

# 2023 ANNUAL HYDROLOGY REPORT

SAGE CREEK MINE

PERMIT C-2009-087

February 2024



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## **1.0 INTRODUCTION**

This Annual Hydrology Report (AHR) presents the hydrologic monitoring data collected during the 2023 water year (October 2022 - September 2023) at the Peabody Sage Creek Mining, LLC's Peabody Sage Creek Mine (PSCM). The AHR fulfills the reporting requirements under the Colorado Division of Reclamation, Mining, and Safety (CDRMS) Permit No. C-2009-087.

### **1.1 BACKGROUND**

The PSCM is an underground coal mine located in Routt County, approximately nine miles southeast of Hayden, Colorado. PSCM Permit No. C-2009-087 was approved by CDRMS in May 2010. The PSCM permit area encompasses the majority of the former Seneca II Mine (State Permit No. C-1980-005) which is a reclaimed surface mine that extracted coal from 1968 through 1999. Many of the PSCM hydrologic monitoring sites were previously utilized for the Seneca II Mine. Excavation of the PSCM portal began in June 2011 and underground mining proceeded until the fall of 2012 when it was suspended. The PSCM remains in a care and maintenance state. No coal extraction occurred in 2023.

In 2012 the Water Quality Control Division (WQCD) issued PSCM a violation for elevated selenium in the mine discharges. In response, PSCM completed an extensive monitoring effort to evaluate the source and fate of selenium in these watersheds. In 2014 the Water Quality Control Commission (WQCC) granted a temporary modification of the chronic selenium TVS in both Cow Camp Creek and Grassy Creek to current conditions to allow PSCM to collect additional biologic and water quality data needed to develop site-specific standards. In 2017, the WQCC extended the selenium temporary modification for Grassy Creek to 12/31/2022 and the temporary modification to Cow Camp Creek to 12/31/2023. In 2022, the WQCD decided to move all temporary modification reviews up by 6-months. Because this provided insufficient time for stakeholders to finalize and advance their site-specific standard proposals, the WQCC extended all temporary modifications set to expire in 2022 through 12/31/2023. This extended the Grassy Creek temporary modifications through

12/31/2023. In May 2019 the WQCD incorporated the extension of the selenium temporary modification into NPDES Permit No. CO0048275. On 1/1/2021, the NPDES permit was placed on administrative extension until WQCD renews the permit. No changes to the permit may occur while it is on administrative extension. Therefore, the extension of the Grassy Creek selenium temporary modification through the end of 2023 was not incorporated into the permit and the monthly average selenium limits became effective 1/1/2023. PSCM continues to collect the biologic and water quality data necessary for the development of a site-specific selenium standard. This AHR will only discuss data relevant to the requirements of the CDRMS permit.

## 2.0 METEOROLOGICAL

Meteorological data for the 2023 water year is presented in Appendix A. The 2023 data was obtained from NOAA weather station USC00053867 located in Hayden, Colorado ([www.ncdc.noaa.gov/cdo-wb/](http://www.ncdc.noaa.gov/cdo-wb/)). A total of 20.99 inches of precipitation was measured in 2023, which is 2.78 inches greater than the 1981-2023 average of 18.21 inches. November, December, January, March, and June were wetter than normal, but the remaining months were drier than normal. Potential snowpack runoff, as estimated by totaling November through March precipitation, was 14.12 inches, which was 6.45 inches above the 1981-2023 average of 7.67 inches.

### 3.0 GROUNDWATER

The PSCM groundwater monitoring program includes seven monitoring wells. The following table includes the wells monitored, the water bearing unit they are screened in, the frequency they are monitored, and their required parameter list. The monitoring well locations are shown on Figure 1. Groundwater monitoring was completed by experienced personnel in accordance with the practices described in Section 2.04.7 of Permit No. C-2009-087. All samples were analyzed by ACZ Laboratories.

Site	Unit	Monitoring Frequency		Parameter List
		Water Level	Water Quality	
SGAL70	Grassy Creek Alluvium	SA	SA	GW Long
SCAL69	Cow Camp Creek Alluvium	SA	SA	GW Short
SSP61	Spoil	SA	SA	GW Short
SSP62	Spoil	SA	SA	GW Short
COV2702	Wadge Overburden	A	A	GW Long
SOV42	Wadge Overburden	A	A	GW Short
CW2701	Wadge Coal	A	A	GW Long

**Note**

A: Annual

SA: Semi-Annually

GW Long: Field conductivity, field pH, field temperature, dissolved aluminum, dissolved arsenic, bicarbonate, dissolved boron, dissolved cadmium, calcium, carbonate, chloride, dissolved chromium, dissolved copper, fluoride, hardness, dissolved iron, dissolved lead, magnesium, dissolved manganese, dissolved mercury, dissolved nickel, nitrate, nitrite, potassium, dissolved selenium, sodium, Sodium Adsorption Ratio, sulfide, total suspended solids, dissolved zinc, Cation/Anion Balance, total dissolved solids, total dissolved solids calculated

GW Short: Field conductivity, field pH, field temperature, fluoride, dissolved iron, dissolved manganese, nitrate, nitrite, dissolved selenium, sulfate, total dissolved solids

### 3.1 WATER LEVELS

The static water levels measured during the 2023 water year are included with the groundwater quality data in Appendix B. Water level hydrographs for each of the wells are provided in Appendix C. The static water levels measured at the alluvium, bedrock, and spoil wells this year were within their respective historic range. This

includes Wadge Overburden Well SOV42 which was previously dry in 2022. This wells water table has been fluctuating near the base of well since 2019.

Water levels in most of the water bearing units at PSCM exhibit seasonal fluctuations. The water table in the shallow alluvial and spoil wells fluctuates in response to seasonal precipitation events, with the water table typically at its highest during the spring snowmelt seasons and then declining through late summer/early fall in response to the dry conditions. The water levels in the bedrock overburden and coal seams also fluctuate in response to recharge from seasonal precipitation but are partially influenced by interactions with groundwater in the reclaimed mine spoil. The water level in spoil wells SSP61 and SSP62 indicate only the downslope highwall portions of the spoil are significantly saturated.

### 3.2 GROUNDWATER QUALITY

The PSCM Groundwater Point of Compliance (GWPOC) is SGAL70. SGAL70 was previously used as the GWPOC at the Seneca II Mine and has a long historical record of water level and water quality data. SGAL70 is screened within the Grassy Creek alluvium downgradient of the PSCM surface effects. Bedrock GWPOC wells were deemed unnecessary due to the low hydraulic conductivity of the bedrock units, their low yields which are insufficient to support domestic or agricultural use, and because downgradient attenuation and dilution will further limit water quality impacts only to bedrock in close proximity to the mine. See Section 2.04, pg 103 of Permit No. C-2009-087 and Technical Revision 47 (TR-47) of Seneca II Permit No. C-1980-005 for further justification for the GWPOC.

Table B.1 of Appendix B includes the analytical results for the samples collected from GWPOC well SGAL70 during the 2023 water year and provides a comparison to the Grassy Creek Alluvial GWPOC water quality standards. Technical Revision 47 (TR-47) of Seneca II Permit No. C-1980-005 describes how the standards were established. Table B.2 provides the analytical results for the remaining monitoring wells however no comparisons to water quality standards were made as these wells are not GWPOC. The groundwater quality at SGAL70 complies with all TR-47 water quality standards except for dissolved cadmium. The dissolved cadmium exceedances were not



associated with a measurable value of cadmium but are the result of the lab detection limit exceeding the water quality standard. Water quality samples analyzed at commercial labs are often run in groups that include samples from unrelated locations and the detection limit for the batch of samples can be increased above the normal detection threshold in response to high concentrations in one or more samples within the batch or from unrelated instrument interference. Cadmium has not been detected at SGAL70 since 2001 and the measured value was 3 µg/L. Since cadmium has not historically been a chemical of concern at this well its unlikely that that the elevated detection limit is censoring a concentration above the water quality standard.

## 4.0 SURFACE WATER

The PSCM lies within the headwaters of Grassy Creek and Fish Creek. The following table lists the PSCM surface water monitoring points from upstream to downstream, the stream they are associated with, the frequency they are monitored, and their required parameter list. See Figure 1 for the location of the surface water monitoring points. Surface water monitoring was completed by experienced personnel in accordance with the practices described in Section 2.04.7 of Permit No. C-2009-087. All samples were analyzed by ACZ Laboratories.

Site	Type	Stream	Monitoring Frequency		Parameter List
			Flow	Water Quality	
NPDES5	NPDES	Fish Creek	SM	SM	NPDES
NPDES6	NPDES	Fish Creek	SM	SM	NPDES
SSC10	Surface Water	Fish Creek	SA	SA	SW Short
YSGF5	Surface Water	Grassy Creek	TA	TA	SW Short
SSG1	Surface Water	Grassy Creek	TA	TA	SW Short
SSLG5	Surface Water	Little Grassy Creek	TA	TA	SW Short
NPDES2	NPDES	Little Grassy Creek	SM	SM	NPDES
NPDES3	NPDES	Grassy Creek	SM	SM	NPDES
NPDES7	NPDES	Grassy Creek	SM	SM	NPDES
SSG2	Surface Water	Grassy Creek	TA	TA	SW Short
YSG5	Surface Water	Grassy Creek	TA	TA	SW Long

**Note**

TA: Triannually during snowmelt runoff, post runoff, and baseflow (usually April, June, and September)

SA: Semiannually in June and July

SM: Semimonthly

SW Long: Field conductivity, field pH, field temperature, total recoverable arsenic, bicarbonate, dissolved boron, dissolved cadmium, calcium, carbonate, chloride, dissolved chromium, dissolved copper, hardness, total recoverable iron, dissolved lead, magnesium, dissolved manganese, total mercury, dissolved nickel, ammonia, nitrate, nitrite, potassium, dissolved selenium, dissolved silver, sodium, Sodium Adsorption Ratio, sulfate, sulfide, total suspended solids, dissolved zinc, Cation/Anion Balance, total dissolved solids, total dissolved solids calculated

SW Short: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total mercury, ammonia, nitrate, nitrite, dissolved selenium, sulfate, sulfide, total suspended solids, total dissolved solids

NPDES: See NPDES Permit No. CO-0048275

The Colorado WQCC has established segment specific aquatic life water quality standards for Grassy Creek (Segment 13i and 13j) and Fish Creek (Segment 13g) of the Yampa River. The water quality standards for these segments are included in Colorado Department of Public Health & Environment (CDPHE) Regulation 33. Therefore, the following surface water quality discussion has been organized by drainage basin and then segment. The 2023 Water Year surface water quality data is provided in Appendix D. Samples from this year's stream points are compared to both the CDPHE surface water agricultural use standards (CDPHE, Reg. 31) and the appropriate segment specific aquatic life water quality standards (CDPHE, Reg. 33). Samples from NPDES outfalls are compared to NPDES discharge limits as well as the segment specific aquatic life standards. Additional discussion of the water quality in each stream segment follows.

#### 4.1 FISH CREEK

Analytical results for the 2023 surface water monitoring completed at Cow Camp Creek (tributary to Fish Creek) stream point SSC10 is provided in Table D.1 of Appendix D. Analytical results for Outfalls 005 and 006, which report to Cow Camp Creek, are included in Table D.2 and D.3. The analytical results for Pond 004, which is only monitored when cattle are present within the Outfall 005 watershed, is found in Table D.4. The temporary modification of the chronic aquatic life selenium standard to current conditions has been extended through 12/31/2023 for Yampa Segment 13g, which includes Cow Camp Creek down to its confluence with Fish Creek (CDPHE, Reg. 33). A report only monthly average limit at Outfalls 005 and 006 was also incorporated into NPDES Permit No. C00048275. Surprisingly when WQCD extended the selenium temporary modification in the NPDES permit they did not extend the flow limit compliance schedule despite the direct relationship between the seasonal flow limits and seasonal selenium limits at the site. The flow limits became effective on 10/1/2019.

There was one exceedances of the water quality based NPDES permit limits at Outfall 004, 005, and 006 in 2023. An exceedance of the pH limit occurred at Outfall 006 in April. The 6.1 su pH measured during the April 20<sup>th</sup> sampling event was appears to be an anomaly as the pH measured before and after this even was neutral (4/12/2023:

was 7.1 su; 5/5/2023: 7.3 su). The discharge at this outfall is associated with a spring located within the reclaimed portion of the Seneca Mine and there is no ongoing mining activity in this watershed. No other exceedances of the water quality based NPDES permit limits or Yampa Segment 13g water quality standards occurred at Outfalls 004, 005 or 006 in 2023

Four monthly average flow limit exceedances, two at Outfall 005 and two at Outfall 006, also occurred during 2023. The exceedances occurred in April and May at both locations. Outfalls 005 and 006 are associated with spoil spring discharges and the flows are the result of natural hydrologic processes which can not be practically controlled. The area had an abnormally wet winter and spring season (November - March), with the precipitation nearly twice (14.12 in) the historical average for this period (7.67 in), which contributed to the higher-than-average flows observed at these outfalls in April and May.

During 2023, water was only present at downstream point SSC10 in May. This sample was collected at the same time as the biological monitoring event completed to support the ongoing selenium standard temporary modification. Unfortunately, the wrong sample type was collected and manganese, mercury, ammonia, nitrate, nitrite, sulfide, and TSS were not analyzed. These parameters will be measured in future sampling events. Since water was not present in the stream channel during the June and July sampling events, samples could not be collected. Cow Camp Creek loses water to the alluvium in its lower reach and the stream is often dry near its outlet even when discharge persists in the upper reaches. There were no exceedances of the Yampa Segment 13g water quality standards in 2023.

## 4.2 GRASSY CREEK

Analytical results for the monitoring conducted at upper Grassy Creek Segment 13i stream points SSLG5, YSGF5, SSG1, and SSG2 are provided in Tables D.5 through D.8 of Appendix D and the analytical results for monitoring point YSG5 located in lower Grassy Creek Segment 13j are found in Table D.9. Analytical results for PSCM Outfalls 002, 003, and 007, which report to upper Grassy Creek Segment 13.i, are found in Table D.10 through D.12. The PSCM does not have any outfalls that discharge directly

to Grassy Creek Segment 13j. As is described in CDPHE Regulation 33, a current conditions temporary modification of the chronic dissolved selenium standard is in place for Yampa Segment 13i through 12/31/2023. However, this change could not be incorporated into the NPDES permit because it is on administrative extension. Therefore, the monthly average selenium limits for Outfalls 002 and 003 became effective on 1/1/2023. The temporary modification for chronic total recoverable iron in Yampa Segment 13i was deleted in 2022, the standard was returned to 1 mg/L.

Two exceedances of the NPDES permit limits occurred at Outfall 002 in 2023. In April the total recoverable iron exceeded the monthly average limit of 1 mg/L. No mining activity was occurring at this time and the pH remained neutral (7.7 su). The total recoverable iron returned to compliance levels during the next sample event in May. There have been no other exceedances of total recoverable iron at Outfall 002 during the last five years (Oct 2018 - Sept 2023) and it is unclear what caused this elevated result. The selenium monthly average limit was also exceeded at Outfall 002 during May. Marine shale deposits, including the Williams Fork and Lewis Shale Formations, that are present in this area are known to be laden with selenium. Selenium is naturally mobilized to surface water and groundwater through weathering processes. Extensive monitoring has indicated that the selenium found within these formations causes elevated selenium both instream and at the outfalls, particularly during the spring snowmelt season. PSCM collects biological data within these streams, and the data continues to demonstrate that there is no toxic effect to the downstream aquatic species from these discharges. PSCM is continuing to work with the WQCD towards a site-specific standard that more appropriately reflects the existing conditions at the site. No other exceedances of the NPDES limits or Segment 13i standards occurred at any of the other upper Grassy Creek outfalls in 2023.

Total recoverable iron exceeded the chronic aquatic life standard of 1 mg/L twice at upstream point YSGF5. These exceedances occurred during the June 28<sup>th</sup> and July 17<sup>th</sup> monitoring events. Samples collected from points SSG2 and YSG5, downstream of the mine's outfalls, during the same June 28<sup>th</sup> and July 17<sup>th</sup> monitoring event indicate iron was compliant with the standard. YSGF5 also receives drainage from Yoast Mine Outfall 011. Yoast has been reclaimed and vegetated for over 10 years and Outfall 011 was not discharging in either June or July. See Tables D.2 and D.4 in Appendix D of the Permit No. C-1994-082 2022 Annual Hydrology Report. Total recoverable iron at

the Grassy Creek stream points is strongly correlated with suspended solids ( $r^2$ : 0.87) which become naturally elevated during rain and snow melt runoff events (Figure D.1). The Total suspended solids in the YSGF5 June and July samples were elevated (59-62 mg/L) relative to the concentration observed at downstream points SSG2 and YSG5 ( $\leq 24$  mg/L). This indicates the elevated iron observed at YSGF5 is unrelated to the runoff from the mine and is likely the result of natural erosional processes that are occurring within the unmined portions of the watershed.

Stream points SSLG5, YSGF5, SSG1, SSG2, and YSG5 were compliant with all other aquatic life standards and agriculture use standards except for sulfide and mercury. The exceedances for both parameters were related to the laboratories method detection limit being greater than the standard. The method detection limit for the sulfide analysis (MDL: 0.02 mg/L) conducted by PSCM's lab exceeds the water quality standard for un-ionized sulfide ( $\text{H}_2\text{S}$ : 0.002 mg/L) by an order of magnitude. This method detects both dissolved sulfides and acid-soluble metallic sulfides that are present in suspended matter and provides a single cumulative concentration. Dissolved sulfide includes both the ionized ( $\text{HS}^-$ ) and un-ionized forms of hydrogen sulfide ( $\text{H}_2\text{S}$ ). The distribution of sulfide between the un-ionized hydrogen sulfide and ionized form is dependent on the temperature and pH. The toxic un-ionized hydrogen sulfide is dominant at low pH however in alkaline waters, like those present at PSCM, most of the dissolved sulfide is present as non-toxic ionized sulfide. Dissolved sulfide is also rarely present in oxygenated surface waters as it typically oxidizes to sulfate very quickly. Therefore, it is unlikely that the elevated detection limit is censoring a concentration above the water quality standard and this result is an actual exceedance of the standard.

The method detection limit for mercury (0.02  $\mu\text{g/L}$ ) used by PSCM's lab is above the 0.01  $\mu\text{g/L}$  aquatic life standard. PSCM's lab follows EPA method 245.1 which utilizes cold vapor atomic adsorption and follows the CDRMS Guidelines for the Collection of Water Quality and Overburden Geochemistry Data. At the time that the PSCM NPDES permit was established the WQCD performed a reasonable potential analysis and determined that there was no potential for the discharges to exceed the mercury standard and the monitoring requirements were removed. There is no reason to believe that the mercury detection limit is censoring a measurable value above the water quality standard.

CDPHE Regulation 31 specifies that the manganese agricultural use standard of 0.2 mg/L standard is only applicable when irrigation water is applied to soils with pH lower than 6.0. The soils at PSCM are alkaline and the 0.2 mg/L standard is therefore not applicable for any of the surface water points. Dissolved manganese is significantly less than the CDPHE Yampa Segment 13i and 13j acute and chronic aquatic life standards.

There were no other exceedances of the Yampa Segment 13i or 13j water quality standards in 2023.

## 5.0 SPRINGS

The PSCM monitoring program includes five springs. The following table includes the springs, the frequency they are monitored, and the parameter list. See Figure 1 for the location of the spring points. Spring monitoring was completed by experienced personnel and samples were collected in accordance with the practices described in Section 2.04.7 of Permit No. C-2009-087. All samples were analyzed by ACZ Laboratories.

Site	Type	Unit	Monitoring Frequency		Parameter List
			Discharge	Water Quality	
SSSPG3	Spring	Spoils	A	A	SW Short
SSSPG4	Spring	Spoils	A	A	SW Short
SSSPG5	Spring	Spoils	A	A	SW Short
SSSPG6A	Spring	Spoils	A	A	SW Long
SSSPG10	Spring	Spoils	A	A	SW Short

**Note**

A: Annual

SW Long: Field conductivity, field pH, field temperature, total recoverable arsenic, bicarbonate, dissolved boron, dissolved cadmium, calcium, carbonate, chloride, dissolved chromium, dissolved copper, hardness, total recoverable iron, dissolved lead, magnesium, dissolved manganese, total mercury, dissolved nickel, ammonia, nitrate, nitrite, potassium, dissolved selenium, dissolved silver, sodium, Sodium Adsorption Ratio, sulfate, sulfide, total suspended solids, dissolved zinc, Cation/Anion Balance, total dissolved solids, total dissolved solids calculated

SW Short: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total mercury, ammonia, nitrate, nitrite, dissolved selenium, sulfate, sulfide, total suspended solids, total dissolved solids

Table E.1 in Appendix E includes the analytical results for samples collected from the spoil springs in 2023. Samples were collected from all springs except for SSSPG10 and SSSPG6A which were dry. The primary post-mine land use in this area is livestock grazing and wildlife habitat. Therefore, the water quality collected from the spoil springs is compared to the CWQCC agricultural use standards established in CDPHE Regulation 31. There were no exceedances of the agricultural use surface water quality standards at the springs in 2023.

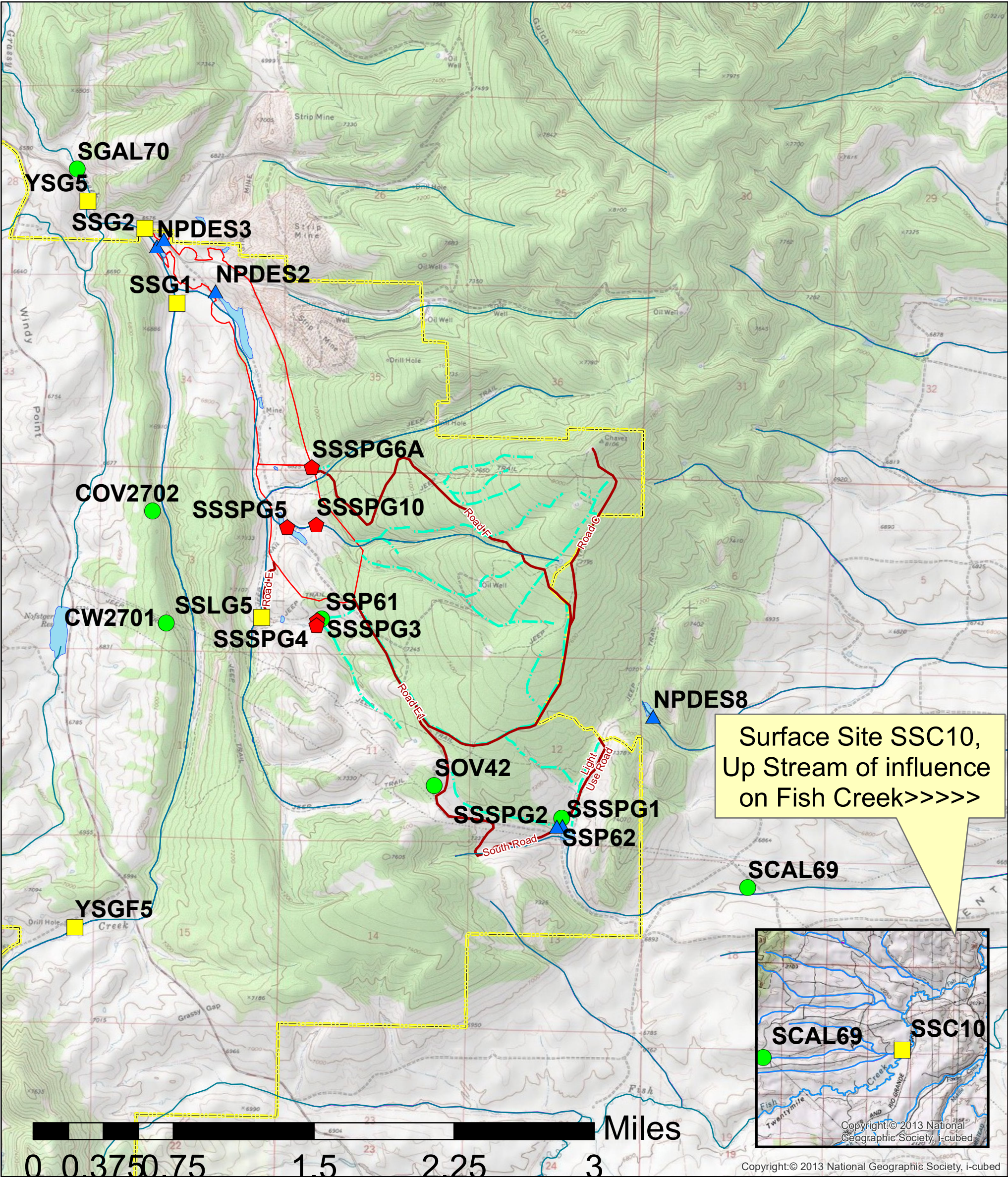


## 6.0 SUMMARY

No significant hydrologic impacts attributable to activities at PSCM were noted during 2023. Groundwater levels in all alluvium, bedrock, and spoil monitoring wells were within the historic range observed at these locations. The groundwater quality at the GWPOC complied with all TR-47 water quality standards except for dissolved cadmium. The dissolved cadmium exceedances were not associated with a measurable value of cadmium but were the result of the lab detection limit exceeding the water quality standard.

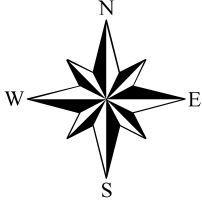
Although there were two exceedances of the total recoverable iron chronic aquatic life standards at upstream monitoring point YSGF5 in Grassy Creek, synoptic watershed monitoring conducted at the downstream points during the same events confirmed that the iron was unrelated to the PSCM. It is likely that the iron at YSGF5 is the result of natural erosional processes that are occurring within the unmined portions of the watershed. There were no other measured exceedances of the applicable Yampa Segment 13g, 13i, or 13j aquatic life standards or agricultural use standards in Cow Camp Creek or upper and lower Grassy Creek in 2023.





Legend

- NPDES
- Surface Water
- SPRING
- Ground Water
- Segment\_13g Bond Creek
- Segment\_13i Grassy Creek
- Sage Creek Mine Permit Boundary
- PSCM Current Disturbance



<div>Peabody Sage Creek Mine</div> <div> 36600 RCR #27 Hayden, CO 81639</div>	
Annual Hydrology Report 2021	
DESIGNED BY: MLK DRAWN BY: MLK APPROVED BY:	COUNTRY: USA STATE/PROVINCE: COLORADO GSC: 5N 86W, 6N 86W
DATE: 2020-06-24	DRAWING/SHEET: 1 of 1 C.I.: 0'

Figure 1



APPENDIX A  
METEOROLOGICAL DATA

PERIOD OF RECORD PRECIPITATION SUMMARY													
Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2023	1.23	2.06	4.12	3.79	1.04	3.11	1.37	0.52	1.69	0.29	1.33	0.44	20.99
2022	1.82	0.62	2.79	1.18	0.85	1.43	2.07	3.14	0.61	1.14	0.99	2.1	18.74
2021	0.87	0.74	1.46	1.03	1.59	1.67	0.5	1.02	0.15	0.86	1.09	1.46	12.44
2020	1.90	1.37	2.60	2.53	2.40	1.67	1.75	1.63	0.77	0.71	0.43	0.43	18.19
2019	2.14	1.81	1.62	2.45	1.46	2.89	1.66	1.88	3.57	0.38	0.44	1.53	21.83
2018	2.45	1.31	1.36	1.65	1.92	1.90	2.95	0.85	0.15	0.15	1.33	0.17	16.19
2017	1.29	0.91	2.06	2.70	1.47	0.84	2.06	1.85	0.13	1.68	0.46	1.74	17.19
2016	1.39	1.90	2.55	2.65	1.16	1.40	3.02	1.94	0.40	0.81	0.19	1.02	18.43
2015	1.60	2.10	1.84	0.55	1.02	1.30	1.60	4.36	0.61	2.36	1.53	0.90	19.77
2014	2.69	1.75	1.42	2.02	0.78	1.96	1.19	2.58	0.72	1.50	3.77	0.87	21.25
2013	0.86	0.46	3.21	1.02	0.73	1.29	3.58	1.67	0.06	0.46	1.48	2.76	17.58
2012	1.41	1.65	0.36	0.87	1.97	0.50	1.13	0.22	0.15	2.43	0.55	1.56	12.80
2011	2.18	1.91	2.98	1.59	2.09	2.52	4.50	3.56	0.85	1.82	0.65	1.14	25.79
2010	1.22	0.77	1.24	0.75	0.90	0.73	1.98	2.80	1.34	1.19	1.56	0.62	15.10
2009	0.53	1.16	1.38	2.80	0.60	1.32	1.40	1.89	2.08	0.51	1.04	0.48	15.19
2008	1.41	0.13	3.36	2.51	1.70	1.64	0.94	1.68	0.37	0.57	0.75	0.91	15.97
2007	2.64	0.76	0.86	1.04	1.34	1.46	0.62	0.87	0.33	0.52	1.12	2.72	14.28
2006	2.27	2.04	2.01	1.78	0.58	1.06	0.95	0.93	0.24	1.48	2.71	2.75	18.80
2005	1.34	1.68	0.50	1.49	0.84	0.99	1.97	1.41	3.36	0.57	1.57	1.30	17.02
2004	0.44	2.90	1.58	0.74	1.64	0.40	1.57	1.26	0.86	1.00	1.44	2.76	16.59
2003	1.88	1.09	1.28	0.74	1.95	0.99	2.57	1.15	1.33	0.47	0.62	1.83	15.90
2002	1.14	1.17	0.54	0.88	0.92	1.06	1.39	0.40	0.37	0.78	1.26	1.94	11.85
2001	0.67	1.60	1.16	0.96	1.41	1.07	1.28	1.15	0.85	1.11	2.06	1.66	14.98
2000	0.43	0.61	1.66	1.66	1.68	1.46	1.84	1.94	0.54	0.75	2.38	2.00	16.95
1999	1.85	0.81	1.13	2.13	0.99	0.57	3.21	2.00	1.39	2.10	1.85	0.78	18.81
1998	2.37	1.08	0.95	1.34	1.93	1.77	1.77	0.62	2.51	1.50	0.48	1.50	17.82
1997	1.79	2.39	1.69	2.88	0.97	0.48	3.19	2.75	1.60	1.05	3.57	5.48	27.84
1996	1.32	2.20	1.26	3.60	2.19	0.99	1.34	2.10	1.00	1.33	0.35	1.37	19.05
1995	0.95	2.09	0.68	1.47	0.97	0.82	3.36	4.48	1.54	1.23	0.73	2.69	21.01
1994	3.02	1.61	1.16	0.69	1.13	0.56	1.85	1.07	0.43	0.24	0.98	0.72	13.46
1993	1.46	1.48	1.33	2.28	1.66	1.53	2.55	1.14	1.29	0.65	1.37	1.39	18.13
1992	1.18	2.79	0.85	0.88	1.16	1.20	1.66	3.08	1.15	4.38	0.95	0.98	20.26
1991	3.20	1.71	1.18	1.75	0.86	2.42	1.09	0.96	1.74	1.59	2.00	1.32	19.82
1990	0.77	1.38	2.08	0.65	1.64	1.54	1.36	1.12	1.38	1.14	0.51	1.22	14.79
1989	0.13	2.79	1.13	1.02	2.50	1.38	0.45	1.39	0.53	1.82	1.33	1.52	15.99
1988	1.27	1.22	2.32	2.80	0.70	1.31	0.83	1.85	1.93	0.60	1.03	2.31	18.17
1987	2.65	1.00	0.56	1.28	1.35	1.50	1.60	1.92	0.64	1.78	1.35	0.46	16.09
1986	3.51	4.19	1.34	0.79	3.01	1.59	2.70	0.99	1.00	1.65	1.96	2.12	24.85
1985	2.61	1.68	1.80	2.40	1.01	2.40	3.77	1.40	0.68	1.28	0.64	1.17	20.84
1984	2.16	2.82	5.03	0.59	0.43	2.31	2.68	1.33	2.36	1.84	2.61	1.31	25.47
1983	1.64	1.52	1.03	1.10	1.66	2.17	2.28	1.57	2.76	1.88	1.08	0.79	19.48
1982	3.76	0.78	2.51	1.71	0.62	2.64	1.92	0.97	0.46	1.60	1.19	2.64	20.80
1981	1.09	0.33	0.43	0.53	0.45	2.50	0.69	3.97	1.65	2.24	1.12	1.33	16.33
AVG	1.69	1.54	1.68	1.61	1.33	1.50	1.91	1.75	1.11	1.24	1.30	1.54	18.21

**Note**

Data from October 1980 to February 1982, and 2011 Water Year and later, from U.S. Department of Commerce - NOAA - Hayden Station. All other data from Seneca II Mine Meteorological Station with Belfort Weighing Bucket Rain Gage. Site relocated to USGS site on August 31, 1991. Precipitation recorded in inches.

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2022	10	01	58	40	56	0.15		0.0		0.0								
2022	10	02	65	45	53	0.12		0.0		0.0								
2022	10	03	67	40	60	0.00		0.0		0.0								
2022	10	04	68	40	61	0.00		0.0		0.0								
2022	10	05	68	34	62	0.00		0.0		0.0								
2022	10	06	71	35	65	0.00		0.0		0.0								
2022	10	07	70	33	64	0.00		0.0		0.0								
2022	10	08	71	37	62	0.00		0.0		0.0								
2022	10	09	71	36	61	0.00		0.0		0.0								
2022	10	10	69	35	64	0.00		0.0		0.0								
2022	10	11	68	32	63	0.00		0.0		0.0								
2022	10	12	69	31	59	0.00		0.0		0.0								
2022	10	13	69	32	60	0.00		0.0		0.0								
2022	10	14	70	28	61	0.00		0.0		0.0								
2022	10	15	70	27	60	0.00		0.0		0.0								
2022	10	16	67	27	59	0.00		0.0		0.0								
2022	10	17	68	26	59	0.00		0.0		0.0								
2022	10	18	69	27	60	0.00		0.0		0.0								
2022	10	19	71	29	64	0.00		0.0		0.0								
2022	10	20	72	30	64	0.00		0.0		0.0								
2022	10	21	68	27	61	0.00		0.0		0.0								
2022	10	22	68	32	60	0.00		0.0		0.0								
2022	10	23	60	30	32	0.54		0.5		0.0								
2022	10	24	37	26	33	0.01		T		0.0								
2022	10	25	35	27	34	0.08		T		0.0								
2022	10	26	44	29	34	0.15		1.0		0.0								
2022	10	27	34	25	33	0.18		1.0		0.0								
2022	10	28	51	20	40	0.00		0.0		0.0								
2022	10	29	53	24	45	0.00		0.0		0.0								
2022	10	30	54	27	46	0.00		0.0		0.0								
2022	10	31	56	23	47	0.00		0.0		0.0								
Summary			62	31		1.23		2.5										

Empty, or blank, cells indicate that a data observation was not reported.

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Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2022	11	01	62	28	54	0.00		0.0		0.0								
2022	11	02	63	32	53	0.00		0.0		0.0								
2022	11	03	53	28	29	0.32		2.0		2.0								
2022	11	04	35	16	30	0.09		1.0		2.0								
2022	11	05	45	26	43	0.12		0.5		0.0								
2022	11	06	43	27	32	0.36		4.0		2.0								
2022	11	07	62	31	52	0.00		0.0		0.0								
2022	11	08	62	34	46	0.00		0.0		0.0								
2022	11	09	59	29	29	0.16		2.0		2.0								
2022	11	10	32	19	25	0.04		1.0		2.0								
2022	11	11	32	11	21	0.00		0.0		2.0								
2022	11	12	41	11	30	0.00		0.0		1.0								
2022	11	13	45	15	30	0.00		0.0		0.0								
2022	11	14	34	14	24	0.00		0.0		0.0								
2022	11	15	28	9	18	0.23		4.5		3.0								
2022	11	16	30	5	18	0.00		0.0		3.0								
2022	11	17	31	11	24	0.02		0.5		3.0								
2022	11	18	24	11	11	T		0.5		3.0								
2022	11	19	32	-3	19	0.00		0.0		3.0								
2022	11	20	43	6	26	0.00		0.0		2.0								
2022	11	21	45	12	30	0.00		0.0		2.0								
2022	11	22	47	11	31	0.00		0.0		2.0								
2022	11	23	34	10	29	0.10		1.3		3.0								
2022	11	24	38	19	29	T		T		3.0								
2022	11	25	42	12	29	0.00		0.0		2.0								
2022	11	26	43	16	32	0.00		0.0		2.0								
2022	11	27	37	27	29	0.11		2.0		3.0								
2022	11	28	38	25	30	T		T		3.0								
2022	11	29	30	11	11	0.51		6.0		8.0								
2022	11	30	35	6	20	0.00		0.0		8.0								
Summary			42	17		2.06		25.3										

Empty, or blank, cells indicate that a data observation was not reported.

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2022	12	01	46	7	41	0.00		0.0		7.0								
2022	12	02	45	11	11	0.26		4.0		11.0								
2022	12	03	27	1	27	0.00		0.0		11.0								
2022	12	04	39	26	35	T		T		8.0								
2022	12	05	39	28	28	0.52		6.0		13.0								
2022	12	06	31	15	15	0.34		5.0		17.0								
2022	12	07	23	2	17	0.07		1.0		17.0								
2022	12	08	33	13	13	0.36		5.0		19.0								
2022	12	09	24	5	15	0.00		0.0		19.0								
2022	12	10	28	4	18	0.00		0.0		17.0								
2022	12	11	29	13	24	0.00		0.0		17.0								
2022	12	12	38	23	27	T		T		16.0								
2022	12	13	27	13	16	0.34		4.0		19.0								
2022	12	14	24	15	20	0.24		4.5		23.0								
2022	12	15	20	10	11	0.11		1.5		23.0								
2022	12	16	12	-3	0	0.00		0.0		22.0								
2022	12	17	14	-7	-1	0.00		0.0		21.0								
2022	12	18	18	-8	1	0.00		0.0		20.0								
2022	12	19	15	-10	4	0.00		0.0		20.0								
2022	12	20	23	-1	20	0.00		0.0		20.0								
2022	12	21	35	16	30	T		T		19.0								
2022	12	22	30	-13	-11	0.17		2.5		20.0								
2022	12	23	17	-15	17	0.00		0.0		19.0								
2022	12	24	30	17	28	0.04		1.5		19.0								
2022	12	25	36	14	32	0.00		0.0		18.0								
2022	12	26	41	29	33	0.00		0.0		17.0								
2022	12	27	40	16	32	0.26		2.0		19.0								
2022	12	28	35	27	27	0.58		5.0		23.0								
2022	12	29	29	14	19	0.03		0.5		21.0								
2022	12	30	22	6	21	0.06		1.0		21.0								
2022	12	31	39	21	31	0.74		7.0		28.0								
Summary			29	9		4.12		50.5										

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	01	01	40	31	37	T		T		27.0								
2023	01	02	37	26	26	0.12		1.5		25.0								
2023	01	03	26	20	23	0.19		2.5		27.0								
2023	01	04	29	13	13	0.02		0.5		26.0								
2023	01	05	29	5	19	0.00		0.0		25.0								
2023	01	06	32	17	30	0.40		6.0		31.0								
2023	01	07	38	19	19	0.16		2.0		30.0								
2023	01	08	28	11	24	0.00		0.0		30.0								
2023	01	09	38	13	33	0.00		0.0		29.0								
2023	01	10	43	31	39	0.33		4.0		28.0								
2023	01	11	39	28	28	0.28		4.0		32.0								
2023	01	12	28	8	18	0.05		1.5		33.0								
2023	01	13	33	13	23	0.00		0.0		30.0								
2023	01	14	34	15	27	0.00		0.0		29.0								
2023	01	15	38	26	34	0.10		1.0		29.0								
2023	01	16	34	24	29	0.11		2.0		30.0								
2023	01	17	30	16	25	T		T		30.0								
2023	01	18	27	20	21	0.30		4.0		33.0								
2023	01	19	21	0	12	0.00		0.0		32.0								
2023	01	20	17	2	11	0.00		0.0		32.0								
2023	01	21	20	7	11	T		0.5		31.0								
2023	01	22	23	5	15	0.00		0.0		31.0								
2023	01	23	21	3	10	0.00		0.0		30.0								
2023	01	24	23	4	10	T		T		29.0								
2023	01	25	20	7	11	0.02		0.5		29.0								
2023	01	26	22	1	17	0.08		1.5		31.0								
2023	01	27	25	17	23	0.67		8.0		39.0								
2023	01	28	32	23	23	0.26		3.0		40.0								
2023	01	29	27	8	8	0.37		5.0		44.0								
2023	01	30	9	-1	1	0.33		4.5		48.0								
2023	01	31	7	-26	-4	0.00		0.0		47.0								
Summary			28	12		3.79		52.0										

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			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	02	01	16	-10	3	0.00		0.0		45.0								
2023	02	02	21	-5	10	0.00		0.0		44.0								
2023	02	03	28	-1	14	0.00		0.0		42.0								
2023	02	04	29	6	17	0.00		0.0		41.0								
2023	02	05	43	11	34	0.00		0.0		39.0								
2023	02	06	34	23	24	0.23		2.5		42.0								
2023	02	07	28	11	13	0.03		1.0		40.0								
2023	02	08	27	4	23	0.10		1.0		41.0								
2023	02	09	23	9	9	0.03		1.0		40.0								
2023	02	10	23	-1	16	0.00		0.0		40.0								
2023	02	11	31	6	19	0.00		0.0		39.0								
2023	02	12	34	9	20	0.00		0.0		38.0								
2023	02	13	26	7	20	0.00		0.0		38.0								
2023	02	14	28	9	15	0.03		0.5		38.0								
2023	02	15	26	10	12	T		T		38.0								
2023	02	16	15	-9	6	0.08		1.0		38.0								
2023	02	17	24	-2	14	0.00		0.0		38.0								
2023	02	18	27	-1	18	0.00		0.0		38.0								
2023	02	19	33	9	26	0.05		1.0		39.0								
2023	02	20	40	21	36	0.00		0.0		37.0								
2023	02	21	42	13	35	0.00		0.0		36.0								
2023	02	22	41	5	5	0.16		3.0		38.0								
2023	02	23	24	-3	20	0.11		1.5		39.0								
2023	02	24	31	13	25	0.11		1.5		40.0								
2023	02	25	34	7	24	0.00		0.0		39.0								
2023	02	26	44	16	33	0.00		0.0		38.0								
2023	02	27	37	27	29	0.00		0.0		37.0								
2023	02	28	31	21	21	0.11		1.5		37.0								
Summary			30	7		1.04		15.5										

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Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	03	01	33	7	26	T		T		37.0								
2023	03	02	31	21	21	0.00		0.0		37.0								
2023	03	03	32	10	23	0.13		2.0		40.0								
2023	03	04	34	6	33	0.04		0.5		39.0								
2023	03	05	36	22	22	0.27		6.0		45.0								
2023	03	06	36	19	23	0.14		2.0		42.0								
2023	03	07	30	6	20	0.00		0.0		42.0								
2023	03	08	28	2	24	0.00		0.0		41.0								
2023	03	09	35	13	28	0.08		1.0		41.0								
2023	03	10	42	16	37	0.00		0.0		40.0								
2023	03	11	43	24	24	0.19		2.0		39.0								
2023	03	12	33	10	31	0.05		1.0		39.0								
2023	03	13	41	18	33	0.00		0.0		38.0								
2023	03	14	48	22	42	0.00		0.0		38.0								
2023	03	15	44	33	33	0.11		T		37.0								
2023	03	16	34	19	29	0.16		1.5		37.0								
2023	03	17	29	0	21	0.00		0.0		37.0								
2023	03	18	27	-1	20	0.00		0.0		37.0								
2023	03	19	37	3	34	0.00		0.0		37.0								
2023	03	20	39	23	34	0.13		1.5		37.0								
2023	03	21	39	11	35	0.32		4.0		39.0								
2023	03	22	40	29	29	0.56		6.0		42.0								
2023	03	23	40	25	30	0.18		2.0		41.0								
2023	03	24	40	19	31	0.00		0.0		40.0								
2023	03	25	32	6	24	0.40		4.5		41.0								
2023	03	26	29	4	22	0.00		0.0		41.0								
2023	03	27	28	9	23	0.00		0.0		41.0								
2023	03	28	36	5	30	0.00		0.0		41.0								
2023	03	29	49	22	45	0.00		0.0		40.0								
2023	03	30	46	30	35	0.10		1.0		40.0								
2023	03	31	37	22	32	0.25		3.0		39.0								
Summary			36	15		3.11		38.0										

Empty, or blank, cells indicate that a data observation was not reported.

\*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCEI's quality control tests. "At Obs." = Temperature at time of observation

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"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

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**Record of Climatological  
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Generated on 02/23/2024

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Fl ag	Snow, Ice Pellets, Hail (in)	Fl ag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	04	01	46	20	44	0.02		0.5		38.0								
2023	04	02	50	36	37	0.00		0.0		36.0								
2023	04	03	47	26	38	0.00		0.0		34.0								
2023	04	04	38	21	27	0.40		4.0		35.0								
2023	04	05	32	10	27	0.04		0.5		35.0								
2023	04	06	35	11	34	0.00		0.0		34.0								
2023	04	07	42	14	37	0.00		0.0		33.0								
2023	04	08	46	26	43	0.00		0.0		31.0								
2023	04	09	45	25	41	0.00		0.0		30.0								
2023	04	10	46	29	43	0.00		0.0		27.0								
2023	04	11	60	30	54	0.00		0.0		26.0								
2023	04	12	64	31	55	0.00		0.0		22.0								
2023	04	13	60	42	53	0.00		0.0		15.0								
2023	04	14	53	27	38	0.47		6.0		14.0								
2023	04	15	43	26	41	0.00		0.0		13.0								
2023	04	16	53	23	52	0.00		0.0		9.0								
2023	04	17	64	29	62	0.00		0.0		3.0								
2023	04	18	62	34	51	0.00		0.0		1.0								
2023	04	19	51	24	33	0.10		0.5		T								
2023	04	20	40	16	31	0.00		0.0		0.0								
2023	04	21	32	19	31	0.15		2.0		2.0								
2023	04	22	43	27	42	0.00		0.0		0.0								
2023	04	23	50	25	48	0.00		0.0		0.0								
2023	04	24	58	30	54	0.00		0.0		0.0								
2023	04	25	54	33	48	0.16		0.5		0.0								
2023	04	26	60	31	56	0.00		0.0		0.0								
2023	04	27	60	33	51	0.00		0.0		0.0								
2023	04	28	55	29	54	0.03		0.0		0.0								
2023	04	29	70	31	69	0.00		0.0		0.0								
2023	04	30	73	33	69	0.00		0.0		0.0								
Summary			51	26		1.37		14.0										

Empty, or blank, cells indicate that a data observation was not reported.

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Fl ag	Snow, Ice Pellets, Hail (in)	Fl ag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	05	01	78	40	68	0.00		0.0		0.0								
2023	05	02	73	46	64	0.00		0.0		0.0								
2023	05	03	75	41	72	0.00		0.0		0.0								
2023	05	04	72	44	58	0.05		0.0		0.0								
2023	05	05	66	37	60	0.00		0.0		0.0								
2023	05	06	62	34	59	0.22		0.0		0.0								
2023	05	07	60	34	55	0.02		0.0		0.0								
2023	05	08	67	35	64	T		0.0		0.0								
2023	05	09	74	36	69	0.00		0.0		0.0								
2023	05	10	74	42	63	0.00		0.0		0.0								
2023	05	11	63	44	56	0.13		0.0		0.0								
2023	05	12	62	45	59	0.02		0.0		0.0								
2023	05	13	69	39	65	0.00		0.0		0.0								
2023	05	14	72	43	62	0.00		0.0		0.0								
2023	05	15	74	43	62	T		0.0		0.0								
2023	05	16	73	40	66	0.08		0.0		0.0								
2023	05	17	76	41	73	0.00		0.0		0.0								
2023	05	18	73	43	65	0.00		0.0		0.0								
2023	05	19	72	41	68	0.00		0.0		0.0								
2023	05	20	74	42	71	0.00		0.0		0.0								
2023	05	21	77	43	70	0.00		0.0		0.0								
2023	05	22	74	42	66	0.00		0.0		0.0								
2023	05	23	74	42	68	0.00		0.0		0.0								
2023	05	24	74	44	62	0.00		0.0		0.0								
2023	05	25	76	43	70	T		0.0		0.0								
2023	05	26	80	40	73	0.00		0.0		0.0								
2023	05	27	73	42	62	0.00		0.0		0.0								
2023	05	28	72	41	61	0.00		0.0		0.0								
2023	05	29	77	40	73	0.00		0.0		0.0								
2023	05	30	79	37	75	0.00		0.0		0.0								
2023	05	31	76	42	64	0.00		0.0		0.0								
Summary			72	41		0.52		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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"s" This data value failed one of NCEI's quality control tests. "At Obs." = Temperature at time of observation

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

**Record of Climatological  
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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Fl ag	Snow, Ice Pellets, Hail (in)	Fl ag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	06	01	69	43	60	0.00		0.0		0.0								
2023	06	02	60	47	50	0.29		0.0		0.0								
2023	06	03	68	47	63	0.04		0.0		0.0								
2023	06	04	68	44	65	0.00		0.0		0.0								
2023	06	05	76	46	65	0.13		0.0		0.0								
2023	06	06	82	45	65	0.00		0.0		0.0								
2023	06	07	69	44	58	0.00		0.0		0.0								
2023	06	08	76	46	75	0.00		0.0		0.0								
2023	06	09	79	42	75	0.00		0.0		0.0								
2023	06	10	75	43	69	0.00		0.0		0.0								
2023	06	11	76	44	71	0.00		0.0		0.0								
2023	06	12	73	51	57	0.09		0.0		0.0								
2023	06	13	65	42	56	0.09		0.0		0.0								
2023	06	14	74	45	60	0.23		0.0		0.0								
2023	06	15	66	42	55	0.30		0.0		0.0								
2023	06	16	68	42	65	0.39		0.0		0.0								
2023	06	17	68	42	60	0.13		0.0		0.0								
2023	06	18	78	44	75	0.00		0.0		0.0								
2023	06	19	83	47	80	0.00		0.0		0.0								
2023	06	20	81	44	79	0.00		0.0		0.0								
2023	06	21	83	42	81	0.00		0.0		0.0								
2023	06	22	84	43	81	0.00		0.0		0.0								
2023	06	23	81	43	75	0.00		0.0		0.0								
2023	06	24	76	38	74	0.00		0.0		0.0								
2023	06	25	85	43	83	0.00		0.0		0.0								
2023	06	26	85	44	84	0.00		0.0		0.0								
2023	06	27	84	50	82	0.00		0.0		0.0								
2023	06	28	83	39	82	0.00		0.0		0.0								
2023	06	29	82	43	66	T		0.0		0.0								
2023	06	30	76	41	71	0.00		0.0		0.0								
Summary			76	44		1.69		0.0										

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Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	07	01	82	44	76	0.00		0.0		0.0								
2023	07	02	86	47	85	0.03		0.0		0.0								
2023	07	03	87	47	78	0.00		0.0		0.0								
2023	07	04	81	47	64	0.02		0.0		0.0								
2023	07	05	81	49	78	0.03		0.0		0.0								
2023	07	06	78	53	71	0.00		0.0		0.0								
2023	07	07	84	50	74	0.00		0.0		0.0								
2023	07	08	84	50	71	0.00		0.0		0.0								
2023	07	09	88	50	86	0.00		0.0		0.0								
2023	07	10	88	51	83	0.00		0.0		0.0								
2023	07	11	89	49	87	0.00		0.0		0.0								
2023	07	12	91	50	87	0.00		0.0		0.0								
2023	07	13	91	52	89	0.00		0.0		0.0								
2023	07	14	89	47	85	0.00		0.0		0.0								
2023	07	15	86	47	85	0.00		0.0		0.0								
2023	07	16	91	45	89	0.00		0.0		0.0								
2023	07	17	96	51	89	0.00		0.0		0.0								
2023	07	18	89	55	80	0.00		0.0		0.0								
2023	07	19	89	55	80	0.00		0.0		0.0								
2023	07	20	85	56	78	0.05		0.0		0.0								
2023	07	21	87	48	80	0.00		0.0		0.0								
2023	07	22	90	48	89	0.00		0.0		0.0								
2023	07	23	89	53	85	0.00		0.0		0.0								
2023	07	24	94	52	92	0.00		0.0		0.0								
2023	07	25	92	57	87	0.00		0.0		0.0								
2023	07	26	88	56	77	0.00		0.0		0.0								
2023	07	27	88	54	84	0.16		0.0		0.0								
2023	07	28	92	60	88	0.00		0.0		0.0								
2023	07	29	93	56	88	0.00		0.0		0.0								
2023	07	30	92	59	87	0.00		0.0		0.0								
2023	07	31	87	62	75	0.00		0.0		0.0								
Summary			88	52		0.29		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	08	01	81	56	67	0.19		0.0		0.0								
2023	08	02	81	59	77	0.22		0.0		0.0								
2023	08	03	79	54	75	0.30		0.0		0.0								
2023	08	04	83	49	78	0.05		0.0		0.0								
2023	08	05	84	48	78	0.00		0.0		0.0								
2023	08	06	82	43	76	0.00		0.0		0.0								
2023	08	07	76	48	71	0.07		0.0		0.0								
2023	08	08	80	46	69	0.00		0.0		0.0								
2023	08	09	81	41	80	0.00		0.0		0.0								
2023	08	10	85	45	77	0.00		0.0		0.0								
2023	08	11	86	51	78	0.00		0.0		0.0								
2023	08	12	85	52	78	0.02		0.0		0.0								
2023	08	13	82	52	79	0.00		0.0		0.0								
2023	08	14	85	47	82	0.00		0.0		0.0								
2023	08	15	91	46	89	0.00		0.0		0.0								
2023	08	16	92	51	83	0.00		0.0		0.0								
2023	08	17	92	52	89	0.00		0.0		0.0								
2023	08	18	90	60	69	0.02		0.0		0.0								
2023	08	19	88	56	80	0.00		0.0		0.0								
2023	08	20	92	57	90	0.00		0.0		0.0								
2023	08	21	91	55	88	0.00		0.0		0.0								
2023	08	22	88	57	61	0.23		0.0		0.0								
2023	08	23	85	51	79	0.02		0.0		0.0								
2023	08	24	81	58	75	0.13		0.0		0.0								
2023	08	25	77	55	67	0.06		0.0		0.0								
2023	08	26	85	51	83	0.02		0.0		0.0								
2023	08	27	88	56	82	0.00		0.0		0.0								
2023	08	28	84	50	81	0.00		0.0		0.0								
2023	08	29	87	52	82	0.00		0.0		0.0								
2023	08	30	90	53	85	0.00		0.0		0.0								
2023	08	31	89	46	85	0.00		0.0		0.0								
Summary			85	52		1.33		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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"s" This data value failed one of NCEI's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

**Record of Climatological  
Observations**  
These data are quality controlled and may not  
be identical to the original observations.  
Generated on 02/23/2024

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: 107.2548° W  
Station: **HAYDEN, CO US USC00053867**

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		"Soil Temperature (F)"					
			"24 Hrs. Ending at Observation Time"		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	F l a g	Snow, Ice Pellets, Hail (in)	F l a g	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2023	09	01	85	50	81	0.00		0.0		0.0								
2023	09	02	84	50	80	0.00		0.0		0.0								
2023	09	03	80	50	72	0.15		0.0		0.0								
2023	09	04	72	53	57	0.07		0.0		0.0								
2023	09	05	76	40	70	0.03		0.0		0.0								
2023	09	06	85	43	80	0.00		0.0		0.0								
2023	09	07	82	40	77	0.00		0.0		0.0								
2023	09	08	83	41	79	0.00		0.0		0.0								
2023	09	09	84	42	80	0.00		0.0		0.0								
2023	09	10	81	55	74	0.00		0.0		0.0								
2023	09	11	76	44	70	0.00		0.0		0.0								
2023	09	12	78	42	75	0.00		0.0		0.0								
2023	09	13	78	40	68	0.00		0.0		0.0								
2023	09	14	68	50	58	0.04		0.0		0.0								
2023	09	15	72	39	62	0.03		0.0		0.0								
2023	09	16	77	38	72	0.00		0.0		0.0								
2023	09	17	78	41	71	0.00		0.0		0.0								
2023	09	18	78	42	58	0.03		0.0		0.0								
2023	09	19	73	42	54	0.05		0.0		0.0								
2023	09	20	76	41	73	0.04		0.0		0.0								
2023	09	21	76	47	73	0.00		0.0		0.0								
2023	09	22	73	40	57	0.00		0.0		0.0								
2023	09	23	67	30	63	0.00		0.0		0.0								
2023	09	24	73	31	67	0.00		0.0		0.0								
2023	09	25	78	35	70	0.00		0.0		0.0								
2023	09	26	80	38	76	0.00		0.0		0.0								
2023	09	27	82	39	75	0.00		0.0		0.0								
2023	09	28	82	41	76	0.00		0.0		0.0								
2023	09	29	80	37	75	0.00		0.0		0.0								
2023	09	30	82	39	71	0.00		0.0		0.0								
Summary			78	42		0.44		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

\*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCEI's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.



APPENDIX B  
GROUNDWATER QULITY DATA

**Table B.1.** Groundwater analytical results for Point of Compliance (POC) well SGAL70 during water year 2023.

Well	Date	Depth to Water ft btoc	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Aluminum D MG/L	Arsenic D UG/L	Boron D UG/L	Cadmium D UG/L	Chloride N MG/L	Chromium D UG/L	Copper D UG/L	Fluoride N MG/L
SGAL70	6/21/2023	9.82	3380	7.7	9.5	< 0.1	< 0.4	126	< 16	36	< 40	< 20	0.26
SGAL70	9/25/2023	9.78	2870	7.3	14.6	< 0.05	0.25	141	< 8	39.6	< 20	< 10	0.26
<b>GWPOC Water Quality Standards*</b>			-	6.5 - 8.5	-	5	50	750	5	250	100	200	2

Well	Date	Iron D MG/L	Lead D UG/L	Manganese D MG/L	Mercury D UG/L	Nickel D UG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	Zinc D MG/L
SGAL70	6/21/2023	< 0.12	< 60	0.082	< 0.2	< 16	0.069	< 0.01	13.5	1870	< 0.02	3270	< 0.04
SGAL70	9/25/2023	0.067	< 30	0.312	< 0.2	< 8	< 0.02	0.013	< 2	2000	< 0.02	3290	0.061
<b>GWPOC Water Quality Standards*</b>		14.1	70	2.44	2	100	10	1	20	2517	-	5038	2

Well	Date	Alkalinity, Bicarbonate N MG/L	Alkalinity, Carbonate N MG/L	Calcium D MG/L	SpC, Lab N UMS/CM	Hardness N MG/L	Magnesium D MG/L	Potassium D MG/L	Sodium D MG/L	SAR N NONE	Cation / Anion %	TDS (Calc) N MG/L	TSS N MG/L
SGAL70	6/21/2023	391	6.1	354	3370	1940	257	5.68	183	1.8	-1.1	2950	15
SGAL70	9/25/2023	351	<2	372	3410	2040	271	6.18	184	1.8	-1	3090	35
<b>GWPOC Water Quality Standards*</b>		-	-	-	-	-	-	-	-	-	-	-	-

**Notes**

\* See Part 2.04 page 103 of Permit C-2009-087 and TR-47 of Permit C-1980-005.

**Bold** Analyte exceeds GWPOC Standard

**Table B.2.** Groundwater analytical results for Non-Point of Compliance wells during water year 2023.

Well	Date	Depth to Water ft btoc	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Aluminum D MG/L	Arsenic D UG/L	Boron D UG/L	Cadmium D UG/L	Chloride N MG/L	Chromium D UG/L	Copper D UG/L	Fluoride N MG/L
SCAL69	6/21/2023	6.11	2970	7.4	10								0.2
SCAL69	9/25/2023	5.51	3000	7.2	15.5								0.23
SSP61	6/21/2023	7.53	3400	7.3	13								0.35
SSP61	9/25/2023	11.55	3110	6.9	14.7								0.34
SSP62	6/21/2023	16.28	3300	7.2	12.7								0.26
SSP62	9/25/2023	19.9	3010	7.1	13.4								0.28
COV2702	6/21/2023	144.03	1130	9.5	11.4	< 0.05	< 0.4	159	< 8	4.6	< 20	< 10	1.85
SOV42	6/21/2023	152.91	2850	7.4	13.7								0.3
CW2701	6/21/2023	161.06	1600	9.6	11.8	< 0.05	< 0.2	280	< 8	5.97	< 20	< 10	2.84

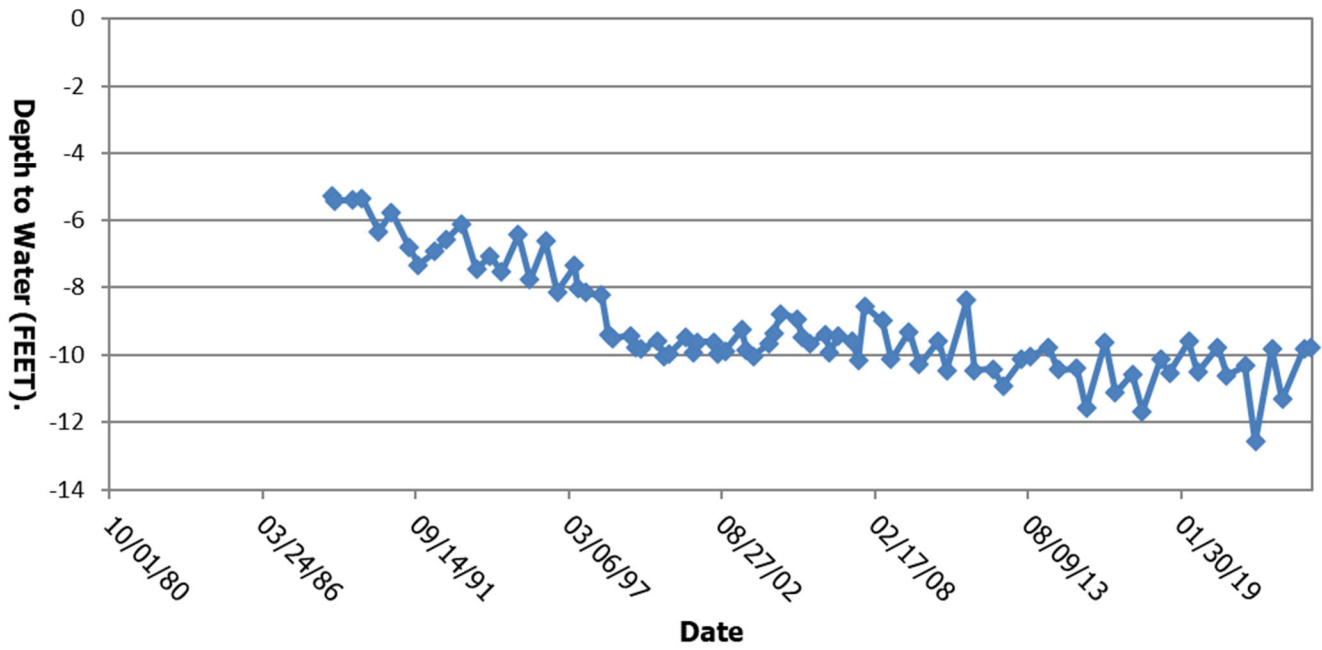
Well	Date	Iron D MG/L	Lead D UG/L	Manganese D MG/L	Mercury D UG/L	Nickel D UG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	Zinc D MG/L
SCAL69	6/21/2023	0.136		0.302			0.036	< 0.01	< 2	1580		2680	
SCAL69	9/25/2023	< 0.12		0.597			< 0.02	< 0.01	< 2	2110		3440	
SSP61	6/21/2023	< 0.12		0.238			7.68	0.054	7.1	2060		3420	
SSP61	9/25/2023	< 0.12		0.326			6.2	0.081	3	2370		3740	
SSP62	6/21/2023	0.325		3.04			0.698	0.036	2.6	1980		3320	
SSP62	9/25/2023	0.306		2.26			0.198	0.041	< 2	2210		3460	
COV2702	6/21/2023	< 0.06	< 30	< 0.01	< 0.2	< 8	0.596	< 0.01	< 2	< 20	< 0.02	588	0.053
SOV42	6/21/2023	0.198		0.018			0.075	0.01	< 2	1030		2190	
CW2701	6/21/2023	< 0.06	< 30	< 0.01	< 0.2	< 8	0.081	0.03	< 2	52	19.3	884	0.026

Well	Date	Alkalinity, Bicarbonate N MG/L	Alkalinity, Carbonate D MG/L	Calcium D MG/L	SpC, Lab N UMS/CM	Hardness N MG/L	Magnesium D MG/L	Potassium D MG/L	Sodium D MG/L	SAR N NONE	Cation / Anion %	TDS (Calc) N MG/L	TSS N MG/L
SCAL69	6/21/2023												
SCAL69	9/25/2023												
SSP61	6/21/2023												
SSP61	9/25/2023												
SSP62	6/21/2023												
SSP62	9/25/2023												
COV2702	6/21/2023	395	195	1020	0.86	3.4	0.31	1.74	241	57	-4.3	608	13
SOV42	6/21/2023												
CW2701	6/21/2023	476	310	1490	1.01	3.6	0.27	2.81	347	80	-6.3	888	92

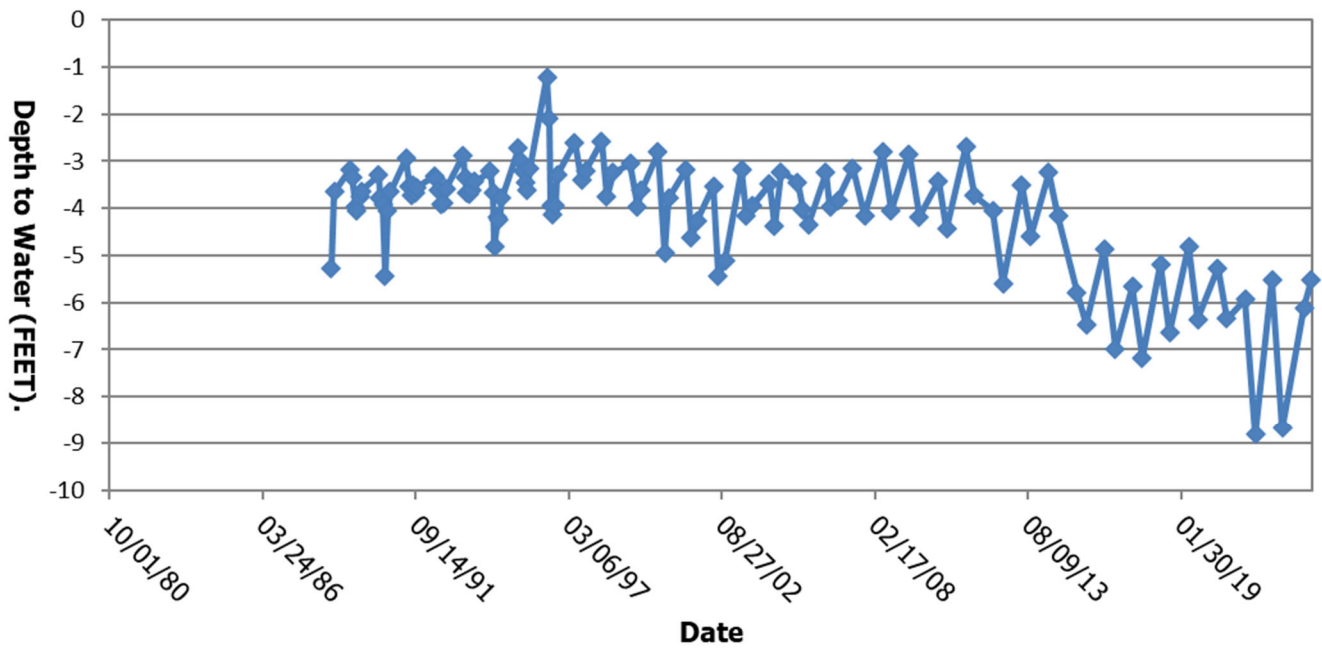
APPENDIX C

GROUNDWATER HYDROGRAPHS

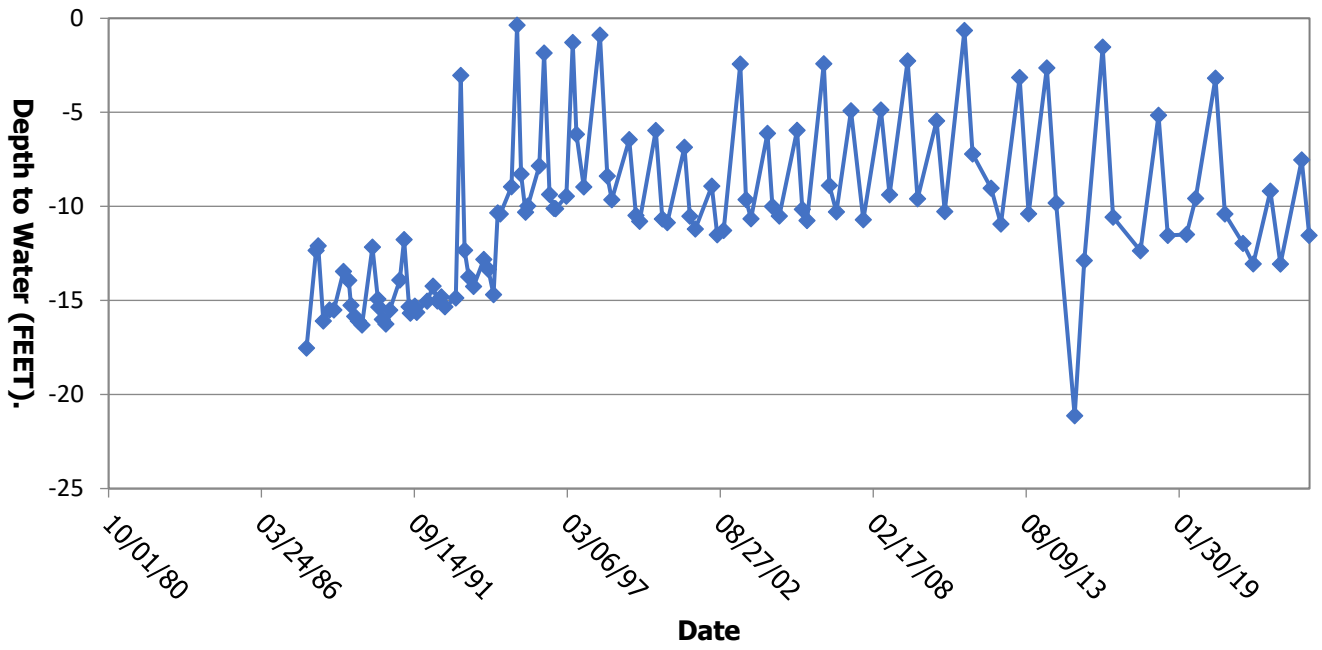
### SGAL70



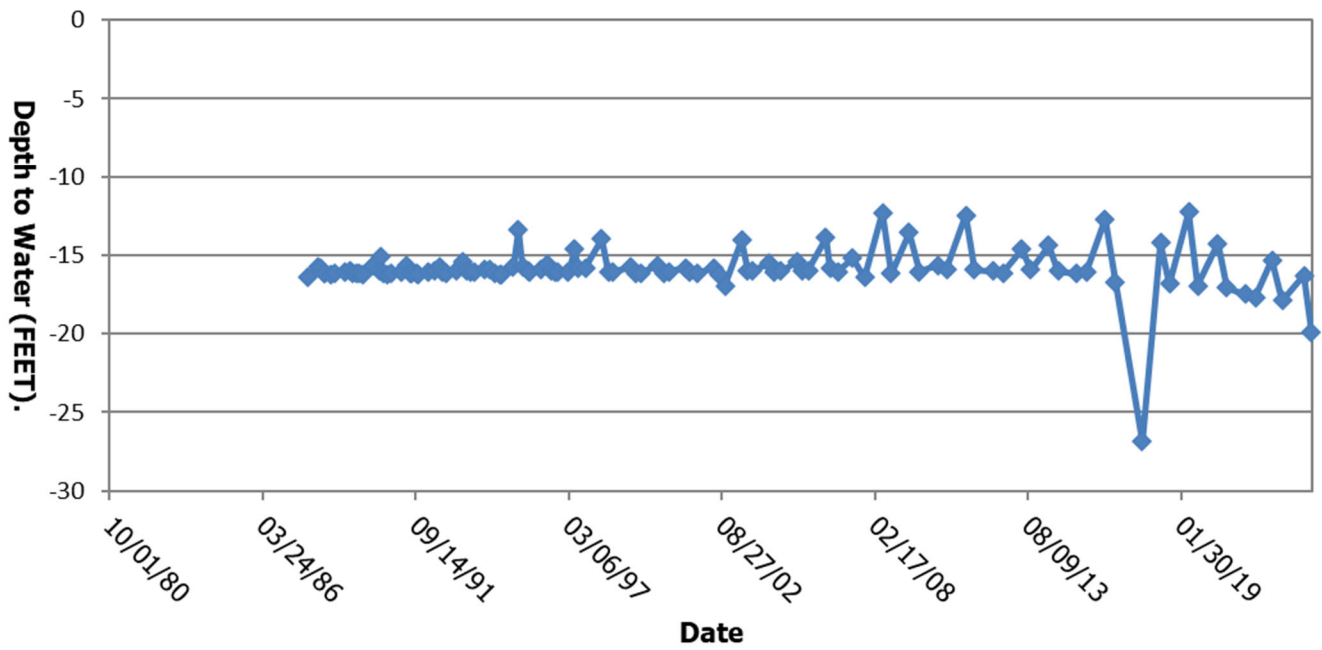
### SCAL69



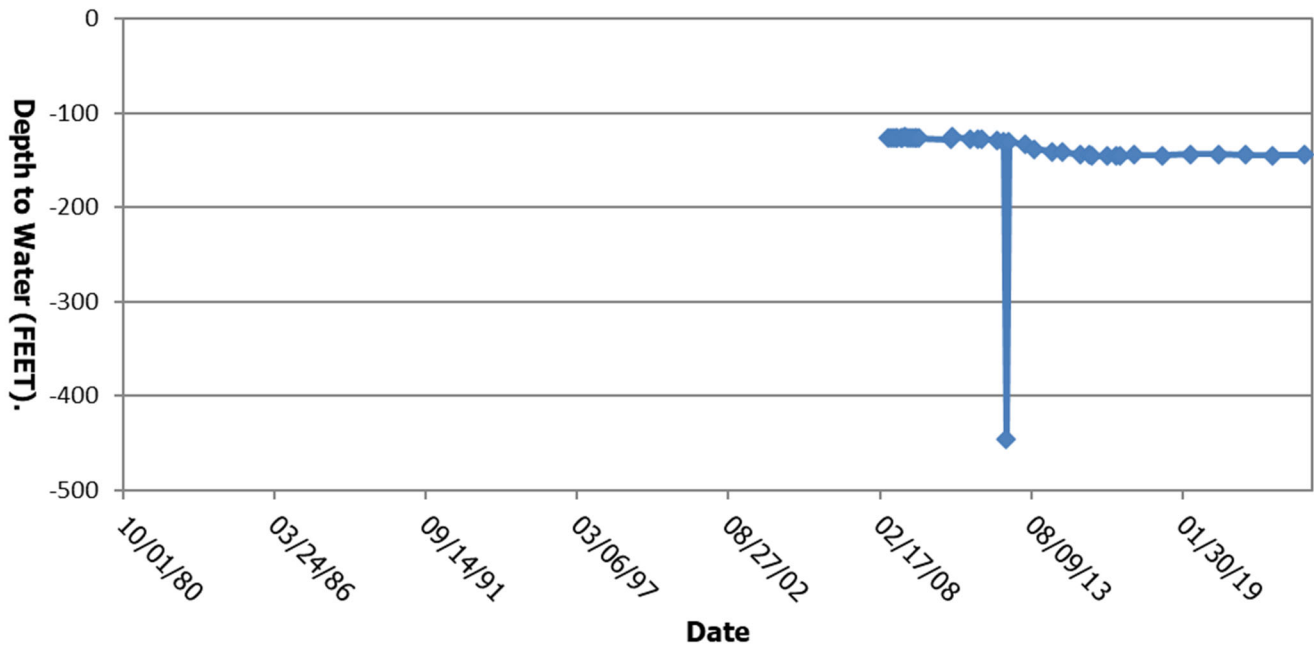
### SSPG1



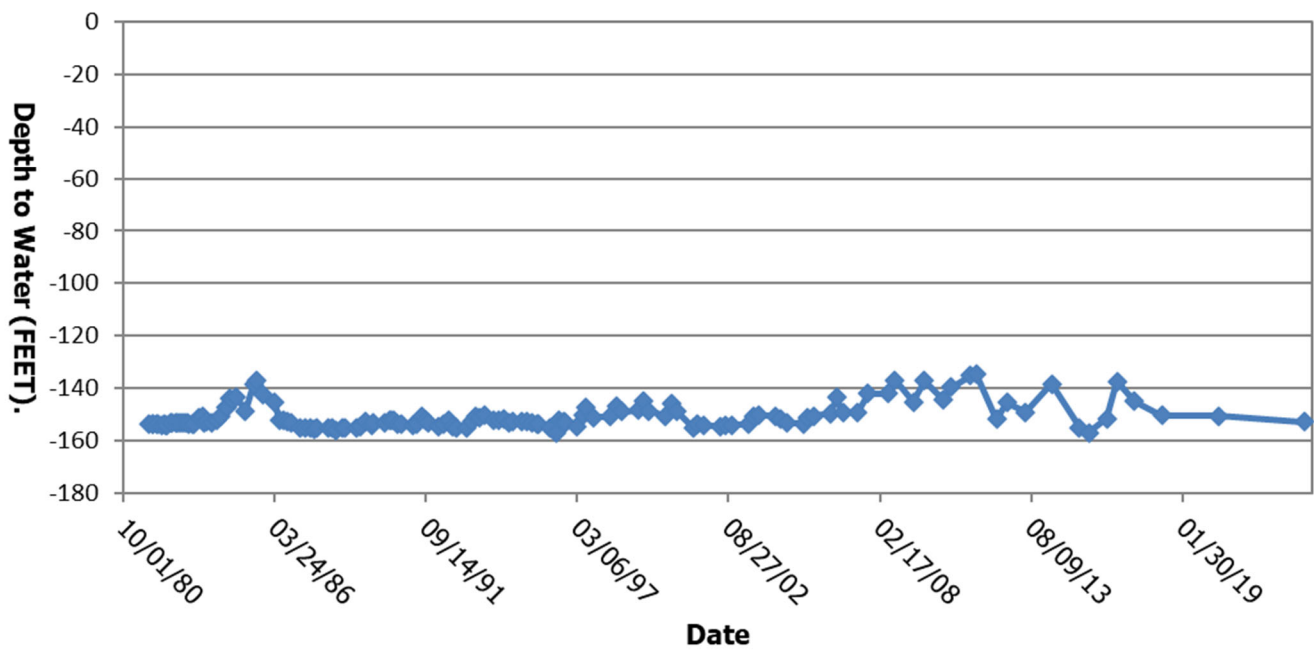
### SSPG62



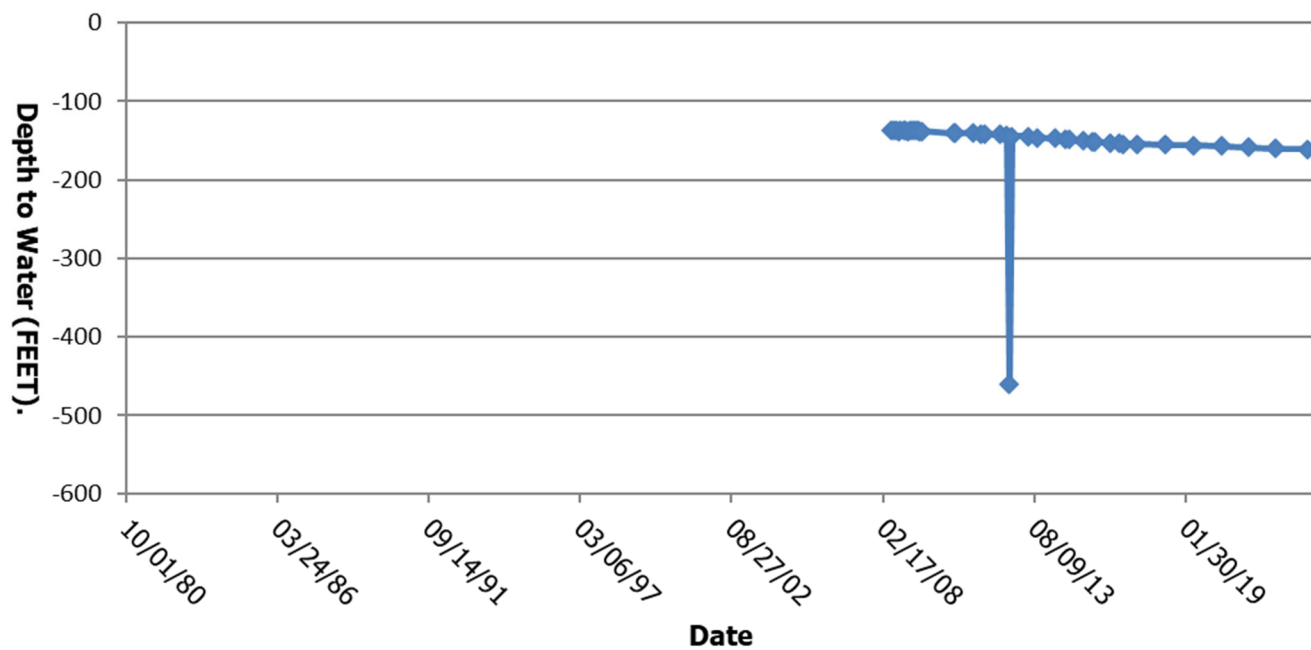
## COV2702



## SOV42



# CW2701





APPENDIX D  
SURFACE WATER QUALITY DATA

**Table D.1** Fish Creek Yampa Segment 13g stream point analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N N MG/L	Nitrate N N MG/L	Nitrite N N MG/L	Selenium D UG/L
SSC10	5/24/2023	0.426 <sup>1</sup>	2790	8.3	16.6			0.535						
SSC10	6/27/2023	0												
SSC10	7/17/2023	0												
Yampa Segment 13g Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	0.5	100	0.05	18.4
Yampa Segment 13g Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM*
Agricultural Use Standards		-	-	-	-	-	-	-	0.2**	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
SSC10	5/24/2023	3.88	3.75	1810		48	
SSC10	6/27/2023						
SSC10	7/17/2023						
Yampa Segment 13g Standards - Acute		-	-	-	0.002***	-	-
Yampa Segment 13g Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

**Notes**

<sup>1</sup> Flow measured on 5/23/2023

\* A current conditions temporary modification is in place for the Segment 13g chronic selenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13g or Agricultural Use Standards

**Table D.2** Fish Creek Yampa Segment 13g NPDES Outfall 005 analytical data for water year 2023.

Location	Date	Flow N MGD	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L	TDS, Lab N MG/L	Manganese PD MG/L
SSSPG2 (NPDES5)	10/5/2022	0								
SSSPG2 (NPDES5)	10/20/2022	0								
SSSPG2 (NPDES5)	11/16/2022	0								
SSSPG2 (NPDES5)	11/28/2022	0								
SSSPG2 (NPDES5)	12/5/2022	0								
SSSPG2 (NPDES5)	12/12/2022	0								
SSSPG2 (NPDES5)	1/23/2023	0								
SSSPG2 (NPDES5)	1/31/2023	0								
SSSPG2 (NPDES5)	3/9/2023	0								
SSSPG2 (NPDES5)	3/21/2023	0								
SSSPG2 (NPDES5)	4/12/2023	0								
SSSPG2 (NPDES5)	4/20/2023	<b>0.926</b>	7	N	0.18		12.9	16.8	2980	
SSSPG2 (NPDES5)	5/5/2023	<b>0.946</b>	8.3	N	< 0.12		8.34	9.83	2910	
SSSPG2 (NPDES5)	5/23/2023	<b>0.874</b>	7.9	N		3.61	3.32	3.77	3540	
SSSPG2 (NPDES5)	6/8/2023	0.016	8.4	N	< 0.06		1.26	2.1	3950	
SSSPG2 (NPDES5)	6/26/2023	0.002	7.8	N	< 0.12		1.01	1.45	4420	
SSSPG2 (NPDES5)	7/6/2023	0.002	7.8	N	< 0.12		0.54	0.72	4490	< 0.05
SSSPG2 (NPDES5)	7/17/2023	0.001	7.6	N	< 0.12	0.65	0.41	0.59	4900	
SSSPG2 (NPDES5)	8/3/2023	0								
SSSPG2 (NPDES5)	8/21/2023	0								
SSSPG2 (NPDES5)	9/7/2023	0								
SSSPG2 (NPDES5)	9/28/2023	0								
NPDES Limit	Daily Max	Report	6.5 - 9.0	Report	-	-	18.4	-	-	Report
	Monthly Avg.	Varies**	-	-	1	-	Report	-	Varies**	Report
Yampa Segment 13g Standards - Acute		-	6.5 - 9.0	-	-	18.4	-	-	-	4.738
Yampa Segment 13g Standards - Chronic		-	-	-	1	TM***	-	-	-	2.618
Agricultural Use Standards		-	-	-	-	20	-	-	-	0.2****

**Notes**

An NPDES permit renewal application sample was collected on 6/11/2020 for an extended list of paramaters that are not required for the permits standard discharge monitoring requirements. See Table D.12 for the analytical results from this sample.

\* Outfall 005 does not have a dissolved selenium or total recoverable selenium monitoring requirement.

\*\* See permit CO0048275 for variable monthly average flow and TDS limits. Note that the TDS limits are only applicable when cattle are present.

\*\*\* A current conditions temporary modification is in place for the Segment 13g chronic selenium standard.

\*\*\*\* The manganese agricultural use standard is only applicable to areas with acidic soils. These are not present at Sage Creek Mine.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13g aquatic life standard, or Agricultural Use standard

**Bold** Analyte exceeds the NPDES Monthly Average limit

**Table D.3** Fish Creek Yampa Segment 13g NPDES Outfall 006 analytical data for water year 2023.

Location	Date	Flow N MGD	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L	TDS, Lab N MG/L	TSS* N MG/L	Manganese* D MG/L
SSSPG1 (NPDES6)	10/5/2022	0.034	7.08	N	< 0.06		1.42	1.92	4170		
SSSPG1 (NPDES6)	10/20/2022	0.031	7.06	N	< 0.12		1.36	1.26	3760		
SSSPG1 (NPDES6)	11/16/2022	0.030	7.14	N	< 0.12		1.31	1.51	3950		
SSSPG1 (NPDES6)	11/28/2022	0.030	7.18	N	< 0.12		1.4	1.43	3810		
SSSPG1 (NPDES6)	12/5/2022	0.031	7.16	N	< 0.06		0.93	1.44	3850		
SSSPG1 (NPDES6)	12/12/2022	0.031	7.18	N	< 0.12		1.35	1.75	3900		
SSSPG1 (NPDES6)	1/22/2023	0.028	7.23	N	< 0.12		1.39	1.32	3940		
SSSPG1 (NPDES6)	1/31/2023	0.000									
SSSPG1 (NPDES6)	2/9/2023	0.028	7.4	N	< 0.12		1.26	1.57	3780		
SSSPG1 (NPDES6)	2/27/2023	0.028	7	N	< 0.12		1.42	1.4	3780		
SSSPG1 (NPDES6)	3/9/2023	0.030	6.9	N	< 0.12		1.27	1.42	3810		
SSSPG1 (NPDES6)	3/21/2023	0.034	7.2	N	< 0.3		1.52	1.64	3770		
SSSPG1 (NPDES6)	4/12/2023	<b>0.183</b>	7.1	N	< 0.12		4.1	3.99	3280		
SSSPG1 (NPDES6)	4/20/2023	<b>0.720</b>	<b>6.1</b>	N	< 0.12		14.2	18.4	3170		
SSSPG1 (NPDES6)	5/5/2023	<b>0.710</b>	7.3	N	< 0.12		15.5	16.6	2980		
SSSPG1 (NPDES6)	5/23/2023	<b>0.700</b>	6.8	N		9.92	10.7	11.4	3130		
SSSPG1 (NPDES6)	6/8/2023	0.180	7.6	N	< 0.06		6.57	7.91	3470		
SSSPG1 (NPDES6)	6/26/2023	0.099	6.8	N	< 0.12		4.53	6.06	3510		
SSSPG1 (NPDES6)	7/6/2023	0.069	6.8	N	< 0.12		3.85	4.6	3640		
SSSPG1 (NPDES6)	7/17/2023	0.068	7.1	N	< 0.12	4.02	3.81	4.07	3790		
SSSPG1 (NPDES6)	8/3/2023	0.068	7.3	N	< 0.12		2.98	3.6	3580		
SSSPG1 (NPDES6)	8/21/2023	0.066	7.2	N	< 0.12		3.09	3.63	3710		
SSSPG1 (NPDES6)	9/7/2023	0.064	7.3	N	0.174		3.6	3.3	3910		
SSSPG1 (NPDES6)	9/28/2023	0.062	7.3	N	< 0.06		2.91	2.6	3630		
NPDES Limit	Daily Max	Report	6.5 - 9.0	Report	-	-	18.4	-	-	-	-
	Monthly Avg.	Varies**	-	-	1	-	Report	-	5000**	-	-
Yampa Segment 13g Standards - Acute		-	6.5 - 9.0	-	-	18.4	-	-	-	-	4.738
Yampa Segment 13g Standards - Chronic		-	-	-	1	TM***	-	-	-	-	2.618
Agricultural Use Standards		-	-	-	-	20	-	-	-	-	0.2****

**Notes**

An NPDES permit renewal application sample was collected on 6/11/2020 for an extended list of parameters that are not required for the permits standard discharge monitoring requirements. See Table D.12 for the analytical results from this sample.

\* Outfall 006 does not have a dissolved selenium, total recoverable selenium, TSS, or manganese monitoring requirement

\*\* TDS limit only applies when cattle are present.

\*\*\* A current conditions temporary modification is in place for the Segment 13g chronic selenium standard.

\*\*\*\* The manganese agricultural use standard is only applicable to areas with acidic soils. These are not present at Sage Creek Mine.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13g aquatic life standard, or Agricultural Use standard  
**Bold** Analyte exceeds the NPDES Monthly Average limit

**Table D.4** Fish Creek Yampa Segment 13g NPDES Monitoring Point Pond 004 analytical data for water year 2023.

Location	Date	Flow* N MGD	pH, Field* N S.U.	Selenium* D UG/L	Selenium* PD UG/L	Selenium* TR UG/L	TDS, Lab N MG/L
NPDES4	5/23/2023	1.476	7.9	8.55		8.87	3120
NPDES4	7/17/2023	0.067	7.9	2.08		2.39	3940
NPDES4	8/21/2023	0.065	7.9				3820
NPDES4	9/7/2023	0.063	8				4090
NPDES Limit	Daily Max	-	-	-		-	-
	Monthly Avg.	-	-	-		-	5000**
Yampa Segment 13g Standards - Acute		-	6.5 - 9.0	18.4		-	-
Yampa Segment 13g Standards - Chronic		-	-	TM***		-	-
Agricultural Use Standards		-	-	20		-	-

**Notes**

\* Outfall 004 does not have a flow, pH, dissolved selenium, potentially dissolved selenium, or total recoverable selenium monitoring requirement

Samples only required to be collected when cattle are present from August through October

\*\* TDS monthly average limit only applicable from August through October when cattle are present.

\*\*\* A current conditions temporary modification is in place for the Segment 13g chronic selenium standard.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13g aquatic life standard, or Agricultural Use standard

**Bold** Analyte exceeds the NPDES Monthly Average limit

**Table D.5** Upper Grassy Creek Yampa Segment 13i stream point SSLG5 analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
SSLG5	5/23/2023	0.31	1859	8.4	14.6	< 0.06	0.0399	0.130	0.0224	< 0.2	< 0.05	2.45	0.035	5.6
SSLG5	6/28/2023	0												
SSLG5	7/17/2023	0												
SSLG5	9/7/2023	0												
Yampa Segment 13i Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	0.5	100	0.05	18.4
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM*
Agricultural Use Standards		-	-	-	-	-	-	-	0.2**	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
SSLG5	5/23/2023	5.67	5.71	690	< 0.02	1310	12.0
SSLG5	6/28/2023						
SSLG5	7/17/2023						
SSLG5	9/7/2023						
Yampa Segment 13i Standards - Acute		-	-	-	0.002***	-	-
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

**Notes**

\* A current conditions temporary modification is in place for the Segment 13i chronic iselenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13i or Agricultural Use Standards

**Table D.6** Upper Grassy Creek Yampa Segment 13i stream point YSGF5 analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
YSGF5	5/23/2023	4.63	955	8.3	16.5	0.0958	0.189	0.417	0.114	< 0.2	< 0.05	0.026	< 0.01	0.8
YSGF5	6/28/2023	0.057	1386	8.2	12.2			<b>1.57</b>	0.108	< 0.2	< 0.1	0.025	< 0.01	0.39
YSGF5	7/17/2023	0.015	1386	8.1	21.7	0.074	0.696	<b>1.79</b>						
YSGF5	9/7/2023	0												
Yampa Segment 13i Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	0.5	100	0.05	18.4
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM*
Agricultural Use Standards		-	-	-	-	-	-	-	0.2**	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
YSGF5	5/23/2023	0.79	0.78	363	< 0.02	758	18.0
YSGF5	6/28/2023	0.23	0.38	447	< 0.02	944	62.0
YSGF5	7/17/2023					1030	59.0
YSGF5	9/7/2023						
Yampa Segment 13i Standards - Acute		-	-	-	0.002***	-	-
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

**Notes**

\* A current conditions temporary modification is in place for the Segment 13i chronic iselenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13i or Agricultural Use Standards

**Table D.7** Upper Grassy Creek Yampa Segment 13i stream point SSG1 analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
SSG1	5/23/2023	6.85	1234	8.2	13.6	0.081	0.217	0.503	0.0784	< 0.2	< 0.05	0.038	< 0.01	0.8
SSG1	6/28/2023	0.041	1338	8.3	19.5			0.229	0.0616	< 0.2	< 0.1	0.039	< 0.01	0.61
SSG1	7/17/2023	0												
SSG1	9/7/2023	0												
Yampa Segment 13i Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	0.5	100	0.05	18.4
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM*
Agricultural Use Standards		-	-	-	-	-	-	-	0.2**	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
SSG1	5/23/2023	0.76	0.74	374	< 0.02	812	18.0
SSG1	6/28/2023	0.41	0.58	447	< 0.02	926	5
SSG1	7/17/2023						
SSG1	9/7/2023						
Yampa Segment 13i Standards - Acute		-	-	-	0.002***	-	-
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

**Notes**

\* A current conditions temporary modification is in place for the Segment 13i chronic iselenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13i or Agricultural Use Standards



**Table D.8** Upper Grassy Creek Yampa Segment 13i stream point SSG2 analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
SSG2	5/25/2023	0.589 <sup>1</sup>	2290	8.3	16.8	0.0730	0.173	0.364	0.0679	< 0.2	< 0.05	1.06	0.018	3.43
SSG2	6/28/2023	0.061	3122	8.1	20.5			0.281	0.0585	< 0.2	< 0.1	0.898	< 0.01	2.54
SSG2	7/17/2023	0.019	3804	8.1	23.8	< 0.12	0.231	0.492						2.55
SSG2	9/7/2023	0.004	3124	8.2	19.1			0.299	0.144	< 0.2	< 0.1	< 0.02	< 0.01	1.42
Yampa Segment 13i Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	0.5	100	0.05	18.4
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM*
Agricultural Use Standards		-	-	-	-	-	-	-	0.2**	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
SSG2	5/25/2023	3.68	3.98	1270	< 0.02	2220	15.0
SSG2	6/28/2023	1.88	2.53	1680	< 0.02	2720	11
SSG2	7/17/2023		2.74	2280		3620	24.0
SSG2	9/7/2023	1.46	1.92	2030	< 0.02	3650	10.0
Yampa Segment 13i Standards - Acute		-	-	-	0.002***	-	-
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

**Notes**

<sup>1</sup> Flow measured on 5/23/2023

\* A current conditions temporary modification is in place for the Segment 13i chronic iselenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13i or Agricultural Use Standards

**Table D.9** Lower Grassy Creek Yampa Segment 13j stream point YSG5 analytical data for water year 2023.

Location	Date	Flow N MGD	SpC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Arsenic TR UG/L	Alkalinity, Bicarbonate N MG/L	Boron D UG/L	Cadmium D UG/L	Calcium D MG/L	Carbonate as CO3 N MG/L	Chloride N MG/L	Chromium D UG/L	Copper D UG/L
YSG5	5/23/2023	7.51	3375	8.3	19.9	0.9	453	213	< 0.1	258	9.0	12.6	< 1	< 1.6
YSG5	5/25/2023	7.51 <sup>1</sup>	2390	8.3	13.1									
YSG5	6/28/2023	0.09	2934	7.9	17.4	0.91	381	204	< 0.1	270	< 2	14.5	< 1	< 1.6
YSG5	7/17/2023	0.007	3273	8.0	21.5									
YSG5	9/7/2023	0.02	2685	8.1	14.8	1.4	379	286	< 0.1	299	< 2	20.8	< 1	< 1.6
Yampa Segment 13j Standards - Acute		-	-	6.5 - 9.0	-	340	-	750	9.2	-	-	-	1773	50
Yampa Segment 13j Standards - Chronic		-	-	-	-	7.6	-		1.2	-	-	-	231	29
Agricultural Use Standards		-	-	-	-	100	-	750	10	-	-	-	100	200

Location	Date	Hardness N MG/L	Iron TR MG/L	Lead D UG/L	Magnesium D MG/L	Manganese D MG/L	Mercury T UG/L	Nickel D UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Potassium D MG/L	Selenium D UG/L	Selenium TR UG/L
YSG5	5/23/2023	1560	0.437	< 0.2	222	0.045	< 0.2	< 16	< 0.05	1.07	0.019	7.32	4.75	4.55
YSG5	5/25/2023												4.13	3.81
YSG5	6/28/2023	1640	0.576	< 0.2	234	0.095	< 0.2	< 16	< 0.1	0.368	< 0.01	7.31	2.08	1.98
YSG5	7/17/2023												1.62	1.7
YSG5	9/7/2023	1990	0.746	< 0.2	303	0.398	< 0.2	< 16	< 0.1	< 0.02	< 0.01	9.08	0.89	1.07
Yampa Segment 13j Standards - Acute		-	-	281	-	4.738	0.01***	1513	0.5	100	0.05	-	18.4	-
Yampa Segment 13j Standards - Chronic		-	1	11	-	2.618	-	168	-	-	-	-	TM*	-
Agricultural Use Standards		-	-	100	-	0.2**	-	200	-	100	10	-	20	-

Location	Date	Silver D UG/L	Sodium D MG/L	SAR N RATIO	Sulfates N MG/L	Sulfide N MG/L	Zinc D MG/L	Cation / Anion Balance N %	TDS, Lab N MG/L	TDS Calc. N MG/L	TSS N MG/L
YSG5	5/23/2023	< 0.2	84.0	0.94	1460	< 0.02	0.042	-5.4	2320	2280	16.0
YSG5	5/25/2023										
YSG5	6/28/2023	< 0.2	81.1	0.88	1520	< 0.02	< 0.04	-2.6	2500	2320	14.0
YSG5	7/17/2023				1670				2970		
YSG5	9/7/2023	< 0.2	106	1.00	1870	< 0.02	0.057	-1.1	3030	2800	16.0
Yampa Segment 13j Standards - Acute		22	-	-	-	0.002***	0.565	-	-	-	-
Yampa Segment 13j Standards - Chronic		3.5	-	-	-	-	0.428	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	2	-	-	-	-

**Notes**

<sup>1</sup> Flow measured on 5/23/2023

\* A current conditions temporary modification is in place for the Segment 13j chronic selenium standard.

\*\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

\*\*\* The standard is an order of magnitude less than the laboratories detection limit.

**Bold** Analyte exceeds the Yampa Segment 13i or Agricultural Use Standards

**Table D.10.** Upper Grassy Creek Segment 13i NPDES Outfall 002 analytical data for water year 2023.

Location	Date	Flow N MGD	pH, Field N S.U.	Oil & Grease Y / N	Iron* D MG/L	Iron* PD MG/L	Iron TR MG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L	TDS, Lab N MG/L	TSS N MG/L	Copper PD UG/L
NPDES2	10/5/2022	0.028	8.03	N					0.64	0.57		8	
NPDES2	10/20/2022	0.028	7.91	N			0.391		0.38	0.65	4160	14	< 0.8
NPDES2	11/16/2022	0.027	8.01	N			0.063		0.37	0.54		< 5	
NPDES2	11/28/2022	0.028	8.03	N					0.48	0.56		< 5	
NPDES2	12/5/2022	0.028	8.04	N			0.076		0.3	0.44		7	
NPDES2	12/12/2022	0.028	8.06	N					0.46	0.56		6	
NPDES2	1/22/2023	0.024	8.04	N			< 0.06		0.78	0.61		< 5	
NPDES2	2/10/2023	0.127	7.7	N			< 0.12		0.76	0.93		< 5	
NPDES2	2/27/2023	0.140	7.6	N			< 0.12		0.61	0.59	4250	< 5	< 1.6
NPDES2	3/9/2023	0.146	7.5	N					0.61	0.67	4180	< 5	< 1.6
NPDES2	3/21/2023	0.055	7.7	N			< 0.12		0.75	0.93		8	
NPDES2	4/12/2023	7.045	7.7	N			<b>1.99</b>		1.38	1.44		22	
NPDES2	4/20/2023	2.928	7.6	N					4.96	4.82		6	
NPDES2	5/5/2023	2.875	8.2	N			0.15		<b>9.56</b>	8.8		5	
NPDES2	5/23/2023	2.524	8.1	N	< 0.12	< 0.12	< 0.12	6.83	<b>7.12</b>	7.32	3440	13	
NPDES2	6/8/2023	2.430	8.3	N			< 0.06		5.07	5.51		13	
NPDES2	6/26/2023	0.304	7.9	N					3.63	4.62		8	
NPDES2	7/6/2023	0.237	8	N			< 0.12		3.21	3.64	3980	7	< 20
NPDES2	7/17/2023	0.210	8	N	< 0.12	< 0.12	< 0.12	3.1	2.8	3.07	4090	7	
NPDES2	8/3/2023	0.205	8.1	N			< 0.12		1.55	2.47		< 5	
NPDES2	8/21/2023	0.082	8	N					1.74	2.17		5	
NPDES2	9/7/2023	0.069	8.2	N			< 0.12		1.84	2.15		< 5	
NPDES2	9/28/2023	0.057	8.1	N					1.33	1.42		6	
NPDES Limit	Daily Max	Report	6.5 - 9.0	Report	-	-	6	-	18.4	-	Report	70	Report
	Monthly Avg.	Varies**	-	-	-	-	1	-	Varies**	-	Report	35	Report
Yampa Segment 13i Standards - Acute		-	6.5 - 9.0	-	-	-	-	18.4	-	-	-	-	50
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	1	TM***	-	-	-	-	29
Agricultural Use Standards		-	-	-	-	-	-	20	-	-	-	-	200

**Notes**

\* Outfall 002 does not have a dissolved iron, potentially dissolved iron, dissolved selenium, or total recoverable selenium monitoring requirement

\*\* See permit CO0048275 for variable monthly average flow and selenium limits.

\*\*\* A current conditions temporary modification is in place for the Segment 13i chronic selenium standards.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13i aquatic life standard, or Agricultural Use standard  
**Bold** Analyte exceeds the NPDES Monthly Average limit

**Table D.11.** Upper Grassy Creek Segment 13i NPDES Outfall 003 analytical data for water year 2023.

Location	Date	Flow N MGD	pH, Field N S.U.	Oil & Grease Y / N	Iron* D MG/L	Iron* PD MG/L	Iron TR MG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L	TDS, Lab* N MG/L	TSS N MG/L	Manganese PD MG/L
NPDES3	10/5/2022	0.000											
NPDES3	10/20/2022	0.000											
NPDES3	11/16/2022	0.000											
NPDES3	11/28/2022	0.001	8.07	N			0.129		0.33	0.51		< 5	
NPDES3	12/5/2022	0.001	8.09	N			0.141		0.44	0.34		< 5	
NPDES3	12/12/2022	0.001	8.11	N			0.248		0.27	0.34		< 5	
NPDES3	1/23/2023	0.000											
NPDES3	1/31/2023	0.000											
NPDES3	3/9/2023	0.014	7.6	N			0.499		0.64	0.73	1960	5	
NPDES3	3/21/2023	0.022	7.6	N			0.399		1.03	1.1		< 5	
NPDES3	4/12/2023	0.000											
NPDES3	4/20/2023	0.115	7.4	N			0.398		3.4	3.36		8	
NPDES3	4/27/2023	0.122	7.4	N			0.635		2.66	2.74		9	
NPDES3	5/5/2023	0.114	8.2	N			0.297		3.81	3.65		11	
NPDES3	5/23/2023	0.112	8.2	N	< 0.06	0.176	0.226	3.17	3.21	3.11	1910	12	
NPDES3	6/8/2023	0.011	8.4	N			0.22		1.04	2.51		13	
NPDES3	6/26/2023	0.011	7.9	N			0.246		1.13	1.11		11	
NPDES3	7/6/2023	0.004	7.8	N			0.183		0.94	0.92		10	0.432
NPDES3	7/17/2023	0.004	7.9	N	0.116	0.256	0.344	1.36	0.9	0.96	1970	17	
NPDES3	8/3/2023	0.004	8.1	N			0.482		0.54	1.16		19	
NPDES3	8/21/2023	0.004	8	N			0.223		0.77	0.82		30	
NPDES3	9/7/2023	0.003	8.2	N			0.232		0.63	0.63		14	
NPDES3	9/28/2023	0.003	8.1	N			0.456		0.48	0.49		14	
NPDES Limit	Daily Max	Report	6.5 - 9.0	Report	-	-	6	-	18.4	-	-	70	Report
	Monthly Avg.	0.1195	-	-	-	-	1	-	4.6	-	-	35	Report
Yampa Segment 13i Standards - Acute		-	6.5 - 9.0	-	-	-	-	18.4	-	-	-	-	4.738
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	1	TM**	-	-	-	-	2.618
Agricultural Use Standards		-	-	-	-	-	-	20	-	-	-	-	0.2***

**Notes**

\* Outfall 003 does not have a dissolved iron, potentially dissolved iron, dissolved selenium, total recoverable selenium, or TDS monitoring requirement.

\*\* A current conditions temporary modification is in place for the Segment 13i chronic selenium standards.

\*\*\* The manganese agricultural use standard is only applicable to areas with acidic soils. These are not present at Sage Creek Mine.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13i aquatic life standard, or Agricultural Use standard

**Bold** Analyte exceeds the NPDES Monthly Average limit

**Table D.12.** Upper Grassy Creek Segment 13i NPDES Outfall 007 analytical data for water year 2023.

Location	Date	Flow N MGD	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	Selenium PD UG/L	Selenium* TR UG/L	TSS N MG/L	Manganese PD MG/L
NPDES7	10/5/2022	0							
NPDES7	10/20/2022	0							
NPDES7	11/16/2022	0							
NPDES7	11/28/2022	0							
NPDES7	12/5/2022	0							
NPDES7	12/12/2022	0							
NPDES7	1/23/2023	0							
NPDES7	1/31/2023	0							
NPDES7	3/9/2023	0							
NPDES7	3/21/2023	0							
NPDES7	4/12/2023	0.058	7.5	N	0.92	1.32	1.41	16	
NPDES7	4/20/2023	0.05	7.8	N	0.083	6.29	6.08	< 5	
NPDES7	5/5/2023	0.05	7.9	N	< 0.06	0.85	0.85	7	
NPDES7	5/23/2023	0.04	8.1	N	< 0.06	2.35	2.29	< 5	
NPDES7	6/8/2023	0.04	8.4	N	< 0.06	0.2	1.25	< 5	
NPDES7	6/26/2023	0.004	7.9	N	< 0.06	0.66	0.66	< 5	
NPDES7	7/6/2023	0.01	7.9	N	< 0.06	0.63	0.53	< 5	0.062
NPDES7	7/17/2023	0.009	8.1	N	< 0.06	0.44	0.49	< 5	
NPDES7	8/3/2023	0.011	8.1	N	0.103	< 0.1	0.42	< 5	
NPDES7	8/21/2023	0.011	8.1	N	0.071	0.35	0.33	< 5	
NPDES7	9/7/2023	0.01	8.1	N	< 0.06	0.31	0.26	< 5	
NPDES7	9/28/2023	0.007	8.1	N	0.077	0.22	0.22	< 5	
NPDES7	9/6/2022	0.000							
NPDES7	9/22/2022	0.000							
NPDES Limit	Daily Max	Report	6.5 - 9.0	Report	6	Report	-	70	Report
	Monthly Avg.	Report	-	-	1	Report	-	35	Report
Yampa Segment 13i Standards - Acute		-	6.5 - 9.0	-	-	18.4	-	-	4.738
Yampa Segment 13i Standards - Chronic		-	-	-	1	TM**	-	-	2.618
Agricultural Use Standards		-	-	-	-	20	-	-	0.2***

**Notes**

\* Outfall 007 does not have a total recoverable selenium monitoring requirement

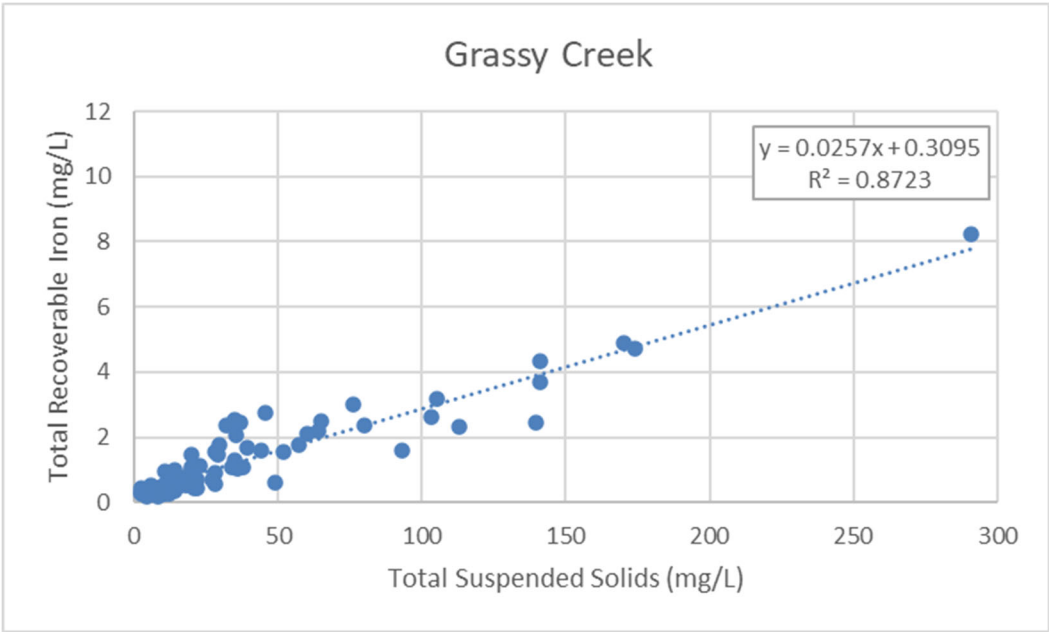
\*\* A current conditions temporary modification is in place for the Segment 13i chronic selenium standards.

\*\*\* The manganese agricultural use standard is only applicable to areas with acidic soils. These are not present at Sage Creek Mine.

**Bold** Analyte exceeds the NPDES Daily Max limit, Segment 13i aquatic life standard, or Agricultural Use standard

**Bold** Analyte exceeds the NPDES Monthly Average limit

**Figure D.1.** Suspended solids vs total recoverable iron at Grassy Creek stream points YSGF5, SSG1, SSG2 and YSG5 for samples collected from October 1, 2015 through September 30, 2022.



APPENDIX E

SPRING WATER QUALITY DATA

**Table E.1.** Analytical data for spoil springs sampled during the 2023 water year.

Location	Date	Flow N MGD	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L
SSSPG5	6/28/2023	0.135	4171	7.5	21.9	0.227	0.0143	< 0.2	< 0.1	0.458	< 0.01
SSSPG3	6/29/2023	0.108	4153	7.5	9.8	0.329	0.222	< 0.2	< 0.1	4.32	0.019
SSSPG4	6/29/2023	0.033	4283	7.5	9.2	0.251	0.0128	< 0.2	< 0.1	7.69	0.011
SSSPG6A	6/28/2023	0									
SSSPG10	6/28/2023	0									
Agricultural Use Standards		-	-	-	-	-	0.2*	-	-	100	10

Location	Date	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
SSSPG5	6/28/2023	2.09	1.61	2.15	2540	< 0.02	4210	15
SSSPG3	6/29/2023	4.82	4.17	5.17	2410	< 0.02	3760	12
SSSPG4	6/29/2023	14.3	12.6	14.9	2630	< 0.02	4030	9
SSSPG6A	6/28/2023							
SSSPG10	6/28/2023							
Agricultural Use Standards		20	-	-	-	-	-	-

**Notes**

\* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

**Bold** Analyte exceeds the Agricultural Use Standards