2022 ANNUAL HYDROLOGY REPORT

YOAST MINE

PERMIT C-94-082

March 2023

Submitted To: Colorado Division of Reclamation, Mining and Safety
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SENECA Coal Company

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APPENDICES

1.0 INTRODUCTION

This Annual Hydrology Report presents the hydrologic monitoring data collected during the 2022 water year (October 2021 – September 2022) at the Seneca Coal Company's (SCC) Yoast Mine (Yoast). The AHR fulfills the reporting requirements under the Colorado Division of Reclamation, Mining, and Safety (CDRMS) Permit No. C-1994-082.

1.1 BACKGROUND

Yoast is a surface coal mine located in Routt County, approximately 25 miles west of Steamboat Springs, Colorado (Figure 1). The Yoast permit went into effect on August 8, 1995. Overburden removal began in 1996 in the Grassy Creek watershed and 2000 in the Sage Creek watershed. The last of the coal at Yoast was removed in February 2006. The mine has been reclaimed and vegetated for many years and SCC is actively pursuing bond release.

2.0 METEOROLOGICAL

Meteorological data for the 2022 water year is presented in Appendix A. The 2022 data was obtained from NOAA weather station USC00053867 located in Hayden, Colorado (www.ncdc.noaa.gov/cdo-wb/). A total of 18.74 inches of precipitation was measured in 2022, which is 0.60 inches less than the 1981-2022 average of 18.14 inches. October, December, April, May, and September were wetter than normal, but the remaining months were drier than normal. Potential snowpack runoff, as estimated by totaling November through March precipitation, was 6.87 inches, which was 0.64 inches below the 1981-2022 average of 7.51 inches.

3.0 GROUNDWATER

The Yoast groundwater monitoring program includes 10 monitoring wells. The following table includes the wells monitored, the water bearing unit they are screened in, the frequency of monitoring, and the required parameter list. The monitoring well locations are shown on Figure 1. Groundwater monitoring was completed by experienced personnel and samples were collected following the monitoring practices described in Tab 15 of Permit C-1994-082. All samples were analyzed by ACZ Laboratories.

Site	Unit	Monitoring Frequency		Parameter List
		Water Level	Water Quality	
YAAL14	Annand Draw Alluvium	A	A	GW Long
YGAL16	Grassy Creek Alluvium	A	A	GW Long
SGAL70	Grassy Creek Alluvium	A	A	GW Long
YSAL1	Sage Creek Alluvium	A	A	GW Long
YSAL3	Sage Creek Alluvium	A	A	GW Long
YOV30	Wadge Overburden	A	A	GW Long
YW30	Wadge Coal	A	A	GW Long
YWU30	Wadge Underburden	A	A	GW Long
YWC33	Wolf Creek Coal	A	A	GW Short
YWCU33	Wolf Creek Underburden	A	A	GW Short

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

3.1 WATER LEVELS

The static water levels measured during the 2022 water year are included with the groundwater quality data in Appendix B. Water level hydrographs for each of the wells are also provided in Appendix C. The static water levels were measured at all wells except for YWC33, where the well casing was damaged, and a measurement

could not be made. The water levels measured at all wells this year were within their respective historic range. The water levels in most of the water bearing units at Yoast exhibit seasonal fluctuations. The water table in the shallow alluvial 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. Due to the bedrock unit depths and lower hydraulic conductivity, the water level fluctuations are typically muted relative to the fluctuations observed in the shallow alluvium.

3.2 Groundwater Quality

The Yoast Mine Groundwater Points of Compliance (GWPOC) were established in Technical Revision 39 (TR-39) (see Attachment 15-1 of Permit C-1994-082). The two GWPOC monitoring wells are YSAL3 which is screened within the Sage Creek Alluvium and SGAL70 which is screened within the Grassy Creek Alluvium (Figure 1). SGAL70 is located downgradient of both the Yoast Mine and the adjacent Sage Creek Mine. Bedrock GWPOC wells were deemed unnecessary in TR-39 due to the limited potential for the mine to negatively impact the quality of bedrock groundwater. The Wadge and Wolf Creek Coal exhibit low hydraulic conductivity (Wadge Coal: 2.45E-7 to 3.5E-7 cm/sec; Wolf Creek Coal: 4.55E-6 cm/sec) which impedes the migration of mine-impacted groundwater through these units. Attenuation and dilution should further limit water quality impacts. Aquifers of regional significance include the Trout Creek Sandstone and the Twentymile Sandstone. The Twentymile Sandstone is located approximately 500 ft above the Wadge Coal seam and is not found within the Yoast permit boundary. Low permeability confining layers of the Williams Fork Formation isolate the Trout Creek Sandstone from the mine. The Trout Creek Sandstone lies approximately 300 to 400 feet below the Wadge Coal seam and approximately 60 to 100 feet below the Wolf Creek Coal Seam. The groundwater in the Trout Creek Sandstone is under confined conditions and exhibits an upward hydraulic head that further limits the potential for mine affected groundwater to infiltrate into this unit.

See TR-39 located in the Appendix 15-1 of the Yoast Mine permit package for additional justification for the Groundwater Points of Compliance.

Tables B.1 and B.2 in Appendix B include the analytical results for samples collected from wells YSAL3 and SGAL70 in 2022 and provide a comparison to the Grassy Creek and Sage Creek Alluvial GWPOC water quality standards established in TR-39. Table B.3 includes the analytical results for the remaining monitoring wells however no comparison to water quality standards were made as these wells are not GWPOC. The groundwater quality at SGAL70 meets the TR-39 water quality standards for all parameters except for dissolved cadmium. This exceedance is not associated with a measurable value of cadmium as the lab detection limit exceeded the cadmium water quality standard. Water quality samples 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 as a result of elevated concentrations in one or more samples within the batch or from unrelated instrument interference. The fact that cadmium has not historically been an issue at this well suggests that that the elevated detection limit is unlikely to be censoring a measured value above the water quality standard. There were no exceedances of the GWPOC standards at YSAL3 in 2022.

Predictions for the potential TDS increases at several of the Yoast monitoring wells were made in the Probable Hydrologic Consequences (PHC, Tab 17) section of Permit C-1994-082. The following table outlines these predictions along with this year's observed value.

Well	Predicted TDS (mg/L)	This Years TDS (mg/L)
YAAL14	2036	2400*
YGAL16	1296	2050*
YSAL1	798	1590*
YSAL3	798	1160*
YOV30	3201	2010
YW30	2570	4120*
YWC33**	2721	-

Note
*Indicates value above prediction
** YWC33 well casing broken. Sample could not be collected.

In 2022, the TDS at five of the seven wells exceeded the predicted value. Although the predicted TDS values for the Grassy Creek (YAAL14, YGAL16) and Sage Creek (YSAL1, YSAL3) alluvial wells were exceeded its important to acknowledge that the 2022 values remain within the range of ambient, pre-mine, TDS measured in alluvial monitoring wells in these same drainages. Overburden removal in the Grassy Creek basin began in 1996. The pre-mine (1/1/1980 – 1/31/1994) TDS measured in Grassy Creek alluvial wells YGAL15, YGAL16, YGAL17 and YGAL18 ranged from 546 – 4030 mg/L (mean:1603 mg/L) (see Table 6 TR-39). The pre-mine (1/1/1980 – 12/31/1999) TDS measured in Sage Creek alluvial wells YSAL1, YSAL12, YSAL3, and YSAL8 ranged from 230 – 2140 mg/L (see Table 2 TR-39). This suggests that the slightly elevated TDS concentrations could be from non-mine related sources such as bedrock groundwater contributions from the underlying Lewis Shale or agriculture, which can concentrate dissolved salts, which weren't considered as part of the post mine predictions.

The TDS measured in 2022 at bedrock well YW30 also exceeded its predicted values. As described above the low hydraulic conductivity of the bedrock units will inhibit groundwater from migrating away from the mine. Groundwater from the Wadge Coal and its overburden have not historically been used in this area because groundwater yields from these units are insufficient for irrigation or domestic use. Low permeable confining bedrock units separating the mine from usable aquifers will continue to isolate the mine water from these systems.

4.0 SURFACE WATER

The Yoast Mine lies within the headwaters of the Grassy Creek and Sage Creek watersheds. The southwest portion of the permit drains to the west towards Sage Creek, which ultimately flows to the north-northeast towards the Yampa River. A small area on the southeastern end of the permit drains southeast towards Grassy Creek, which flows to the northeast near the southern end of the permit area before bending to the north towards the Yampa River. The remainder of the permit area drains to the north-northeast towards Annand Draw, which drains north to Scotchmans Gulch, before eventually flowing to the east-northeast to Grassy Creek. The following table includes the Yoast surface water monitoring points, the watershed they are located in, the frequency of monitoring, and the required parameter list. See Figure 1 for the location of the surface water monitoring points. Surface water monitoring was completed by experienced personnel and samples were collected following the monitoring practices described in Tab 15 of Permit C-1994-082. All samples were analyzed by ACZ Laboratories.

Site	Type	Watershed	Monitoring Frequency		Parameter List
			Flow	Water Quality	
NPDES11	NPDES	Grassy Creek	M	M	NPDES
YSGF5	Surface Water	Grassy Creek	SA	SA	SW Long
NPDES10	NPDES	Grassy Creek	M	M	NPDES
YSG5	Surface Water	Grassy Creek	SA	SA	SW Long
YSSF3	Surface Water	Sage Creek	SA	SA	SW Short
NPDES14	NPDES	Sage Creek	M	M	NPDES
NPDES13	NPDES	Sage Creek	M	M	NPDES
NPDES12	NPDES	Sage Creek	M	M	NPDES
YSS2	Surface Water	Sage Creek	SA	SA	SW Long

Note
SA: Semiannual during spring snowmelt and summer baseflow
M: Monthly
SW Long: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total mercury, ammonia, nitrate, nitrite, dissolved selenium, sulfate, sulfide, total dissolved solids, total suspended solids
SW Short: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total suspended solids, total dissolved solids
NPDES: See NPDES permit CO-0000221

The Colorado Water Quality Control Commission (CWQCC) has established segment specific aquatic life water quality standards for Grassy Creek (Segment 13i and 13j) and Sage Creek (Segment 13e) of the Yampa River. The water quality standards for these segments are included in CWQCC Regulation 33. Therefore, the following surface water quality discussion has been organized by drainage basin. The 2022 Water Year surface water quality data is provided in Appendix D. Samples from this year's stream points are compared to both the Colorado Department of Public Health & Environment (CDPHE) surface water agricultural use standards (CDPHE, Reg. 31) and the appropriate segment specific aquatic life water quality standards. 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 Grassy Creek

Analytical results for the 2022 surface water monitoring conducted at upper Grassy Creek Segment 13i stream point YSGF5 and NPDES Outfall 011 are provided in Tables D.1 and D.2 of Appendix D. Analytical results for lower Grassy Creek stream point YSG5 and NPDES Outfall 010 are provided in Table D.3 and D.4. As described in CWQCC Regulation 33, a current conditions temporary modification of the chronic dissolved selenium standard is in place for Yampa River Segment 13i and Segment 13j which includes upper and lower Grassy Creek. At one time a current conditions temporary modification of the chronic iron standard was also in place for both segments. However because the elevated iron in the stream is not the result of elevated iron in the mine discharges the temporary modification was deleted and the iron standard was returned to 1 mg/L.

There were no exceedances of NPDES permit limits or instream water quality standards at Outfalls 010 or 011. Due to the dry conditions experienced in the region Outfall 011 did not discharge in 2022. There were no exceedances of the Yampa Segment 13i water quality standards at upper Grassy stream point YSGF5. There was one exceedance of the Yampa Segment 13j chronic total iron standard at stream point YSG5. The sample collected on April 18th had a total recoverable iron concentration of 1.06 mg/L, just above the 1 mg/L standard. Monitoring was also completed at Outfall

010 and 011 on April 18th. Outfall 011 was not discharging, and the total recoverable iron measured at Outfall 010 (0.51 mg/L) was compliant with the standard. This indicates that the elevated iron in Grassy Creek is unrelated to the runoff from the reclaimed mine and is likely the result of natural erosional processes that are occurring within the unmined portions of the watershed.

The method detection limit for the sulfide analysis (MDL: 0.02 mg/L) conducted by SCC's lab exceeds the Yampa Segment 13i and 13j water quality standard for un-ionized sulfide (H_2S) of 0.002 mg/L. All of the sulfide samples analyzed were non-detect. This analytical method detects both dissolved sulfides and acid-soluble metallic sulfides that are present in suspended matter and provides a single cumulative concentration. Furthermore, dissolved sulfide includes both the ionized (HS^-) and un-ionized forms of hydrogen sulfide (H_2S). The distribution of sulfide between the un-ionized hydrogen sulfide and ionized form is dependent on the temperature and pH. At low pH most of the dissolved sulfide exists as the toxic un-ionized hydrogen sulfide. In alkaline waters, like those present at Yoast, most of the dissolved sulfide is present as non-toxic ionized sulfide.

The method detection limit for mercury (0.02 μg/L) used by SCC's lab is above the 0.01 μg/L aquatic life standard. None of the samples collected during 2022 exceeded the labs method detection limit. CDPHE previously performed a reasonable potential analysis for Outfall 010 and determined that there was no reasonable potential for discharges from this outfall to exceed the mercury limit and the monitoring requirement was dropped from the NPDES permit. There is no reason to believe total mercury in Grassy Creek exceeds the aquatic life standard.

CWQCC Regulation 31 specifies that the 0.2 mg/L manganese agricultural use standard is only applicable when irrigation water is applied to soils with pH lower than 6.0. The soils at Yoast Mine are alkaline and the agriculture standard is therefore not applicable. Dissolved manganese at YSGF5 and YSG5 are significantly lower than the Yampa Segment 13i acute and chronic manganese standards.

4.2 SAGE CREEK

Analytical results for the 2022 surface water monitoring conducted at Sage Creek stream points YSSF3 and YSS2 are provided in Table D.5 of Appendix D and the analytical results for Outfalls 012, 013, and 014 that report to Sage Creek are included in Table D.6 through D.8. There was one exceedance of the Yampa Segment 13e total recoverable iron standard at downstream monitoring point YSS2, one exceedance of the potentially dissolved selenium limit at NPDES12, and two exceedances of the pH limit at Outfall 013 during the 2022 water year.

The total recoverable iron exceedance at YSS2 occurred on September 6th during the dry fall season when flow in the stream was very low (4.4 gpm). Outfalls 013 and Outfall 014 were not discharging on September 6th and the total recoverable iron measured at Outfall 012 (<0.12 mg/L) was compliant with the 1 mg/L aquatic life standard, indicating the iron at YSS2 was not associated with runoff from the reclaimed mine. The pH at YSS2 was slightly alkaline (8.8 s.u.), indicating any dissolved iron would have already precipitated out of the water column, but the total suspended solids were elevated (34 mg/L). The Yampa River sub-basin is known to have iron-rich soils. A statistical comparison of the total suspended solids and total recoverable iron concentrations at YSS2 indicate that they are strongly correlated (r^2: 0.90) (Figure D.1). This further suggests that the iron at Sage Creek YSS2 is reflective of the iron in the suspended solids that were derived from natural erosional processes within the unmined portions of the watershed.

As discussed in Section 4.1, the lab used by SCC has a method detection limit for mercury and sulfide that are above the Segment 13e water quality standard. None of the samples collected from YSS2 in 2022 exceed the labs mercury or sulfide method detection limit. All other parameters sampled at Sage Creek stream points YSS2 and YSSF3 were within the applicable water quality standards.

There were no exceedances of the Yampa Segment 13e aquatic life standards or Agricultural Use standards at Outfalls 012, 013, and 014. Due to the dry conditions experienced in the region Outfall 014 did not discharge.

There was a single exceedance of potentially dissolved selenium monthly average limit at Outfall 012. The sample collected on July 9th had a potentially dissolved selenium concentration of 27 µg/L. However, the total recoverable selenium for this sample was 0.36 µg/L. The total recoverable selenium analysis includes a measurement of both the metals that are dissolved in the water and the metals that are present in the particulates in the water after it's been treated with acid preservative. The potentially dissolved metals analysis measures the metals present in the filtrate of the water that was first treated with acid preservative and allowed to stand for several hours before being filtered through a membrane filter. The potentially dissolved selenium can not be greater than the total recoverable selenium as the potentially dissolved form is a subset of the selenium that is measured as a part of the total recoverable analysis. This suggests the elevated potentially dissolved selenium results may have been the result of an ICP-MS matrix interference which can result in overestimation of selenium concentrations (Smith and Compton, 2004). There were no other exceedances of the NPDES limits or water quality standards at Outfall 012 in 2022.

There were two exceedances of the upper pH limit of 9.00 s.u. at Outfall 013. The pH measured on April 19th was 9.13 s.u. and the pH measured on May 9th was 9.76. Outfall 013 only discharges in response to the spring snowmelt and the flows are of limited duration. During the 2022 water year discharge only occurred during the April and early May monitoring event and the flows were 24.7 gpm and 1.7 gpm. The sample collected from downstream monitoring point YSS2 on April 19th indicate the pH in the receiving stream (8.13 s.u.) was compliant with the Yampa Segment 13e pH standard. The drainage area reporting to this pond is fully vegetated and no fertilizers were applied. Outfall 013 had not discharged since May of 2020 and algae are naturally present in this pond. The elevated pH was likely the result of algae photosynthesis.

In the Probable Hydrological Consequences Probable Hydrologic Consequences (PHC, Tab 17) section of Permit C-1994-082, predictions were made for the expected TDS increases to be observed at several stream points. The following table outlines these predictions along with 2022's average concentration.

Stream Point	Predicted TDS (mg/L)	Mean TDS (mg/L)*
NPDES10	3938	3560
YSGF5	1337	1218
NPDES12	4291	2929
WSSF3**	2118	1650

* Duplicates removed from average calculation

** WSSF3 is a Seneca II-W stream point located in Sage Creek, downstream of the Yoast outfalls. See the 2022 Annual Hydrology Report for Permit C-1982-057 for the full dataset.

The annual average TDS measured at each of the four monitoring locations was less than the predicted value.

5.0 SPRINGS

The Yoast monitoring program includes four spring sites. The following table includes the list of springs monitored, the frequency of monitoring, 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 following the monitoring practices described in Tab 15 of Permit C-1994-082. All samples were analyzed by ACZ Laboratories.

Site	Type	Unit	Monitoring Frequency		Parameter List
			Discharge	Water Quality	
YSSPG1	Spring	Spoils	A	A	SW Long
YSSPG2	Spring	Spoils	A	A	SW Short
YSSPG3	Spring	Spoils	A	A	SW Short
YSSPG4	Spring	Spoils	A	A	SW Short

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

Table E.1 in Appendix E includes the analytical results for samples collected from the four spoil springs in 2022. 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. Due to the dry conditions experienced in the region none of the springs were flowing and samples could not be collected. Therefore, there were no exceedances of the Agricultural Use surface water quality standards at the springs in 2022.

6.0 SUMMARY

No significant hydrologic impacts, attributable to activities at Yoast, were noted during 2022. Groundwater levels in all monitoring wells were within their historic range. No measured water quality exceedances occurred at the GWPOC. Exceedances of the total recoverable iron chronic aquatic life standards occurred once at downstream monitoring point YSG5 in Grassy Creek and once at downstream monitoring point YSS2 in Sage Creek. Synoptic monitoring completed at the mine outfalls during these events confirmed that the iron was unrelated to discharge from the Yoast outfalls and is likely the result of natural erosional processes that are occurring within the unmined portions of the watershed. There were no other exceedances of the surface water quality standards at the stream monitoring points.

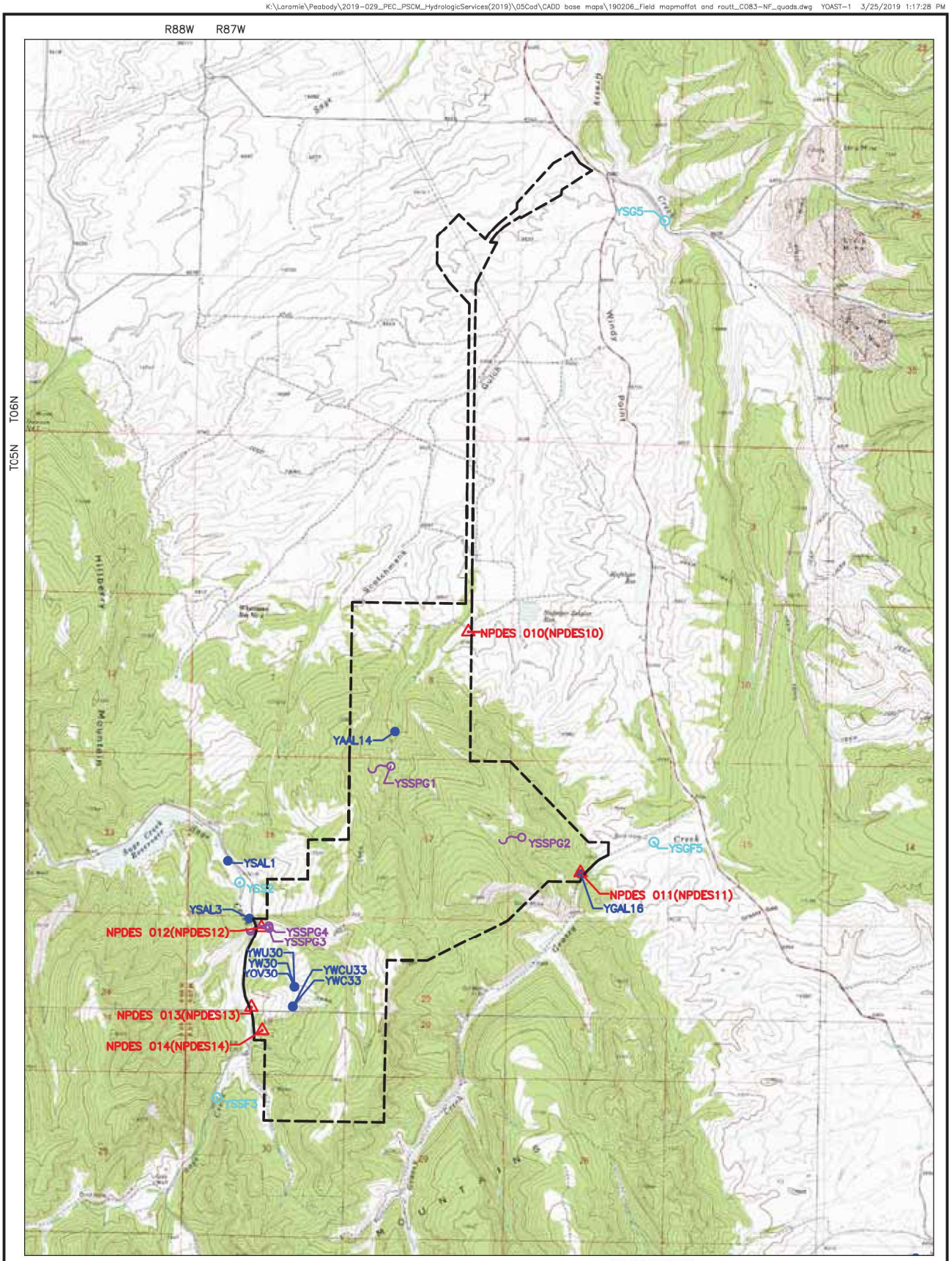

IMAGE SOURCE:
DIGITAL RASTER GRAPHIC COUNTY MOSAIC BY NRCS OF ROUTT COUNTY, COLORADO FROM GEOSPATIAL DATA GATEWAY (HTTPS://GDG.SC.EGOV.USDA.GOV) DOWNLOADED 10/16

DESIGNED BY: JAH	FIGURE 1 MONITORING SITE LOCATIONS
DRAWN BY: SDG	
CHECKED BY: TNS	YOAST MINE PEABODY SAGE CREEK MINING, LLC PEABODY ENERGY
DATE: 2019	WWC ENGINEERING

APPENDIX A

METEOROLOGICAL DATA

PERIOD OF RECORD PRECIPITATION SUMMARY													
Water Year	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**TOTAL**
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	1.70	1.53	1.63	1.56	1.34	1.46	1.92	1.78	1.09	1.27	1.30	1.57	18.14

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.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2021	10	01	60	36	60	0.00		0.0		0.0								
2021	10	02	67	36	66	0.00		0.0		0.0								
2021	10	03	68	36	66	0.00		0.0		0.0								
2021	10	04	72	40	68	0.00		0.0		0.0								
2021	10	05	73	41	68	0.00		0.0		0.0								
2021	10	06	70	40	60	0.00		0.0		0.0								
2021	10	07	68	41	60	0.00		0.0		0.0								
2021	10	08	60	41	52	0.03		0.0		0.0								
2021	10	09	55	40	44	0.36		0.0		0.0								
2021	10	10	51	36	45	0.12		0.0		0.0								
2021	10	11	57	31	53	0.00		0.0		0.0								
2021	10	12	53	32	35	0.12		T		0.0								
2021	10	13	36	25	34	0.26		3.0		0.0								
2021	10	14	39	28	35	0.07		0.0		0.0								
2021	10	15	40	25	39	0.00		0.0		0.0								
2021	10	16	59	23	52	0.00		0.0		0.0								
2021	10	17	68	31	60	0.00		0.0		0.0								
2021	10	18	68	32	53	0.00		0.0		0.0								
2021	10	19	53	32	40	0.14		0.0		0.0								
2021	10	20	54	24	48	0.02		0.0		0.0								
2021	10	21	60	30	57	0.00		0.0		0.0								
2021	10	22	62	30	52	0.00		0.0		0.0								
2021	10	23	55	30	52	0.00		0.0		0.0								
2021	10	24	56	35	50	0.11		T		0.0								
2021	10	25	70	32	62	0.00		0.0		0.0								
2021	10	26	64	30	32	0.50		1.0		1.0								
2021	10	27	42	28	40	0.09		0.5		0.0								
2021	10	28	48	25	47	0.00		0.0		0.0								
2021	10	29	54	32	54	0.00		0.0		0.0								
2021	10	30	59	20	55	0.00		0.0		0.0								
2021	10	31	55	28	51	0.00		0.0		0.0								
Summary			58	32		1.82		4.5										

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2021	11	01	51	36	46	0.01		0.0		0.0								
2021	11	02	51	36	46	0.37		0.0		0.0								
2021	11	03	51	38	48	0.03		0.0		0.0								
2021	11	04	56	30	55	0.00		0.0		0.0								
2021	11	05	60	29	51	0.00		0.0		0.0								
2021	11	06	64	28	57	0.00		0.0		0.0								
2021	11	07	69	32	51	0.00		0.0		0.0								
2021	11	08	57	34	45	0.00		0.0		0.0								
2021	11	09	55	26	50	0.00		0.0		0.0								
2021	11	10	50	34	37	0.03		0.0		0.0								
2021	11	11	44	30	44	0.00		0.0		0.0								
2021	11	12	45	34	44	T		0.0		0.0								
2021	11	13	52	29	48	0.00		0.0		0.0								
2021	11	14	55	24	45	0.00		0.0		0.0								
2021	11	15	58	31	49	0.00		0.0		0.0								
2021	11	16	55	35	43	0.00		0.0		0.0								
2021	11	17	43	20	25	0.06		0.5		0.0								
2021	11	18	44	14	40	0.00		0.0		0.0								
2021	11	19	52	29	42	0.00		0.0		0.0								
2021	11	20	45	34	35	0.12		0.5		0.0								
2021	11	21	43	19	32	0.00		0.0		0.0								
2021	11	22	47	18	35	0.00		0.0		0.0								
2021	11	23	50	18	48	0.00		0.0		0.0								
2021	11	24	48	24	27	T		T		0.0								
2021	11	25	40	10	30	0.00		0.0		0.0								
2021	11	26	48	18	33	0.00		0.0		0.0								
2021	11	27	48	20	34	0.00		0.0		0.0								
2021	11	28	50	22	39	0.00		0.0		0.0								
2021	11	29	53	24	40	0.00		0.0		0.0								
2021	11	30	51	16	35	0.00		0.0		0.0								
		Summary	51	26		0.62		1.0										

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

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

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Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2021	12	01	57	22	42	0.00		0.0		0.0								
2021	12	02	60	25	42	0.00		0.0		0.0								
2021	12	03	57	25	40	0.00		0.0		0.0								
2021	12	04	57	20	42	0.00		0.0		0.0								
2021	12	05	52	20	39	0.00		0.0		0.0								
2021	12	06	39	19	36	0.00		0.0		0.0								
2021	12	07	48	27	35	0.00		0.0		0.0								
2021	12	08	42	16	39	0.00		0.0		0.0								
2021	12	09	40	30	31	T		0.0		0.0								
2021	12	10	31	13	19	0.30		3.0		2.0								
2021	12	11	30	-5	17	0.00		0.0		2.0								
2021	12	12	38	8	24	0.00		0.0		2.0								
2021	12	13	47	10	31	0.00		0.0		1.0								
2021	12	14	50	21	37	0.00		0.0		1.0								
2021	12	15	48	15	21	0.28		3.0		3.0								
2021	12	16	32	5	25	0.00		0.0		3.0								
2021	12	17	30	15	22	0.20		2.5		5.0								
2021	12	18	30	-2	15	0.00		0.0		5.0								
2021	12	19	34	2	17	0.00		0.0		5.0								
2021	12	20	36	5	21	0.00		0.0		4.0								
2021	12	21	37	9	25	0.00		0.0		4.0								
2021	12	22	37	7	28	0.00		0.0		3.0								
2021	12	23	43	23	38	T		T		2.0								
2021	12	24	42	22	25	0.97		14.0		14.0								
2021	12	25	38	20	28	0.00		0.0		12.0								
2021	12	26	37	19	23	0.13		2.0		12.0								
2021	12	27	34	12	28	0.00		0.0		12.0								
2021	12	28	28	8	19	0.27		3.0		14.0								
2021	12	29	24	12	19	0.14		3.0		15.0								
2021	12	30	34	18	33	0.00		0.0		13.0								
2021	12	31	33	20	20	0.50		10.0		19.0								
Summary			40	15		2.79		40.5										

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

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
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Record of Climatological Observations

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Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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)	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.
2022	01	01	20	0	3	T		T		19.0								
2022	01	02	27	-10	10	0.00		0.0		17.0								
2022	01	03	24	-6	9	0.00		0.0		17.0								
2022	01	04	32	3	27	0.00		0.0		17.0								
2022	01	05	34	20	32	0.23		2.5		17.0								
2022	01	06	43	14	39	0.27		3.5		16.0								
2022	01	07	54	24	36	0.00		0.0		12.0								
2022	01	08	45	18	18	0.25		4.0		16.0								
2022	01	09	31	2	8	0.00		0.0		16.0								
2022	01	10	28	0	9	0.00		0.0		16.0								
2022	01	11	31	2	15	0.00		0.0		14.0								
2022	01	12	38	2	20	0.00		0.0		14.0								
2022	01	13	36	10	30	0.00		0.0		13.0								
2022	01	14	35	12	28	T		T		13.0								
2022	01	15	34	7	20	0.00		0.0		13.0								
2022	01	16	31	4	17	0.00		0.0		13.0								
2022	01	17	32	4	17	0.00		0.0		13.0								
2022	01	18	36	8	18	0.00		0.0		13.0								
2022	01	19	32	4	21	0.00		0.0		13.0								
2022	01	20	29	12	24	0.02		0.5		13.0								
2022	01	21	38	20	25	0.28		4.0		17.0								
2022	01	22	28	8	8	0.01		T		17.0								
2022	01	23	31	1	11	0.00		0.0		17.0								
2022	01	24	29	-2	17	0.00		0.0		17.0								
2022	01	25	37	10	11	0.12		1.5		18.0								
2022	01	26	27	-5	15	0.00		0.0		18.0								
2022	01	27	33	2	11	0.00		0.0		18.0								
2022	01	28	33	-3	8	0.00		0.0		18.0								
2022	01	29	38	0	11	0.00		0.0		17.0								
2022	01	30	32	-3	10	0.00		0.0		17.0								
2022	01	31	28	-4	17	0.00		0.0		17.0								
Summary			33	5		1.18		16.0										

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National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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)	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.
2022	02	01	25	2	8	0.00		0.0		17.0								
2022	02	02	20	-16	3	0.00		0.0		17.0								
2022	02	03	21	-17	5	0.00		0.0		17.0								
2022	02	04	30	-5	15	0.00		0.0		17.0								
2022	02	05	32	0	17	0.00		0.0		17.0								
2022	02	06	35	12	17	0.00		0.0		16.0								
2022	02	07	38	4	22	T		T		16.0								
2022	02	08	37	4	23	0.00		0.0		15.0								
2022	02	09	36	10	30	0.00		0.0		15.0								
2022	02	10	43	22	33	0.00		0.0		15.0								
2022	02	11	44	10	27	0.00		0.0		14.0								
2022	02	12	38	2	22	0.00		0.0		14.0								
2022	02	13	37	6	22	0.00		0.0		14.0								
2022	02	14	45	2	30	0.00		0.0		14.0								
2022	02	15	47	13	35	0.00		0.0		14.0								
2022	02	16	37	24	25	0.16		2.0		16.0								
2022	02	17	37	0	13	0.00		0.0		16.0								
2022	02	18	38	10	29	0.00		0.0		16.0								
2022	02	19	43	12	24	0.00		0.0		15.0								
2022	02	20	46	9	40	0.00		0.0		15.0								
2022	02	21	40	20	34	0.00		0.0		15.0								
2022	02	22	34	0	5	0.19		2.0		17.0								
2022	02	23	15	1	6	0.35		4.0		21.0								
2022	02	24	30	0	10	0.05		1.0		21.0								
2022	02	25	32	0	10	0.10		1.5		22.0								
2022	02	26	36	-10	13	0.00		0.0		22.0								
2022	02	27	38	-3	17	0.00		0.0		21.0								
2022	02	28	44	4	26	0.00		0.0		20.0								
Summary			36	4		0.85		10.5										

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

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National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	03	01	52	12	31	0.00		0.0		20.0								
2022	03	02	51	22	34	0.00		0.0		19.0								
2022	03	03	60	22	37	0.00		0.0		18.0								
2022	03	04	53	24	37	T		0.0		18.0								
2022	03	05	44	29	29	0.42		2.0		19.0								
2022	03	06	41	14	18	T		T		19.0								
2022	03	07	32	3	14	0.00		0.0		19.0								
2022	03	08	41	0	25	T		T		19.0								
2022	03	09	32	12	16	0.18		3.0		21.0								
2022	03	10	22	-1	3	0.06		1.0		21.0								
2022	03	11	33	-16	19	0.00		0.0		21.0								
2022	03	12	50	12	30	0.00		0.0		20.0								
2022	03	13	46	10	33	T		T		20.0								
2022	03	14	46	21	33	0.06		1.0		21.0								
2022	03	15	53	12	41	0.00		0.0		20.0								
2022	03	16	41	31	38	0.25		1.5		21.0								
2022	03	17	47	22	30	0.02		T		20.0								
2022	03	18	46	14	40	0.00		0.0		20.0								
2022	03	19	50	12	40	0.00		0.0		20.0								
2022	03	20	52	30	47	0.00		0.0		19.0								
2022	03	21	47	22	34	0.02		0.5		19.0								
2022	03	22	41	12	36	T		T		19.0								
2022	03	23	48	12	36	0.00		0.0		19.0								
2022	03	24	51	22	43	0.00		0.0		18.0								
2022	03	25	58	23	53	0.00		0.0		17.0								
2022	03	26	63	33	53	0.00		0.0		15.0								
2022	03	27	67	34	57	0.00		0.0		12.0								
2022	03	28	68	34	55	0.00		0.0		8.0								
2022	03	29	55	32	37	0.42		T		5.0								
2022	03	30	50	32	43	0.00		0.0		4.0								
2022	03	31	54	22	49	0.00		0.0		0.0								
Summary			48	18		1.43		9.0										

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 NCDC'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.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	04	01	53	24	52	0.11		0.0		0.0								
2022	04	02	61	23	61	0.00		0.0		0.0								
2022	04	03	61	33	53	0.00		0.0		0.0								
2022	04	04	53	24	53	0.00		0.0		0.0								
2022	04	05	53	30	30	T		T		0.0								
2022	04	06	49	14	43	0.00		0.0		0.0								
2022	04	07	53	14	50	0.00		0.0		0.0								
2022	04	08	60	23	60	0.00		0.0		0.0								
2022	04	09	63	31	57	0.00		0.0		0.0								
2022	04	10	57	20	40	0.18		1.0		0.0								
2022	04	11	45	30	45	0.00		0.0		0.0								
2022	04	12	55	20	32	0.32		5.0		2.0								
2022	04	13	34	12	26	0.07		1.0		2.0								
2022	04	14	48	10	48	0.05		0.5		1.0								
2022	04	15	50	30	50	0.00		0.0		0.0								
2022	04	16	60	30	54	0.00		0.0		0.0								
2022	04	17	55	34	54	0.33		0.5		0.0								
2022	04	18	70	30	70	0.00		0.0		0.0								
2022	04	19	70	32	66	0.00		0.0		0.0								
2022	04	20	66	34	62	0.00		0.0		0.0								
2022	04	21	72	40	72	0.00		0.0		0.0								
2022	04	22	72	38	38	T		0.0		0.0								
2022	04	23	42	31	33	0.85		4.0		2.0								
2022	04	24	55	32	55	0.02		T		0.0								
2022	04	25	55	22	55	0.00		0.0		0.0								
2022	04	26	58	30	58	0.00		0.0		0.0								
2022	04	27	70	35	70	0.00		0.0		0.0								
2022	04	28	73	34	64	0.00		0.0		0.0								
2022	04	29	64	32	47	0.14		1.5		0.0								
2022	04	30	60	24	60	0.00		0.0		0.0								
		Summary	58	27		2.07		13.5										

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	05	01	66	28	55	0.00		0.0		0.0								
2022	05	02	59	32	57	0.68		0.0		0.0								
2022	05	03	60	32	32	0.16		0.5		1.0								
2022	05	04	48	32	46	0.18		2.0		0.0								
2022	05	05	68	40	67	0.00		0.0		0.0								
2022	05	06	73	42	67	0.00		0.0		0.0								
2022	05	07	67	45	50	0.06		0.0		0.0								
2022	05	08	62	40	55	0.16		0.0		0.0								
2022	05	09	55	32	55	0.05		0.0		0.0								
2022	05	10	70	24	64	0.00		0.0		0.0								
2022	05	11	77	41	70	0.00		0.0		0.0								
2022	05	12	70	40	57	0.00		0.0		0.0								
2022	05	13	65	24	65	0.00		0.0		0.0								
2022	05	14	72	30	72	0.00		0.0		0.0								
2022	05	15	78	40	78	0.00		0.0		0.0								
2022	05	16	81	46	74	0.00		0.0		0.0								
2022	05	17	78	40	65	T		0.0		0.0								
2022	05	18	75	42	75	0.00		0.0		0.0								
2022	05	19	75	40	73	0.00		0.0		0.0								
2022	05	20	73	30	49	0.47		6.0		0.0								
2022	05	21	53	20	53	T		T		0.0								
2022	05	22	62	31	57	0.00		0.0		0.0								
2022	05	23	57	33	57	0.06		0.0		0.0								
2022	05	24	60	34	60	0.00		0.0		0.0								
2022	05	25	68	31	68	0.00		0.0		0.0								
2022	05	26	78	40	78	0.00		0.0		0.0								
2022	05	27	83	46	76	0.00		0.0		0.0								
2022	05	28	76	42	66	0.00		0.0		0.0								
2022	05	29	66	40	41	0.86		0.0		0.0								
2022	05	30	55	34	43	0.40		0.0		0.0								
2022	05	31	66	30	55	0.06		0.0		0.0								
Summary			68	36		3.14		8.5										

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

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	06	01	75	30	73	0.00		0.0		0.0								
2022	06	02	87	47	77	0.00		0.0		0.0								
2022	06	03	83	46	73	0.00		0.0		0.0								
2022	06	04	81	43	73	0.00		0.0		0.0								
2022	06	05	73	50	70	0.01		0.0		0.0								
2022	06	06	74	44	71	0.19		0.0		0.0								
2022	06	07	76	41	74	0.00		0.0		0.0								
2022	06	08	79	39	72	0.00		0.0		0.0								
2022	06	09	86	52	83	0.00		0.0		0.0								
2022	06	10	89	45	84	0.00		0.0		0.0								
2022	06	11	91	50	84	0.00		0.0		0.0								
2022	06	12	90	55	88	0.00		0.0		0.0								
2022	06	13	88	48	65	0.00		0.0		0.0								
2022	06	14	67	43	66	0.00		0.0		0.0								
2022	06	15	77	33	76	0.00		0.0		0.0								
2022	06	16	87	38	85	0.00		0.0		0.0								
2022	06	17	93	52	78	0.00		0.0		0.0								
2022	06	18	78	60	72	0.03		0.0		0.0								
2022	06	19	76	54	71	0.15		0.0		0.0								
2022	06	20	71	42	67	0.00		0.0		0.0								
2022	06	21	80	35	78	0.00		0.0		0.0								
2022	06	22	81	45	79	0.00		0.0		0.0								
2022	06	23	82	50	70	0.03		0.0		0.0								
2022	06	24	73	46	71	0.12		0.0		0.0								
2022	06	25	81	46	75	0.00		0.0		0.0								
2022	06	26	82	53	79	0.00		0.0		0.0								
2022	06	27	86	50	85	0.00		0.0		0.0								
2022	06	28	88	51	86	0.00		0.0		0.0								
2022	06	29	86	50	62	T		0.0		0.0								
2022	06	30	76	54	61	0.08		0.0		0.0								
		Summary	81	46		0.61		0.0										

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	07	01	83	51	80	0.28		0.0		0.0								
2022	07	02	83	51	73	0.03		0.0		0.0								
2022	07	03	84	50	78	0.02		0.0		0.0								
2022	07	04	88	52	86	0.00		0.0		0.0								
2022	07	05	86	57	70	T		0.0		0.0								
2022	07	06	83	53	70	0.00		0.0		0.0								
2022	07	07	87	51	84	T		0.0		0.0								
2022	07	08	91	52	88	0.00		0.0		0.0								
2022	07	09	94	52	90	0.00		0.0		0.0								
2022	07	10	92	53	81	0.00		0.0		0.0								
2022	07	11	90	55	87	0.00		0.0		0.0								
2022	07	12	92	51	89	0.00		0.0		0.0								
2022	07	13	90	51	80	0.00		0.0		0.0								
2022	07	14	92	53	90	0.06		0.0		0.0								
2022	07	15	90	61	78	0.06		0.0		0.0								
2022	07	16	87	57	84	0.23		0.0		0.0								
2022	07	17	90	56	89	0.00		0.0		0.0								
2022	07	18	92	56	87	0.03		0.0		0.0								
2022	07	19	91	57	80	0.00		0.0		0.0								
2022	07	20	90	55	90	0.00		0.0		0.0								
2022	07	21	91	52	89	0.00		0.0		0.0								
2022	07	22	94	53	86	0.00		0.0		0.0								
2022	07	23	90	61	69	0.10		0.0		0.0								
2022	07	24	71	56	61	0.22		0.0		0.0								
2022	07	25	85	51	82	0.00		0.0		0.0								
2022	07	26	89	51	86	0.00		0.0		0.0								
2022	07	27	91	52	86	0.00		0.0		0.0								
2022	07	28	87	55	68	0.00		0.0		0.0								
2022	07	29	84	52	76	0.11		0.0		0.0								
2022	07	30	89	50	82	0.00		0.0		0.0								
2022	07	31	87	53	85	0.00		0.0		0.0								
Summary			88	54		1.14		0.0										

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

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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

Record of Climatological Observations

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Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	08	01	91	56	72	0.15		0.0		0.0								
2022	08	02	85	56	74	0.02		0.0		0.0								
2022	08	03	87	54	81	0.00		0.0		0.0								
2022	08	04	91	53	90	0.00		0.0		0.0								
2022	08	05	90	57	71	0.00		0.0		0.0								
2022	08	06	91	58	89	0.00		0.0		0.0								
2022	08	07	89	53	82	0.00		0.0		0.0								
2022	08	08	90	48	87	0.00		0.0		0.0								
2022	08	09	93	51	91	0.00		0.0		0.0								
2022	08	10	95	60	91	0.00		0.0		0.0								
2022	08	11	93	55	86	0.00		0.0		0.0								
2022	08	12	90	54	88	0.02		0.0		0.0								
2022	08	13	89	60	83	0.00		0.0		0.0								
2022	08	14	86	59	68	0.32		0.0		0.0								
2022	08	15	82	54	66	0.04		0.0		0.0								
2022	08	16	84	54	75	0.00		0.0		0.0								
2022	08	17	87	49	85	0.00		0.0		0.0								
2022	08	18	89	49	81	0.00		0.0		0.0								
2022	08	19	85	53	74	0.00		0.0		0.0								
2022	08	20	74	48	63	0.00		0.0		0.0								
2022	08	21	76	52	67	0.36		0.0		0.0								
2022	08	22	85	48	84	0.00		0.0		0.0								
2022	08	23	87	52	81	0.00		0.0		0.0								
2022	08	24	86	53	83	0.02		0.0		0.0								
2022	08	25	83	51	72	0.00		0.0		0.0								
2022	08	26	82	49	68	0.00		0.0		0.0								
2022	08	27	85	47	70	0.06		0.0		0.0								
2022	08	28	81	47	75	0.00		0.0		0.0								
2022	08	29	85	46	80	0.00		0.0		0.0								
2022	08	30	90	47	88	0.00		0.0		0.0								
2022	08	31	90	50	85	0.00		0.0		0.0								
Summary			87	52		0.99		0.0										

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

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U.S. Department of Commerce
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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 Observations

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Generated on 01/20/2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

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.
2022	09	01	90	49	84	0.00		0.0		0.0								
2022	09	02	91	48	88	0.00		0.0		0.0								
2022	09	03	92	56	88	0.00		0.0		0.0								
2022	09	04	94	49	67	0.00		0.0		0.0								
2022	09	05	92	47	87	0.00		0.0		0.0								
2022	09	06	92	46	85	0.00		0.0		0.0								
2022	09	07	94	47	88	0.00		0.0		0.0								
2022	09	08	91	49	81	0.00		0.0		0.0								
2022	09	09	81	47	73	0.02		0.0		0.0								
2022	09	10	73	37	69	0.00		0.0		0.0								
2022	09	11	85	35	77	0.00		0.0		0.0								
2022	09	12	85	39	80	0.00		0.0		0.0								
2022	09	13	80	44	62	0.00		0.0		0.0								
2022	09	14	73	46	71	0.04		0.0		0.0								
2022	09	15	71	51	60	0.25		0.0		0.0								
2022	09	16	69	45	66	0.21		0.0		0.0								
2022	09	17	74	47	73	0.37		0.0		0.0								
2022	09	18	80	43	76	0.00		0.0		0.0								
2022	09	19	83	42	79	0.00		0.0		0.0								
2022	09	20	79	46	64	0.05		0.0		0.0								
2022	09	21	71	47	55	0.34		0.0		0.0								
2022	09	22	71	51	64	0.44		0.0		0.0								
2022	09	23	69	35	65	0.00		0.0		0.0								
2022	09	24	72	35	68	0.00		0.0		0.0								
2022	09	25	76	36	72	0.00		0.0		0.0								
2022	09	26	79	40	73	0.00		0.0		0.0								
2022	09	27	79	42	73	0.00		0.0		0.0								
2022	09	28	82	46	72	0.00		0.0		0.0								
2022	09	29	73	47	60	0.00		0.0		0.0								
2022	09	30	61	48	50	0.38		0.0		0.0								
Summary			80	45		2.10		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 NCDC'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 YSAL3 during water year 2022.

Location	Date	Static Water Level FT BTOC	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Fluoride N MG/L	Iron D MG/L	Manganese D MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	TDS, Lab N MG/L
YSAL3	5/3/2022	6.78	1730	7.65	7.2	0.36	0.278	0.185	0.063	0.018	< 2	546	1160
Sage Creek TR39 GWPOC Standards*			-	6.5 - 8.5	-	2	4.91	0.76	10	1	20	1200	2675

Notes

* See Yoast Mine Technical Revision 39 (TR-39) for GWPOC standards

Bold Exceeds groundwater quality standard

Table B.2. Groundwater analytical results for Point of Compliance (POC) well SGAL70 during water year 2022.

Well	Date	Depth to Water ft btoc	pH, Field N S.U.	Temp., Field N DEG-C	SPC, Field N UMHOS/CM	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	5/6/2022	9.83	7.42	7.9	3320	< 0.1	< 0.4	107	**< 16**	31.2	< 40	< 20	0.27
SGAL70	9/15/2022	11.31	7.11	9.9	3350	< 0.1	0.29	134	**< 16**	29.8	45	29	0.17
Grassy Creek TR39 GWPOC Standard*			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	5/6/2022	< 0.12	< 60	0.041	< 0.2	< 16	0.027	< 0.01	6.4	1820	< 0.02	2810	0.18
SGAL70	9/15/2022	0.345	< 60	0.027	< 0.2	< 16	0.042	< 0.01	< 2	1840	< 0.02	2850	< 0.04
TR-39 GWPOC Standards*		**14.1**	**70**	**2.44**	**2**	**100**	**10**	**1**	**20**	**2517**	**-**	**5038**	**5**

Well	Date	Alk. as CaCO3, @ pH 4.5 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 Balance N %
SGAL70	5/6/2022	332	346	3260	1810	230	5.64	174	1.8	-2.2
SGAL70	9/15/2022	334	364	3220	1890	239	5.4	170	1.7	-1.1
TR-39 GWPOC Standards*		-	-	-	-	-	-	-	-	-

Notes

* See Yoast Mine Technical Revision 39 (TR-39) for GWPOC standards

Bold Analyte exceeds the TR-39 GWPOC Standard

Table B.3. Groundwater analytical results for Non-Point of Compliance wells during water year 2022.

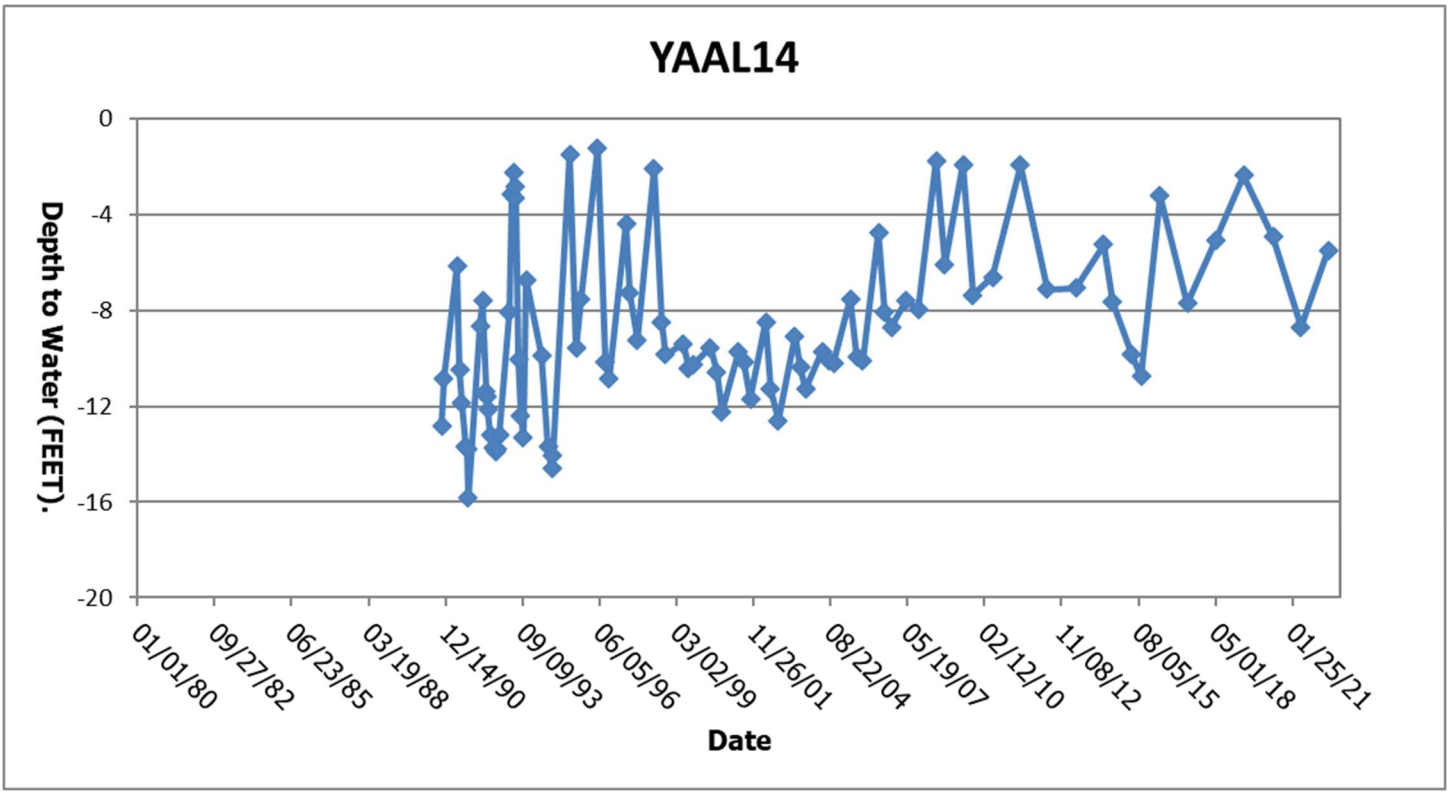
Location	Date	Static Water Level FT BTOC	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Fluoride N MG/L	Iron D MG/L	Manganese D MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	TDS, Lab N MG/L
YAAL14	5/3/2022	5.49	2850	7.16	8.9	0.25	< 0.12	0.035	0.49	< 0.01	2.8	1360	2400
YGAL16	5/3/2022	10.64	2410	7.05	9.2	0.22	< 0.12	0.022	0.06	< 0.01	< 2	1190	2050
YSAL1	5/3/2022	5.26	2020	7.6	7.1	0.24	0.073	< 0.01	0.271	< 0.01	2.1	857	1590
YOV30	5/6/2022	133.15	2670	7.56	11.4	1.27	0.204	0.022	< 0.02	0.022	< 2	751	2010
YW30	5/6/2022	182.84	5570	7.44	9.8	0.63	< 0.3		0.911	0.037	< 2	2290	4120
YWU30	5/6/2022	219.37	970	7.47	10.6	0.17	0.147	0.063	3.55	0.016	< 2	58	700
YWC33*													
YWCU33	5/6/2022	253.19	1480	8.51	11.1		0.259	< 0.01					858

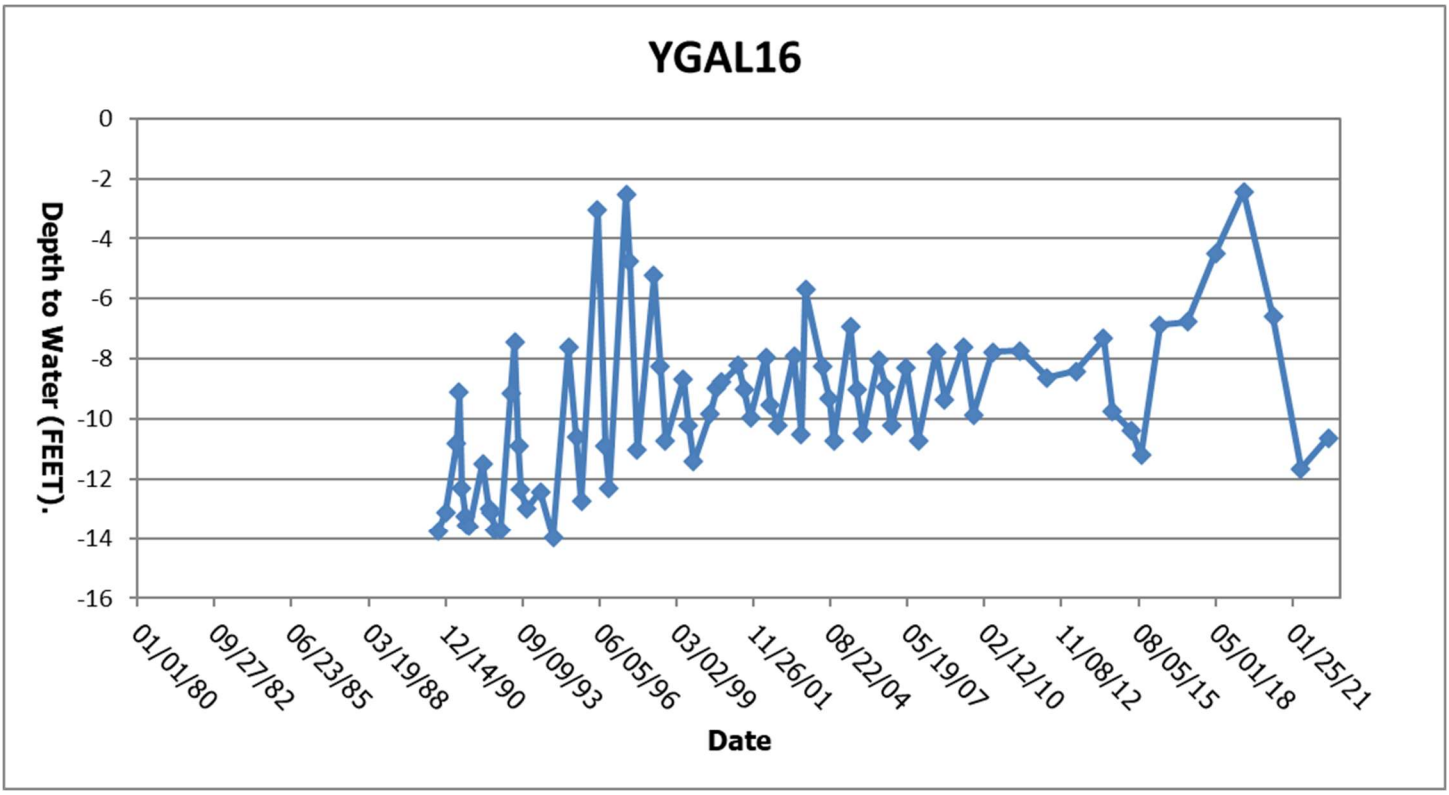
Notes

*YWC33 well casing broken. Water level could not be measured and a sample could not be collected.

APPENDIX C

GROUNDWATER HYDROGRAPHS


YAAL14
Depth to Water (FEET).
0
-4
-8
-12
-16
-20
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YGAL16
Depth to Water (FEET).
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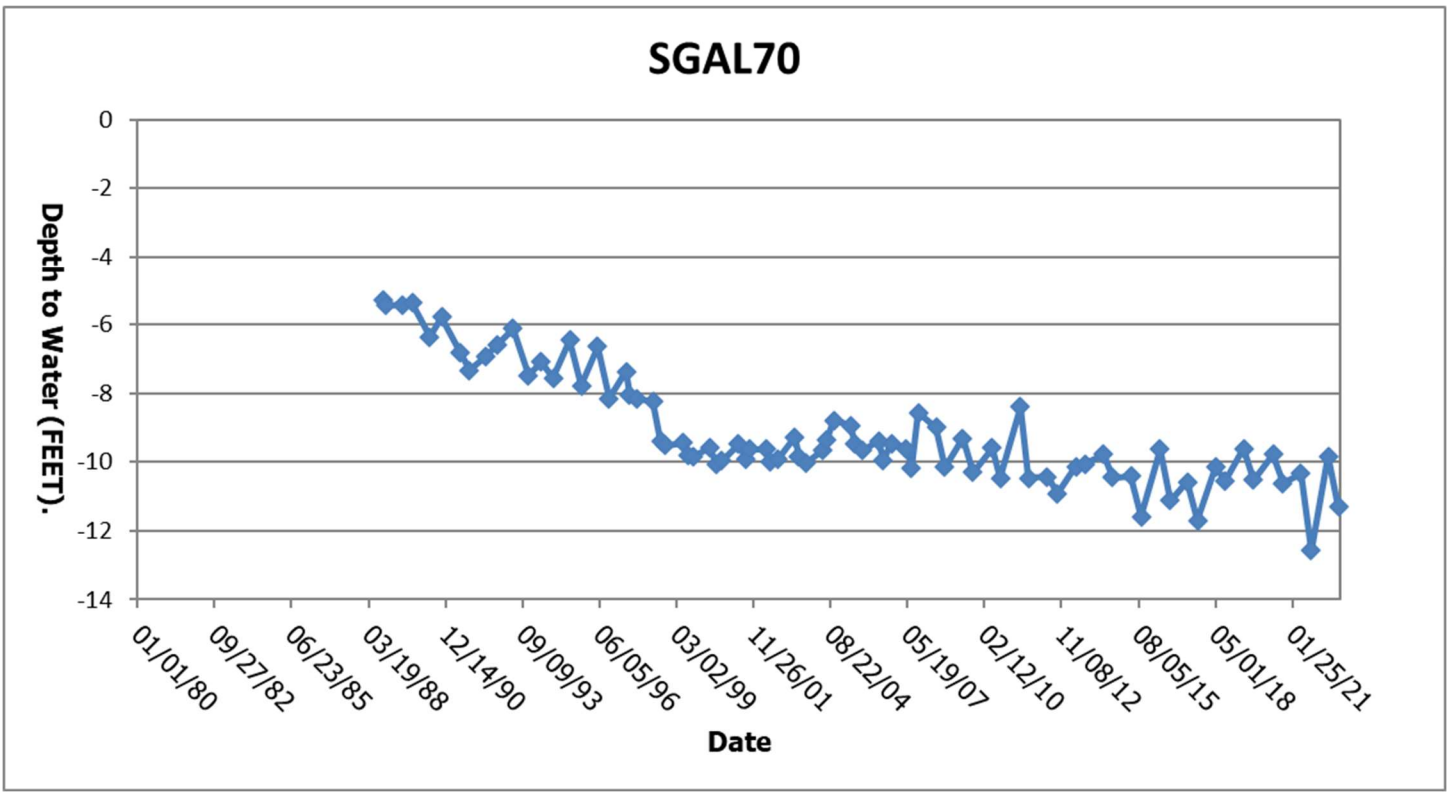
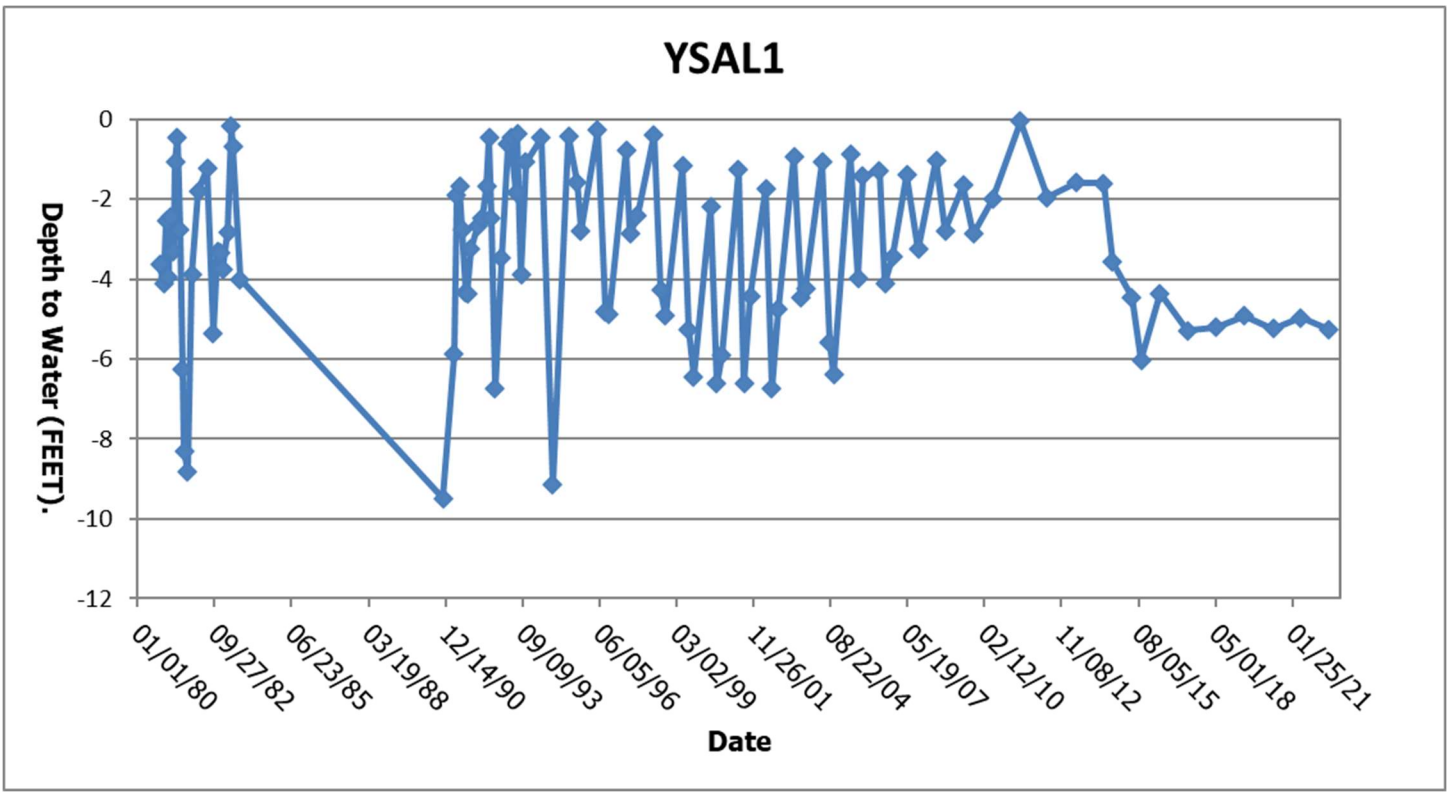
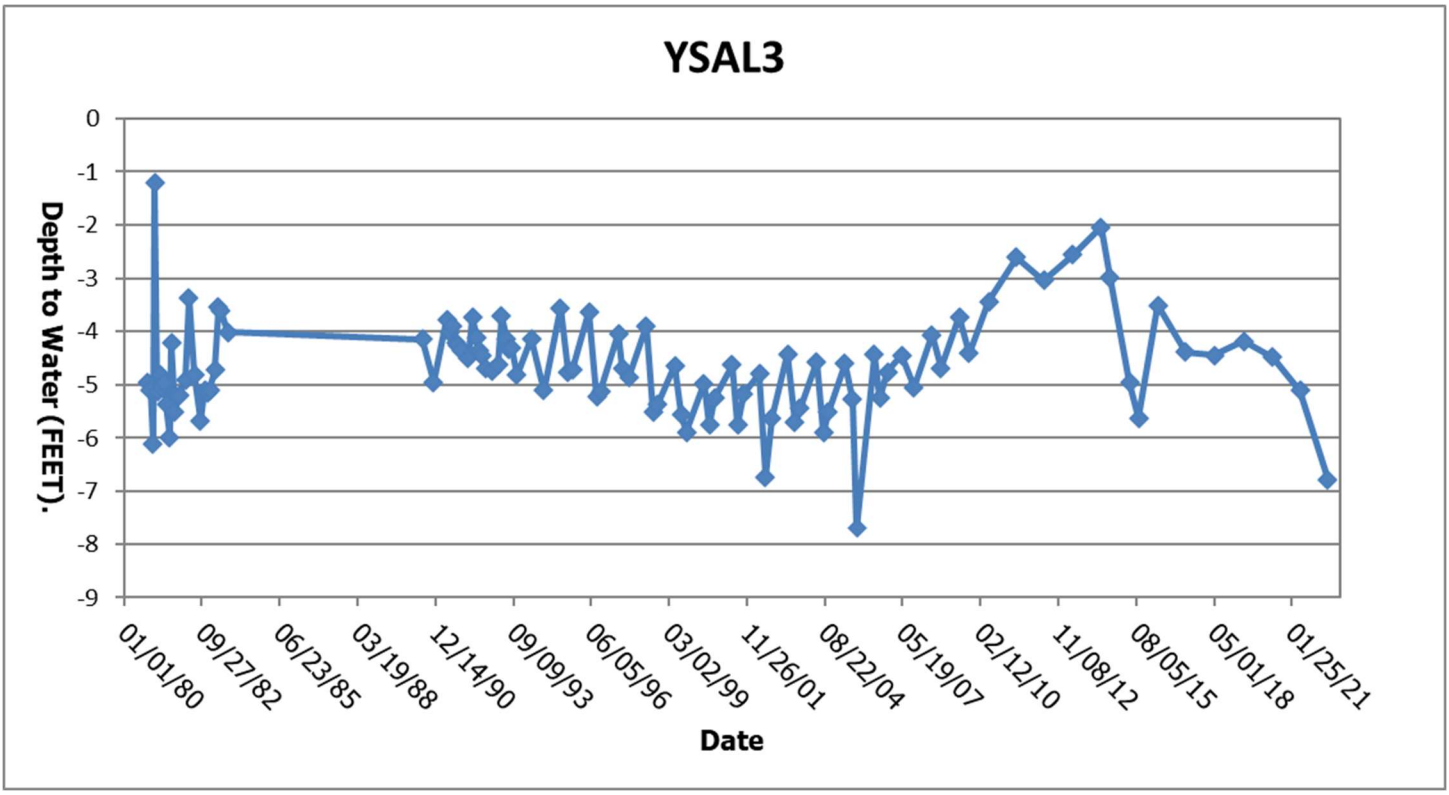
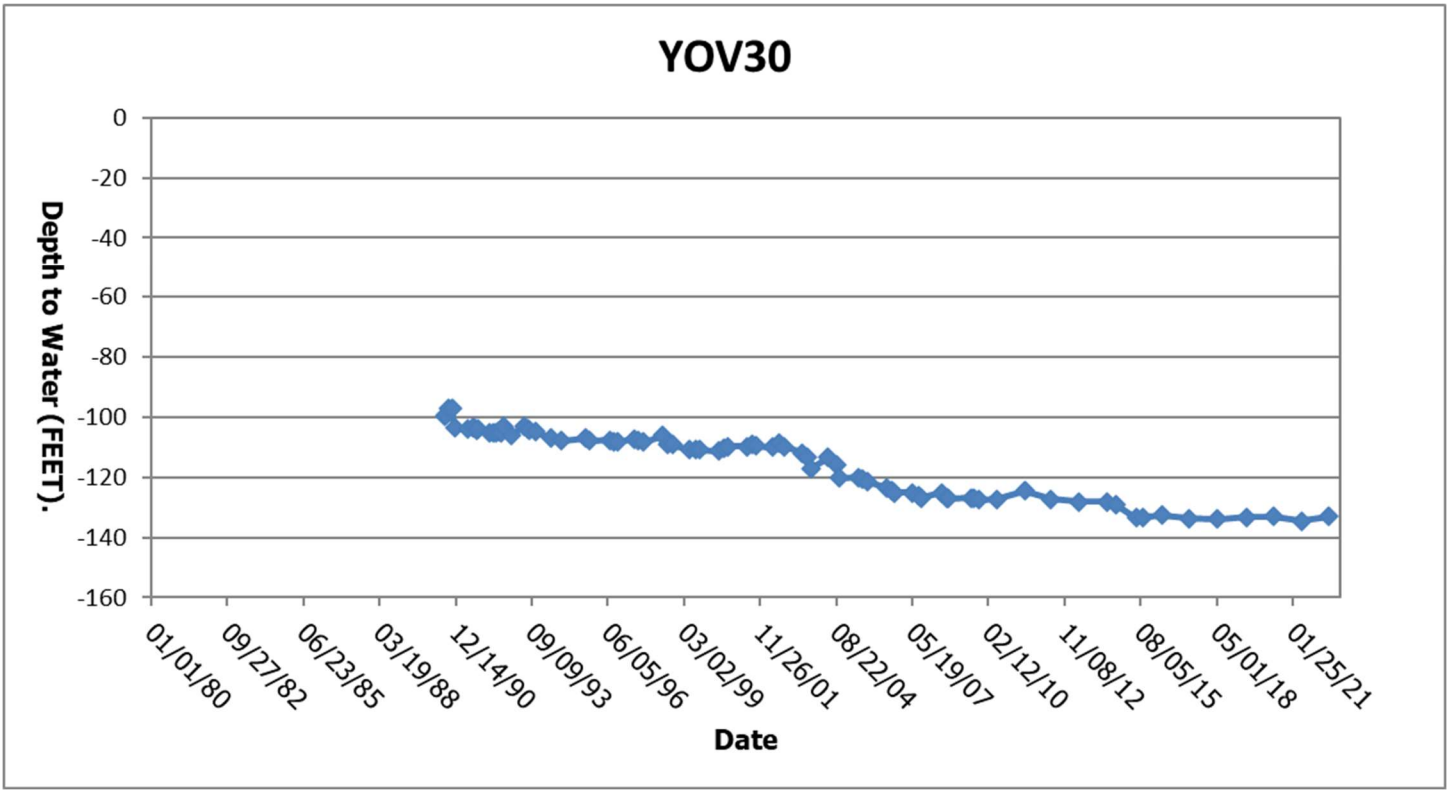
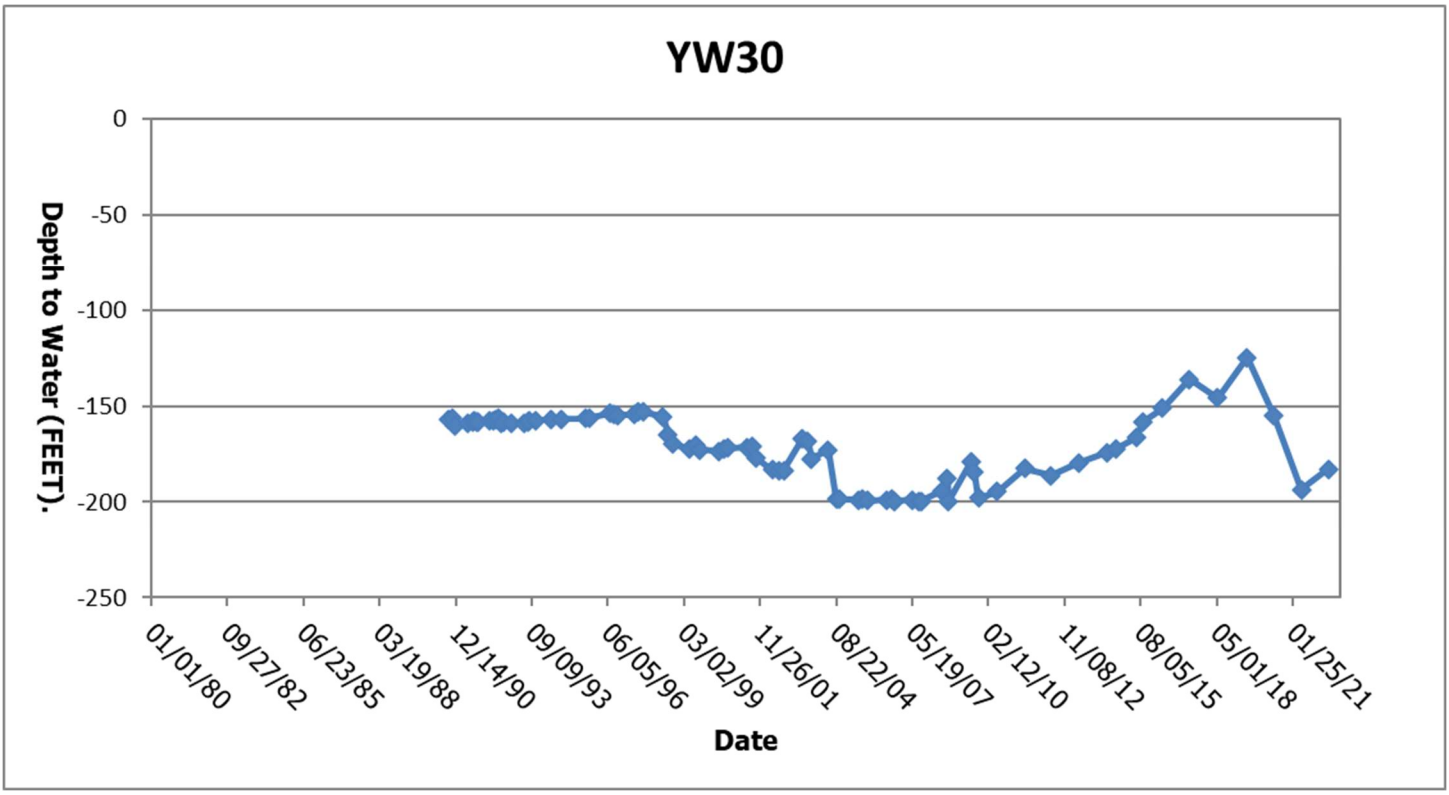
-2
-4
-6
-8
-10
-12
-14
-16
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date

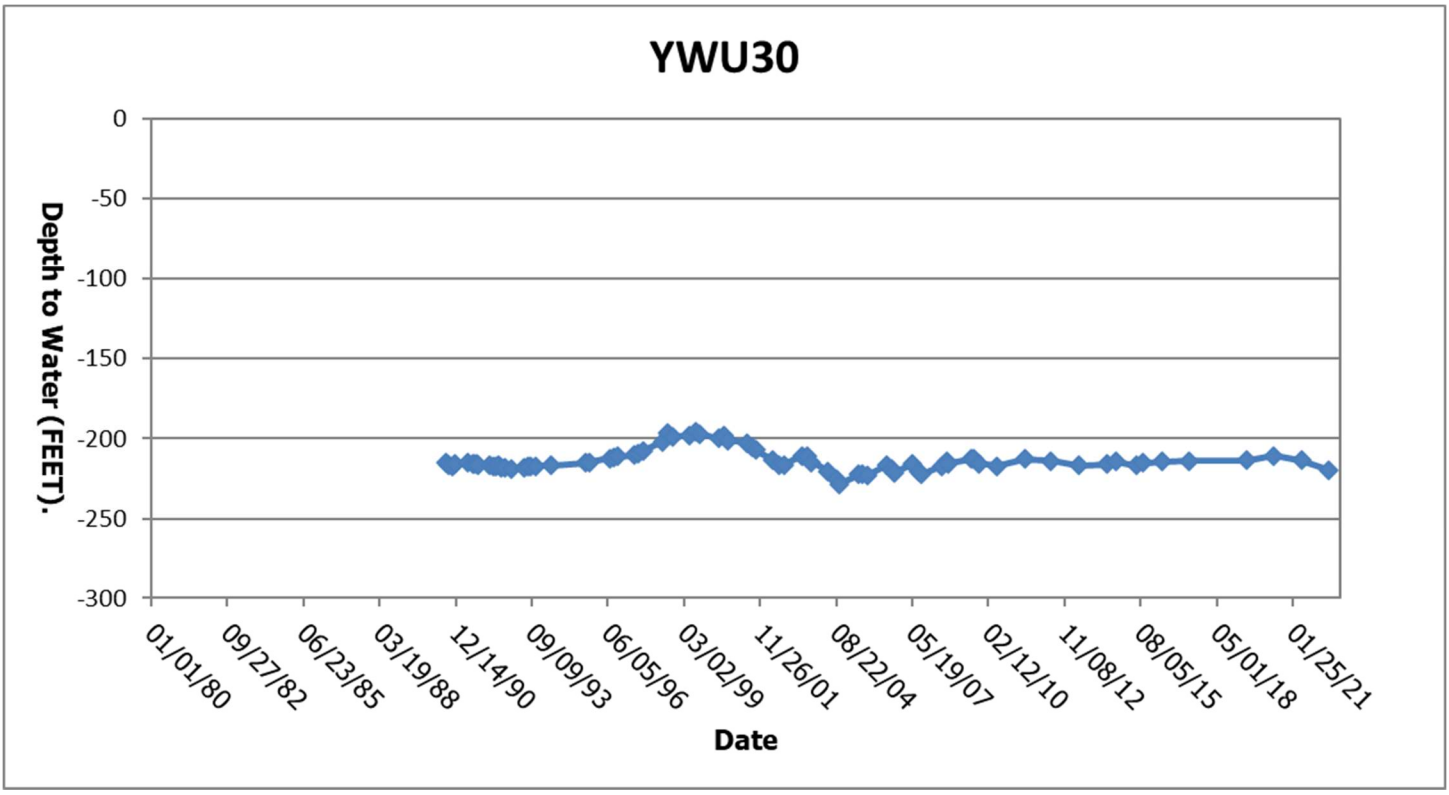

SGAL70
Depth to Water (FEET).
0
-2
-4
-6
-8
-10
-12
-14
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date

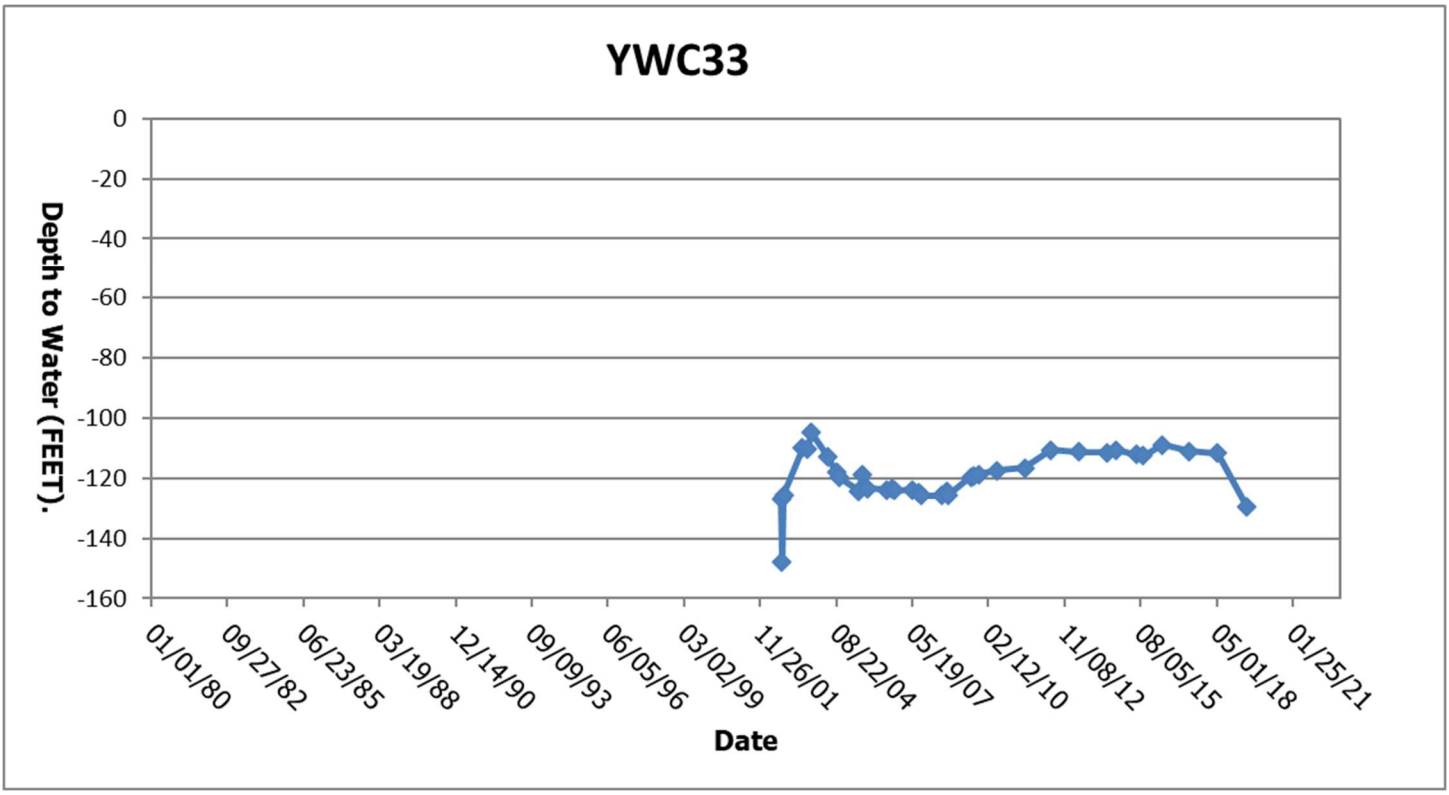

YSAL1
Depth to Water (FEET).
0
-2
-4
-6
-8
-10
-12
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date

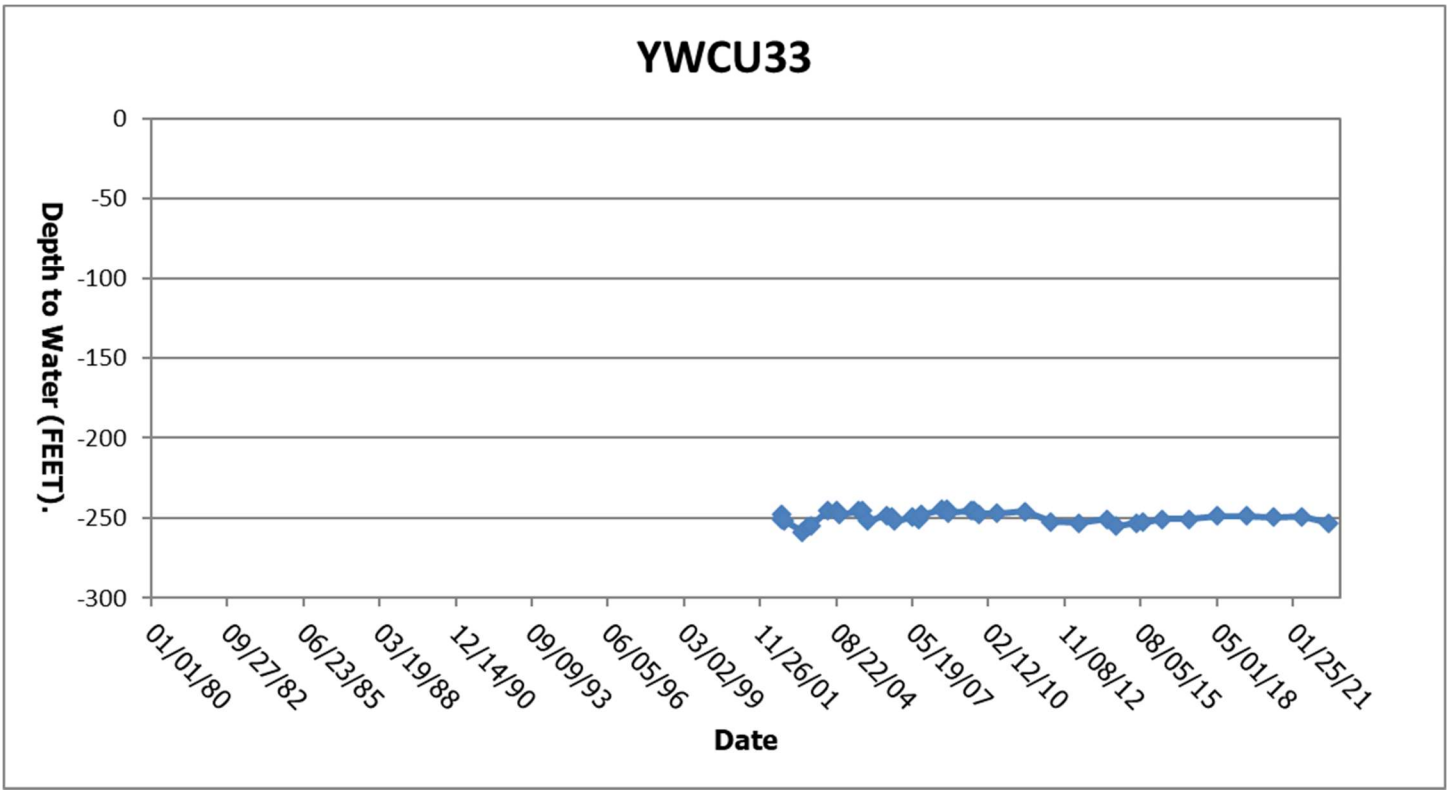

YSAL3
Depth to Water (FEET).
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YOV30
Depth to Water (FEET).
0
-20
-40
-60
-80
-100
-120
-140
-160
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YW30
0
-50
-100
-150
-200
-250
Depth to Water (FEET).
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YWU30
0
-50
-100
-150
-200
-250
-300
Depth to Water (FEET).
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YWC33
0
-20
-40
-60
-80
-100
-120
-140
-160
Depth to Water (FEET).
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date


YWCU33
0
-50
-100
-150
-200
-250
-300
Depth to Water (FEET).
01/01/80
09/27/82
06/23/85
03/19/88
12/14/90
09/09/93
06/05/96
03/02/99
11/26/01
08/22/04
05/19/07
02/12/10
11/08/12
08/05/15
05/01/18
01/25/21
Date

APPENDIX D

SURFACE WATER QUALITY DATA

Table D.1 Upper Grassy Creek Yampa Segment 13i stream point analytical data for water year 2022.

Location	Date	Flow N GPM	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	4/18/2022	768				< 0.06	0.238	0.964						
YSGF5	4/18/2022	768	1437	8.06	12			0.943	0.102	< 0.2	< 0.05	< 0.02	< 0.01	1.78
YSGF5	6/21/2022	12.4	1653	8.18	10.6			1	0.461	< 0.2	< 0.05	< 0.02	< 0.01	0.26
YSGF5	7/18/2022	8.3	1794	8.27	24.3	0.077	0.419	0.711						
YSGF5	9/6/2022	0												
Yampa Segment 13i Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	Varies	100	0.05	18.4
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-	1	2.618	-	Varies	-	-	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	4/18/2022					1090	7
YSGF5	4/18/2022	2.08	1.92	633	< 0.02	1080	14
YSGF5	6/21/2022	0.29	0.3	669	< 0.02	1280	20
YSGF5	7/18/2022					1290	22
YSGF5	9/6/2022						
Yampa Segment 13i Standards - Acute		-	-	-	0.002****	-	-
Yampa Segment 13i Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

Notes

The ammonia standard varies based on stream classification, pH, and temperature. See Regulation 33 Table Value Standard calculation formula. Each samples water quality was compared to calculated standard.

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

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

*** The mercury standard is an order of magnitude less than the labs 0.2 mg/L analytical detection limit.

**** The sulfide standard is an order of magnitude less than the labs 0.02 mg/L sulfide analytical detection limit.

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

Table D.2. Upper Grassy Creek Segment 13i NPDES Outfall 011 analytical data for water year 2022.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	TDS, Lab N MG/L	Cadmium PD UG/L	Chromium PD UG/L	Copper PD UG/L	Lead PD UG/L	Mercury T UG/L	Nickel PD UG/L
NPDES11	1/11/2022	0										
NPDES11	2/8/2022	0										
NPDES11	3/23/2022	0										
NPDES11	4/18/2022	0										
NPDES11	5/10/2022	0										
NPDES11	6/20/2022	0										
NPDES11	7/18/2022	0										
NPDES11	8/17/2022	0										
NPDES11	9/6/2022	0										
NPDES11	10/28/2021	0										
NPDES11	11/9/2021	0										
NPDES11	12/2/2021	0										
NPDES Limit	Daily Max		6.5 - 9.0	10	Report	Report	Report	Report	Report	Report	Report	Report
	Monthly Avg.		NA	NA	1	Report	Report	Report	Report	Report	Report	Report
Yampa Segment 13i Standards - Acute			6.5 - 9.0	-	-	-	9.2	1773	50	281	0.01	1513
Yampa Segment 13i Standards - Chronic			-	-	1	-	1.2	231	29	11	-	168
Agricultural Use Standards			-	-	-	-	10	100	200	100	-	200

Location	Date	Selenium PD UG/L	Selenium* TR UG/L	Silver PD UG/L	Zinc PD MG/L
NPDES11	1/11/2022				
NPDES11	2/8/2022				
NPDES11	3/23/2022				
NPDES11	4/18/2022				
NPDES11	5/10/2022				
NPDES11	6/20/2022				
NPDES11	7/18/2022				
NPDES11	8/17/2022				
NPDES11	9/6/2022				
NPDES11	10/28/2021				
NPDES11	11/9/2021				
NPDES11	12/2/2021				
NPDES Limit	Daily Max	Report	-	Report	Report
	Monthly Avg.	Report	-	Report	Report
Segment 13i Standards - Acute		18.4	-	22	0.565
Segment 13i Standards - Chronic		TM**	-	3.5	0.428
Agricultural Use Standards		-	20	-	2

Note

*NPDES11 does not have a Total Recoverable Selenium NPDES monitoring requirement.

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

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

Table D.3 Lower Grassy Creek Yampa Segment 13j stream point analytical data for water year 2022.

Location	Date	Flow N GPM	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
YSG5	4/18/2022	817	2237	8.18	10.3									8.27
YSG5	4/18/2022	1354	2237	8.18	10.3			**1.06**	0.072	< 0.2	< 0.05	1.12	0.013	8.81
YSG5	6/21/2022	12.4	398	8.53	15.3			0.512	0.236	< 0.2	< 0.05	< 0.02	< 0.01	0.72
YSG5	7/18/2022	1.1	3676	8.02	21.9									0.7
YSG5	9/6/2022	0												
Yampa Segment 13j Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01***	Varies	100	0.05	18.4
Yampa Segment 13j Standards - Chronic		-	-	-	-	-	-	1	2.618	-	Varies	-	-	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
YSG5	4/18/2022		8.65	1120		1860	
YSG5	4/18/2022		8.48	1110	< 0.02	1910	20
YSG5	6/21/2022		0.77	2380	< 0.02	3690	6
YSG5	7/18/2022		0.51	2130		3650	
YSG5	9/6/2022						
Yampa Segment 13j Standards - Acute		-	-	-	0.002****	-	-
Yampa Segment 13j Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

Notes

The ammonia standard varies based on stream classification, pH, and temperature. See Regulation 33 Table Value Standard calculation formula. Each samples water quality was compared to calculated standard.

* 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 mercury standard is an order of magnitude less than the labs 0.2 mg/L analytical detection limit.

**** The sulfide standard is an order of magnitude less than the labs 0.02 mg/L sulfide analytical detection limit.

Bold Analyte exceeds the Yampa Segment 13j or Agricultural Use Standards

Table D.4. Lower Grassy Creek Segment 13j NPDES Outfall 010 analytical data for water year 2022.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	TDS, Lab N MG/L	Copper PD UG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L
NPDES10	1/11/2022	0								
NPDES10	2/8/2022	0								
NPDES10	3/23/2022	0								
NPDES10	4/18/2022	26.9	8.06	N	0.51	3540	< 1.6	0.69	0.52	0.71
NPDES10	5/9/2022	25.7	8.06	N	0.36	3360	< 0.8		0.67	0.89
NPDES10	6/20/2022	14.3	7.92	N	0.28	3560	< 1.6	0.76	0.47	0.59
NPDES10	7/18/2022	0								
NPDES10	8/17/2022	1.1	8.41	N	< 0.12	3780	< 0.8		0.37	0.51
NPDES10	9/6/2022	0								
NPDES10	10/27/2021	0								
NPDES10	11/8/2021	0								
NPDES10	12/1/2021	0								
NPDES Limit	Daily Max		6.5 - 9.0	10	Report	Report	Report	-	Report	-
	Monthly Avg.		NA	NA	1	Report	Report	-	Report	-
Yampa Segment 13j Standards - Acute			6.5 - 9.0	-	-	-	50	18.4	-	-
Yampa Segment 13j Standards - Chronic			-	-	1	-	29	TM**	-	-
Agricultural Use Standards			-	-	-	-	200	-	-	20

Note

*NPDES10 does not have a Dissolved or Total Recoverable Selenium NPDES monitoring requirement.

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

Bold Analyte exceeds the NPDES limit, Segment 13j aquatic life standard, or Agricultural Use standard

Table D.5. Sage Creek Segment 13e stream point analytical data for water year 2022.

Location	Date	Flow N GPM	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
YSSF3	4/19/2022	2194	736	8.13	3.6			0.081	0.0131					1.89
YSSF3	6/21/2022	9.8	2830	7.81	10			0.084	0.0369					0.15
YSS2	4/19/2022	768	1301	8.15	2.3			0.548	0.0963	< 0.2	< 0.05		< 0.01	1.58
YSS2	6/21/2022	23.2	1943	8.09	8.2			0.565	0.0527	< 0.2	< 0.05		< 0.01	0.22
YSS2	9/6/2022	4.4	3643	8.81	15.7			**1.26**	0.0726					0.23
Yampa Segment 13e Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01**	Varies	100	0.05	18.4
Yampa Segment 13e Standards - Chronic		-	-	-	-	-	-	1.25	2.618	-	Varies	-	-	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
YSSF3	4/19/2022	2.01	1.86			478	< 5
YSSF3	6/21/2022	0.16	0.21			412	< 5
YSS2	4/19/2022	1.66	1.64	586	< 0.02	1030	8
YSS2	6/21/2022	0.21	0.31	828	< 0.02	1510	13
YSS2	9/6/2022	0.29	0.27			3480	34
Yampa Segment 13e Standards - Acute		-	-	-	0.002****	-	-
Yampa Segment 13e Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

Notes

The ammonia standard varies based on stream classification, pH, and temperature. See Regulation 33 Table Value Standard calculation formula. Each samples water quality was compared to calculated standard.

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

** The mercury standard is an order of magnitude less than the labs 0.2 mg/L analytical detection limit.

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

**** The sulfide standard is an order of magnitude less than the labs 0.02 mg/L sulfide analytical detection limit.

Bold Analyte exceeds the Yampa Segment 13e or Agricultural Use Standards

Table D.6. Sage Creek Segment 13e NPDES Outfall 014 analytical data for water year 2022.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y / N	TDS N MG/L	Selenium* D UG/L	Selenium* TR UG/L
NPDES14	1/10/2022	0					
NPDES14	2/7/2022	0					
NPDES14	3/22/2022	0					
NPDES14	4/19/2022	0					
NPDES14	5/9/2022	0					
NPDES14	6/20/2022	0					
NPDES14	7/19/2022	0					
NPDES14	8/17/2022	0					
NPDES14	9/6/2022	0					
NPDES14	10/27/2021	0					
NPDES14	11/8/2021	0					
NPDES14	12/1/2021	0					
NPDES Limit	Daily Max		6.5 - 9.0	10	Report	-	-
	Monthly Avg.		NA	NA	Report	-	-
Yampa Segment 13e Standards - Acute			6.5 - 9.0	-	-	18.4	-
Yampa Segment 13e Standards - Chronic			-	-	-	TM**	-
Agricultural Use Standards			-	-	-	-	20

Note

*NPDES14 does not have a Dissolved or Total Recoverable Selenium NPDES monitoring requirement.

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

Bold Analyte exceeds the NPDES limit or Agricultural Use standard

Table D.7. Sage Creek Segment 13e NPDES Outfall 013 analytical data for water year 2022.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y / N	TDS, Lab N MG/L	Arsenic TR UG/L	Cadmium PD UG/L	Chromium PD UG/L	Copper PD UG/L	Iron TR MG/L	Lead PD UG/L	Manganese PD MG/L	Mercury T UG/L	Nickel PD UG/L
NPDES13	1/10/2022	0												
NPDES13	2/7/2022	0												
NPDES13	3/22/2022	0												
NPDES13	4/19/2022	24.7	**9.13**	N	1500	0.83	< 0.05	< 0.5	1.42	0.142	0.16	< 0.01	0.0026	< 8
NPDES13	5/9/2022	1.7	**9.76**	N	2790									
NPDES13	6/20/2022	0												
NPDES13	7/19/2022	0												
NPDES13	8/17/2022	0												
NPDES13	9/6/2022	0												
NPDES13	10/27/2021	0												
NPDES13	11/8/2021	0												
NPDES13	12/1/2021	0												
NPDES Limit	Daily Max		6.5 - 9.0	10	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report
	Monthly Avg.		NA	NA	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report
Yampa Segment 13e Standards - Acute			6.5 - 9.0	-	-	340	9.2	1773	50	1.25	281	4.738	0.01	1513
Yampa Segment 13e Standards - Chronic			-	-	-	100	1.2	231	29	-	11	2.618	-	168
Agricultural Use Standards			-	-	-	100	10	100	200	-	100	0.2***	-	200

Location	Date	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	Zinc PD MG/L	TSS* N MG/L
NPDES13	1/10/2022					
NPDES13	2/7/2022					
NPDES13	3/22/2022					
NPDES13	4/19/2022		6.88	7.21	< 0.02	16
NPDES13	5/9/2022					
NPDES13	6/20/2022					
NPDES13	7/19/2022					
NPDES13	8/17/2022					
NPDES13	9/6/2022					
NPDES13	10/27/2021					
NPDES13	11/8/2021					
NPDES13	12/1/2021					
NPDES Limit	Daily Max	-	Report	-	Report	-
	Monthly Avg.	-	Report	-	Report	-
Segment 13e Standards - Acute		18.4	-	-	0.565	-
Segment 13e Standards - Chronic		TM**	-	-	0.428	-
Agricultural Use Standards		-	-	20****	2	-

Note

*TSS is not an NPDES monitoring requirement at this outfall

** A current condtions temporary modification is in place for the Segment 13e chronic selenium standard.

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

**** The agricultural use standard is applied to total recoverable selenium

Bold Analyte exceeds the NPDES limit, Segment 13e aquatic life standard, or Agricultural Use standard

Table D.8. Sage Creek Segment 13e NPDES Outfall 012 analytical data for water year 2022.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y / N	Iron TR MG/L	TDS N MG/L	Manganese PD MG/L	Selenium* D UG/L	Selenium PD UG/L	Selenium* TR UG/L
NPDES12	1/10/2022	37.3	8.09	N	0.11	2900	0.488		1.23	< 0.2
NPDES12	2/7/2022	36.4	8.06	N	0.176	2970			< 0.5	< 0.2
NPDES12	3/22/2022	32.6	7.97	N	< 0.12	2780			1.09	0.45
NPDES12	4/19/2022	94.1	8	N	0.313	1880	0.035		0.98	1
NPDES12	5/9/2022	86.1	8	N	0.145	2900			0.64	1.03
NPDES12	6/20/2022	75.3	8.07	N	< 0.12	2940			0.31	0.46
NPDES12	7/19/2022	37.3	7.93	N	0.118	3020	0.143		**27**	0.36
NPDES12	8/17/2022	36.9	8.56	N	< 0.12	3140			0.37	0.35
NPDES12	9/6/2022	34.7	8.69	N	< 0.12	3550			0.25	0.23
NPDES12	10/27/2021	37.6	8.2	N	0.121	3050	0.0378		0.19	< 0.2
NPDES12	11/8/2021	42.8	8.23	N	0.183	3060			0.25	0.26
NPDES12	12/1/2021	36.9	8.16	N	< 0.12	2960			0.21	< 0.2
NPDES Limit	Daily Max		6.5 - 9.0	10	Report	Report	Report	-	18	-
	Monthly Avg.		NA	NA	1	Report	Report	-	4.6	-
Yampa Segment 13e Standards - Acute			6.5 - 9.0	-	1	-	4.738	18.4	-	-
Yampa Segment 13e Standards - Chronic			-	-	-	-	2.618	TM**	-	-
Agricultural Use Standards			-	-	-	-	0.2***	-	-	20

Note

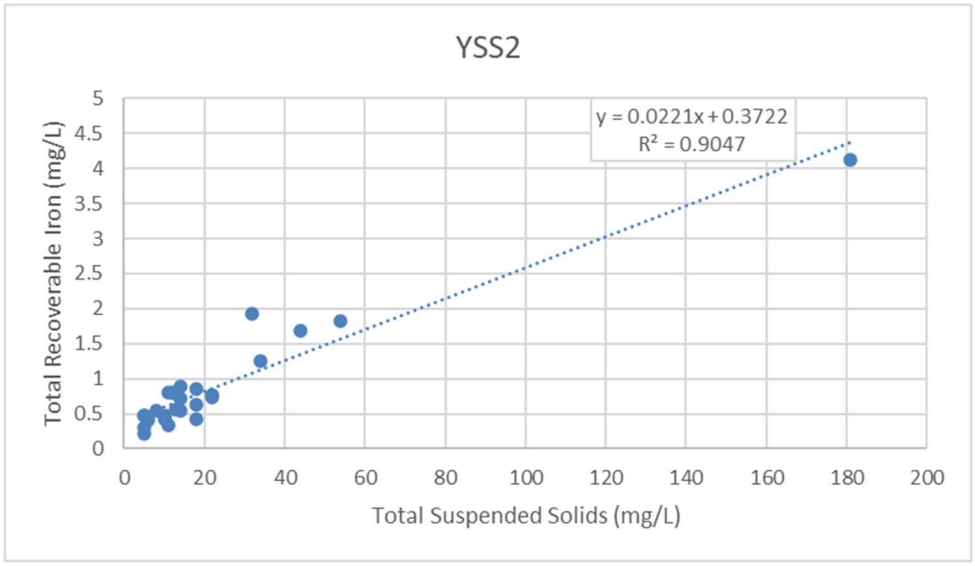
*NPDES12 does not have a Dissolved or Total Recoverable Selenium NPDES monitoring requirement.

** A current condtions temporary modification is in place for the Segment 13e chronic selenium standard.

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

Bold Analyte exceeds the NPDES limit, Segment 13e aquatic life standard, or Agricultural Use standard

Figure D.1. Suspended solids vs total recoverable iron at Sage Creek stream points YSS2 collected between January 1, 2014 and September 30, 2022.



APPENDIX E

SPRING WATER QUALITY DATA

Table E.1. Analytical data for springs sampled during the 2022 water year.

Location	Date	Flow N GPM	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
YSSPG1	6/21/2022	0									
YSSPG2	6/21/2022	0									
YSSPG3	6/22/2022	0									
YSSPG4	6/22/2022	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
YSSPG1	6/21/2022							
YSSPG2	6/21/2022							
YSSPG3	6/22/2022							
YSSPG4	6/22/2022							
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