623 / 0%

POC-8
293 / 603 / 0%

NGSW
884 / 997 / 100%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Sulfate Concentrations compared to
Background UTL = 626 mg/l
UTL = Upper Tolerance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 11a
Colowyo Mine
Temporary Monitoring Wells
Sulfate Statistics
(Upgradient Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Above Background
- Average Below Background
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
648 / 715 / 0%

POC-6
1330 / 2610 / 86%

POC-16
1933 / 2160 / 100%

POC-5
886 / 1100 / 29%

POC-2
597 / 645 / 0%

POC-1
578 / 661 / 0%

POC-3
1084 / 1180 / 100%

GOSSARD WELL
801 / 1030 / 5%

MT-95-02
949 / 1170 / 14%

POC-14
1696 / 3030 / 100%

POC-13
1149 / 1330 / 71%

POC-12
1594 / 1720 / 100%

POC-11
647 / 731 / 0%

POC-10
610 / 654 / 0%

POC-9
422 / 623 / 0%

POC-8
293 / 603 / 0%

NGSW
884 / 997 / 0%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
Sulfate Concentrations compared to
Downgradient Well Background UTL = 997 mg/l
UTL = Upper Tolerance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 11b
Colowyo Mine
Temporary Monitoring Wells
Sulfate Statistics
(Pre-1994 Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Standard
- Average Above Standard
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
1600 / 2000 / 14%

POC-6
2700 / 5100 / 86%

POC-16
3800 / 4100 / 100%

POC-5
1900 / 2400 / 86%

POC-2
1400 / 1500 / 0%

POC-1
1400 / 1600 / 0%

POC-3
2400 / 2500 / 100%

GOSSARD WELL
1800 / 2200 / 90%

MT-95-02
2300 / 2600 / 100%

POC-14
3200 / 5400 / 100%

POC-13
2300 / 2800 / 100%

POC-12
3100 / 3500 / 100%

POC-11
1600 / 1800 / 43%

POC-10
1300 / 1600 / 0%

POC-9
1100 / 1500 / 0%

POC-8
1100 / 1600 / 0%

NGSW
1900 / 2200 / 100%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
TDS Concentrations compared to
Drinking Water Groundwater Standard = 1700 mg/l
Standard is 1.25 x Background (UTL = 1360 mg/l)
Colorado Regulation No. 41
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 12a
Colowyo Mine
Temporary Monitoring Wells
Total Dissolved Solids Statistics
(Regulation 41 Comparison)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021

Legend

Permanent Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background

Temporary Well Sample Result (Avg/Max/% Exceedance)

- Average Below Background
- Average Above Background
- Stream
- Colowyo Mine Open Pit Extent
- Ditch
- Mine Permit Boundary
- Township
- Section
- Pond
- County Boundary
- Road
- Alluvial Valley

POC-15
1600 / 2000 / 14%

POC-6
2700 / 5100 / 86%

POC-16
3800 / 4100 / 100%

POC-5
1900 / 2400 / 86%

POC-2
1400 / 1500 / 0%

POC-1
1400 / 1600 / 0%

POC-3
2400 / 2500 / 100%

GOSSARD WELL
1800 / 2200 / 33%

POC-14
3200 / 5400 / 100%

POC-13
2300 / 2800 / 86%

POC-12
3100 / 3500 / 100%

MT-95-02
2300 / 2600 / 100%

POC-11
1600 / 1800 / 0%

POC-10
1300 / 1600 / 0%

POC-9
1100 / 1500 / 0%

POC-8
1100 / 1600 / 0%

NGSW
1900 / 2200 / 71%

5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
State Hwy 13
Moffat County Rd 180

Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
Notes:
TDS Concentrations compared to
Downgradient Well Background UTL = 1840 mg/l
UTL = Upper Tolrance Limit with 95% Confidence
Statistics for Permanent Wells NGSW, MT-95-02,
and Gossard Well based on sampling from 2015 - 2020

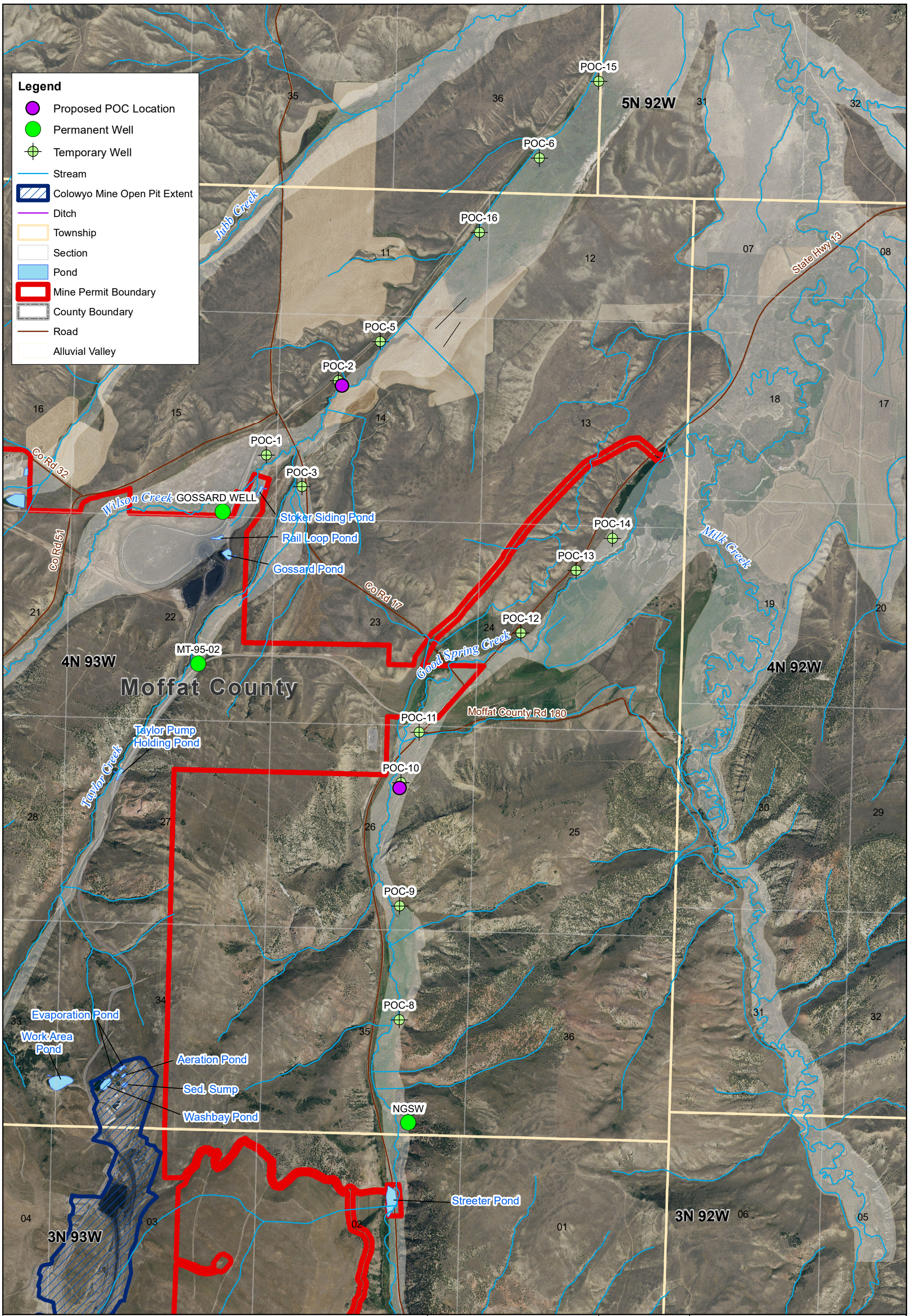
N W E S

0 1,000 2,000 4,000
Scale in Feet

AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770

Designed	DE
Drawn	DE
Checked	MF
Peer Review	MS
Project Manager	AB
Project Number	60614862

Figure 12b
Colowyo Mine
Temporary Monitoring Wells
Total Dissolved Solids Statistics
(Pre-1994 Background)
October 2019 to November 2020
Rio Blanco and Moffat Counties, Colorado
February 2021


Legend
Proposed POC Location
Permanent Well
Temporary Well
Stream
Colowyo Mine Open Pit Extent
Ditch
Township
Section
Pond
Mine Permit Boundary
County Boundary
Road
Alluvial Valley
POC-15
POC-6
POC-16
POC-5
POC-2
POC-1
POC-3
GOSSARD WELL
Stoker Siding Pond
Rail Loop Pond
Gossard Pond
POC-14
POC-13
POC-12
MT-95-02
POC-11
POC-10
Taylor Pump Holding Pond
POC-9
POC-8
NGSW
Evaporation Pond
Work Area Pond
Aeration Pond
Sed. Sump
Washbay Pond
Streeter Pond
5N 92W
4N 93W
4N 92W
3N 93W
3N 92W
Moffat County
Jubb Creek
Wilson Creek
Taylor Creek
Good Spring Creek
Milk Creek
Co Rd 32
Co Rd 51
Co Rd 17
Moffat County Rd 180
State Hwy 13
35
36
31
32
11
12
07
08
16
15
14
13
18
17
21
22
23
24
19
20
28
27
26
25
30
29
34
33
35
36
31
32
04
03
02
01
06
05
Coordinate System:
NAD 1983 State Plane,
Colorado North Zone, Feet
N
W
E
S
0
1,000
2,000
4,000
Scale in Feet
AECOM
7595 Technology Way, Suite 200
Denver, CO 80237, United States
T +1-303-694-2770
Designed DE
Drawn DE
Checked MF
Peer Review MS
Project Manager AB
Project Number 60614862
Figure 13
Colowyo Mine
Proposed Point of
Compliance Well Locations
Rio Blanco and Moffat Counties,
Colorado
February 2021

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 ttennyson@tristategt.org.

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

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60071-MH **Receipt Number:**

2. Owner's Well Designation: POC-1

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 262025.9 Northing: 4466440.6

6. Legal Well Location: SE 1/4, NE 1/4, Sec., 15 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 8, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,322 feet **Date Completed:** 10/11/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 20 feet **Depth Completed:** 20 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
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	Dark Gray	
18-20	Silty Sand	Very fine to fi	Grayish Brow	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5		

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	10

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	10	20

14. Filter Pack:
Material: sand
Size: 10/20
Interval: 10-20

15. Packer Placement:
Type: pre pack
Depth: 10

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31
02/2017

WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

State of Colorado, Office of the State Engineer
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

1. **Well Permit Number:** 60070-MH **Receipt Number:**
2. **Owner's Well Designation:** POC-2
3. **Well Owner Name:** Colowyo Coal Company L.P.
4. **Well Location Street Address:** 5731 State Highway 13 Meeker, CO 81641
5. **As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 262537.9 Northing: 4466947.9
6. **Legal Well Location:** NW 1/4, SE 1/4, Sec., 14 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.
   County: Moffat
   Subdivision: _____, Lot 8, Block _____, Filing (Unit) _____
7. **Ground Surface Elevation:** 6,297 feet **Date Completed:** 10/09/2019 **Drilling Method:** Direct Push
8. **Completed Aquifer Name :** Unnamed **Total Depth:** 25 feet **Depth Completed:** 25 feet
9. **Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019
10. **Aquifer Type:** (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. **Geologic Log:**

Depth	Type	Grain Size	Color	Water Loc.
0-24	Silt with sand	very fine to fi	light brown	
24-25	gravel/sand	fine to coarse	tan	

12. **Hole Diameter (in.)**

	From (ft)	To (ft)
2.5	0	25

13. **Plain Casing**

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	15

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	15	25

14. **Filter Pack:**
Material: sand
Size: 10/20
Interval: 15-25

15. **Packer Placement:**
Type: pre pack
Depth: 15

16. **Grouting Record**

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____
    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.	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:
[signature] for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60072-MH **Receipt Number:**

2. Owner's Well Designation: POC-3

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 262164.3 Northing: 4466295.1

6. Legal Well Location: SW 1/4, SW 1/4, Sec., 14 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 9, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,325 feet **Date Completed:** 10/11/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 20 feet **Depth Completed:** 20 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-5	silt with sand	fine to coarse	dark yellowis	
5-20	clay with sand	very fine to fi	dark yellowis	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	20

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	10

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	10	20

14. Filter Pack:

Material: sand

Size: 10/20

Interval: 10-20

15. Packer Placement:

Type: pre pack

Depth: 10

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60074-MH **Receipt Number:**

2. Owner's Well Designation: POC-4

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 261847.1 Northing: 4465439.5

6. Legal Well Location: NE 1/4, SE 1/4, Sec., 22 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 5, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,385 feet **Date Completed:** 10/11/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 30 feet **Depth Completed:** 30 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-13	Silt with sand	very fine to fi	olive	
13-23	sand	fine	yellowish brc	
23-30	silt and clay	fine	dark yellowis	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.3	0	30

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	20

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	20	30

14. Filter Pack:
Material: Sand
Size: 10/20
Interval: 20-30

15. Packer Placement:
Type: Pre Pack
Depth: 20

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60073-MH **Receipt Number:**

2. Owner's Well Designation: POC-5

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 262851.8 Northing: 4467271.3

6. Legal Well Location: NW 1/4, NE 1/4, Sec., 14 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 2, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,282 feet **Date Completed:** 10/09/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 25 feet **Depth Completed:** 23 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
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	
23.5-25	gravel with silt	fine - coarse	brown matri)	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	25

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	13

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	13	23

14. Filter Pack:

Material: Sand

Size: 10/20

Interval: 13-23

15. Packer Placement:

Type: Pre Pack

Depth: 13

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

Date/Time measured: _____ Estimate Length (hrs) _____

Remarks:

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Company Name:	Email:	Phone w/area code:	License Number:
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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-21-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60096-MH **Receipt Number:**

2. Owner's Well Designation: POC-6

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 264025.5 Northing: 4468759.1

6. Legal Well Location: SE 1/4, SW 1/4, Sec., 36 Twp. 5 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 6, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,236 feet **Date Completed:** 10/09/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 13 feet **Depth Completed:** 13 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-9.25	Silt with sand	fine	Dark reddish	
9.25-13	clay with trace fi	very fine	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	13

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	3

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	3	13

14. Filter Pack:

Material: Sand

Size: 10/20

Interval: 3-13

15. Packer Placement:

Type: Pre Pack

Depth: 3

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

Date/Time measured: _____ Estimate Length (hrs) _____

Remarks:

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Company Name:	Email:	Phone w/area code:	License Number:
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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60095-MH **Receipt Number:**

2. Owner's Well Designation: POC-7

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 264964.0 Northing: 4469888.7

6. Legal Well Location: NW 1/4, NW 1/4, Sec., 31 Twp. 5 ☒ N or S ☐, Range 92 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 11, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,208 feet **Date Completed:** 10/08/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 32 feet **Depth Completed:** 32 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-5	silt with fine sanc	fine	olive	
5-32	lean clay	fine	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	32

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	22

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	22	32

14. Filter Pack:

Material: Sand

Size: 10/20

Interval: 22-32

15. Packer Placement:

Type: Pre Pack

Depth: 22

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31
02/2017

WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

State of Colorado, Office of the State Engineer
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

1. **Well Permit Number:** 60097-MH **Receipt Number:**
2. **Owner's Well Designation:** POC-8
3. **Well Owner Name:** Colowyo Coal Company L.P.
4. **Well Location Street Address:** 5731 State Highway 13 Meeker, CO 81641
5. **As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 262922.8 Northing: 4461965.0
6. **Legal Well Location:** NE 1/4, SW 1/4, Sec., 35 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.
   County: Moffat
   Subdivision: _____, Lot 9, Block _____, Filing (Unit) _____
7. **Ground Surface Elevation:** 6,496 feet **Date Completed:** 10/12/2019 **Drilling Method:** Direct Push
8. **Completed Aquifer Name :** Unnamed **Total Depth:** 20 feet **Depth Completed:** 20 feet
9. **Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019
10. **Aquifer Type:** (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-20	Silt with sand	fine - medium	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	20

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	10

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	10	20

14. Filter Pack:
Material: sand
Size: 10/20
Interval: 10-20

15. Packer Placement:
Type: Pre Pack
Depth: 10

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____
    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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31
02/2017

WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

State of Colorado, Office of the State Engineer
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

1. **Well Permit Number:** 60078-MH **Receipt Number:**
2. **Owner's Well Designation:** POC-9
3. **Well Owner Name:** Colowyo Coal Company L.P.
4. **Well Location Street Address:** 5731 State Highway 13 Meeker, CO 81641
5. **As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 262935.5 Northing: 4462802.5
6. **Legal Well Location:** SE 1/4, SW 1/4, Sec., 26 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.
   County: Moffat
   Subdivision: _____, Lot 11, Block _____, Filing (Unit) _____
7. **Ground Surface Elevation:** 6,474 feet **Date Completed:** 10/12/2019 **Drilling Method:** Direct Push
8. **Completed Aquifer Name :** Unnamed **Total Depth:** 11 feet **Depth Completed:** 11 feet
9. **Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019
10. **Aquifer Type:** (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-9.5	Silty sand	fine	olive	
9.5-11	lean clay with sar	fine - medium	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	11

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	1

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	1	11

14. Filter Pack:
Material: sand
Size: 10/20
Interval: 1-11

15. Packer Placement:
Type: Pre Pack
Depth: 1

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____
    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.	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:
[signature] for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60079-MH **Receipt Number:**

2. Owner's Well Designation: POC-10

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 262906.7 Northing: 4463750.2

6. Legal Well Location: NE 1/4, SW 1/4, Sec., 26 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 1, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,401 feet **Date Completed:** 10/12/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 25 feet **Depth Completed:** 25 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-10	silt with sand	fine	olive	
10-25	lean clay with sar	fine	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	25

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	15

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	15	25

14. Filter Pack:

Material: sand

Size: 10/20

Interval: 15-25

15. Packer Placement:

Type: Pre Pack

Depth: 15

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31
02/2017

WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

State of Colorado, Office of the State Engineer
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

1. **Well Permit Number:** 60080-MH **Receipt Number:**
2. **Owner's Well Designation:** POC-11
3. **Well Owner Name:** Colowyo Coal Company L.P.
4. **Well Location Street Address:** 5731 State Highway 13 Meeker, CO 81641
5. **As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 263042.0 Northing: 4464238.2
6. **Legal Well Location:** NE 1/4, NW 1/4, Sec., 26 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.
   County: Moffat
   Subdivision: _____, Lot 1, Block _____, Filing (Unit) _____
7. **Ground Surface Elevation:** 6,371 feet **Date Completed:** 10/12/2019 **Drilling Method:** Direct Push
8. **Completed Aquifer Name :** Unnamed **Total Depth:** 24 feet **Depth Completed:** 24 feet
9. **Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019
10. **Aquifer Type:** (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. **Geologic Log:**

Depth	Type	Grain Size	Color	Water Loc.
0-17	Silt with sand	fine	olive	
17-22	lean clay with sar	fine	olive	
22-24	Silty sand	fine	olive	

12. **Hole Diameter (in.)**

	From (ft)	To (ft)
2.5	0	24

13. **Plain Casing**

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	14

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	14	24

14. **Filter Pack:** Material: Sand; Size: 10/20; Interval: 14-24

15. **Packer Placement:** Type: Pre Pack; Depth: 14

16. **Grouting Record**

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____
    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.	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:
Chris Nelson for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60075-MH **Receipt Number:**

2. Owner's Well Designation: POC-12

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 264045.4 Northing: 4464946.8

6. Legal Well Location: SW 1/4, NE 1/4, Sec., 24 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 8, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,315 feet **Date Completed:** 10/11/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 30 feet **Depth Completed:** 30 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-4	sand	med - coarse	dark gray	
4-10	clayey sand	fine	dark grayish	
10-16	lean clay with sar	fine	dark gray	
16-30	silty sand	fine	brown	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	30

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	20

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	20	30

14. Filter Pack:
Material: Sand
Size: 10/20
Interval: 20-30

15. Packer Placement:
Type: Pre Pack
Depth: 20

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60076-MH **Receipt Number:**

2. Owner's Well Designation: POC-13

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 264381.6 Northing: 4465440.8

6. Legal Well Location: NW 1/4, NE 1/4, Sec., 24 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 1, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,299 feet **Date Completed:** 10/11/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 30 feet **Depth Completed:** 30 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-8	Sand	medium - Coa	olive	
8-21	silty sand	fine	olive	
21-26.5	lean clay with sar	fine	olive	
26.5-30	sand	fine	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	30

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	20

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	20	30

14. Filter Pack:

Material: sand

Size: 10/20

Interval: 20-30

15. Packer Placement:

Type: Pre Pack

Depth: 20

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

Date/Time measured: _____ Estimate Length (hrs) _____

Remarks:

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Company Name:	Email:	Phone w/area code:	License Number:
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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60077-MH **Receipt Number:**

2. Owner's Well Designation: POC-14

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 264728.5 Northing: 4465705.5

6. Legal Well Location: NE 1/4, NW 1/4, Sec., 24 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 1, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,286 feet **Date Completed:** 10/12/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 25 feet **Depth Completed:** 25 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-11.5	Silt with sand	fine	light brownis	
11.5-17.5	lean clay with sar	fine	olive	
17.5-20	sand	fine	olive	
20-25	lean clay with sar	fine	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	25

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	15

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	15	25

14. Filter Pack:

Material: Sand

Size: 10/20

Interval: 15-25

15. Packer Placement:

Type: Pre Pack

Depth: 15

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31
02/2017

WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

State of Colorado, Office of the State Engineer
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

1. **Well Permit Number:** 60099-MH **Receipt Number:**
2. **Owner's Well Designation:** POC-15
3. **Well Owner Name:** Colowyo Coal Company L.P.
4. **Well Location Street Address:** 5731 State Highway 13 Meeker, CO 81641
5. **As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 264497.4 Northing: 4469299.9
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
   Subdivision: _____, Lot 7, Block _____, Filing (Unit) _____
7. **Ground Surface Elevation:** 6,218.5 feet **Date Completed:** 10/09/2019 **Drilling Method:** Direct Push
8. **Completed Aquifer Name :** Unnamed **Total Depth:** 25 feet **Depth Completed:** 25 feet
9. **Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019
10. **Aquifer Type:** (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. **Geologic Log:**

Depth	Type	Grain Size	Color	Water Loc.
0-6	Sand with silt	fine	olive	
6-22.5	lean clay with tra	medium	olive	
22.5-25	silt with sand	fine	olive	

12. **Hole Diameter (in.)**

	From (ft)	To (ft)
2.5	0	25

13. **Plain Casing**

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	15

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	15	25

14. **Filter Pack:** Material: sand; Size: 10/20; Interval: 15-25

15. **Packer Placement:** Type: Pre Pack; Depth: 15

16. **Grouting Record**

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____
    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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 www.water.state.co.us and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 60069-MH **Receipt Number:**

2. Owner's Well Designation: POC-16

3. Well Owner Name: Colowyo Coal Company L.P.

4. Well Location Street Address: 5731 State Highway 13 Meeker, CO 81641

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 263616.4 Northing: 4468136.3

6. Legal Well Location: NE 1/4, SE 1/4, Sec., 11 Twp. 4 ☒ N or S ☐, Range 93 ☐ E or W ☒, 6 P.M.

County: Moffat

Subdivision: _____, Lot 15, Block _____, Filing (Unit) _____

7. Ground Surface Elevation: 6,250 feet **Date Completed:** 10/16/2019 **Drilling Method:** Direct Push

8. Completed Aquifer Name : Unnamed **Total Depth:** 32 feet **Depth Completed:** 32 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 10/02/2019

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-10	sandy silt	fine - very fin	olive	
10-25	silt with sand	very fine	olive	
25-32	gravel	fine - medium	olive	

12. Hole Diameter (in.)

	From (ft)	To (ft)
2.5	0	32

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	0	22

Perforated Casing Screen Slot Size (in): 0.010

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
1.3	PVC	.18	22	32

14. Filter Pack:

Material: sand

Size: 10/20

Interval: 22-32

15. Packer Placement:

Type: Pre Pack

Depth: 22

16. Grouting Record

Material	Amount	Density	Interval	Method

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: _____ Estimated Yield (gpm) _____

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.	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:
for	Michael G.Sorensen - Sr. Manager, Fuels and Water Resources	12-31-19

Appendix B

October 2019 Well Development and Sampling Forms

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colowyo

Well Identification POC-4 1

Page 1 of 1

Project Number: 60614682
Site Name: Colowyo
Location: CMP

Sampled By: SF
Sample ID: POC-1
Sample Date: 10/14/19
Sample Time: 0745

Equipment

Purging Method/Equipment: 3 vol/Pesi
Sampling Equipment: Hordual/Pesi
Filtering Equipment: 0.45 um

Field Parameters

Initial Water Temp. (C):
Initial pH:
Initial Conductance (mS/cm):
Reference Point

Purging Information

Casing I.D. [a] (in.): 1.0
Unit Casing Volume [b] (gal/ft): 0.04
Depth to Water [c] (ft, bgs): 11.65
Depth to Bottom of Well [d] (ft, bgs): 20.00

Length of Static Water Column [e] = [d] - [c] (ft): 8.35
Casing Water Volume [f] = [b] x [e] (gal): 0.39
Total Purged Volume [g] (gal): 1.5
Number of Purged Volumes [h] = [g] / [f]: 73

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0725	—	—	9.10	7.07	172	1.44	>999	8.15	Initial
0728	—	0.5	10.11	7.07	110	1.43	>999	8.62	
0731	—	1.0	9.96	7.29	40	1.41	>999	8.73	
0734	—	1.5	10.01	7.29	51	1.40	>999	9.71	
		Wil	wait	for	turbidity	to go	down	before	sampling

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Final turbidity: 500 NTU

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colonyo

Well Identification: POC-2

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colonyo	Sample ID:	POC-2
Location:	CMP	Sample Date:	10/15/19
		Sample Time:	0835

Equipment

Purging Method/Equipment	3 vol/Per.
Sampling Equipment	Hor. bail per.
Filtering Equipment	0.45 NM

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	5.25
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.21
Depth to Water [c] (ft, bgs):	21.35	Total Purged Volume [g] (gal):	1.5
Depth to Bottom of Well [d] (ft, bgs):	26.60	Number of Purged Volumes [h] = [g] / [f]:	7

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0821	~	-	8.39	7.88	35	1.05	>999	2.30	milky
0824	|	0.5	8.26	~~7.66~~	44	1.08	>999	2.13	
0827	|	1.0	8.44	6.87	46	1.07	477	2.10	
0830	|	1.5	8.50	6.87	47	1.07	400	2.17	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 0

Well Identification POC-3

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Project Number:	60614682	Sampled By:	SF
Site Name:	Colony 0	Sample ID:	POC-3
Location:	CMP	Sample Date:	10/14/19
		Sample Time:	0640

Equipment

Purging Method/Equipment	low flow 3 volumes/per.	Initial Water Temp. (C)	
Sampling Equipment	Horiba/Peri	Initial pH:	
Filtering Equipment	0.45 um	Initial Conductance (mS/cm):	
		Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	11.41
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.45
Depth to Water [c] (ft, bgs):	13.39	Total Purged Volume [g] (gal):	1.5
Depth to Bottom of Well [d] (ft, bgs):	24.80	Number of Purged Volumes [h] = [g] / [f]:	73

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L)	Water Description
0625	–	–	10.17	6.23	118	2.08	7999	7.24	initial
0628	–	0.5	10.83	7.09	39	2.15	>999	10.21	
0631	–	1.0	10.55	7.25	53	2.13	7999	10.06	
0634		1.5	9.58	7.19	68	2.04	7999	10.36	
	Will wait for turbidity to go down before sampling								

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Final turbidity: ≈ 250

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colonyo

Well Identification: POC-5

Page 1 of 1

Project Number:	60684862	Sampled By:	SF
Site Name:	Colonyo	Sample ID:	POC-5
Location:	CMP	Sample Date:	10/15/19
		Sample Time:	0901

Equipment

Purging Method/Equipment	3 vol/per.
Sampling Equipment	Horiba/per.
Filtering Equipment	0.45 um

Field Parameters

Initial Water Temp. (C)	9
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	10.34
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.41
Depth to Water [c] (ft, bgs):	14.41	Total Purged Volume [g] (gal):	1.5
Depth to Bottom of Well [d] (ft, bgs):	24.75	Number of Purged Volumes [h] = [g] / [f]:	73

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0849		-	8.20	6.82	31	1.77	7999	3.52	initial
0853		0.5	8.47	6.80	19	1.75	>999	2.24	
0857		1.0	8.55	6.79	19	1.75	>999	2.21	
0901		1.5	8.48	6.79	18	1.73	782	2.17	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

waited for turbidity to drop to ≈ 500 NTU before sampling

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colocsa 0

Well Identification: POC-6

Page 1 of 1

Project Number: 60614682

Site Name:

Location:

Sampled By: SF

Sample ID: POC-6

Sample Date: 10/16/19

Sample Time: 0630

Equipment

Purging Method/Equipment:

Sampling Equipment:

Filtering Equipment:

Field Parameters

Initial Water Temp. (C):

Initial pH:

Initial Conductance (mS/cm):

Reference Point

Purging Information

Casing I.D. [a] (in.): 1.0

Unit Casing Volume [b] (gal/ft): 0.04

Depth to Water [c] (ft, bgs): 5.52

Depth to Bottom of Well [d] (ft, bgs): 14.00

Length of Static Water Column [e] = [d] - [c] (ft): 8.48

Casing Water Volume [f] = [b] x [e] (gal): 0.34

Total Purged Volume [g] (gal): 1.5

Number of Purged Volumes [h] = [g] / [f]: >3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0616		-	11.71	6.42	160	1.80	351	1.29	
0619		0.5	10.95	6.70	120	1.79	~~0.0~~	2.13	Turb: >999
0622		1.0	10.90	6.88	91	1.70	>999	11.07	
0625		1.5	10.89	6.90	85	1.83	>999	10.12	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 0

Well Identification POC-7

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colony 0	Sample ID:	POC-7
Location:	CMP	Sample Date:	10/6/19
		Sample Time:	

Equipment

Purging Method/Equipment	3 vol/per.
Sampling Equipment	Hach/per.
Filtering Equipment	0.45 µm

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	6.11
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.24
Depth to Water [c] (ft, bgs):	26.39	Total Purged Volume [g] (gal):	
Depth to Bottom of Well [d] (ft, bgs):	32.5	Number of Purged Volumes [h] = [g] / [f]:	

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description

Purged Dry (Y/N): Y

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Bailed sample immediately. Well went dry just short of full suite

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 40

Well Identification POC-8

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colony 40	Sample ID:	POC-8
Location:	CMP	Sample Date:	10/15/19
		Sample Time:	0755

Equipment

Purging Method/Equipment	3 vol/ per.
Sampling Equipment	Horiba/ per.
Filtering Equipment	0.45 um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0
Unit Casing Volume [b] (gal/ft)	~~0.04~~ 0.04
Depth to Water [c] (ft, bgs):	~~21.85~~ 10.69
Depth to Bottom of Well [d] (ft, bgs):	21.85
Length of Static Water Column [e] = [d] - [c] (ft):	11.16
Casing Water Volume [f] = [b] x [e] (gal)	0.44
Total Purged Volume [g] (gal):	~~1.5~~ 2
Number of Purged Volumes [h] = [g] / [f]:	>3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
~~0760~~ 78	–	–	9.23	6.78	79	1.26	>999	2.11	initial
0740	|	0.75	9.64	6.69	-18	1.27	7999	2.24	
0744	|	1.5	9.59	6.69	-59	1.29	612	2.08	
0747	|	2	9.68	6.68	-71	1.28	511	2.02	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colonyo

Well Identification: POC-10

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colonyo	Sample ID:	POC-10, POC-10-D
Location:	CMP	Sample Date:	10/15/19
		Sample Time:	0650

Equipment

Purging Method/Equipment	3 vol/per
Sampling Equipment	Horiba/per
Filtering Equipment	0.45um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	13.45
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.54
Depth to Water [c] (ft, bgs):	12.05	Total Purged Volume [g] (gal):	2.0
Depth to Bottom of Well [d] (ft, bgs):	25.5	Number of Purged Volumes [h] = [g] / [f]:	>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		–	8.27	6.35	119	1.18	408	9.25	initial
0634		0.75	8.16	6.55	91	1.18	404	4.57	
0638		1.5	8.13	6.59	83	1.17	75.7	3.90	
0642		2	8.10	6.60	80	1.17	20	3.69	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Field duplicate collected

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 0

Well Identification POC-11

Page 1 of 1

Project Number:	~~60614434~~ 60614682	**Sampled By:**	SF
Site Name:	Colony 0	**Sample ID:**	POC-11
Location:	CMP	**Sample Date:**	10/15/19
		Sample Time:	0725

Equipment

Purging Method/Equipment	3 vol / peri
Sampling Equipment	Horiba / peri
Filtering Equipment	0.45um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	14.21
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.57
Depth to Water [c] (ft, bgs):	11.29	Total Purged Volume [g] (gal):	2.0
Depth to Bottom of Well [d] (ft, bgs):	25.5	Number of Purged Volumes [h] = [g] / [f]:	~3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0708	-	-	8.69	6.72	80	1.35	>999	2.91	Initial
0712	|	0.75	8.93	6.66	69	1.34	>999	2.58	
0716	|	1.5	8.97	6.65	63	1.33	799	2.57	
0719	|	2.0	8.72	6.65	59	1.33	800	2.44	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Waited for turbidity to reach ~500NTU before sampling

1740

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony0

Well Identification POC-12

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colony0	Sample ID:	POC-12
Location:	CMP	Sample Date:	10/14/19
		Sample Time:	1000

Equipment

Purging Method/Equipment	3 vol/per
Sampling Equipment	Horiba/per
Filtering Equipment	0.45um

Field Parameters

Initial Water Temp. (C)	Did not
Initial pH:	record initial
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	16.24
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.65
Depth to Water [c] (ft, bgs):	13.36	Total Purged Volume [g] (gal):	2
Depth to Bottom of Well [d] (ft, bgs):	29.60	Number of Purged Volumes [h] = [g] / [f]:	3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0940	-	0.75	12.20	7.14	67	2.68	>999	6.84	
0945	-	1.5	12.14	7.06	72	2.69	>999	5.22	
0948	-	2.0	12.20	7.07	79	2.65	999	5.71	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Waited for turbidity to drop to ~ 700NTU before sampling

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colowyo

Well Identification: POC-13

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colowyo	Sample ID:	POC-13
Location:	CMP	Sample Date:	10/14/19
		Sample Time:	

Equipment

Purging Method/Equipment	3 vol/ per.
Sampling Equipment	Hach/ per.
Filtering Equipment	0.45 um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	7.3
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.29
Depth to Water [c] (ft, bgs):	21.95	Total Purged Volume [g] (gal):	1
Depth to Bottom of Well [d] (ft, bgs):	29.25	Number of Purged Volumes [h] = [g] / [f]:	>3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
	–	–	8.10	7.15	118	1.65	7999	7.49	initial

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Bailed 1.0 gallons out of well, sample collected w/ bailer

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 10

Well Identification POC-14

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colony 10	Sample ID:	POC-14
Location:	CMP	Sample Date:	10/14/19
		Sample Time:	0925

Equipment

Purging Method/Equipment	3 vol/per.
Sampling Equipment	Horiba/per.
Filtering Equipment	0.45um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	8.42
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.34
Depth to Water [c] (ft, bgs):	17.43	Total Purged Volume [g] (gal):	1.5
Depth to Bottom of Well [d] (ft, bgs):	25.85	Number of Purged Volumes [h] = [g] / [f]:	~3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0900	-	-	8.25	7.31	175	2.50	>999	11.16	Initial water
0905	-	0.5	9.39	7.06	167	2.61	>999	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	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Final Turbidity ~ 250

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony O

Well Identification POC-15

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Project Number: 60614682
Site Name: CMP
Location:

Sampled By: SF
Sample ID: POC-15
Sample Date: 10/16/19
Sample Time: 0750

Equipment

Purging Method/Equipment: low flow/pe.
Sampling Equipment: Hach-pe.
Filtering Equipment: 0.45um

Field Parameters

Initial Water Temp. (C): 9
Initial pH:
Initial Conductance (mS/cm):
Reference Point

Purging Information

Casing I.D. [a] (in.): 1.0
Unit Casing Volume [b] (gal/ft): 0.04
Depth to Water [c] (ft, bgs): 6.71
Depth to Bottom of Well [d] (ft, bgs): 26.03

Length of Static Water Column [e] = [d] - [c] (ft): 19.32
Casing Water Volume [f] = [b] x [e] (gal): 0.77
Total Purged Volume [g] (gal): 3
Number of Purged Volumes [h] = [g] / [f]: 73

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0737	7	1	7.21	7.51	152	1.31	580	6.73	
0742	1	2	7.57	7.34	137	1.29	441	7.06	
0747	1	3	7.76	7.24	120	1.29	216	6.12	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

AECOM

Office Address:

Groundwater Purge Log

Site Name: Colony 10

Well Identification POC-16

Page 1 of 1

Project Number:	60614682	Sampled By:	SF
Site Name:	Colony 10	Sample ID:	POC-16
Location:	CMP	Sample Date:	10/15/19
		Sample Time:	0940

Equipment

Purging Method/Equipment	low flow/3 vol
Sampling Equipment	Horiba/Peri.
Filtering Equipment	0.45um

Field Parameters

Initial Water Temp. (C)	
Initial pH:	
Initial Conductance (mS/cm):	
Reference Point	

Purging Information

Casing I.D. [a] (in.):	1.0	Length of Static Water Column [e] = [d] - [c] (ft):	23.16
Unit Casing Volume [b] (gal/ft)	0.04	Casing Water Volume [f] = [b] x [e] (gal)	0.92
Depth to Water [c] (ft, bgs):	8.74	Total Purged Volume [g] (gal):	3
Depth to Bottom of Well [d] (ft, bgs):	31.90	Number of Purged Volumes [h] = [g] / [f]:	>3

Time	Water Level (ft bgs)	Volume Purged (gal)	Temp (C)	pH	ORP mV	Conductance (mS/cm)	Turbidity (NTU)	DO (mg/L	Water Description
0918	—	—	8.99	6.88	84	2.61	>999	2.62	initial
0923	|	1	8.97	6.77	88	2.54	7999	1.96	
0928	|	2	9.08	6.77	101	2.53	780	1.91	
0933	|	3	9.19	6.71	113	2.55	171	1.92	

Purged Dry (Y/N): N

Casing Volume

Casing I.D. (in.)	Unit Casing Volume Gal/Lin. Ft.)
1.0	0.04
1.5	0.09
2.0	0.16
2.2	0.20
3.0	0.37
4.0	0.65
4.3	0.75
5.0	1.00
6.0	1.55
7.0	2.00
8.0	2.60

Additional Remarks

Appendix C

Temporary Monitoring Well Abandonment Forms

Form No GWS-09 03/2017

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
dwr.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-1 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262025.9 Northing 4466440.6

6. Legal Location: SE 1/4 of the NE 1/4, Sec 15, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60071-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from 5 feet to 10 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.68 cubic feet clean sand	Poured	from 5 feet to 20 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
dwr.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-2 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262537.9 Northing 4466947.9

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. From ☐ E or W ☐ Line.

Subdivision Name _____ Lot _____, Block _____, Filing/Unit _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60070-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from 5 feet to 10 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.85 cubic feet clean sand	Poured	from 5 feet to 25 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
dwr.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-3 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262164.3 Northing 4466295.1

6. Legal Location: SW 1/4 of the SW 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. From ☐ E or W ☐ Line.

Subdivision Name _____ Lot _____, Block _____, Filing/Unit _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60072-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from 5 feet to 10 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.68 cubic feet clean sand	Poured	from 5 feet to 20 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
dwr.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 60074-MH or **MH File Number MH-** _____

Owners Well Designation- POC-4 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 261847.1 Northing 4465439.5

6. Legal Location: NE 1/4 of the SE 1/4, Sec 22, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60074-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
1.02 cubic feet clean sand	Poured	from 5 feet to 30 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
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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 60073-MH or **MH File Number MH-** _____

Owners Well Designation- POC-5 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262851.8 Northing 4467271.3

6. Legal Location: NW 1/4 of the NE 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. From ☐ E or W ☐ Line.

Subdivision Name _____ Lot _____, Block _____, Filing/Unit _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60073-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.85 cubic feet clean sand	Poured	from 5 feet to 25 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
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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-6 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264025.5 Northing 4468759.1

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. From ☐ E or W ☐ Line.

Subdivision Name _____ Lot _____, Block _____, Filing/Unit _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60096-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,
from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.44 cubic feet clean sand	Poured	from 5 feet to 13 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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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-7 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264964.0 Northing 4469888.7

6. Legal Location: NW 1/4 of the NW 1/4, Sec 31, Twp 4 ☒ N or S ☐, Range 92 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60095-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
1.09 cubic feet clean sand	Poured	from 5 feet to 32 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

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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 60097-MH or **MH File Number MH-** _____

Owners Well Designation- POC-8 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262922.8 Northing 4461965.0

6. Legal Location: NE 1/4 of the SW 1/4, Sec 35, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60097-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,
from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.68 cubic feet clean sand	Poured	from 5 feet to 20 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Form No GWS-09 03/2017

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581
dwr.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 60078-MH or **MH File Number MH-** _____

Owners Well Designation- POC-9 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262935.5 Northing 4462802.5

6. Legal Location: SE 1/4 of the SW 1/4, Sec 26, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60078-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 11 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.37 cubic feet clean sand	Poured	from 5 feet to 11 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

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WELL ABANDONMENT REPORT

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1. Well Permit Number of plugged well 60079-MH or **MH File Number MH-** _____

Owners Well Designation- POC-10 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 262906.7 Northing 4463750.2

6. Legal Location: NE 1/4 of the SW 1/4, Sec 26, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60079-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,
from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.85 cubic feet clean sand	Poured	from 5 feet to 25 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

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WELL ABANDONMENT REPORT

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1. Well Permit Number of plugged well 60080-MH or **MH File Number MH-** _____

Owners Well Designation- POC-11 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 263042.0 Northing 4464238.2

6. Legal Location: NE 1/4 of the NW 1/4, Sec 26, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60080-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.82 cubic feet clean sand	Poured	from 5 feet to 24 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
Mike Martin Mike Martin	Mike Martin, SR Operations Manager, #1566	03/30/2021

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WELL ABANDONMENT REPORT

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1. Well Permit Number of plugged well 60075-MH or **MH File Number MH-** _____

Owners Well Designation- POC-12 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264045.4 Northing 4464946.8

6. Legal Location: SW 1/4 of the NE 1/4, Sec 24, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60075-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
1.02 cubic feet clean sand	Poured	from 5 feet to 30 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

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WELL ABANDONMENT REPORT

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1. Well Permit Number of plugged well 60076-MH or **MH File Number MH-** _____

Owners Well Designation- POC-13 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264381.6 Northing 4465440.8

6. Legal Location: NW 1/4 of the NE 1/4, Sec 24, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60076-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,
from 5 feet to 10 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.85 cubic feet clean sand	Poured	from 5 feet to 25 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
Mike Martin *Mike Martin*	Mike Martin, SR Operations Manager, #1566	03/30/2021

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1. Well Permit Number of plugged well 60077-MH or **MH File Number MH-** _____

Owners Well Designation- POC-14 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264728.5 Northing 4465705.5

6. Legal Location: NE 1/4 of the NW 1/4, Sec 24, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60077-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from None feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
None - Well was impacted by		from _____ feet to _____ feet
a wildfire. Casing was melted and		from _____ feet to _____ feet
broke off at ground level. Well was		from _____ feet to _____ feet
collasped.		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

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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-15 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 264497.4 Northing 4469299.9

6. Legal Location: NE 1/4 of the SE 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. From ☐ E or W ☐ Line.

Subdivision Name _____ Lot _____, Block _____, Filing/Unit _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60099-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills
☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,
from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
0.85 cubic feet clean sand	Poured	from 5 feet to 25 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
Mike Martin *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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

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1. Well Permit Number of plugged well 60069-MH or **MH File Number MH-** _____

Owners Well Designation- POC-16 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

UTM ☐ Zone 12 or ☒ Zone 13 Easting 263616.4 Northing 4468136.3

6. Legal Location: NE 1/4 of the SE 1/4, Sec 11, Twp 4 ☒ N or S ☐, Range 93 ☐ 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 _____

7. I/we report the existing well/hole was plugged and sealed on 03/29/2021 (date) for the following reason(s):

☑ The well was plugged and sealed as required under Well Permit Number 60069-MH.

☐ The well was not in use and was plugged and sealed.

☐ Other (please explain) _____

8. Aquifer Type: (check one)

☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layer) ☐ Laramie-Fox Hills

☐ Type II (Not Overlain by Type III) ☐ Type II (Overlain by Type III ☒ Type III (alluvial)

9. Intervals of Casing Removed/Ripped:

from 0 feet to 5 feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

from _____ feet to _____ feet, from _____ feet to _____ feet, from _____ feet to _____ feet,

10. Amount and Type of Material	**Method of Placement**	**Interval**
1.09 cubic feet clean sand	Poured	from 5 feet to 32 feet
0.17 cubic feet bentonite	Poured	from 0 feet to 5 feet
		from _____ feet to _____ feet
		from _____ feet to _____ feet

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 in compliance with Rule 17.4.

11. Signature(s)	Please Print the Name, Title, & License No.	Date
Mike Martin *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. The Well Construction Contractor is responsible for notifying the owner of this requirement in writing.

Exhibit 7
Hydrology Information

Volume 2B

1) 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

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Exhibit 7
Hydrology Information

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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 up-gradient of South Taylor mining activities.
12. Trout Creek Well – Located on the northeastern edge of the Collom Pit, this site respresents the regional aquifer condition of the Trout Creek Sandstone.
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.

Groundwater Laboratory Parameters

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

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

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

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

Groundwater Fill Piezometers - Monitoring of the West Pit fill 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 pre-mine profile and function of Little Collom Gulch will be restored.

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

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

4.06 TOPSOIL

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

All topsoil, as classified in section 2.04.9, is removed from areas to be affected by the surface coal mining operations. The graphical representation of the topsoil removal is shown on the Topsoil Handling Map 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.