

2019 ANNUAL HYDROLOGY REPORT

HAYDEN GULCH TERMINAL LOADOUT

PERMIT C-92-081

APRIL 2020



Submitted To: Colorado Division of Reclamation, Mining and Safety
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Peabody
ENERGY

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1.0 INTRODUCTION

This document constitutes the Annual Hydrology Report (AHR) for the Hayden Gulch Terminal LLC's (HGT) Hayden Gulch Loadout. This AHR presents hydrologic monitoring data for the 2019 water year (October 2018 - September 2019). The AHR fulfills the reporting requirements under the Colorado Division of Reclamation, Mining and Safety (CDRMS) Permit C-92-081. Monitoring results for prior water years are presented in previous AHRs, although selected historical data from prior years are summarized in some of the Figures, Tables and Reports for comparison to the current water year.

1.1 BACKGROUND

The HGT is in Routt County, approximately 2 miles Southeast of Hayden, Colorado (Figure 1). The HGT facility is in temporary cessation.

In 2011, the tipple was scrapped. Topsoiling and reseeding of the tipple and coal storage areas were also completed in 2011. The Tie-Across Haul Road (formerly associated with the Seneca II-W Mine, CDRMS Permit C-82-057) was transferred to the HGT on January 4, 2012. The east office area and the rail line were left in place until 2013 when the offices were reclaimed. In 2014, the west office building was removed, and that area was reclaimed. Only the substation, rail loop, two sediment ponds and the haul road remain.

2.0 MONITORING PROGRAM

The monitoring program consists of two groundwater sites, two surface water sites and two NPDES sites (Figure 1). Required monitoring frequencies and parameters are listed in CDRMS Permit C-92-081 and NPDES Permit COG850008.

All field tasks were conducted using appropriate personal protective equipment (PPE); which at a minimum, consisted of nitrile gloves, eye protection and safety toe footwear.

2.1 GROUNDWATER

There are two groundwater sites monitored at the HGT.

	Site	Type	Unit
1	HGDAL3	Groundwater	Dry Creek Alluvium
2	HGDAL4	Groundwater	Dry Creek Alluvium

The following reports were prepared for each groundwater site: Period of Record Monitoring Summary, Water Year Monitoring Data, Period of Record Depth to Water Hydrograph and Period of Record TDS Trend Plot (Reports 1 & 2).

A Mann-Kendall test, at a 95% confidence level, was utilized to determine a statistical trend of TDS per site. Sen Slope is also represented on the TDS Trend Plots in red as a line passing through the median.

The following discussion of hydrologic data collected during the reporting period is arranged by strata monitored. For each site, the groundwater level and quality were compared to historical data. This year's groundwater quality was also compared against Colorado Department of Public Health & Environment (CDPHE) groundwater agricultural use standards (CDPHE, Reg. 41, 2008).

2.1.1 DRY CREEK ALLUVIUM

Both groundwater wells monitored at the HGT are completed in the Dry Creek Alluvium: HGDAL3 and HGDAL4.

Groundwater levels remained within the historical range at each monitoring well. The following wells display groundwater level trends:

Site	Increasing	Decreasing
1 HGDAL3		X
2 HGDAL4		X

Groundwater quality concentrations remained within the CDPHE agricultural use standard range at each monitoring well except for the following:

Site	Date	Parameter	Units	Standard	Result
1 HGDAL3	05/07/19	Manganese	mg/L	0.2	2.4
2 HGDAL3	09/03/19	Manganese	mg/L	0.2	5.1
3 HGDAL4	05/07/19	Manganese	mg/L	0.2	0.3
4 HGDAL4	09/03/19	Manganese	mg/L	0.2	5.6

Both wells exceeded the manganese standard in May and September. It should be noted that, while the CDPHE uses a manganese standard of 0.2 mg/L, the EPA states that this standard is used to protect crops grown in soils with a pH value lower than 6.0. In January 2008, CDPHE revised their groundwater agricultural standard to reflect this pH qualifier. In soils with a higher pH (as are found in the HGT region), a more appropriate standard would be 10 mg/L.

TDS concentrations remained within the historical range at each monitoring well. The following sites display a statistically significant TDS trend:

Site	Increasing	Decreasing
1 HGDAL3		X
2 HGDAL4	X	

2.2 SURFACE WATER

There are four surface water sites monitored at the HGT. Two of the four surface water sites are NPDES sites.

	Site	Type	Unit
1	HGSD1	Surface Water	Dry Creek
2	HGSD3	Surface Water	Dry Creek
3	NPDES 001 (NPDES1H)	NPDES	Dry Creek
4	NPDES 002 (NPDES2H)	NPDES	Dry Creek

The following reports were prepared for each surface water site: Period of Record Monitoring Summary, Water Year Monitoring Data, Period of Record Water Discharge Hydrograph and Period of Record TDS Trend Plot (Reports 3-6).

A Mann-Kendall test, at a 95% confidence level, was utilized to determine a statistical trend of TDS per site. Sen Slope is also represented on the TDS Trend Plots in red as a line passing through the median.

The following discussion of hydrologic data collected during the reporting period is arranged by drainage basin monitored. For each site, the surface water discharge and quality were compared to historical data. This year's surface water quality was also compared against Colorado Department of Public Health & Environment (CDPHE) surface water agricultural use standards (CDPHE, Reg. 31, 2009) and the appropriate CDPHE receiving stream standards: lower Dry Creek (Yampa Segment 13h, Regulation No. 33, January 2009).

The total mercury method detection limit (MDL) this year was 1.0 ug/L. All test values this year were less than the MDL. The total mercury standard is 0.01 ug/L.

The sulfide MDL this year was 0.1 mg/L. All test values this year were less than the MDL. The sulfide standard is 0.02 mg/L.

2.2.1 DRY CREEK

Both surface water sites monitored at the HGT are on Dry Creek: HGSD1 and HGSD3. Both NPDES sites at the HGT discharge to Dry Creek: NPDES 001 (NPDES1H) and NPDES 002 (NPDES2H).

Surface water quality concentrations remained within the CDPHE receiving stream standards range at each monitoring site except for the following:

	Site	Date	Parameter	Units	Standard	Result
1	HGSD1	05/02/19	Selenium	ug/L	18.4	38.5

Surface water site HGSD1 exceeded the acute selenium standard in May. Irrigation return water from nearby hay fields is in part the cause of the excursions at these sites. This entire area is composed of topsoil derived from the Lewis Shale, which has naturally elevated concentrations of selenium and salts, which contribute to dissolved solids in local runoff. NPDES Sites did not flow this year, so they are not responsible for the stream selenium exceedance.

The NPDES sites were not sampled in 2019 as there was no discharge.

TDS concentrations remained within the historical range at each surface water site. The following sites display a statistically significant TDS trend:

	Site	Increasing	Decreasing
1	HGSD1	X	

2.3 METEOROLOGICAL

Meteorological data for 2019, including temperature and precipitation were obtained for Hayden, Colorado from the National Oceanic & Atmospheric Administration. This data from the Hayden Station has been utilized to evaluate the precipitation trend and compare climatological observations for the period of record (Tables 1 & 2).

For this year, 21.83 inches of precipitation was measured, which is 3.56 inches (19.49%) greater than the 1981-2019 average, 18.27 inches. Four months exhibited below average precipitation: April, July, August, and September. Snowpack runoff, as estimated by totaling November through March precipitation values, was 10.23 inches, which was 2.74 inches (36.58%) above the 1981-2019 average, 7.49 inches.

3.0 SUMMARY

No significant hydrology impacts, attributable to activities at the HGT, were noted during 2019.

3.1 GROUNDWATER

Groundwater sites that exhibit a level trend:

	Site	Increasing	Decreasing
1	HGDAL3		X
2	HGDAL4		X

Groundwater sites and associated parameters that exceeded the CDPHE agricultural use standards:

	Site	Manganese
1	HGDAL3	X
2	HGDAL4	X

Groundwater sites that exhibit a statistically significant TDS trend:

	Site	Increasing	Decreasing
1	HGDAL3		X
2	HGDAL4	X	

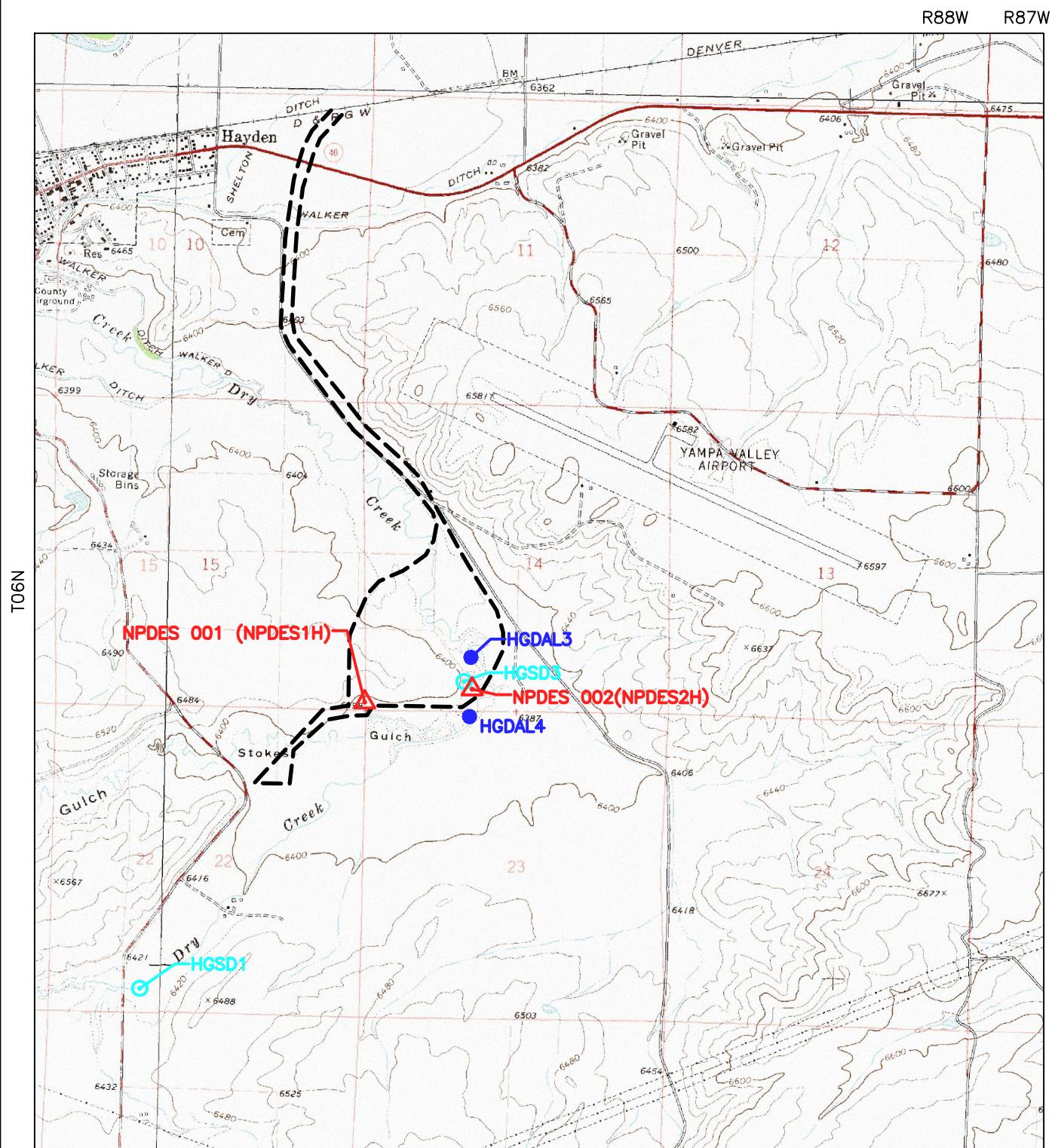
3.2 SURFACE WATER

Surface water sites and associated parameters that exceeded the CDPHE receiving stream standards:

Site	Selenium
1	HGSD1

Surface water sites that exhibit a statistically significant TDS trend:

Site	Increasing	Decreasing
1	HGSD1	X



LEGEND

- GROUNDWATER
- SURFACE WATER
- NPDES
- PERMIT BOUNDARY

0 2500'
SCALE

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

DESIGNED BY:	WWC
DRAWN BY:	SDG
CHECKED BY:	TNS
DATE:	2019

FIGURE 1
MONITORING SITE LOCATIONS

HAYDEN GULCH TERMINAL LOADOUT
HAYDEN GULCH TERMINAL, LLC
PEABODY ENERGY

PERIOD OF RECORD PRECIPITATION SUMMARY

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
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	1.9	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	11.86
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	1.71	1.58	1.58	1.56	1.32	1.45	1.96	1.77	1.14	1.29	1.33	1.58	18.27

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.

Record of Climatological Observations

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

Generated on 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation Time					24 Hour Wind Movement (mi)		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)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2018	10	01	73	45	67	0.00		0.0		0.0										
2018	10	02	68	44	63	0.01		0.0		0.0										
2018	10	03	67	52	60	0.08		0.0		0.0										
2018	10	04	60	44	49	0.51		0.0		0.0										
2018	10	05	49	36	38	0.21		0.0		0.0										
2018	10	06	55	28	42	0.16		0.0		0.0										
2018	10	07	53	36	47	0.31		0.0		0.0										
2018	10	08	47	32	37	0.46		0.5		0.0										
2018	10	09	49	33	43	0.02		0.0		0.0										
2018	10	10	46	33	34	0.16		T		0.0										
2018	10	11	42	31	41	0.04		0.0		0.0										
2018	10	12	54	29	49	0.09		0.0		0.0										
2018	10	13	58	25	51	T		0.0		0.0										
2018	10	14	51	22	29	0.07		0.5		0.0										
2018	10	15	42	12	37	0.00		0.0		0.0										
2018	10	16	57	20	52	0.00		0.0		0.0										
2018	10	17	64	30	53	0.00		0.0		0.0										
2018	10	18	56	27	48	T		0.0		0.0										
2018	10	19	60	26	52	0.12		0.0		0.0										
2018	10	20	66	29	57	0.00		0.0		0.0										
2018	10	21	68	32	60	0.00		0.0		0.0										
2018	10	22	68	35	58	0.00		0.0		0.0										
2018	10	23	63	41	51	0.02		0.0		0.0										
2018	10	24	58	37	50	0.18		0.0		0.0										
2018	10	25	57	29	50	0.00		0.0		0.0										
2018	10	26	56	31	51	0.00		0.0		0.0										
2018	10	27	65	30	58	0.00		0.0		0.0										
2018	10	28	69	30	60	0.00		0.0		0.0										
2018	10	29	68	30	57	0.00		0.0		0.0										
2018	10	30	57	34	40	0.00		0.0		0.0										
2018	10	31	45	13	38	0.00		0.0		0.0										
Summary			58	31		2.44		1.0												

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.

"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 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2018	11	01	41	27	37	0.14		2.0		0.0										
2018	11	02	54	36	50	0.06		0.0		0.0										
2018	11	03	50	34	42	0.01		0.0		0.0										
2018	11	04	42	26	31	0.37		3.0		3.0										
2018	11	05	39	29	33	0.09		1.0		2.0										
2018	11	06	40	26	37	0.00		0.0		1.0										
2018	11	07	41	21	29	T		T		0.0										
2018	11	08	33	19	27	T		T		0.0										
2018	11	09	40	10	27	0.00		0.0		0.0										
2018	11	10	40	14	29	0.00		0.0		0.0										
2018	11	11	31	9	25	T		T		0.0										
2018	11	12	31	4	19	0.00		0.0		0.0										
2018	11	13	40	10	30	0.00		0.0		0.0										
2018	11	14	49	15	38	0.00		0.0		0.0										
2018	11	15	50	17	34	0.00		0.0		0.0										
2018	11	16	52	17	39	0.00		0.0		0.0										
2018	11	17	39	21	24	0.06		1.0		1.0										
2018	11	18	39	13	23	0.00		0.0		1.0										
2018	11	19	43	9	28	0.00		0.0		1.0										
2018	11	20	51	14	35	0.00		0.0		0.0										
2018	11	21	52	16	38	0.00		0.0		0.0										
2018	11	22	40	18	29	0.17		1.5		1.0										
2018	11	23	38	23	32	0.04		1.0		2.0										
2018	11	24	42	22	23	0.30		4.0		4.0										
2018	11	25	31	14	18	0.00		0.0		4.0										
2018	11	26	31	2	21	0.00		0.0		4.0										
2018	11	27	34	6	28	0.00		0.0		3.0										
2018	11	28	37	24	33	0.00		0.0		3.0										
2018	11	29	39	29	32	0.41		4.0		4.0										
2018	11	30	34	28	28	0.16		1.0		4.0										
		Summary	41	18		1.81		18.5												

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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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2018	12	01	34	16	17	0.17		2.5		7.0										
2018	12	02	25	3	15	0.00		0.0		7.0										
2018	12	03	24	6	15	0.12		2.0		9.0										
2018	12	04	22	2	7	0.09		1.0		10.0										
2018	12	05	18	-3	17	0.06		1.0		11.0										
2018	12	06	30	15	24	T		T		11.0										
2018	12	07	36	23	24	0.07		1.0		9.0										
2018	12	08	34	21	29	0.01		0.1		9.0										
2018	12	09	33	18	18	0.01		0.5		9.0										
2018	12	10	32	6	19	0.00		0.0		8.0										
2018	12	11	36	14	17	0.00		0.0		8.0										
2018	12	12	30	7	26	0.08		1.5		10.0										
2018	12	13	30	1	13	0.00		0.0		10.0										
2018	12	14	27	2	18	0.00		0.0		10.0										
2018	12	15	33	8	22	0.00		0.0		10.0										
2018	12	16	39	12	25	0.00		0.0		9.0										
2018	12	17	31	14	27	0.00		0.0		9.0										
2018	12	18	39	22	30	0.00		0.0		8.0										
2018	12	19	37	28	28	T		T		8.0										
2018	12	20	36	9	23	0.00		0.0		8.0										
2018	12	21	33	12	31	0.00		0.0		8.0										
2018	12	22	31	11	12	0.21		2.5		11.0										
2018	12	23	25	-1	16	0.00		0.0		11.0										
2018	12	24	29	16	26	0.33		4.5		15.0										
2018	12	25	36	13	14	0.00		0.0		14.0										
2018	12	26	30	14	22	0.12		1.5		15.0										
2018	12	27	30	6	7	T		0.1		15.0										
2018	12	28	10	-9	0	0.00		0.0		15.0										
2018	12	29	17	-9	14	0.00		0.0		15.0										
2018	12	30	26	11	21	T		0.1		15.0										
2018	12	31	22	3	3	0.35		3.5		17.0										
Summary			30	9		1.62		21.8												

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Generated on 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	01	01	3	-14	-5	0.00		0.0		17.0										
2019	01	02	5	-21	-5	0.00		0.0		16.0										
2019	01	03	19	-10	10	0.00		0.0		16.0										
2019	01	04	31	6	22	0.00		0.0		16.0										
2019	01	05	28	2	25	0.00		0.0		15.0										
2019	01	06	39	18	28	0.13		3.0		16.0										
2019	01	07	37	16	25	0.12		1.5		16.0										
2019	01	08	29	12	19	T		T		16.0										
2019	01	09	33	13	21	0.00		0.0		16.0										
2019	01	10	30	9	21	0.00		0.0		16.0										
2019	01	11	30	16	26	0.10		1.5		17.0										
2019	01	12	26	18	20	T		T		17.0										
2019	01	13	20	2	6	0.00		0.0		17.0										
2019	01	14	9	-11	-1	0.00		0.0		17.0										
2019	01	15	34	-9	28	0.00		0.0		16.0										
2019	01	16	35	24	30	0.22		2.0		18.0										
2019	01	17	33	19	29	0.12		1.5		19.0										
2019	01	18	31	25	25	1.08		11.0		28.0										
2019	01	19	25	3	24	0.00		0.0		27.0										
2019	01	20	34	19	23	0.00		0.0		26.0										
2019	01	21	41	14	30	T		T		25.0										
2019	01	22	30	14	16	0.08		1.0		24.0										
2019	01	23	16	-3	15	0.16		5.0		29.0										
2019	01	24	30	15	21	0.29		6.0		33.0										
2019	01	25	32	15	21	0.10		2.0		31.0										
2019	01	26	33	17	17	0.05		1.0		31.0										
2019	01	27	31	12	24	0.00		0.0		30.0										
2019	01	28	26	12	12	0.00		0.0		28.0										
2019	01	29	18	-4	8	0.00		0.0		28.0										
2019	01	30	15	-9	11	0.00		0.0		27.0										
2019	01	31	24	-5	11	0.00		0.0		27.0										
Summary			27	7		2.45		35.5												

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	02	01	28	3	19	0.00		0.0		26.0										
2019	02	02	42	10	38	0.00		0.0		25.0										
2019	02	03	43	27	31	0.06		T		23.0										
2019	02	04	40	27	35	0.00		0.0		23.0										
2019	02	05	39	27	28	0.02		0.5		23.0										
2019	02	06	31	14	14	0.17		3.5		25.0										
2019	02	07	16	-1	7	0.09		1.0		25.0										
2019	02	08	17	-9	9	0.00		0.0		25.0										
2019	02	09	20	-2	16	0.00		0.0		25.0										
2019	02	10	32	3	27	0.00		0.0		25.0										
2019	02	11	31	7	7	0.04		0.5		25.0										
2019	02	12	22	-6	17	0.00		0.0		25.0										
2019	02	13	39	14	29	0.08		1.0		25.0										
2019	02	14	41	27	34	0.20		2.0		25.0										
2019	02	15	44	31	36	0.36		0.0		24.0										
2019	02	16	36	19	19	0.14		2.0		25.0										
2019	02	17	23	7	15	T		0.3		25.0										
2019	02	18	21	8	13	T		T		25.0										
2019	02	19	17	-4	4	0.12		1.2		26.0										
2019	02	20	30	-2	13	0.05		0.5		26.0										
2019	02	21	24	8	17	0.00		0.0		26.0										
2019	02	22	24	11	16	0.07		0.8		27.0										
2019	02	23	19	-5	15	T		T		27.0										
2019	02	24	29	8	24	0.00		0.0		26.0										
2019	02	25	32	3	27	0.00		0.0		26.0										
2019	02	26	42	9	32	0.00		0.0		26.0										
2019	02	27	38	12	33	0.00		0.0		26.0										
2019	02	28	44	25	36	0.06		0.3		25.0										
		Summary	31	10		1.46		13.6												

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	03	01	38	28	30	0.15		1.5		26.0										
2019	03	02	31	26	26	0.75		7.0		33.0										
2019	03	03	26	11	14	0.21		4.0		36.0										
2019	03	04	18	-2	8	0.01		0.2		34.0										
2019	03	05	34	-3	29	0.00		0.0		33.0										
2019	03	06	37	28	33	0.42		1.5		31.0										
2019	03	07	45	32	36	T		T		29.0										
2019	03	08	39	27	30	0.32		2.0		31.0										
2019	03	09	34	15	24	0.08		1.0		30.0										
2019	03	10	34	21	29	0.07		0.3		29.0										
2019	03	11	34	16	31	0.00		0.0		29.0										
2019	03	12	37	14	31	0.00		0.0		29.0										
2019	03	13	34	25	25	0.71		7.0		36.0										
2019	03	14	27	16	23	0.00		0.0		34.0										
2019	03	15	30	1	26	0.00		0.0		34.0										
2019	03	16	34	5	29	0.00		0.0		34.0										
2019	03	17	35	10	30	0.00		0.0		34.0										
2019	03	18	39	12	32	0.00		0.0		33.0										
2019	03	19	38	8	32	0.00		0.0		32.0										
2019	03	20	40	11	31	0.00		0.0		32.0										
2019	03	21	45	21	35	0.00		0.0		32.0										
2019	03	22	41	21	36	0.08		0.5		31.0										
2019	03	23	45	27	37	0.01		0.0		29.0										
2019	03	24	41	27	37	0.02		0.0		28.0										
2019	03	25	43	25	36	0.01		0.3		27.0										
2019	03	26	49	24	46	0.00		0.0		26.0										
2019	03	27	52	27	46	0.00		0.0		25.0										
2019	03	28	53	28	44	0.00		0.0		24.0										
2019	03	29	44	28	33	0.05		T		24.0										
2019	03	30	39	22	35	0.00		0.0		23.0										
2019	03	31	43	13	35	0.00		0.0		22.0										
Summary			38	18		2.89		25.3												

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	04	01	46	19	40	0.00		0.0		20.0										
2019	04	02	47	30	44	0.04		0.7		19.0										
2019	04	03	62	32	37	0.12		0.0		17.0										
2019	04	04	54	31	49	0.00		0.0		14.0										
2019	04	05	60	33	54	0.00		0.0		10.0										
2019	04	06	56	35	47	0.01		0.0		9.0										
2019	04	07	56	27	54	0.07		0.0		4.0										
2019	04	08	65	30	60	0.00		0.0		0.0										
2019	04	09	65	35	59	0.00		0.0		0.0										
2019	04	10	59	32	33	T		T		0.0										
2019	04	11	39	22	34	0.02		T		0.0										
2019	04	12	36	26	33	0.05		T		0.0										
2019	04	13	44	27	40	0.02		T		0.0										
2019	04	14	53	24	50	T		0.0		0.0										
2019	04	15	60	38	58	T		0.0		0.0										
2019	04	16	63	34	56	0.00		0.0		0.0										
2019	04	17	57	36	53	T		0.0		0.0										
2019	04	18	61	38	60	0.00		0.0		0.0										
2019	04	19	70	30	68	0.00		0.0		0.0										
2019	04	20	74	36	59	0.00		0.0		0.0										
2019	04	21	59	36	56	0.05		0.0		0.0										
2019	04	22	63	30	52	0.00		0.0		0.0										
2019	04	23	67	28	63	0.00		0.0		0.0										
2019	04	24	68	37	60	0.00		0.0		0.0										
2019	04	25	68	36	65	0.00		0.0		0.0										
2019	04	26	71	34	52	0.08		0.0		0.0										
2019	04	27	64	34	63	0.37		0.0		0.0										
2019	04	28	66	35	55	0.02		0.0		0.0										
2019	04	29	55	25	36	0.21		1.0		0.0										
2019	04	30	48	34	43	0.60		0.0		0.0										
		Summary	59	31		1.66		1.7												

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Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	05	01	45	23	43	0.42		1.0		0.0										
2019	05	02	54	27	52	0.00		0.0		0.0										
2019	05	03	60	28	59	0.00		0.0		0.0										
2019	05	04	64	28	60	0.00		0.0		0.0										
2019	05	05	68	34	63	0.00		0.0		0.0										
2019	05	06	68	38	60	0.00		0.0		0.0										
2019	05	07	69	39	64	0.00		0.0		0.0										
2019	05	08	64	35	44	0.03		0.0		0.0										
2019	05	09	49	33	43	0.04		0.0		0.0										
2019	05	10	56	33	54	0.00		0.0		0.0										
2019	05	11	63	27	59	0.00		0.0		0.0										
2019	05	12	69	33	66	0.00		0.0		0.0										
2019	05	13	74	36	72	0.00		0.0		0.0										
2019	05	14	76	41	67	0.00		0.0		0.0										
2019	05	15	75	42	68	0.00		0.0		0.0										
2019	05	16	73	46	67	0.00		0.0		0.0										
2019	05	17	68	42	44	0.02		0.0		0.0										
2019	05	18	56	34	54	0.12		0.0		0.0										
2019	05	19	56	32	54	T		0.0		0.0										
2019	05	20	54	36	45	0.05		0.0		0.0										
2019	05	21	45	31	43	0.49		1.0		0.0										
2019	05	22	50	32	48	0.02		0.0		0.0										
2019	05	23	64	34	42	0.17		T		0.0										
2019	05	24	56	38	52	0.00		0.0		0.0										
2019	05	25	69	33	67	0.00		0.0		0.0										
2019	05	26	70	38	61	0.00		0.0		0.0										
2019	05	27	61	41	55	0.03		0.0		0.0										
2019	05	28	55	34	39	0.37		0.0		0.0										
2019	05	29	56	36	55	0.10		0.0		0.0										
2019	05	30	65	35	61	T		0.0		0.0										
2019	05	31	68	39	61	0.02		0.0		0.0										
Summary			62	35		1.88		2.0												

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Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	06	01	73	42	71	0.07		0.0		0.0										
2019	06	02	75	44	58	0.02		0.0		0.0										
2019	06	03	72	41	59	0.06		0.0		0.0										
2019	06	04	75	39	67	0.02		0.0		0.0										
2019	06	05	77	43	74	0.00		0.0		0.0										
2019	06	06	79	45	72	T		0.0		0.0										
2019	06	07	79	49	76	0.00		0.0		0.0										
2019	06	08	76	43	62	0.00		0.0		0.0										
2019	06	09	62	31	62	0.00		0.0		0.0										
2019	06	10	74		71	0.00		0.0		0.0										
2019	06	11	74	35	73	0.00		0.0		0.0										
2019	06	12	76	38	74	0.00		0.0		0.0										
2019	06	13	78	46	65	0.00		0.0		0.0										
2019	06	14	77	44	54	0.08		0.0		0.0										
2019	06	15	73	42	72	0.20		0.0		0.0										
2019	06	16	76	49	73	0.02		0.0		0.0										
2019	06	17	73	50	59	0.08		0.0		0.0										
2019	06	18	65	48	56	0.06		0.0		0.0										
2019	06	19	75	43	75	0.16		0.0		0.0										
2019	06	20	79	44	61	0.12		0.0		0.0										
2019	06	21	61	31	41	2.04		1.0		0.0										
2019	06	22	54	38	51	0.08		0.0		0.0										
2019	06	23	58	33	57	0.51		0.0		0.0										
2019	06	24	71	39	67	0.00		0.0		0.0										
2019	06	25	78	45	73	0.05		0.0		0.0										
2019	06	26	81	48	79	0.00		0.0		0.0										
2019	06	27	82	44	80	0.00		0.0		0.0										
2019	06	28	85	48	84	0.00		0.0		0.0										
2019	06	29	86	52	85	0.00		0.0		0.0										
2019	06	30	85	53	77	T		0.0		0.0										
		Summary	74	43		3.57		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.

"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
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Generated on 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	07	01	80	43	70	0.12		0.0		0.0										
2019	07	02	72	43	68	0.00		0.0		0.0										
2019	07	03	74	49	73	0.04		0.0		0.0										
2019	07	04	82	43	80	0.00		0.0		0.0										
2019	07	05	81	44	79	0.00		0.0		0.0										
2019	07	06	83	48	80	0.00		0.0		0.0										
2019	07	07	80	38	70	0.02		0.0		0.0										
2019	07	08	75	52	72	0.00		0.0		0.0										
2019	07	09	81	44	80	0.00		0.0		0.0										
2019	07	10	84	45	82	0.00		0.0		0.0										
2019	07	11	88	50	87	0.00		0.0		0.0										
2019	07	12	88	52	86	0.00		0.0		0.0										
2019	07	13	86	53	76	0.00		0.0		0.0										
2019	07	14	88	51	85	0.00		0.0		0.0										
2019	07	15	85	55	78	T		0.0		0.0										
2019	07	16	88	51	84	0.00		0.0		0.0										
2019	07	17	87	51	84	0.00		0.0		0.0										
2019	07	18	86	48	84	0.00		0.0		0.0										
2019	07	19	89	47	86	0.00		0.0		0.0										
2019	07	20	86	49	80	0.00		0.0		0.0										
2019	07	21	88	53	85	0.06		0.0		0.0										
2019	07	22	91	57	68	0.04		0.0		0.0										
2019	07	23	89	50	87	0.00		0.0		0.0										
2019	07	24	88	53	73	0.00		0.0		0.0										
2019	07	25	82	55	79	0.01		0.0		0.0										
2019	07	26	85	51	68	0.06		0.0		0.0										
2019	07	27	83	55	69	T		0.0		0.0										
2019	07	28	83	50	81	0.03		0.0		0.0										
2019	07	29	87	48	84	0.00		0.0		0.0										
2019	07	30	88	53	84	0.00		0.0		0.0										
2019	07	31	84	55	72	0.00		0.0		0.0										
Summary			84	50		0.38		0.0												

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Record of Climatological Observations

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

Generated on 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.	
2019	08	01	76	56	75	0.21		0.0		0.0									
2019	08	02	86	53	83	0.00		0.0		0.0									
2019	08	03	89	54	85	0.00		0.0		0.0									
2019	08	04	85	53	71	0.00		0.0		0.0									
2019	08	05	86	50	82	0.06		0.0		0.0									
2019	08	06	90	52	76	0.00		0.0		0.0									
2019	08	07	87	53	67	T		0.0		0.0									
2019	08	08	81	56	74	0.02		0.0		0.0									
2019	08	09	83	54	80	0.05		0.0		0.0									
2019	08	10	85	51	82	0.00		0.0		0.0									
2019	08	11	82	54	61	0.07		0.0		0.0									
2019	08	12	83	47	81	0.00		0.0		0.0									
2019	08	13	84	43	83	0.00		0.0		0.0									
2019	08	14	86	46	81	0.00		0.0		0.0									
2019	08	15	87	44	80	0.00		0.0		0.0									
2019	08	16	86	47	66	0.00		0.0		0.0									
2019	08	17	82	49	71	0.00		0.0		0.0									
2019	08	18	87	46	85	0.00		0.0		0.0									
2019	08	19	89	46	85	0.00		0.0		0.0									
2019	08	20	90	46	86	0.00		0.0		0.0									
2019	08	21	89	45	87	0.00		0.0		0.0									
2019	08	22	87	47	71	0.03		0.0		0.0									
2019	08	23	83	54	77	0.00		0.0		0.0									
2019	08	24	82	41	75	0.00		0.0		0.0									
2019	08	25	88	45	84	0.00		0.0		0.0									
2019	08	26	84	43	78	0.00		0.0		0.0									
2019	08	27	80	36	77	0.00		0.0		0.0									
2019	08	28	86	39	84	0.00		0.0		0.0									
2019	08	29	84	42	80	0.00		0.0		0.0									
2019	08	30	85	49	71	T		0.0		0.0									
2019	08	31	89	48	85	0.00		0.0		0.0									
Summary			85	48		0.44		0.0											

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

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Record of Climatological Observations

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

Generated on 03/17/2020

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)		At Observation	Precipitation				At Obs. Time	Evaporation		Soil Temperature (F)							
			24 Hrs. Ending at Observation Time			24 Hour Amounts Ending at Observation 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				Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
2019	09	01	90	47	84	0.00		0.0		0.0										
2019	09	02	91	48	87	0.00		0.0		0.0										
2019	09	03	87	42	80	0.00		0.0		0.0										
2019	09	04	88	52	82	0.00		0.0		0.0										
2019	09	05	90	50	78	0.00		0.0		0.0										
2019	09	06	87	51	72	T		0.0		0.0										
2019	09	07	80	48	77	0.10		0.0		0.0										
2019	09	08	77	46	59	0.18		T		0.0										
2019	09	09	73	48	70	0.89		0.0		0.0										
2019	09	10	77	44	60	0.00		0.0		0.0										
2019	09	11	67	48	51	0.17		0.0		0.0										
2019	09	12	64	39	60	0.15		0.0		0.0										
2019	09	13	73	37	70	0.00		0.0		0.0										
2019	09	14	79	40	73	0.00		0.0		0.0										
2019	09	15	81	40	77	0.00		0.0		0.0										
2019	09	16	78	46	73	0.00		0.0		0.0										
2019	09	17	74	45	69	0.00		0.0		0.0										
2019	09	18	77	36	73	0.00		0.0		0.0										
2019	09	19	81	43	75	0.00		0.0		0.0										
2019	09	20	75	44	62	0.00		0.0		0.0										
2019	09	21	64	29	61	0.00		0.0		0.0										
2019	09	22	67	27	61	0.00		0.0		0.0										
2019	09	23	76	34	70	0.00		0.0		0.0										
2019	09	24	75	31	69	0.00		0.0		0.0										
2019	09	25	74	34	68	0.00		0.0		0.0										
2019	09	26	80	36	74	0.00		0.0		0.0										
2019	09	27	75	46	62	0.00		0.0		0.0										
2019	09	28	78	47	70	0.02		0.0		0.0										
2019	09	29	76	50	71	0.00		0.0		0.0										
2019	09	30	71	39	61	0.02		0.0		0.0										
		Summary	78	42		1.53		0.0												

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		Location Code Location Name		HGDAL3									
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation		
3002 - HGLO GW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L	11/22/1993	9/18/2016	45	961.6	946	1352	325	172.3		
3002 - HGLO GW	Aluminum	D	MG/L	11/22/1993	9/18/2016	45	0.22	0.3	0.6	0.03	0.12		
3002 - HGLO GW	Arsenic	D	UG/L	11/22/1993	9/18/2016	45	5.4	3.9	30	0.6	6.5		
3002 - HGLO GW	Bicarbonate as HCO ₃	N	MG/L	11/22/1993	9/18/2016	25	1112	1090	1649	397	226.2		
3002 - HGLO GW	Boron	D	UG/L	11/22/1993	9/18/2016	45	710	700	1100	460	150		
3002 - HGLO GW	Cadmium	D	UG/L	11/22/1993	9/18/2016	45	25	30	100	0.2	22		
3002 - HGLO GW	Calcium	D	MG/L	11/22/1993	9/18/2016	45	426	422	501	362	29.9		
3002 - HGLO GW	Carbonate as CO ₃	N	MG/L	11/22/1993	9/18/2016	25	2	2	2	0	0.7		
3002 - HGLO GW	Cation / Anion Balance	N	%	11/22/1993	9/18/2016	25	-0.705	-1.1	4.2	-5.9	2.53		
3002 - HGLO GW	Chloride	N	MG/L	11/22/1993	9/18/2016	45	549	570	710	64	117		
3002 - HGLO GW	Chromium	D	UG/L	11/22/1993	9/18/2016	45	70	100	200	10	40		
3002 - HGLO GW	Copper	D	UG/L	11/22/1993	9/18/2016	45	70	100	200	10	50		
3002 - HGLO GW	Fluoride	N	MG/L	11/22/1993	9/18/2016	44	0.24	0.21	0.4	0.1	0.075		
3002 - HGLO GW	Hardness	N	MG/L	11/22/1993	9/18/2016	45	5712	5690	7620	4010	761.5		
3002 - HGLO GW	Iron	D	MG/L	11/22/1993	9/3/2019	51	0.365	0.2	1.5	0.01	0.331		
3002 - HGLO GW	Lead	D	UG/L	11/22/1993	9/18/2016	45	200	200	2000	0.1	300		
3002 - HGLO GW	Magnesium	D	MG/L	11/22/1993	9/18/2016	45	1131	1110	1550	749	177.9		
3002 - HGLO GW	Manganese	D	MG/L	11/22/1993	9/3/2019	51	4.52	4.57	6.65	2.4	1.03		
3002 - HGLO GW	Mercury	D	UG/L	11/22/1993	9/18/2016	45	0.2	0.2	0.2	0.2	0		
3002 - HGLO GW	Nickel	D	UG/L	11/22/1993	9/18/2016	45	75	100	200	10	43		
3002 - HGLO GW	Nitrate Nitrogen	N	MG/L	11/22/1993	9/18/2016	45	0.139	0.02	3.31	0.01	0.494		
3002 - HGLO GW	Nitrite Nitrogen	N	MG/L	11/22/1993	9/18/2016	45	0.01	0.01	0.04	0.01	0.005		
3002 - HGLO GW	pH, Field	N	S.U.	11/22/1993	9/3/2019	51	7.17	7.06	8.47	6.57	0.331		
3002 - HGLO GW	pH, Lab	N	S.U.	11/22/1993	9/18/2016	45	7.6	7.6	8	7	0.3		
3002 - HGLO GW	Potassium	D	MG/L	11/22/1993	9/18/2016	45	12.1	12	20.1	6	2.82		
3002 - HGLO GW	Selenium	D	UG/L	11/22/1993	9/18/2016	42	3.1	1	50	1	8.4		
3002 - HGLO GW	Sodium	D	MG/L	11/22/1993	9/18/2016	45	2591	2580	3190	2060	299.3		
3002 - HGLO GW	Sodium Adsorption Ratio	N	RATIO	11/22/1993	9/18/2016	45	15.1	15	17.2	12.62	1.035		
3002 - HGLO GW	Solids, Total Suspended	N	MG/L	11/22/1993	9/18/2016	45	203	50	3070	5	494		
3002 - HGLO GW	Specific Conductivity, Field	N	UMHOS/CM	11/22/1993	9/3/2019	51	13400	13860	18400	1520	2472		
3002 - HGLO GW	Specific Conductivity, Lab	N	UMHOS/CM	11/22/1993	9/18/2016	41	14470	14400	16900	9550	1443		
3002 - HGLO GW	Sulfates	N	MG/L	11/22/1993	9/18/2016	45	9306	9401	12400	4190	1579		
3002 - HGLO GW	Sulfide	N	MG/L	11/22/1993	9/18/2016	45	0.21	0.02	3.9	0.02	0.62		
3002 - HGLO GW	Temperature, Field	N	C	11/22/1993	9/3/2019	51	10.3	9.8	17.6	6.6	2.43		

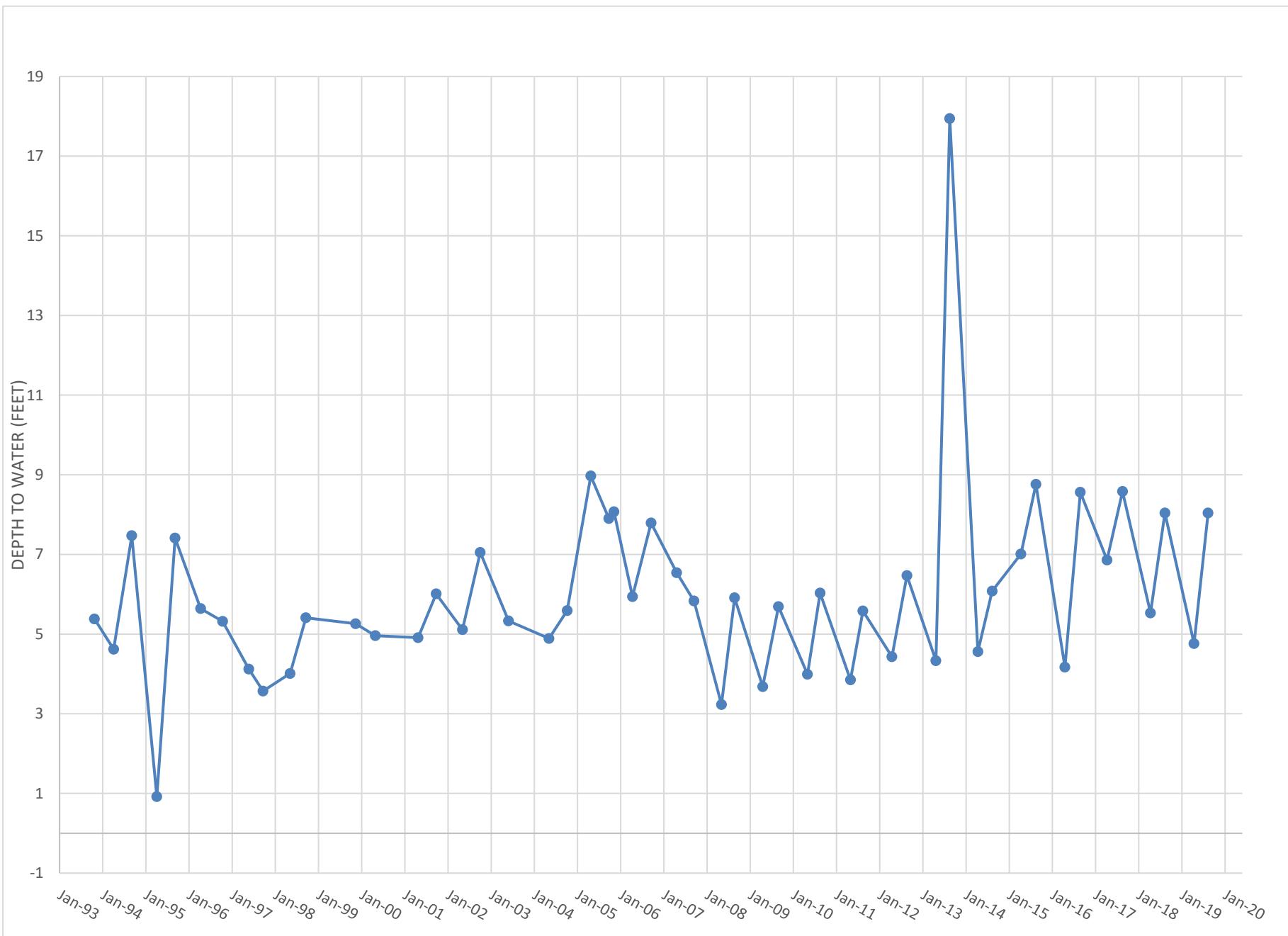
Period of Record Monitoring Summary

HGDAL3

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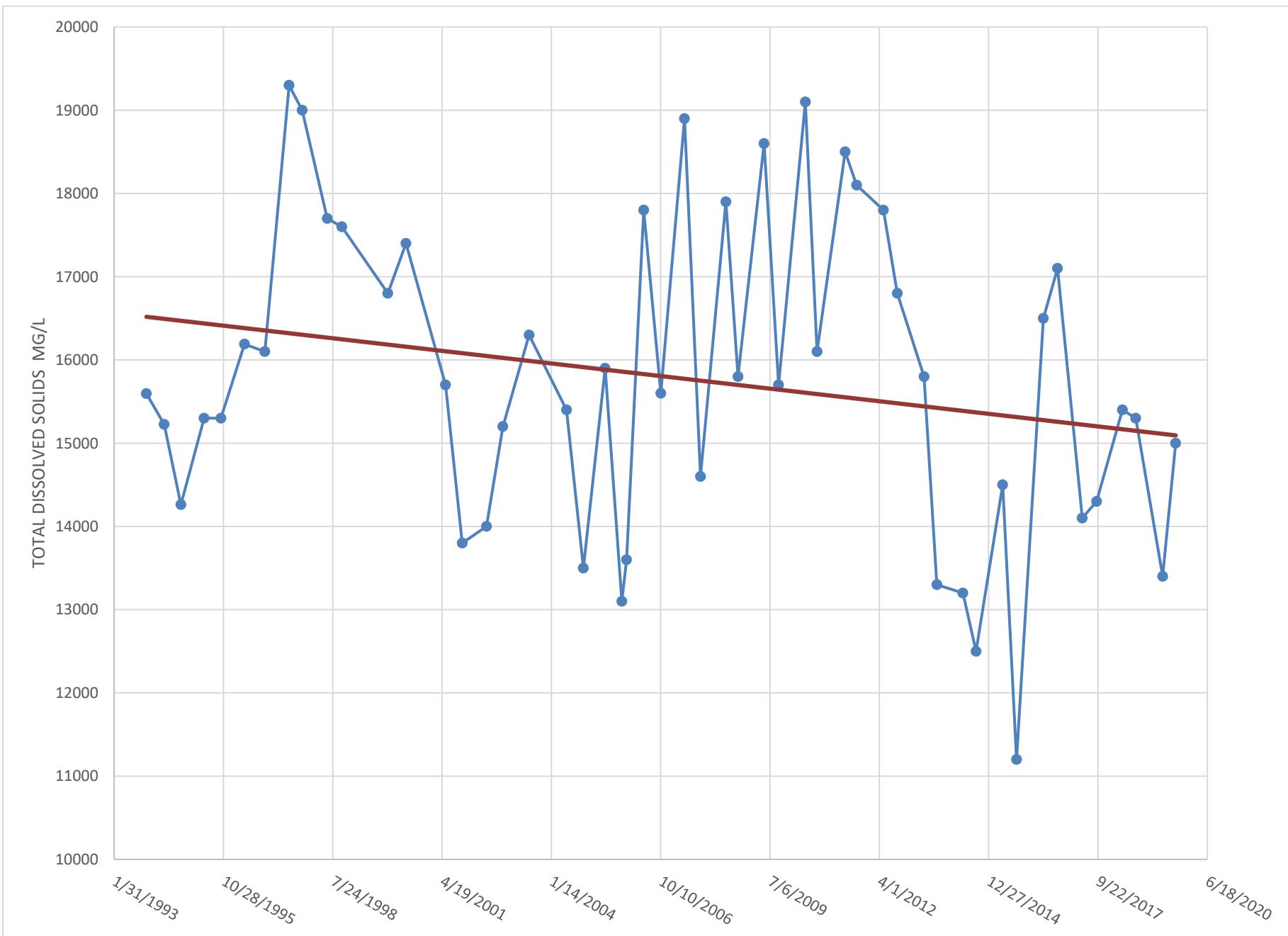
		Location Code	HGDAL3									
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation	
3002 - HGLO GW	Total Dissolved Solids (Calculated)	N	MG/L	11/22/1993	9/18/2016	25	14631	14700	17400	11700	1532.9	
3002 - HGLO GW	Total Dissolved Solids, Lab	N	MG/L	11/22/1993	9/3/2019	51	15788	15700	19300	11200	1890	
3002 - HGLO GW	Zinc	D	MG/L	11/22/1993	9/18/2016	45	0.07	0.1	0.2	0.01	0.05	

Twentymile Site ID Date Depth to Water (FT)				HGDAL3 5/7/2019 4.76		HGDAL3 9/3/2019 8.04	
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection
3002 - HGLO GW	Iron	D	MG/L	0.8	N	0.8	N
3002 - HGLO GW	Manganese	D	MG/L	2.4	Y	5.1	Y
3002 - HGLO GW	pH, Field	N	S.U.	7.72	Y	7.09	Y
3002 - HGLO GW	Specific Conductivity, Field	N	UMHOS/CM	9890	Y	14710	Y
3002 - HGLO GW	Temperature, Field	N	C	9.7	Y	11.8	Y
3002 - HGLO GW	Total Dissolved Solids, Lab	N	MG/L	13400	Y	15000	Y



Period of Record Depth to Water Hydrograph

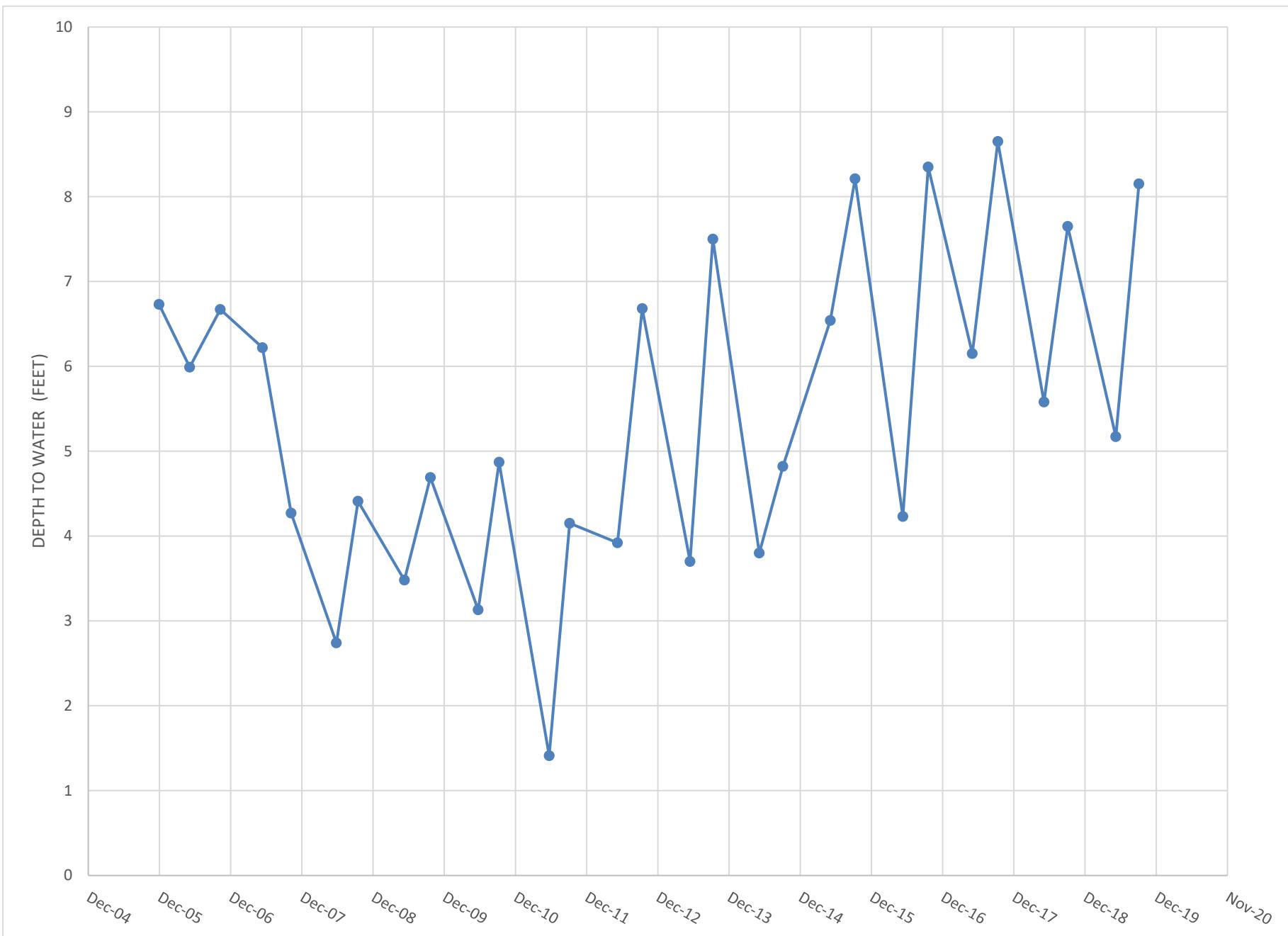
HGDAL3



		Location Code Location Name		HGDAL4									
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation		
3002 - HGLO GW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L	12/2/2005	9/18/2016	23	651	639	766	579	51.6		
3002 - HGLO GW	Aluminum	D	MG/L	12/2/2005	9/18/2016	23	0.14	0.12	0.3	0.03	0.096		
3002 - HGLO GW	Arsenic	D	UG/L	12/2/2005	9/18/2016	23	2.2	2	5	0.9	1		
3002 - HGLO GW	Bicarbonate as HCO ₃	N	MG/L	10/10/2007	9/18/2016	19	791	766	935	707	66.3		
3002 - HGLO GW	Boron	D	UG/L	12/2/2005	9/18/2016	23	580	600	800	400	97		
3002 - HGLO GW	Cadmium	D	UG/L	12/2/2005	9/18/2016	23	20	5	50	0.1	20		
3002 - HGLO GW	Calcium	D	MG/L	12/2/2005	9/18/2016	23	304	267	493	187	90.3		
3002 - HGLO GW	Carbonate as CO ₃	N	MG/L	10/10/2007	9/18/2016	19	2	2	2	2	0		
3002 - HGLO GW	Cation / Anion Balance	N	%	10/10/2007	9/18/2016	19	0.42	0.5	4.6	-5.7	2.9		
3002 - HGLO GW	Chloride	N	MG/L	12/2/2005	9/18/2016	23	168	133	413	26	94.3		
3002 - HGLO GW	Chromium	D	UG/L	12/2/2005	9/18/2016	23	40	20	100	10	30		
3002 - HGLO GW	Copper	D	UG/L	12/2/2005	9/18/2016	23	40	50	100	10	30		
3002 - HGLO GW	Fluoride	N	MG/L	12/2/2005	9/18/2016	22	0.33	0.32	0.4	0.2	0.068		
3002 - HGLO GW	Hardness	N	MG/L	12/2/2005	9/18/2016	23	3390	2990	5510	1820	1060		
3002 - HGLO GW	Iron	D	MG/L	12/2/2005	9/3/2019	29	0.12	0.1	0.4	0.02	0.11		
3002 - HGLO GW	Lead	D	UG/L	12/2/2005	9/18/2016	23	100	40	400	0.1	100		
3002 - HGLO GW	Magnesium	D	MG/L	12/2/2005	9/18/2016	23	640	566	1060	327	204		
3002 - HGLO GW	Manganese	D	MG/L	12/2/2005	9/3/2019	29	1.46	1.11	7.24	0.3	1.47		
3002 - HGLO GW	Mercury	D	UG/L	12/2/2005	9/18/2016	23	1.21	0.2	23.4	0.2	4.84		
3002 - HGLO GW	Nickel	D	UG/L	12/2/2005	9/18/2016	23	40	50	100	8	30		
3002 - HGLO GW	Nitrate Nitrogen	N	MG/L	12/2/2005	9/18/2016	23	0.063	0.03	0.22	0.02	0.064		
3002 - HGLO GW	Nitrite Nitrogen	N	MG/L	12/2/2005	9/18/2016	23	0.01	0.01	0.03	0.01	0.005		
3002 - HGLO GW	pH, Field	N	S.U.	12/2/2005	9/3/2019	29	7.45	7.41	7.96	7.03	0.214		
3002 - HGLO GW	pH, Lab	N	S.U.	12/2/2005	9/18/2016	23	8	8	8.2	7.7	0.12		
3002 - HGLO GW	Potassium	D	MG/L	12/2/2005	9/18/2016	23	4.6	4.4	8	2	1.3		
3002 - HGLO GW	Selenium	D	UG/L	5/8/2006	9/18/2016	22	1.7	1	12	0.5	2.5		
3002 - HGLO GW	Selenium	TR	UG/L	12/2/2005	12/2/2005	1	1	1	1	1	0		
3002 - HGLO GW	Sodium	D	MG/L	12/2/2005	9/18/2016	23	1270	1170	2050	578	378		
3002 - HGLO GW	Sodium Adsorption Ratio	N	RATIO	12/2/2005	9/18/2016	23	9.52	9.8	12	5.96	1.54		
3002 - HGLO GW	Solids, Total Suspended	N	MG/L	12/2/2005	9/18/2016	23	759	580	4320	48	898		
3002 - HGLO GW	Specific Conductivity, Field	N	UMHOS/CM	12/2/2005	9/3/2019	29	8019	7840	14650	1225	2489		
3002 - HGLO GW	Specific Conductivity, Lab	N	UMHOS/CM	5/8/2006	9/18/2016	22	8010	7970	12900	4310	2060		
3002 - HGLO GW	Sulfates	N	MG/L	12/2/2005	9/18/2016	23	4990	4300	9390	2400	1770		
3002 - HGLO GW	Sulfide	N	MG/L	12/2/2005	9/18/2016	23	1	0.08	9	0.02	2.5		

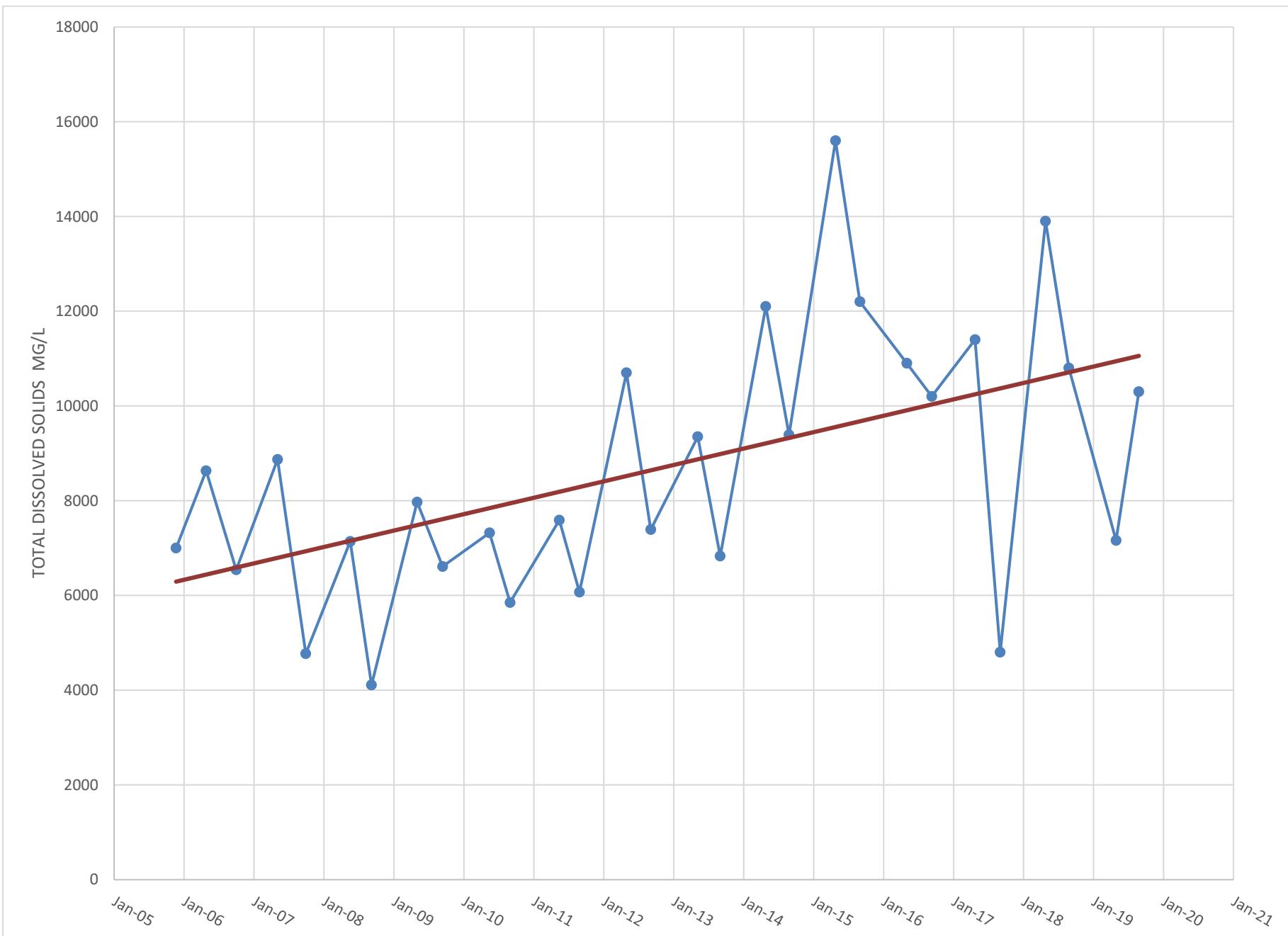
		Location Code	HGDAL4									
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation	
3002 - HGLO GW	Temperature, Field	N	C	12/2/2005	9/3/2019	29	10.4	10.8	14.3	6.1	2.47	
3002 - HGLO GW	Total Dissolved Solids (Calculated)	N	MG/L	10/10/2007	9/18/2016	19	7960	6940	13800	3960	2720	
3002 - HGLO GW	Total Dissolved Solids, Lab	N	MG/L	12/2/2005	9/3/2019	29	8670	7970	15600	4110	2780	
3002 - HGLO GW	Zinc	D	MG/L	12/2/2005	9/18/2016	23	0.104	0.05	1.17	0.01	0.239	

Twentymile Site ID Date Depth to Water (FT)				HGDAL4 5/7/2019 5.17		HGDAL4 9/3/2019 8.15	
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection
3002 - HGLO GW	Iron	D	MG/L	0.4	N	0.4	Y
3002 - HGLO GW	Manganese	D	MG/L	0.3	N	5.6	Y
3002 - HGLO GW	pH, Field	N	S.U.	7.96	Y	7.24	Y
3002 - HGLO GW	Specific Conductivity, Field	N	UMHOS/CM	6010	Y	9810	Y
3002 - HGLO GW	Temperature, Field	N	C	9.5	Y	12.9	Y
3002 - HGLO GW	Total Dissolved Solids, Lab	N	MG/L	7160	Y	10300	Y



Period of Record Depth to Water Hydrograph

HGDAL4



		Location Code Location Name		HGSD1								
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation	
3002 - HGLO SW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L	6/29/1993	9/3/2019	51	413	414	608	209	92.4	
3002 - HGLO SW	Arsenic	TR	UG/L	6/29/1993	9/3/2019	48	2.2	2	6	1	1.4	
3002 - HGLO SW	Bicarbonate as HCO ₃	N	MG/L	6/29/1993	9/3/2019	29	476	501	676	199	123	
3002 - HGLO SW	Boron	D	UG/L	6/29/1993	9/3/2019	48	260	230	600	100	110	
3002 - HGLO SW	Cadmium	D	UG/L	6/9/2015	9/3/2019	9	0.5	0.5	1	0.2	0.3	
3002 - HGLO SW	Calcium	D	MG/L	6/29/1993	9/3/2019	51	165	172	240	79.2	38.6	
3002 - HGLO SW	Carbonate as CO ₃	N	MG/L	6/29/1993	9/3/2019	29	14.2	12	48	0	12.1	
3002 - HGLO SW	Cation / Anion Balance	N	%	6/29/1993	9/3/2019	30	-0.695	-0.8	5.2	-6	2.55	
3002 - HGLO SW	Chloride	N	MG/L	6/29/1993	9/3/2019	51	55.4	58	106	14	20	
3002 - HGLO SW	Chromium	D	UG/L	11/2/2004	9/3/2019	10	6	3	20	1	6	
3002 - HGLO SW	Copper	D	UG/L	11/2/2004	9/3/2019	10	5.1	3	20	1	5.9	
3002 - HGLO SW	Hardness	N	MG/L	6/29/1993	9/3/2019	48	1367	1335	2340	515	376	
3002 - HGLO SW	Iron	TR	MG/L	10/18/1997	9/3/2019	34	1.18	0.395	21	0.1	3.55	
3002 - HGLO SW	Lead	D	UG/L	11/2/2004	9/3/2019	10	0.9	0.5	3	0.2	1	
3002 - HGLO SW	Magnesium	D	MG/L	6/29/1993	9/3/2019	51	232	224	450	77.2	74.8	
3002 - HGLO SW	Manganese	D	MG/L	6/29/1993	9/3/2019	36	0.212	0.165	0.7	0.02	0.185	
3002 - HGLO SW	Mercury	T	UG/L	11/4/1996	9/3/2019	44	0.3	0.2	1	0.2	0.2	
3002 - HGLO SW	Nickel	D	UG/L	6/9/2015	9/3/2019	9	70	40	200	20	70	
3002 - HGLO SW	Nitrate Nitrogen	N	MG/L	6/29/1993	6/11/2019	47	0.547	0.14	3.56	0.01	0.827	
3002 - HGLO SW	Nitrite Nitrogen	N	MG/L	6/29/1993	6/11/2019	47	0.01	0.01	0.05	0.01	0.01	
3002 - HGLO SW	pH, Field	N	S.U.	6/29/1993	9/3/2019	68	8.165	8.15	10.37	7.14	0.4589	
3002 - HGLO SW	pH, Lab	N	S.U.	6/29/1993	9/3/2019	48	8.3	8.3	9	7.7	0.24	
3002 - HGLO SW	Potassium	D	MG/L	6/29/1993	9/3/2019	51	6.6	6.4	10	4	1.4	
3002 - HGLO SW	Selenium	D	UG/L	4/7/2004	9/3/2019	30	13.9	5.25	107	1	22.8	
3002 - HGLO SW	Selenium	PD	UG/L	5/20/2005	6/11/2019	22	4.36	3.95	10.4	0.8	2.67	
3002 - HGLO SW	Selenium	TR	UG/L	6/29/1993	9/3/2019	47	14.56	6.1	109.8	1	19.83	
3002 - HGLO SW	Silver	D	UG/L	11/2/2004	9/3/2019	10	2	0.3	10	0.1	3	
3002 - HGLO SW	Sodium	D	MG/L	6/29/1993	9/3/2019	51	311	289	618	69.3	140	
3002 - HGLO SW	Sodium Adsorption Ratio	N	RATIO	6/29/1993	9/3/2019	48	3.57	3.56	6.2	1.66	1.15	
3002 - HGLO SW	Solids, Total Suspended	N	MG/L	6/29/1993	9/3/2019	56	35.4	14	590	4	82.5	
3002 - HGLO SW	Specific Conductivity, Field	N	UMHOS/CM	6/29/1993	9/3/2019	68	2986	2950	4923	990	908.4	
3002 - HGLO SW	Specific Conductivity, Lab	N	UMHOS/CM	6/29/1993	6/5/2018	43	2990	2880	5190	1120	884	
3002 - HGLO SW	Specific Conductivity, Lab	N	UMS/CM	6/11/2019	9/3/2019	2	4630	4630	4790	4460	233	
3002 - HGLO SW	Sulfates	N	MG/L	6/29/1993	9/3/2019	61	1530	1430	3000	480	559	

Period of Record Monitoring Summary

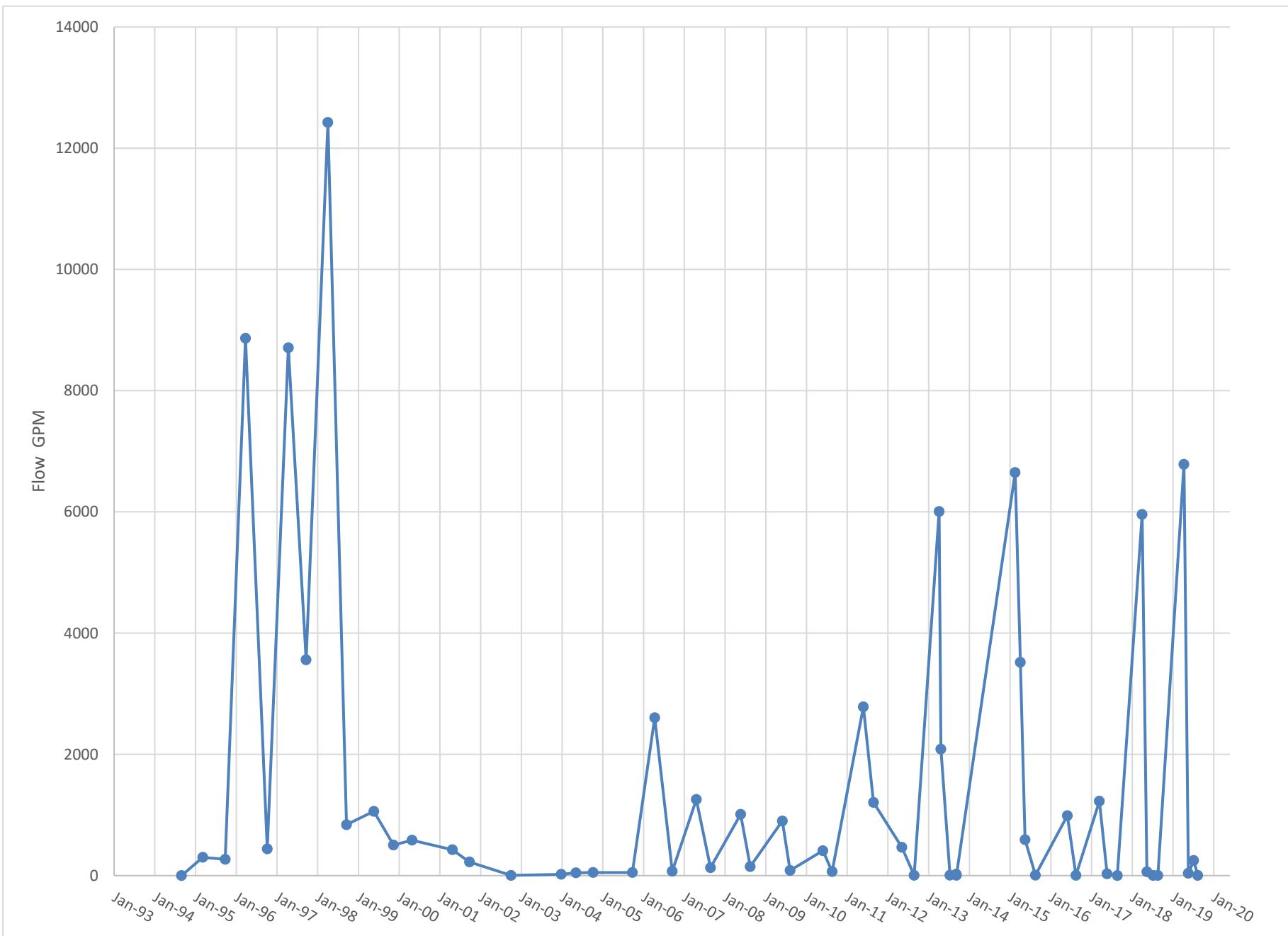
HGSD1

Report 3: Page 1 of 6

		Location Code	HGSD1									
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation	
3002 - HGLO SW	Sulfide	N	MG/L	6/29/1993	9/3/2019	49	0.057	0.02	0.4	0.02	0.074	
3002 - HGLO SW	Temperature, Field	N	C	6/29/1993	9/3/2019	68	13.14	13.5	23.2	0.4	5.239	
3002 - HGLO SW	Total Dissolved Solids (Calculated)	N	MG/L	6/29/1993	9/3/2019	27	2676	2630	4160	1320	846.5	
3002 - HGLO SW	Total Dissolved Solids, Lab	N	MG/L	6/29/1993	9/3/2019	61	2795	2700	4720	910	930.4	
3002 - HGLO SW	Zinc	D	MG/L	11/2/2004	9/3/2019	10	0.09	0.05	0.3	0.02	0.1	

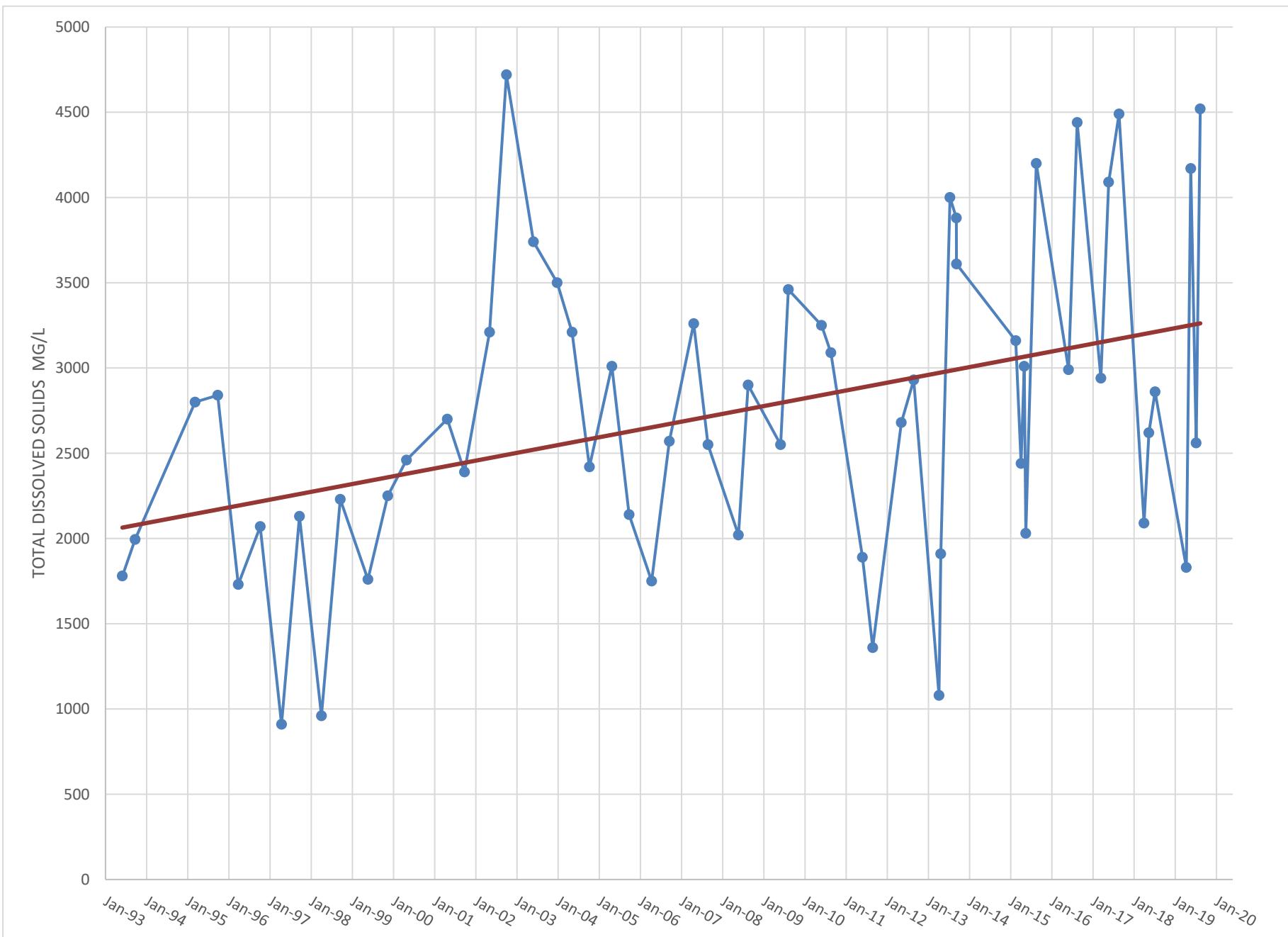
Location Code Site ID Date				HGSD1 5/2/2019		HGSD1 6/11/2019		HGSD1 7/29/2019		HGSD1 9/3/2019	
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO SW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L			545	Y			608	Y
3002 - HGLO SW	Arsenic	TR	UG/L			5	N			5	N
3002 - HGLO SW	Bicarbonate as HCO ₃	N	MG/L			665	Y			676	Y
3002 - HGLO SW	Boron	D	UG/L			400	Y			500	Y
3002 - HGLO SW	Cadmium	D	UG/L			1	N			1	N
3002 - HGLO SW	Calcium	D	MG/L			240	Y			221	Y
3002 - HGLO SW	Carbonate as CO ₃	N	MG/L			20	N			32.4	Y
3002 - HGLO SW	Cation / Anion Balance	N	%			-1.6	Y			4.8	Y
3002 - HGLO SW	Chloride	N	MG/L			70.4	Y			73.3	Y
3002 - HGLO SW	Chromium	D	UG/L			10	N			10	N
3002 - HGLO SW	Copper	D	UG/L			5	Y			10	N
3002 - HGLO SW	Hardness	N	MG/L			2010	Y			1930	Y
3002 - HGLO SW	Iron	TR	MG/L			0.4	N			0.2	Y
3002 - HGLO SW	Lead	D	UG/L			3	N			3	N
3002 - HGLO SW	Magnesium	D	MG/L			343	Y			335	Y
3002 - HGLO SW	Manganese	D	MG/L			0.66	Y			0.13	Y
3002 - HGLO SW	Mercury	T	UG/L			1	N			1	N
3002 - HGLO SW	Nickel	D	UG/L			200	N			200	N
3002 - HGLO SW	Nitrate Nitrogen	N	MG/L			0.86	Y				
3002 - HGLO SW	Nitrite Nitrogen	N	MG/L			0.05	N				
3002 - HGLO SW	pH, Field	N	S.U.	8.77	Y	8.2	Y	8.12	Y	8.35	Y
3002 - HGLO SW	pH, Lab	N	S.U.			8.2	Y			8.4	Y
3002 - HGLO SW	Potassium	D	MG/L			4	Y			5	Y
3002 - HGLO SW	Selenium	D	UG/L	38.5	Y	6.2	Y	1.9	Y	6.3	Y
3002 - HGLO SW	Selenium	TR	UG/L	33.9	Y	6.6	Y	2.1	Y	6.8	Y
3002 - HGLO SW	Silver	D	UG/L			3	N			3	N
3002 - HGLO SW	Sodium	D	MG/L			507	Y			610	Y
3002 - HGLO SW	Sodium Adsorption Ratio	N	RATIO			5	Y			6.1	Y
3002 - HGLO SW	Solids, Total Suspended	N	MG/L			6	Y			15	Y
3002 - HGLO SW	Specific Conductivity, Field	N	UMHOS/CM	2256	Y	4609	Y	3002	Y	4923	Y
3002 - HGLO SW	Specific Conductivity, Lab	N	UMS/CM			4460	Y			4790	Y
3002 - HGLO SW	Sulfates	N	MG/L	1030	Y	2490	Y	1400	Y	2190	Y
3002 - HGLO SW	Sulfide	N	MG/L			0.1	N			0.1	N

Location Code Site ID Date				HGSD1 5/2/2019		HGSD1 6/11/2019		HGSD1 7/29/2019		HGSD1 9/3/2019	
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO SW	Temperature, Field	N	C	12.2	Y	16.2	Y	14.3	Y	23.2	Y
3002 - HGLO SW	Total Dissolved Solids (Calculated)	N	MG/L			3990	Y			3810	Y
3002 - HGLO SW	Total Dissolved Solids, Lab	N	MG/L	1830	Y	4210	Y	2560	Y	4520	Y
3002 - HGLO SW	Zinc	D	MG/L			0.3	N			0.3	N



Period of Record Water Discharge Hydrograph

HGSD1



Period of Record TDS Trend Plot

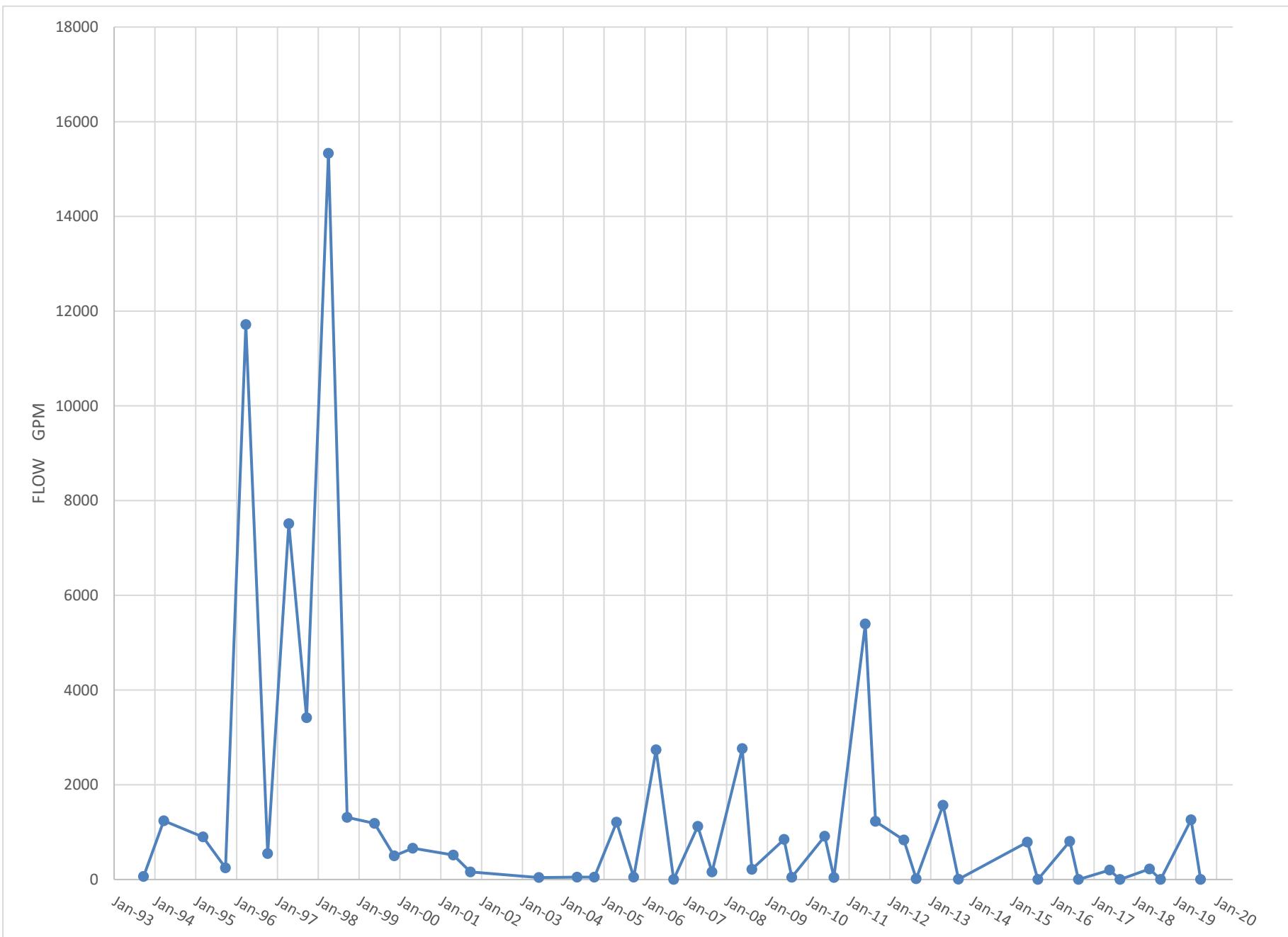
HGSD1

Location Code Location Name				HGSD3								
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation	
3002 - HGLO SW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L	10/21/1993	6/11/2019	42	385	390	603	215	73	
3002 - HGLO SW	Arsenic	TR	UG/L	10/21/1993	6/11/2019	42	2.1	2	7	1	1.2	
3002 - HGLO SW	Bicarbonate as HCO ₃	N	MG/L	10/21/1993	6/11/2019	23	437	466	581	185	91.9	
3002 - HGLO SW	Boron	D	UG/L	10/21/1993	6/11/2019	42	260	240	590	130	80	
3002 - HGLO SW	Cadmium	D	UG/L	6/9/2015	6/11/2019	5	0.3	0.2	0.5	0.2	0.1	
3002 - HGLO SW	Cadmium	PD	UG/L	5/20/2005	10/1/2013	18	0.2	0.1	0.5	0.1	0.1	
3002 - HGLO SW	Cadmium	TR	UG/L	10/21/1993	10/20/2005	21	0.8	0.5	6	0.1	1	
3002 - HGLO SW	Calcium	D	MG/L	10/21/1993	6/11/2019	42	164	169	239	92.3	32.6	
3002 - HGLO SW	Carbonate as CO ₃	N	MG/L	10/21/1993	6/11/2019	23	18.1	16.4	38	2	9.45	
3002 - HGLO SW	Cation / Anion Balance	N	%	10/21/1993	6/11/2019	23	-1.18	-1	4.3	-6.5	2.64	
3002 - HGLO SW	Chloride	N	MG/L	10/21/1993	6/11/2019	42	62.3	59	113	22	24.3	
3002 - HGLO SW	Chromium	D	UG/L	11/2/2004	6/11/2019	6	5	1	20	1	8	
3002 - HGLO SW	Chromium	PD	UG/L	5/20/2005	10/1/2013	18	5	1	20	0.2	7	
3002 - HGLO SW	Chromium	TR	UG/L	10/21/1993	10/20/2005	20	20	20	50	10	9	
3002 - HGLO SW	Copper	D	UG/L	11/2/2004	6/11/2019	6	5	2	20	0.9	7.5	
3002 - HGLO SW	Copper	PD	UG/L	5/20/2005	10/1/2013	18	6.4	3.2	20	1	6.8	
3002 - HGLO SW	Copper	TR	UG/L	10/21/1993	10/20/2005	20	20	20	50	10	9	
3002 - HGLO SW	Hardness	N	MG/L	10/21/1993	6/11/2019	42	1476	1385	2350	713	391.5	
3002 - HGLO SW	Iron	D	MG/L	10/21/1993	5/16/2007	24	0.04	0.02	0.26	0.01	0.051	
3002 - HGLO SW	Iron	T	MG/L	10/21/1993	10/1/2013	29	1	0.6	5.79	0.2	1.17	
3002 - HGLO SW	Iron	TR	MG/L	10/18/1997	6/11/2019	26	0.647	0.49	2.12	0.18	0.432	
3002 - HGLO SW	Lead	D	UG/L	11/2/2004	6/11/2019	6	0.3	0.2	1	0.2	0.3	
3002 - HGLO SW	Lead	PD	UG/L	5/20/2005	10/1/2013	18	0.43	0.3	1.1	0.1	0.33	
3002 - HGLO SW	Lead	TR	UG/L	10/21/1993	10/20/2005	20	9.3	1	80	0.4	24	
3002 - HGLO SW	Magnesium	D	MG/L	10/21/1993	6/11/2019	42	260	234	449	113	78.7	
3002 - HGLO SW	Manganese	D	MG/L	10/21/1993	6/11/2019	29	0.18	0.12	0.63	0.03	0.16	
3002 - HGLO SW	Manganese	PD	MG/L	5/20/2005	10/1/2013	18	0.37	0.32	0.76	0.09	0.21	
3002 - HGLO SW	Manganese	T	MG/L	10/21/1993	6/1/2004	16	0.18	0.15	0.35	0.09	0.077	
3002 - HGLO SW	Manganese	TR	MG/L	10/18/1997	5/16/2007	8	0.39	0.38	0.72	0.07	0.28	
3002 - HGLO SW	Mercury	T	UG/L	11/4/1996	6/11/2019	37	0.2	0.2	1	0.2	0.1	
3002 - HGLO SW	Mercury	TR	UG/L	10/21/1993	4/23/1996	5	0.2	0.2	0.2	0.2	0	
3002 - HGLO SW	Nickel	D	UG/L	6/9/2015	6/11/2019	5	30	20	80	20	30	
3002 - HGLO SW	Nickel	PD	UG/L	5/20/2005	10/1/2013	18	20	20	50	10	10	
3002 - HGLO SW	Nickel	TR	UG/L	10/21/1993	10/20/2005	21	20	20	50	10	9	

Location Code Location Name				HGSD3							
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation
3002 - HGLO SW	Nitrate Nitrogen	N	MG/L	10/21/1993	6/11/2019	42	2.91	0.48	31.4	0.02	6.39
3002 - HGLO SW	Nitrite Nitrogen	N	MG/L	10/21/1993	6/11/2019	42	0.02	0.01	0.09	0.01	0.02
3002 - HGLO SW	pH, Field	N	S.U.	10/21/1993	6/11/2019	42	8.35	8.32	9.85	7.56	0.383
3002 - HGLO SW	pH, Lab	N	S.U.	10/21/1993	6/11/2019	42	8.3	8.4	8.8	7.8	0.2
3002 - HGLO SW	Potassium	D	MG/L	10/21/1993	6/11/2019	42	7.1	6.95	11.9	4.2	1.68
3002 - HGLO SW	Selenium	D	UG/L	5/16/2013	6/11/2019	7	7.29	5.5	14.9	5	3.51
3002 - HGLO SW	Selenium	PD	UG/L	5/20/2005	10/1/2013	18	7.1	4.65	18.9	1.7	5.48
3002 - HGLO SW	Selenium	TR	UG/L	10/21/1993	6/11/2019	28	39	11	270	1	68
3002 - HGLO SW	Silver	D	UG/L	11/2/2004	6/11/2019	6	2	0.2	10	0.1	4
3002 - HGLO SW	Silver	PD	UG/L	5/20/2005	10/1/2013	18	5	0.1	20	0.05	8
3002 - HGLO SW	Silver	TR	UG/L	10/21/1993	10/20/2005	20	2.7	0.5	20	0.05	5.1
3002 - HGLO SW	Sodium	D	MG/L	10/21/1993	6/11/2019	42	371	330	874	146	163
3002 - HGLO SW	Sodium Adsorption Ratio	N	RATIO	10/21/1993	6/11/2019	42	4.15	3.95	7.95	2.41	1.29
3002 - HGLO SW	Solids, Total Suspended	N	MG/L	10/21/1993	6/11/2019	42	27.9	16.5	194	5	34.7
3002 - HGLO SW	Specific Conductivity, Field	N	UMHOS/CM	10/21/1993	6/11/2019	42	3387	3355	6180	1435	935.3
3002 - HGLO SW	Specific Conductivity, Lab	N	UMHOS/CM	10/21/1993	6/5/2018	38	3470	3410	6300	1370	995
3002 - HGLO SW	Specific Conductivity, Lab	N	UMS/CM	6/11/2019	6/11/2019	1	2780	2780	2780	2780	0
3002 - HGLO SW	Sulfates	N	MG/L	10/21/1993	6/11/2019	42	1799	1690	3750	670	644.8
3002 - HGLO SW	Sulfide	N	MG/L	10/21/1993	6/11/2019	42	0.053	0.03	0.44	0.02	0.077
3002 - HGLO SW	Temperature, Field	N	C	10/21/1993	6/11/2019	42	15.56	14.1	101	3	14.38
3002 - HGLO SW	Total Dissolved Solids (Calculated)	N	MG/L	10/21/1993	6/11/2019	23	3079	2820	5640	1520	983.1
3002 - HGLO SW	Total Dissolved Solids, Lab	N	MG/L	10/21/1993	6/11/2019	42	3144	3025	5870	1280	1012
3002 - HGLO SW	Zinc	D	MG/L	11/2/2004	6/11/2019	6	0.05	0.02	0.1	0.02	0.04
3002 - HGLO SW	Zinc	PD	MG/L	5/20/2005	10/1/2013	18	0.02	0.015	0.11	0.01	0.023
3002 - HGLO SW	Zinc	TR	MG/L	10/21/1993	10/20/2005	20	0.02	0.02	0.05	0.01	0.01

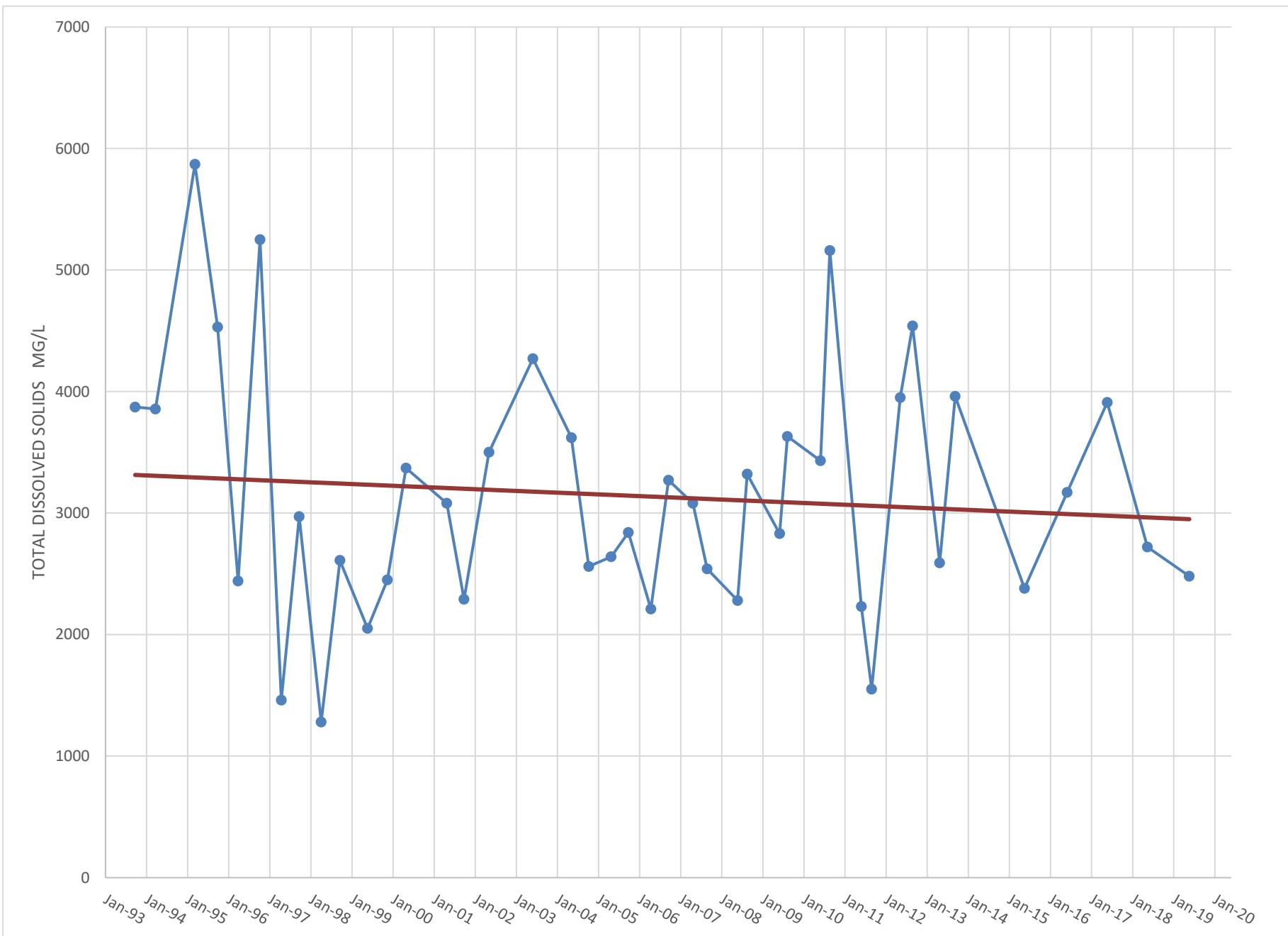
			Location Code	HGSD3	
			Site ID		
			Date	6/11/2019	
Type	Parameter	Fraction	Units	Result	Detection
3002 - HGLO SW	Alkalinity as CaCO ₃ , @ pH 4.5	N	MG/L	402	Y
3002 - HGLO SW	Arsenic	TR	UG/L	1.7	Y
3002 - HGLO SW	Bicarbonate as HCO ₃	N	MG/L	491	Y
3002 - HGLO SW	Boron	D	UG/L	270	Y
3002 - HGLO SW	Cadmium	D	UG/L	0.5	N
3002 - HGLO SW	Calcium	D	MG/L	182	Y
3002 - HGLO SW	Carbonate as CO ₃	N	MG/L	20	N
3002 - HGLO SW	Cation / Anion Balance	N	%	-3.9	Y
3002 - HGLO SW	Chloride	N	MG/L	28.2	Y
3002 - HGLO SW	Chromium	D	UG/L	4	N
3002 - HGLO SW	Copper	D	UG/L	3	Y
3002 - HGLO SW	Hardness	N	MG/L	1350	Y
3002 - HGLO SW	Iron	TR	MG/L	0.27	Y
3002 - HGLO SW	Lead	D	UG/L	1	N
3002 - HGLO SW	Magnesium	D	MG/L	217	Y
3002 - HGLO SW	Manganese	D	MG/L	0.04	Y
3002 - HGLO SW	Mercury	T	UG/L	1	N
3002 - HGLO SW	Nickel	D	UG/L	80	N
3002 - HGLO SW	Nitrate Nitrogen	N	MG/L	0.44	Y
3002 - HGLO SW	Nitrite Nitrogen	N	MG/L	0.03	Y
3002 - HGLO SW	pH, Field	N	S.U.	8.21	Y
3002 - HGLO SW	pH, Lab	N	S.U.	8.3	Y
3002 - HGLO SW	Potassium	D	MG/L	7.4	Y
3002 - HGLO SW	Selenium	D	UG/L	5.3	Y
3002 - HGLO SW	Selenium	TR	UG/L	5.3	Y
3002 - HGLO SW	Silver	D	UG/L	1	N
3002 - HGLO SW	Sodium	D	MG/L	225	Y
3002 - HGLO SW	Sodium Adsorption Ratio	N	RATIO	2.7	Y
3002 - HGLO SW	Solids, Total Suspended	N	MG/L	20	N
3002 - HGLO SW	Specific Conductivity, Field	N	UMHOS/CM	2841	Y
3002 - HGLO SW	Specific Conductivity, Lab	N	UMS/CM	2780	Y
3002 - HGLO SW	Sulfates	N	MG/L	1470	Y
3002 - HGLO SW	Sulfide	N	MG/L	0.1	N

				Location Code	HGSD3	
				Site ID		
				Date	6/11/2019	
Type	Parameter	Fraction	Units	Result	Detection	
3002 - HGLO SW	Temperature, Field	N	C	15.1	Y	
3002 - HGLO SW	Total Dissolved Solids (Calculated)	N	MG/L	2380	Y	
3002 - HGLO SW	Total Dissolved Solids, Lab	N	MG/L	2480	Y	
3002 - HGLO SW	Zinc	D	MG/L	0.1	N	



Period of Record Water Discharge Hydrograph

HGSD3



Period of Record TDS Trend Plot

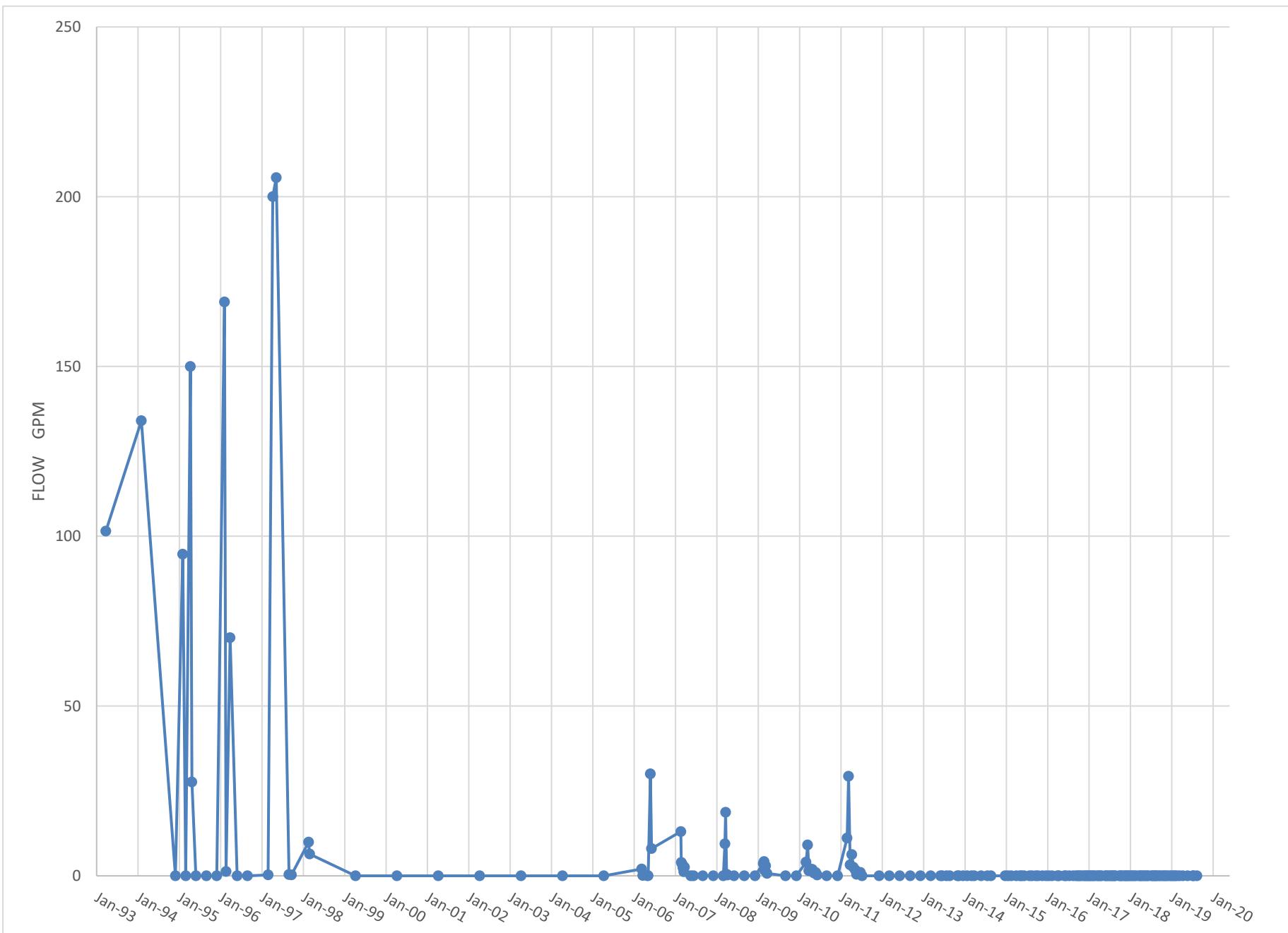
HGSD3

Location Code Location Name				NPDES1H							
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation
3002 - HGLO NPDES	Flow	N	GPM	4/22/1993	9/4/2019	178	7.615	0	205.6	0	30.89
3002 - HGLO NPDES	Iron	T	MG/L	4/22/1993	5/1/2008	19	0.467	0.29	1.31	0.12	0.367
3002 - HGLO NPDES	Iron	TR	MG/L	4/8/2008	7/18/2011	22	0.46	0.48	0.82	0.2	0.17
3002 - HGLO NPDES	Manganese	D	MG/L	4/23/1996	4/3/2007	6	0.04	0.04	0.07	0.02	0.02
3002 - HGLO NPDES	pH, Field	N	S.U.	4/22/1993	7/18/2011	53	7.98	8	8.8	7.11	0.362
3002 - HGLO NPDES	Solids, Settleable	N	ML/L	3/25/1997	4/3/2007	10	0.1	0.1	0.2	0.1	0.03
3002 - HGLO NPDES	Solids, Total Suspended	N	MG/L	4/22/1993	7/18/2011	40	7.2	5	24	5	4.5
3002 - HGLO NPDES	Specific Conductivity, Field	N	UMHOS/CM	4/22/1993	7/18/2011	53	831.3	830	1430	290	306.6

Location Code			NPDES1H		NPDES1H		NPDES1H		NPDES1H		NPDES1H		
Site ID			10/1/2018		10/17/2018		11/5/2018		11/20/2018		12/4/2018		
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y	0	Y	0	Y

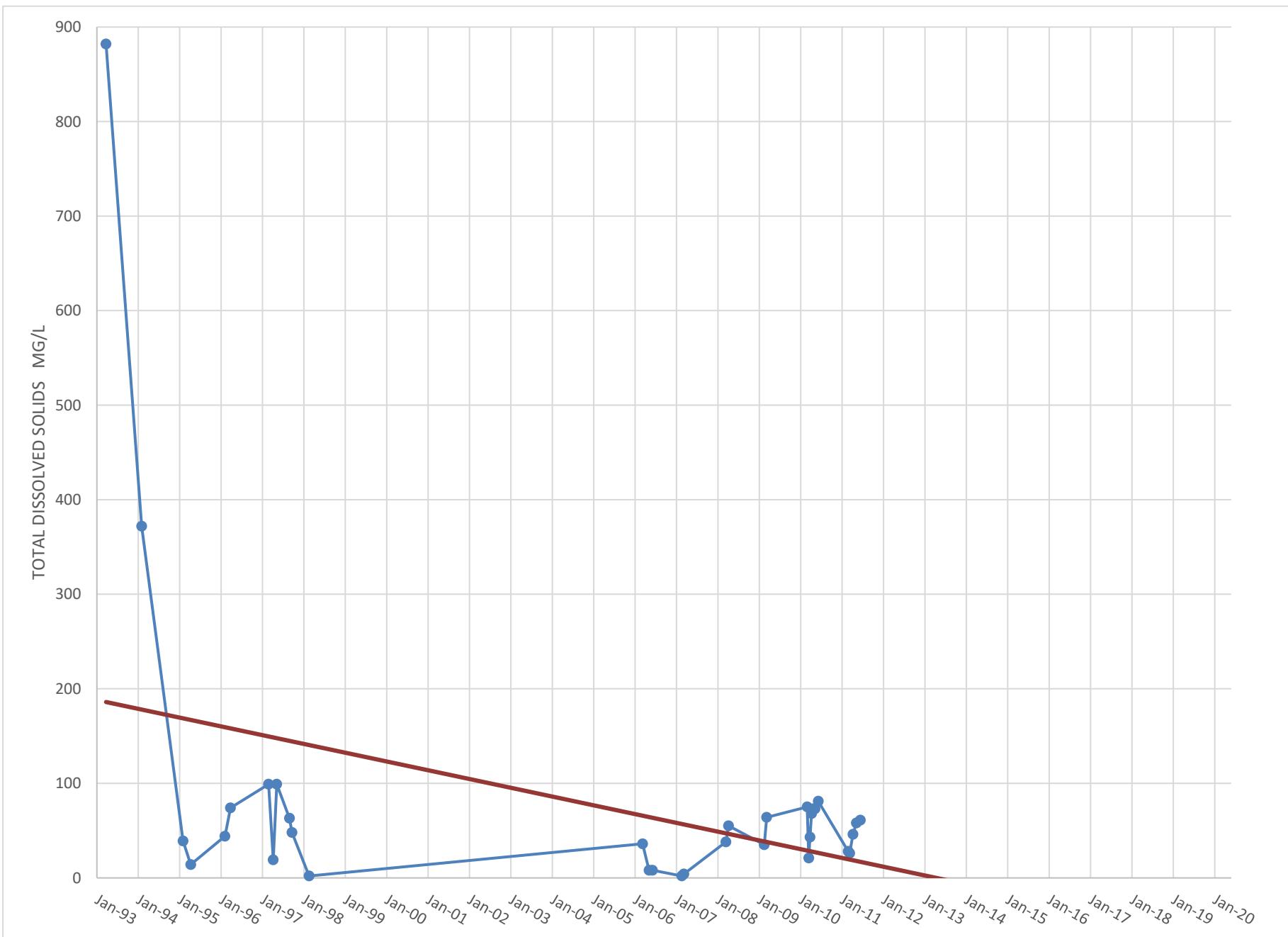
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Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y	0	Y

Location Code		NPDES1H		NPDES1H		NPDES1H		NPDES1H	
Site ID									
Date		5/3/2019	6/13/2019	7/29/2019	8/6/2019	9/4/2019			
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y



Period of Record Water Discharge Hydrograph

NPDES1H



Period of Record TDS Trend Plot

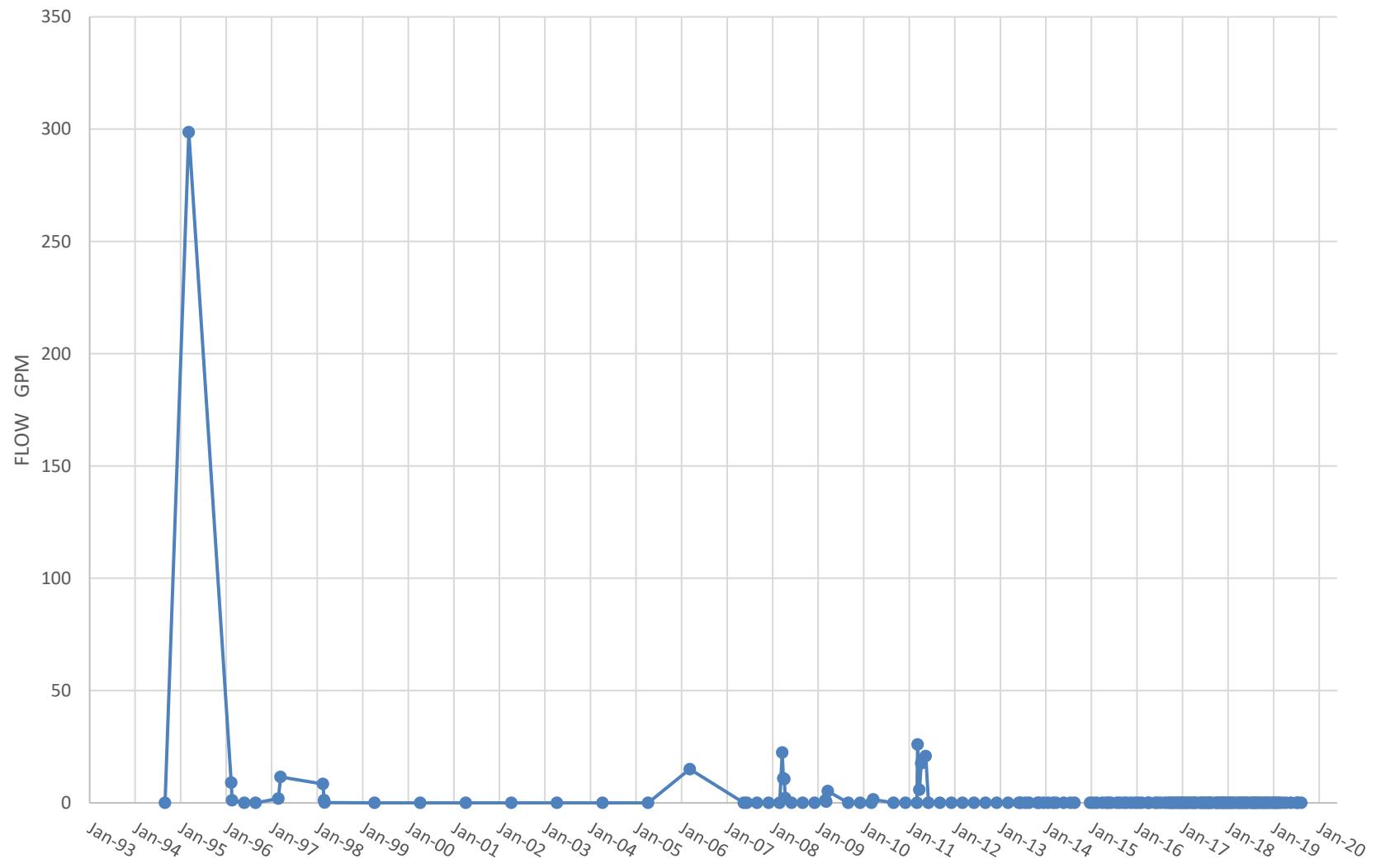
NPDES1H

Location Code Location Name				NPDES2H							
Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	Maximum	Minimum	Standard Deviation
3002 - HGLO NPDES	Flow	N	GPM	9/27/1994	9/4/2019	145	3.2507	0	298.61	0	25.052
3002 - HGLO NPDES	Iron	T	MG/L	3/12/1996	5/1/2008	7	0.47	0.36	0.82	0.12	0.29
3002 - HGLO NPDES	Iron	TR	MG/L	4/14/2008	3/10/2015	12	0.26	0.23	0.51	0.04	0.14
3002 - HGLO NPDES	Manganese	T	MG/L	3/12/1996	5/1/2008	4	0.01	0.01	0.02	0.01	0.005
3002 - HGLO NPDES	pH, Field	N	S.U.	3/12/1996	3/10/2015	23	8.55	8.71	9.1	7.47	0.449
3002 - HGLO NPDES	Solids, Settleable	N	ML/L	3/25/1997	4/4/2006	4	0.1	0.1	0.1	0.1	0
3002 - HGLO NPDES	Solids, Total Suspended	N	MG/L	3/12/1996	6/8/2011	15	13	10	32	5	7.7
3002 - HGLO NPDES	Specific Conductivity, Field	N	UMHOS/CM	3/12/1996	3/10/2015	23	2038	2080	3120	2.12	906.8

Location Code Site ID Date			NPDES2H	NPDES2H	NPDES2H	NPDES2H	NPDES2H	NPDES2H			
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y	0	Y

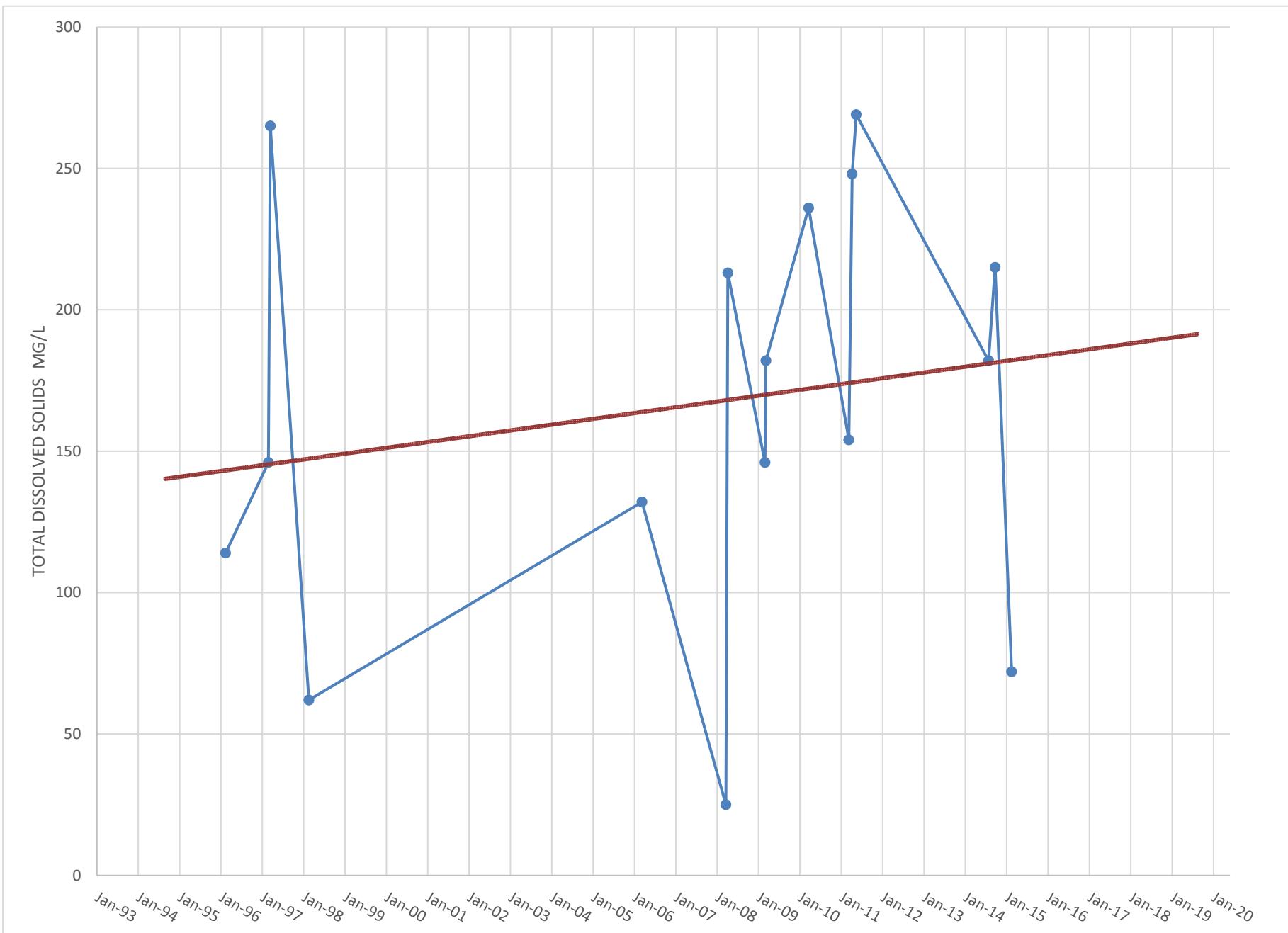
Location Code Site ID Date			NPDES2H		NPDES2H		NPDES2H		NPDES2H		NPDES2H		
Type	Parameter	Fraction	Units	Result	Detection								
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y	0	Y	0	Y

Location Code			NPDES2H	NPDES2H	NPDES2H	NPDES2H	NPDES2H				
Type	Parameter	Fraction	Units	Result	Detection	Result	Detection	Result	Detection	Result	Detection
3002 - HGLO NPDES	Flow	N	GPM	0	Y	0	Y	0	Y	0	Y



Period of Record Water Discharge Hydrograph

NPDES2H



Period of Record TDS Trend Plot

NPDES2H