2019 ANNUAL HYDROLOGY REPORT
McClane Canyon Mine Permit No. C-1980-004

This report on the mine inflows, discharges and probable hydrologic consequences is submitted in compliance with the stipulations of the Mining and Reclamation permits for the mines noted above. The stipulations require a report for each permit. Since the mines are in close proximity, the effects are combined. The McClane Canyon mine remains in temporary.

This report shall discuss the effect of McClane Canyon Mine (MCM) on the hydrologic regime, and then give an overview of the surface water system and groundwater monitoring. This report shall conclude with a discussion of the cumulative effect on the hydrology of East Salt Creek.

Monitoring requirements are detailed in the MCM permit in Section 4.2.3 (page 4-17 & 4-20) and on Table 4.2-15.

Monitoring for the McClane Canyon Mine per the approved permit documents for temporary cessation, shall include; quarterly water quality samples from SW-1 and SW-8 for field parameters (pH, conductivity, temperature, flow) and a full suite sample will be obtained quarterly, water quality samples twice per year for SW-2; once during snow melt and once during a storm event if water is available at time of water sampling, and quarterly water quality samples for SW-3. The quantity of flow will be measured at the time when samples are collected. GW-1, 3 and 9 will be monitored quarterly for field parameters (pH, conductivity, temperature and static water level). And new discharge point 004A *(new sampling location in compliance with discharge permit issued in 2015)* will be monitored twice per month for pH, TSS, Iron and Flow. Monitoring will occur when enough water is available for a sample, and safe conditions exist for gaining access to monitoring location.

McClane Canyon Mine

Mine History and Production:

The McClane Canyon Mine began production in 1977. The mine ceased production later that year when a fault was encountered. The mine remained idle until 1980. From 1977 through 1982 the mine produced a total of 184,365 tons of coal. In 1983 the mine was idled and remained under Division approved temporary cessation until November 1988. In December of 1988, 3,995 tons of coal was mined. In 1989; 125,200 tons of coal was produced. Production during 1990 totaled 208,945 tons. Production for 1991 totaled 194,000 tons of coal. 1992 Production was 7,914 tons. No coal was produced between 1993 and 1996. In 1997 production of 49,115 tons was accomplished. The mine was idle during 1998 and 1999. Production began again in February 2000 and was continuous through December 9, 2010. Production during 2011 was zero tons for the calendar year and 32,070 for the water year. Production from 2012 through 2019 was zero tons for the calendar year, and zero tons for the water year.

CAM-Colorado, LLC has been granted a lease suspension. It is unknown how long the mine will remain idle.

As required by stipulations, a mine map for McClane Canyon showing important hydrologic features is included as Figure 3. Seepage into the mine is nearly all from the areas mined to the north of the East Mains. Water from seeps accumulates in the east end of the East mains. In response to comments made by the Division regarding the 1995 annual hydrologic report, Figure I - Water Sampling Locations, is enclosed. Figure 1 is a line diagram of the drainages and water sampling locations that was derived from Figure 4.2-2 of the McClane Canyon Mine permit.

Mine Water Inflow/Discharge.
Appendix N of the permit application indicates the rate at which the saturated coal ribs are exposed should govern the maximum mine inflow rate. A five entry system exposes 1,480 lineal feet of rib per 100 feet of advance assuming 80 foot square pillars. That same 100 feet of development produces 5,400 tons of coal assuming an eight foot mining height. Based upon the k factor of 0.11 feet per day, it takes about one year to dewater an 80 foot square pillar (40 feet / 0.11 feet per day). Therefore, exposed coal ribs contribute to mine inflow for one year. At an annual production rate of 0.3 million tons per year, using this five entry system, a total of 5,500 feet of development would be required. This would expose 81,000 [(1,480)(5,500)/100] feet of rib. This amount of exposed rib would produce an estimated maximum mine inflow as follows q = kia = (0.11) (81,000 x 8) (0.05) = 3,600 cubic feet per day = 20 gpm.

No water was discharged from the mine during the 2019 calendar year. Flows into the mine are estimated in Table 1. Previous hydrologic reports have shown the inflow of water to the mine can be attributed to dewatering of a perched aquifer as well as surface water infiltration along the faults of the graben. During the mid 1980's, a clear picture of mine water inflows was obtained because water collected in the faces was regularly pumped to outfall 002 and discharged. The quantity of water discharged was recorded on a meter and correlated with precipitation. The steady decrease in the amount of water pumped from the mine during the idle years is evidence of the creation of a dewatered zone in the saturated coal strata. This decrease also provides evidence there is little communication with the comparatively large aquifer within the East Salt Creek alluvium across the west fault of the graben.

When mining resumed, additional area in the saturated portion of the graben was exposed, increasing the flow of water into the mine. The inflow of water went from a low of 0.80 gpm in 1988 to a high of 3.87 gpm in 1990. Water flowing down dip into the faces was pumped to the sump and used in the mining process for dust control. On April 27, 1990, Section 001 was abandoned and sealed.

A small amount of water was trucked to the mine for road dust suppression starting in October 1999 prior to production. When production resumed in February 2000 the demand increased to approximately 373,000 gallons per month. In April 2000 water started seeping from the mining faces developing to the east. To keep up with production demands, a sump was established and the section was moved to the south. The water from the east end of the East Mains was pumped to a sump and used in the mining process for dust control. Table 1 shows the water balance for water year 2019. As shown in Table 1, no water was used to water the roads, or pumped to the sediment pond. Table 6 shows the quality results of mine discharge sampling; however, no water was discharged during the water year.

As discussed in previous reports, the area in the mine that experienced an inflow of water was sealed in 1990. In July of 1992 all areas to the north of the East Mains within the graben were sealed and are now inaccessible. Figure 3, McClane Mine Map shows the location of the seals; as well as, the area of the mine that is not accessible. The sealed area is lower in elevation than accessible areas of the mine but is undoubtedly still experiencing an inflow of water. The volume of the portion of the mine behind the seals is equivalent to about 124 million gallons. At the rate of inflow being experienced in 1990, 3.9 gallons per minute, it would take about 60 years for the sealed area to fill with water.

Source of Water Inflow

As detailed in previous reports, the water flowing into the mine seems to be a mix of water infiltrating the graben along the faults and water in the coal seam. The zone of saturation of the coal seam was initially estimated using the results of exploration drilling. The drilling indicated that holes in the McClane graben were dry; specifically, holes 7-15-3 and 7-21-1.

Additionally, a piezometer installed down dip from the mine outside of the graben has not realized water to date. Since the piezometer is down-dip and is dry it is apparent water flowing into the mine is from a perched aquifer in the area of the coal mine.

The water within the perched aquifer flowing into the mine probably comes from surface water infiltration along the faults east and west of the mine. Both faults have ephemeral drainages crossing their surface trace. These faults may be one source of recharge to the perched aquifer. The water then infiltrates the coal seam which has become saturated over time. This assumption is supported by the previously documented cyclical nature of water inflow corresponding with periods of precipitation.

Future Water Inflow
When mining resumes development will be to the south where the coal seam is relatively dry. Since most of the water generated in the mine comes from the sealed areas in the north, the water inflow should be relatively constant or slowly decreasing.

As shown on Figure 4.2-3, the saturated strata appear to outcrop in the valley formed by the north split of Munger Canyon. Since the strata in the area dip at four percent to the northeast, water may be infiltrating the seam along the valley bottom. Any water infiltrating the strata at this location will flow down dip until the aquifer is totally saturated unless there is an area where water may escape. The elevation of the saturated zone would approximate the elevation of the outcrop (5,600 ft) if no water flows out of the strata at a lower elevation. There are no known springs or seeps that would allow escape of the water from the zone of saturation so it can be expected the coal seam will be saturated near the outcrop elevation.

Precipitation
Precipitation data is shown on Tables 2 & 3 and was acquired from Kevin Hyatt with the BLM (970-244-3030). During the water year, the BLM's recording device did not record data correctly for 4 months out of the year. Available data is included for reference.

Effect of the Mine on the East Salt Creek Regime
Surface Water
Due to the limited disturbance of the mine there is little chance any significant effect on the quantity or quality of the surface waters has occurred. As the Division notes in its approval package for the Munger Canyon Mine, the total area that will be disturbed by both McClane and Munger mine sites amounts to 0.12 percent of the area of the East Salt Creek drainage basin above the mines.

Due to low flow conditions, samples were only taken at SW-1 and SW-8 during second quarter of 2019. Results are shown in Table 4. Historically, results from the samples collected from East Salt Creek above and below the mine site are generally the same for all parameters.

The McClane Canyon Mine did not discharge to East Salt Creek during the water year or the calendar year.

Groundwater
Table 5 shows the results of groundwater sampling during the water year. Table 5a was created in 2011 for GW-10 to be used to gather a year of baseline data, however, GW-10 was sealed in 2012 since a large coal mine waste pile is no longer planned and therefore GW-10 is no longer required. Baseline data for

Table 5 from the 1981 & 1986 monitoring is also shown. Baseline data for GW-9 for the period October 2007 through September 2008 is included. Results of quality sampling are consistent with the results from previous years. GW-4 was in close proximity to a hay field that is irrigated during dry periods and in danger of being eroded with an oxbow was replaced with GW-3. GW-3 is located adjacent to the road south of GW-4 and should be outside of the influence of the irrigation of the hay field. Refer to Figure 4.2-2 of the McClane Canyon Permit. The Division of Reclamation, Mining and Safety has approved this substitution. Ground water wells GW-2, GW-4, GW-7, and GW-8 were sealed during 2007.

Pond Discharges
The Pond did not discharge during 2019.

Discharge monitoring from the sediment ponds and mines are regulated by the Colorado Discharge Permit System Numbers CO-0038342 (McClane). Copies of Quarterly Discharge Monitoring Reports have been provided, under separate cover, to the DRMS at the same schedule required by the CDPS Permit. They are included in this report by reference.

McClane Creek Temporary Diversion
The Operator placed four wooden gabions in the McClane Creek channel during 1997 to ensure the channel would remain stable. The gabions were to provide a solid place in the channel bottom to limit any further erosion. In 2004 a re-survey was conducted and the data and inspection observations show there has been significant erosion subsequent to the 1997 gabion installation. Future high flow events may result in additional channel scour and side-cutting erosion. Portions of the diverted channel appeared to be unstable and further erosion may be likely. To alleviate this problem, the operator installed a 48" culvert ("P") under the haul road during 2006 in order to reconnect upper McClane Creek to it's original lower segment.

Probable Hydrologic Consequences
As discussed above, and as documented in past annual hydrologic reports, the mines had and will have a negligible effect upon the hydrologic regime of East Salt Creek. The area disturbed is small, sedimentation and surface water systems have functioned well for over ten years. The inherent poor quality of surface water in the area is the result of site specific environmental factors not from any impact caused by the mines.

Most but not all of the storm events that have exceeded the design criteria required by the DRMS have not been a problem for the system to handle. The effect that the mine has on the groundwater hydrology of East Salt Creek has not been detected.

The mines will not have a detrimental impact upon the groundwater of the East Salt Creek valley. This is based partially on the relative sizes of the operation and the size of the aquifer. It is also based on the fact that the groundwater contained in the alluvium is substandard. East Salt Creek is an accurate name. The water contained in the alluvium is virtually unusable. Field water sampling has shown that the conductivity of the groundwater is extremely high (3,000 to 100,000).

Data gathered for SW-1 and GW-3 are presented in the Tables N-1 through N-7 in Appendix N. The Division's 1987 Material Damage guidelines require any measured salinity values over 1,000 umhos/cm be reported as 'suspect' values. Since baseline values for SW-1 and GW-3 far exceed the Division's 'suspect' levels, the Operator compiled data in order to demonstrate mine discharge does not add salinity to the already high values, rather, lowers the salinity in SW-1 and GW-3 during the irrigation season. By improving the salinity of the waters in East Salt Creek and the East Salt Creek alluvium, downstream farmers will not suffer loss of production due to the addition of mine discharge.

TABLE 1 WATER INFLOW / OUTFLOW RECORD

McCLANE CANYON

MONTH	IMPORT	MINE INFLOW CONSUMED	PUMP TO OUTFALL	WATER ROADS OUTSIDE USE	PUMP TO SED POND	MONTHLY MINE INFLOW
2018						
OCTOBER	0	0	0	0	0	Unknown
NOVEMBER	0	0	0	0	0	Unknown
DECEMBER	0	0	0	0	0	Unknown
2019						
JANUARY	0	0	0	0	0	Unknown
FEBRUARY	0	0	0	0	0	Unknown
MARCH	0	0	0	0	0	Unknown
APRIL	0	0	0	0	0	Unknown
MAY	0	0	0	0	0	Unknown
JUNE	0	0	0	0	0	Unknown
JULY	0	0	0	0	0	Unknown
AUGUST	0	0	0	0	0	Unknown
SEPTEMBER	0	0	0	0	0	Unknown
TOTAL	0	0	0	0	0	0
					GPM	0.0
A-F		0.0	0.0	0.0		

Notes:

The office bathhouse previously consumed approximately 12,000 gallons per month.
Consumptive use in the mine was assumed to be 373,000 gallons per month based on 2000 AHR.

TABLE 2 DAILY PRECIPITATION TOTALS

2018 - 2019 WATER YEAR ASHFORD CANYON

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.15	NA	0.00	0.53	NA	NA	0.00	0.00
2	0.30	0.00	0.00	0.00	0.00	NA	0.00	NA	NA	NA	0.00	0.00
3	0.05	0.00	0.06	0.00	0.40	NA	0.08	NA	NA	NA	0.02	0.00
4	0.65	0.00	0.00	2.40	0.13	NA	0.00	NA	NA	NA	0.05	0.00
5	0.25	0.00	0.00	0.00	0.00	NA	0.00	NA	NA	NA	0.00	0.00
6	0.35	0.00	0.00	0.00	0.00	NA	0.00	NA	NA	NA	0.00	0.00
7	0.50	0.00	0.00	0.00	0.00	NA	0.00	NA	NA	NA	0.25	0.00
8	0.25	0.00	0.00	0.00	NA	NA	0.00	NA	NA	NA	0.00	0.05
9	0.05	0.00	0.00	0.00	NA	NA	0.00	NA	NA	NA	0.00	0.00
10	0.40	0.00	0.00	0.00	NA	NA	0.55	NA	NA	NA	0.05	0.32
11	0.20	0.00	0.00	0.00	NA	NA	0.02	NA	NA	0.00	0.00	0.15
12	0.00	0.00	0.00	0.00	NA	NA	0.00	NA	NA	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	NA	NA	0.03	NA	NA	0.00	0.00	0.00
14	0.00	0.00	0.20	0.00	NA	NA	0.00	NA	NA	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	NA	NA	0.00	NA	NA	0.00	0.00	0.00
16	0.00	0.00	0.00	0.05	NA	NA	0.00	NA	NA	0.00	0.00	0.00
17	0.00	0.00	0.00	0.50	NA	NA	0.00	NA	NA	0.00	0.00	0.05
18	0.10	0.00	0.00	0.10	NA	NA	0.00	NA	NA	0.00	0.00	0.00
19	0.00	0.00	0.00	0.20	NA	NA	0.00	NA	NA	NA	0.00	0.00
20	0.00	0.00	0.00	0.00	NA	NA	0.00	NA	NA	NA	0.00	0.00
21	0.00	0.00	0.00	0.00	NA	0.20	0.02	NA	NA	NA	0.00	0.00
22	0.00	0.00	0.00	0.00	NA	0.15	0.00	NA	NA	NA	0.00	0.00
23	0.15	0.20	0.10	0.00	NA	0.00	0.00	NA	NA	NA	0.00	0.00
24	0.00	0.05	0.17	0.00	NA	0.05	0.00	NA	NA	NA	0.00	0.00
25	0.00	0.10	0.28	0.00	NA	0.00	0.00	NA	NA	NA	0.00	0.00
26	0.00	0.00	0.05	0.00	NA	0.00	0.00	NA	NA	NA	0.00	0.00
27	0.00	0.00	0.00	0.25	NA	0.00	0.15	NA	NA	NA	0.00	0.03
28	0.00	0.00	0.00	0.70	NA	0.00	0.00	NA	NA	NA	0.00	0.00
29	0.00	0.00	0.00	0.05	NA	0.00	0.05	NA	NA	NA	0.00	0.05
30	0.00	0.30	0.05	0.00	NA	0.00	1.20	NA	NA	NA	0.00	0.00
31	0.00		0.00	0.22	NA	0.02		NA	NA	0.15	0.00	
TOT	3.25	0.65	0.91	4.47	0.68	0.42	2.10	0.53	0.00	0.15	0.37	0.65
MAX	0.65	0.30	0.28	2.40	0.40	0.20	1.20	0.53	0.00	0.15	0.25	0.32
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00
NO.	31	30	31	31	31	31	30	31	31	31	31	30

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Average	1.59	1.51	1.78	1.77	1.43	0.92	0.95	1.30	1.37	1.59	1.42	1.35

TOTAL 2018-2019 PRECIPITATION 14.18 inches
MAXIMUM 24 HOUR EVENT 2.40 inches

"NA" means data recorded by BLM equipment was not usable or unavailable.

TABLE 3 - MONTHLY AND ANNUAL PRECIPITATION
ASHFORD CANYON

YEAR	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL
1977				1.35	1.4			2.65	0.81	1.27	1.49	1.35	6.21+
1978				2.30	0.89	0.03	0.27	0.45	0.20	0.60	4.30	2.36	8.25+
1979					1.51	0.25	0.20	0.33	0.13	0.60	0.60	1.10	9.68+
1980	6.00	4.70	3.07	1.00			0.60	1.45	0.75	2.20	0.78	0.86	19.87+
1981	0.84	0.35	2.23	0.53	2.55	0.60	1.25	1.05	2.45	4.57	0.86	0.83	18.11
1982	2.13	0.41	3.24	0.28	0.70	0.23	0.59	1.18	4.22	2.19	3.21	1.66	20.04
1983	0.79	1.80	2.52	2.35	2.92	2.20	1.74	1.23	2.22	3.14	4.13	3.40	28.44
1984	0.88	0.47	1.91	2.65	1.59	3.56	1.32	3.54	0.43	2.97	0.99	4.02	24.33
1985	1.69	0.94	2.80	3.00	1.49	0.59	1.99	0.08	2.60	3.56	4.94	0.34	24.02
1986	0.32	1.51	1.74	2.53	2.99	0.13	2.27	1.23	3.58	2.02	0.79	0.87	19.98
1987	1.57	1.37	2.79	0.97	1.80	1.40	2.48	3.62	0.79	1.96	1.89	2.21	22.85
1988	1.96	0.48	1.45	1.86	1.77	0.60	0.02	0.89	0.87	0.26	1.35	2.01	13.52
1989	0.78	3.21	1.87	0.28	0.16	0.98	0.07	1.13	1.18	0.75	0.43	0.12	10.96
1990	0.54	1.79	1.27	1.53	0.33	0.65	1.10	0.43	1.79	1.05	0.55	0.86	11.89
1991	1.08	0.95	3.05	1.97	0.56	0.57	1.26	3.00	2.05	2.42	1.70	0.88	19.49
1992	0.78	1.75	2.51	0.96	2.92	0.16	1.70	1.41	0.87	2.29	1.88	2.08	19.31
1993	5.02	4.47	2.73	1.42	2.37	0.58	0.15	1.14	1.38	3.02	1.42	0.71	24.41
1994	0.45	2.04	0.28	2.64	0.74	0.25	0.00	2.14	1.88	2.20	1.94	1.71	16.27
1995	2.09	1.30	1.52	1.25	3.39	3.12	1.97	1.48	1.52	0.24	0.33	0.47	18.68
1996	2.01	3.26	1.07	1.61	0.60	0.94	0.44	0.24	1.77	1.55	1.75	1.19	16.43
1997	3.34	1.11	0.18	2.89	1.58	0.35	0.41	2.37	4.68	2.07	1.12	0.90	21.00
1998	1.51	3.12	2.94	1.88	0.54	1.50	1.00	0.90	0.55	2.49	1.15	0.62	18.20
1999	0.89	1.29	0.40	3.59	1.93	0.43	1.33	0.98	0.92	0.02	0.19	0.33	12.30
2000	1.66	2.45	1.54	0.50	1.68	0.41	0.57	0.74	0.82	1.72	1.00	0.90	13.99
2001	0.78	1.57	0.96	1.85	1.26	0.00	0.57	2.25	0.19	0.99	1.69	1.35	13.46
2002	0.64	0.25	0.87	0.33	0.05	0.33	0.27	0.54	2.43	2.94	0.72	0.76	10.13
2003	0.26	2.66	1.41	0.45	1.80	0.39	0.45	0.60	1.32	0.02	2.42	1.64	13.42
2004	1.05	1.81	0.12	1.80	0.50	0.17	0.13	1.61	2.21	3.18	1.87	1.55	16.00
2005	3.18	1.87	1.55	5.59	2.49	2.61	1.14	0.55	2.81	0.57	2.15	2.17	26.68
2006	2.47	0.75	0.85	0.84	0.33	3.05	1.40	0.11	0.27	2.53	1.30	3.00	16.90
2007	4.41	1.01	0.54	0.75	1.40	0.67	1.19	0.59	0.20	0.96	0.79	2.53	15.04
2008	1.16	1.05	3.25	3.87	0.60	0.16	0.75	1.77	0.84	0.61	0.64	1.03	15.73
2009	0.67	0.58	2.84	1.18	1.05	0.00	0.00	1.84	0.05	0.00	0.68	0.29	9.18
2010	0.24	0.83	3.05	1.40	1.43	2.08	1.63	1.10	0.90	0.90	1.49	0.43	15.47
2011	2.10	2.01	6.05	1.90	0.48	1.70	1.28	2.18	0.98	1.25	0.42	1.35	21.70
2012	1.95	1.18	0.43	1.10	1.90	0.63	0.80	0.03	0.00	0.35	0.25	0.90	9.52
2013	0.33	0.70	2.00	1.00	0.48	0.80	1.50	1.25	0.00	0.90	0.70	2.85	12.51
2014	*No data available due to BLM budget constraints*												
2015	Limited data available									NA		0.00	0.00
2016	0.00	0.00	0.00	0.00	NA	NA	0.00	NA	NA	0.00	0.00	0.00	0.00
2017	0.90	1.35	No data available								1.25	3.50	7.00
2018	0.60	0.30	0.04	2.60	2.80	No Data Available				1.80	2.50	0.25	14.18
2019	3.25	0.65	0.91	4.47	0.68*	0.42*	2.10	0.53*	0*	0.15*	0.65		13.16
AVERAGE	1.59	1.51	1.78	1.77	1.43	0.92	0.95	1.30	1.37	1.59	1.42	1.35	17.27
MAXIMUM	6.00	4.70	6.05	5.59	3.39	3.56	2.48	3.62	4.68	4.57	4.94	4.02	28.44
MINIMUM	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.03	0.00	0.00	0.00	0.00	9.18
ST. DEV.	1.35	1.09	1.25	1.20	0.90	0.95	0.71	0.91	1.15	1.13	1.10	0.99	4.96

U. S. Bureau of Land Management rain gage in Ashford Canyon.
1/4 NE, 1/4 NW, Section 4, T7S, R102W, 6TH PM
(Approximately 4.5 miles North of Munger Canyon.)
0.33 for October, 2013 water year, is based on rain guage at Badger Wash due to equipment failure of guage at Ashford Canyon
* Incomplete data - WY 2019 not included in annual statistics

Not included in the total annual statistics.

TABLE 4 **SURFACE WATER SAMPLING**

SW-1 - EAST SALT CREEK ABOVE McCLANE

39⁰ 26' 22.8" N 108⁰ 46' 46.0" W

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU	Dry		8.20		
Temperature	C			12.8		
Conductivity	UMHO/CM			1,140		
Flow	CFS			4.6		

LAB ANALYSIS

pH	SU			8.48		8.2
Acidity	MG/L			(330.00)		
Conductivity	UMHO/CM			1100		1912
Total Suspended Solids	MG/L			10.9		4179
Total Dissolved Solids	MG/L			764		1713
Total Hardness (CACO3)	MG/L					666
Sodium Absorption Ratio	---					
Bicarbonate	MG/L					
Calcium	MG/L					86
Carbonate	MG/L					
Chloride	MG/L					12
Magnesium	MG/L					78
Potassium	MG/L					
Sodium	MG/L					250
Sulfate	MG/L			275		998
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron - Total	MG/L			31.8		280.00
Iron - Dissolved	MG/L					
Lead	MG/L					0.006
Manganese	UG/L			47.0		0.040
Selenium	MG/L			<50		0.000

(shaded) Monitoring not required during temporary cessation.

Baseline from Table 4.2-6 & 7 East Salt Creek Station No. 1 = SW-1
McClane permit document

TABLE 4 **SURFACE WATER SAMPLING**

SW-2 - McCLANE CREEK BELOW MINE

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU	DRY		DRY		
Temperature	C					
Conductivity	UMHO/CM					
Flow	CFS					

LAB ANALYSIS

PH	SU					8.1
Conductivity	UMHO/CM					3,200
Total Suspended Solids	MG/L					556
Total Dissolved Solids	MG/L					2,938
Total Hardness (CACO3)	MG/L					1,364
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					216.0
Carbonate	MG/L					
Chloride	MG/L					30
Magnesium	MG/L					217
Potassium	MG/L					
Sodium	MG/L					378.0
Sulfate	MG/L					1,963
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron	MG/L					
Lead	MG/L					
Manganese	MG/L					
Selenium	MG/L					

(shaded) Monitoring not required during temporary cessation.

Baseline from Table 4.2-7 McClane Canyon #3
McClane permit document

TABLE 4 **SURFACE WATER SAMPLING**

SW - 3 - MUNGER CREEK BELOW MINE

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU	Dry		Dry		
Temperature	C					
Conductivity	UMHO/CM					
Flow	CFS					

LAB ANALYSIS

pH	SU					7.55
Conductivity	UMHO/CM					129
Total Suspended Solids	MG/L					17
Total Dissolved Solids	MG/L					106
Total Hardness (CACO3)	MG/L					
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					
Carbonate	MG/L					
Chloride	MG/L					
Magnesium	MG/L					
Potassium	MG/L					
Sodium	MG/L					
Sulfate	MG/L					
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron	MG/L					0.255
Lead	MG/L					
Manganese	MG/L					0.023
Selenium	MG/L					

(shaded) Monitoring not required during temporary cessation.

Baseline data from Table 4.5-10 from the Munger permit document (#4).

TABLE 4 **SURFACE WATER SAMPLING**

SW-4 - EAST SALT CREEK ~2 MILES DOWNSTREAM OF SW-8

39° 24' 11.3" N 108° 48' 51.0" W

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19
pH	SU				
Temperature	C				
Conductivity	UMHO/CM				
Flow	CFS				

NOT MONITORED DURING TEMPORARY CESSATI(

LAB ANALYSIS

pH	SU				
Acidity	MG/L				
Conductivity	UMHO/CM				
Total Suspended Solids	MG/L				
Total Dissolved Solids	MG/L				
Total Hardness (CACO3)	MG/L				
Sodium Absorption Ratio	MG/L				
Bicarbonate	MG/L				
Calcium	MG/L				
Carbonate	MG/L				
Chloride	MG/L				
Magnesium	MG/L				
Potassium	MG/L				
Sodium	MG/L				
Sulfate	MG/L				
Aluminum	MG/L				
Arsenic	MG/L				
Boron	MG/L				
Copper	MG/L				
Iron - Total	MG/L				
Iron - Dissolved	MG/L				
Lead	MG/L				
Manganese	MG/L				
Selenium	MG/L				

TABLE 4 **SURFACE WATER SAMPLING**

SW-5 - McCLANE CREEK ABOVE MINE

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU	DRY		DRY		
Temperature	C					
Conductivity	UMHO/CM					

LAB ANALYSIS

pH	SU	DRY		DRY		8.1
Conductivity	UMHO/CM					3,535
Total Suspended Solids	MG/L					252
Total Dissolved Solids	MG/L					3,151
Total Hardness (CACO3)	MG/L					1,277
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					182
Carbonate	MG/L					
Chloride	MG/L					32
Magnesium	MG/L					207
Potassium	MG/L					
Sodium	MG/L					504
Sulfate	MG/L					2,096
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron	MG/L					
Lead	MG/L					
Manganese	MG/L					
Selenium	MG/L					

(shaded) Monitoring not required during temporary cessation.

Baseline from Table 4.2 7 McClane Canyon #1 and #2
McClane permit document

TABLE 4 **SURFACE WATER SAMPLING**

SW-6 - MUNGER CREEK BELOW MINE BEFORE NORTH SPLIT

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU					
Temperature	C					
Conductivity	UMHO/CM					

NOT MONITORED DURING TEMPORARY CESSATION

LAB ANALYSIS

pH	SU					8.4
Conductivity	UMHO/CM					1,700
Total Suspended Solids	MG/L					25,726
Total Dissolved Solids	MG/L					1,190
Total Hardness (CACO3)	MG/L					
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					
Carbonate	MG/L					
Chloride	MG/L					
Magnesium	MG/L					
Potassium	MG/L					
Sodium	MG/L					
Sulfate	MG/L					
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron	MG/L					
Lead	MG/L					
Manganese	MG/L					
Selenium	MG/L					

Baseline data from Table 4.5-9 from the Munger permit document (MC-9).

TABLE 4 **SURFACE WATER SAMPLING**

SW-7 - MUNGER CREEK ABOVE MINE

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU					
Temperature	C					
Conductivity	UMHO/CM					
Flow	GPM					

NOT MONITORED DURING TEMPORARY CESSATION

LAB ANALYSIS

pH	SU					8.40
Conductivity	UMHO/CM					5,800
Total Suspended Solids	MG/L					27
Total Dissolved Solids	MG/L					5,342
Total Hardness (CACO3)	MG/L					
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					
Carbonate	MG/L					
Chloride	MG/L					
Magnesium	MG/L					
Potassium	MG/L					
Sodium	MG/L					
Sulfate	MG/L					
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron	MG/L					0.170
Lead	MG/L					
Manganese	MG/L					
Selenium	MG/L					

Baseline data from Table 4.5-9 from the Munger permit document (MC-7).

TABLE 4 **SURFACE WATER SAMPLING**

SW-8 - EAST SALT CREEK BELOW McCLANE MINE

39° 25' 30.0" N 108° 47' 28.3" W

FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19	Baseline
pH	SU	Dry		7.5		7.60
Temperature	C			20.7		
Conductivity	UMHO/CM			1,270		3,579
Flow	CFS			4.6		

LAB ANALYSIS

pH	SU			8.6		
Acidity	MG/L			(370.0)		
Conductivity	UMHO/CM			1220		
Total Suspended Solids	MG/L			120		3,015
Total Dissolved Solids	MG/L			854		3,248
Total Hardness (CACO3)	MG/L					
Sodium Absorption Ratio	MG/L					
Bicarbonate	MG/L					
Calcium	MG/L					
Carbonate	MG/L					
Chloride	MG/L					
Magnesium	MG/L					
Potassium	MG/L					
Sodium	MG/L					
Sulfate	MG/L			332		
Aluminum	MG/L					
Arsenic	MG/L					
Boron	MG/L					
Copper	MG/L					
Iron - Total	MG/L			26.8		142.000
Iron - Dissolved	MG/L					
Lead	MG/L					
Manganese	UG/L			72.6		0.660
Selenium	UG/L			<50		

Baseline data from Table 4.5-8 from the Munger permit document.

TABLE 5 GROUNDWATER MONITORING SUMMARY

WELL GW-1 - LOCATED ABOUT 3 MILES ABOVE McCLANE IN THE ALLUVIUM OF EAST SALT CREEK

DATE	SWL (feet)	pH su	EC umhos/cm	Temp (C)
11/15/18	14.3	**	**	9.8
06/26/19	8.0	7.7	3,300	12.5
AVERAGE	11.2	7.70	3,300	11.2
MAXIMUM	14.3	7.70	3,300	12.5
MINIMUM	8.0	7.70	3,300	9.8

** Not enough water to grab a sample

1981 Average SWL =		7.94
Table 4.2ii 1981 & 1986 Baseline	Average	Maximum
SWL	7.94	10.40
Temp	10.12	15.1
pH	7.27	7.86
Conductivity	3480	4800

WELL GW-3 - LOCATED IN THE ALLUVIUM OF EAST SALT CREEK BELOW MUNGER

WELL GW-9 - Located in the Alluvium of East Salt Creek Below the Excess Material Stockpiles

DATE	SWL (feet)	pH su	EC umhos/cm	Temp (C)	GW-9 Baseline (10/2007 to 9/2008)		
						Average	Maximum
11/15/18	28.0	7.6	5,600	12.2	Ph	7.4	7.6
					Cond	9650	10150
06/26/19	25.7	7.8	5,200	15.7	Temp	14.7	16.1
					SWL	26	26.5
AVERAGE	26.9	7.70	5,400	14.0	TDS	8150	8857
MAXIMUM	28.0	7.80	5,600	15.7	TR Iron	1.05	3.4
MINIMUM	25.7	7.60	5,200	12.2	TR Mg	0.71	1.66

(shaded) Monitoring not required during temporary cessation.

Total Depths		
GW-1		GW-9
14.3		53.5

TABLE 6 MINE INFLOW/SEEP SAMPLING

Underground Sample - Mine Discharge

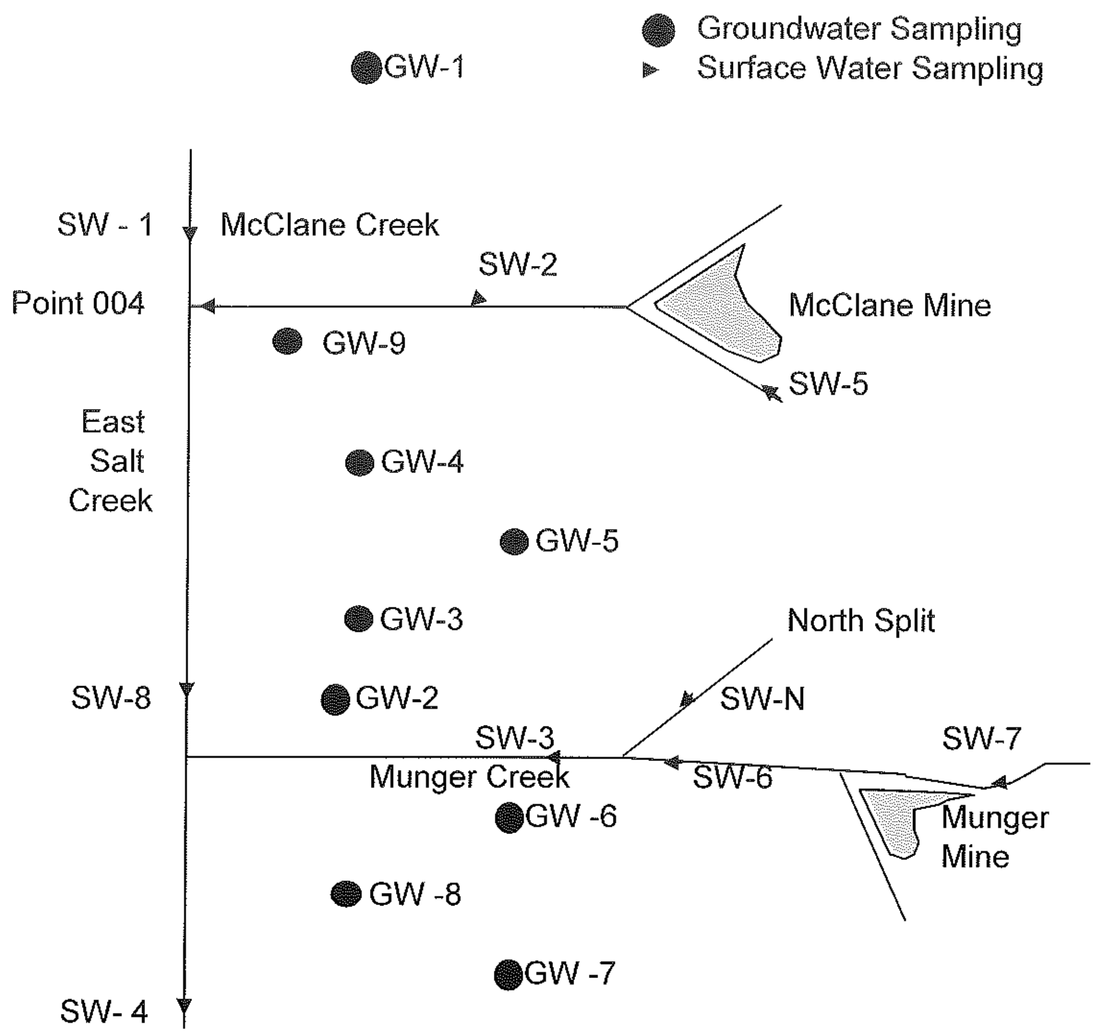
FIELD PARAMETERS	UNITS	4Q/18	1Q/19	2Q/19	3Q/19
pH	SU				
Temperature	C				
Conductivity	UMHO/CM				
Flow	GPM				

NO DISCHARGE DURING THE WATER YEAR

LAB ANALYSIS

pH	SU				
Conductivity	UMHO/CM				
Total Suspended Solids	MG/L				
Total Dissolved Solids	MG/L				
Settable solids	MG/L				
Sodium Absorption Ratio	MG/L				
Bicarbonate	MG/L				
Calcium	MG/L				
Carbonate	MG/L				
Chloride	MG/L				
Magnesium	MG/L				
Potassium	MG/L				
Sodium	MG/L				
Sulfate	MG/L				
Aluminum	MG/L				
Arsenic, Dissolved	MG/L				
Boron, Dissolved	MG/L				
Cadmium, Dissolved	MG/L				
Copper	MG/L				
Chromium, Dissolved	MG/L				
Iron, Total	MG/L	0.330			
Iron, Dissolved	MG/L				
Lead	MG/L				
Manganese, Dissolved	MG/L				
Manganese, Total	MG/L				
Mecury, Dissolved	MG/L				
Selenium	MG/L				
Zinc	MG/L				

FIGURE 1 WATER SAMPLING LOCATIONS



This figure is a diagrammatic representation of the location of the water sampling sites. Actual locations are shown on Figure 4.2-2 of the McClane Canyon Mine Permit Application.

Figure 2: Limited Data available due to Ashford Canyon Rain Gauge reporting issues. See Tables 2 & 3 for data.

LEGEND:

- Workings Complete
- Workings Projected
- Workings 2nd Mined
- Sump

- 2003 Mining
- 2004 Mining
- 2005 Mining
- 2006 Mining
- 2007 Mining
- 2008 Mining
- 2009 Mining
- 2010 Mining

No Mining in 2011 – 2019

McClane Canyon Mine
3148 Highway 139
Loma, Colorado 81624
Phone #970-858-3960 Fax #970-858-4619

Date: 02/01/12
Scale: 1" = 600'

Figure 3 McClane Mine Map

MSHA ID. #05-03013 C-1980-004

* NOT TO SCALE *