Williams Fork Mine

2020 ANNUAL HYDROLOGY REPORT
Permit No. C-1981-044

Submitted to:

Colorado Division of Reclamation Mining and Safety
Denver, Colorado

Submitted by:

Moffat County Mining, LLC
Oak Creek, Colorado

August 2021

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1.0 INTRODUCTION

The following Annual Hydrology Report (AHR) presents hydrologic monitoring data from the Williams Fork underground mine sites near Craig, Colorado for the 2020 calendar year. Site locations are described below. This AHR is provided in fulfillment of reporting requirements under the Colorado State Division of Reclamation, Mining and Safety (DRMS), Permit No. C-81-044. All references to "2020" in this report refer to the 2020 calendar year (January 1, 2020 through December 31, 2020). Monitoring results for prior calendar years (1983 through 2019) are presented in previous AHRs, although selected historical data (period of record – POR) are summarized in some of the tables and figures within this AHR.

Following a discussion of Site Location and Background, this AHR provides a section on the 2020 Hydrologic Monitoring Program, which is further divided into the following subsections:

1) Groundwater Monitoring
2) Surface Water Monitoring

This is followed by the Summary and Conclusions Section. Tables, Figures, and back-up documentation are located in the tabbed sections at the back of this AHR.

2.0 SITE LOCATION AND BACKGROUND

Williams Fork No. 5 and Eagle No. 6 Mines are underground coal mines located approximately seven miles south of Craig, Colorado, on State Highway 13. The mine sites, and adjacent area lie along the northern foot of the Williams Fork Mountains, which trend east to west. The elevation of the permit area ranges from a low of approximately 6,130 feet in the Big Bottom area, to a high of about 7,400 feet in the Williams Fork Mountains. The entire operation is located in Moffat County, Colorado. The general location of the site is shown on Figure 1.

There are two (2) major northwestern Colorado Rivers, which intersect the permit area. These are: 1) the Yampa River and 2) the Williams Fork River. The Yampa River runs from north to south through the permit area, while the Williams Fork River runs from south to north and intersects the Yampa River just north of the mine facilities area. The northern portion of the permit area is dominated by the Big Bottom alluvium, while the southern and eastern portions of the permit area are dominated by the Williams Fork Mountains and the river beds of the Yampa and Williams Fork Rivers.

The Eagle Mine sites are located in an area, which has been historically mined by surface and underground mining. The earliest records of mining indicate that underground mining began in this area in the late 1920's and early 1930's, while surface strip mining began around 1975. The major mines which have operated in the past are: 1) Wise Hill (1,2,3,4), Williams Fork Strip (1,2,3), and Trapper Strip. The Trapper Strip Mine began operations in 1976 and has continued to date.

Underground mining began at the Eagle No. 5 Mine in 1972, under a subsidiary of the Zigler Coal Co. The Cyprus Empire Corporation (CEC), a subsidiary of the Cyprus Coal Company, subsequently acquired the mines from Zigler in 1982, and began operating under an approved Colorado Mine Land Reclamation Board permit in August, 1983. In 1999**,** CEC was acquired by RAG EC. In April 2004, RAG EC was acquired by Peabody Energy, with the mine owned by Peabody's subsidiary, BTU, and the mine name changing to BTU Empire Corporation (BTU EC). In December 2009, the mine name was changed to William's Fork Mine (WFM)

Hydrologic monitoring has been conducted at the mine site since 1980, primarily by CEC/RAG EC/BTU EC/WFM personnel. A private company (Miller Water Monitoring Service) has also been contracted to assist with some of the hydrologic monitoring over the last few years. Water quality samples are currently analyzed by ACZ Laboratories, Inc., of Steamboat Springs, Colorado, an USEPA certified laboratory.

The Eagle No. 5 Mine, mining the "F" Coal Seam of the Cretaceous Age Williams Fork Formation, originally utilized room-and-pillar mining methods until 1985, when economics dictated a change to the longwall mining method. The aerial extent of the underground workings in the Eagle No. 5 Mine was approximately 2,040 acres in early 1990, when the No. 5 mine was sealed and mining moved to the Eagle No. 6 Mine. Full production in the Eagle No. 6 Mine began in late 1990, with coal extraction from the underlying "E" Coal Seam of the Williams Fork Formation. Coal mined at the No. 5 and No. 6 Mines was loaded on unit trains at the mine facility area and hauled by rail to market. The 5A portals and a short section of the No. 5 Mine mains were used for access to the Eagle No. 6 Mine. The aerial extent of the underground workings in the Eagle No. 6 Mine (underlying portions of the No. 5 Mine) was approximately 640 acres at in late 1995, when mining ceased. The mines were subsequently in temporary cessation (TC), until Williams Fork re-activated water monitoring during the second quarter of 2006, in anticipation of WFM considering options for future re-activation of the mine site, and because a bond release application was also being contemplated for the Utah Tract and Williams Fork Strip Pit portions of the mine property.

During the third quarter of 2013, the mine reverted back to TC monitoring (discussed further below). In July 2013 all power was shut down on the mine property. Within a month or so of the shut-down, the site substation was partially dismantled.

In May 2014, copper thieves were discovered on site and apprehended by the Moffat County Sherriff's

department. The thieves activities had resulted in $500,000 to one million dollars-worth of damage between the main warehouse and the multi-services building on site. Security cameras were subsequently installed on site, and a security company was hired to inspect the site daily.

In November 2016, WFM requested deactivation of TC status, in anticipation of upcoming reclamation of the site. Reclamation continued through 2020 and is expected to be finalized in 2021. DRMS will be updated periodically with the status of the reclamation.

3.0 2020 HYDROLOGIC MONITORING PROGRAM

The WFM hydrologic monitoring program includes data collected specifically to meet requirements of the DMG, as well as data collected to meet the requirements of the Colorado Wastewater Discharge Permit System (CDPS). Note that "CDPS" parameters were formerly referred to as National Pollutant Discharge Elimination System (NPDES) parameters in prior AHRs. Specific monitoring locations are illustrated on Figure 2.

In June 2001, Technical Revision TR01-32 was approved, allowing suspension of many DRMS hydrologic monitoring requirements while the mine was in temporary cessation (TC). In 2005 BTU EC began to exam options for future re-activation of the mine site. In view of this considerations, BTU EC reverted back to the active monitoring plan (pages 1 – 14 of Exhibit 29), during the second quarter of 2006. In the third quarter of 2013 the mine reverted back to temporary cessation monitoring, as it was decided that there were no short term plans to reactivate mining.

WFM personnel is responsible for adhering to the monitoring requirements of its CDPS permit. Note that data acquisition required under the TC monitoring plan, only include sites:

- Bedrock well TR-7A,
- Alluvial well AVF-5,
- Surface water sites (Williams Fork) WF-1, WF-2,
- CDPS (Permit CO-0034142) sites:
    - 1) Mine discharge No. 5 Mine sump [CDPS Outfall 003, a.k.a. site 5D];
    - 2) Mine discharge 7 North Angle Well Bore [CDPS Outfall 024, a.k.a. site 9P3], and
    - 3) Spring - No. 1 StripPit [CDPS Outfall 022, a.k.a. site 1SP].

In 2017 TC was lifted and reclamation of the mine site began.

Table 1A presents a summary of hydrologic monitoring requirements for these sites under TC (modified from TR01-32, Appendix D of the TC monitoring plan). Table 1B outlines monitoring and sites required when off

of TC. Water quality monitoring includes field parameters (Table 2), surface water quality parameters under TC (Table 3A), and off of TC (Table 3B). CDPS parameters (Table 4) are the monitoring requirements page from CDPHE CDPS permit CO-0042142.

3.1 Groundwater Monitoring

3.1.1 Bedrock Wells

Three sandstone aquifers are found beneath the subject site. In ascending order, they are: Trout Creek Sandstone, Middle Sandstone, and Twentymile Sandstone. The Eagle No. 5 and Eagle No. 6 Mines are located between the Trout Creek Sandstone and the Middle Sandstone.

Water Levels

Trout Creek Sandstone: Water level measurements in the Trout Creek Sandstone No. 5 Mine well are shown on Figure 3. Historical annual water level fluctuations of 20 to 200 feet have been observed at this well but no seasonal pattern is evident. Note that recent water levels (2006 to date) were lower than levels measured prior to TC. This drop is apparently from consistent subsurface dewatering with the No. 5 mine pump. Levels remained relatively consistent from 2006 through 2008. There was a general rise in water level of about 40 feet in 2009, through 2012. This is due to periodic down time from malfunctions of the No. 5 mine pump. During the last quarter of 2012, the pump failed, resulting in no discharge. The pump was replaced in the spring of 2012, but stopped operating in July 2013 when power was removed from the site. Note the higher water level for No 5 at the last reading indicates how the water level had risen without pump dewatering over the years. In September of 2020 reclamation efforts made it impossible to get a reading during the 4th quarter due to well obstruction. The former Okie Plaza Trout Creek well was abandoned in June 1994 as mining advanced through its location.

Middle Sandstone: The water levels in the Middle Sandstone formation as measured in wells TR-4, TR-7a, 81-01, 83-01, 83-02, and 83-03. Historically these show fluctuations which are apparently related to dewatering and past subsidence associated with Mines 5 and 6. Wells TR-4 water levels appear to be slightly rising since about 2008 (Fig. 4). Levels in TR-7A (Fig. 5) have risen about 50 feet since 2013. There was one outlier in the spring of 2020 that dropped the well level by 40 feet but the well has since returned to the prior level. It is unclear if there was a reading error or what caused the drop. 81-01 in 2020 is relatively consistent with that seen prior to TC (Fig. 6). The water levels in 83-01 (Fig. 7) have been on the rise since monitoring was reactivated in 2006. The water levels in well 83-02 (Fig. 8) are consistent with those found since monitoring was reactivated in 2006. The water level decline of about 150 feet from 1987 to mid 1990 in well 83-02 was determined to be related to mine dewatering as Mine 5 workings approached the location of the

well. The more abrupt 200 foot decline in water levels observed in 1990 is thought to be a drawdown response due to subsidence as it is located only a few hundred feet horizontally from an F seam longwall panel which was mined in a similar time frame. The water level stabilized until 1994 when it recovered to the 1983 levels. Water levels in 83-02 have been stabile since 2006.

Wells TR-4 and 83-03 are located at greater distance horizontally from the active operations for mines 5 and 6. Water levels in Well TR-4 (Fig. 4) historically appear to be related to the fluctuations observed on all three of the down gradient Middle Sandstone Wells: 81-01, 83-01 and 83-02. The water level decline in TR-4 prior to 1984 and the subsequent recovery up to 1988 closely parallels the trends observed in Wells 81-01 and 83-01. The decline during the first part of 1991 also parallels the trend in these two wells. However, the rapid decline during the last part of 1989 and the first part of 1990 appears to follow the trend observed in Well 83-02 although the magnitude of decline is considerably less. Unusually large fluctuations for TR-4 for 1999 through 2000 have been attributed to a faulty pressurized line system.

Well 83-03 (Fig.9) is the Middle Sandstone monitoring well located furthest (more than 1.5 miles) from active underground operations for Mines 5 and 6. The overall trend from 1984 through 2000 and again in 2006 to date suggests a similar trend to the other Middle Sandstone wells. The long term decline could be a pressure response due to the overall drop in potentiometric levels in the Middle Sandstone in the vicinity of Mines 5 and 6. The water levels in the Middle Sandstone wells had either recovered or stabilized in 1995. Note that in early 2008 and 2009 there were drops in the water level. The largest drop being approximately 25 feet in early 2009, after which water levels stabilized and started to rise again in 2012. The reason for the drops is unclear. A large drop occurred after the TC ended in 2017, the water has since stabilized and is on a steady mild incline.

Historically, the groundwater gradient in the Middle Sandstone in the vicinity of the mining operation generally decreases from the southeast to the northwest.

Twentymile Sandstone: Monitoring results to date (Fig. 10) showed no apparent change in the water levels in the Twentymile Sandstone that could be attributable to mining activities. During 2019, wells 259 and 84-01 remained relatively stable as compared to 2006 through 2013, although 84-01 exhibited a slight drop in water level. 9 Mine well has exhibited a stable level since the beginning of monitoring.

Historically, the groundwater gradient in the Middle Sandstone in the vicinity of the mining operation generally decreases from the southeast to the northwest.

Water Quality

Trout Creek Sandstone: The field parameter data for No. 5 Mine well does not suggest any significant mining related water quality impacts to the Trout Creek Sandstone. The water quality data for this Trout Creek Sandstone well is summarized on Table 5. A plot of field conductivity measurements is presented in Figure 11. Note that conductivity values for the No. 5 Mine well following the 2006 removal from TC appear elevated compared to earlier historical values. This may be related to consistent pumping at this site. Note that the No. 5 dewatering pump was damaged during the fourth quarter of 2010, and was removed and replaced with another pump in June 2012 when the area was dry enough to bring in a crane. In July 2013 all power was removed from the facility, and pumping ceased.

Middle Sandstone: The field parameter data for the three Middle Sandstone wells (TR-4, TR-7A, 81-01) was reviewed. Water quality data are summarized in Tables 6 through 11. Plots of field conductivity for these Middle Sandstone Wells are presented in Figure 12. The conductivity measurements recorded in wells TR-7A , TR-4, and 81-01 remain stable as compared to recent historic values. Note that wells TR-4 and 81-01 exhibited elevated conductivity values after monitoring was re-initiated in 2006 when removed from TC. The reason for that effect is unknown.

Wells TR-7A and TR-4 have historically indicated a slight reduction in concentrations of major ions over time. Historically, all three wells have shown a reduction in concentrations of iron which shows considerable variation in concentrations. The general reduction in iron concentrations may be the result of better purging of well bore volumes prior to sampling.

Twentymile Sandstone: The 2020 field parameter data for the two Twentymile Sandstone wells 259, does not suggest a significant impact or trend. Figure 13 shows historical conductivity data. The 9 Mine well exhibited a rise in conductivity in 2010, appeared to stabilize in mid-2011 and went up again in 2016 but has since stabilized. Water quality data for these Twentymile Sandstone wells are summarized in Tables 12 through 14. Measurements for well 259 during 2012 appeared to follow the 9 mine well increase in conductivity, almost mirroring it but returning to “normal” level in 2013 only to have another spike in 2020. The two jumps in conductivity may be related, however an explanation is unknown at this time. The conductivity for the 9 Mine

well was stable during 2020.

In summary, elevated conductivity values were detected in the Trout Creek and Middle Sandstones. However the overall water quality of these, as well as the Twentymile Sandstone does not indicate obvious adverse impacts related to Mines 5 and 6.

3.1.2 Mine Water Discharge

The 7 North Angle (7NA) well site (associated with CDPS Outfall 024, a.k.a. site 9P3 by DRMS) was a mine dewatering well site that would eventually discharge into the Williams Fork River. The Eagle No. 5 Mine sump discharge is CDPS Outfall 003, a.k.a. site 5D. It is also a mine dewatering pump. Under TC, monitoring of these sites remains the same as in the active mining monitoring plan, however 9P3 has not discharged since 2001, and no near future discharge is anticipated.

Site 5D has not discharged since about July 2013, when power was removed from the site. No near future discharge is anticipated from this site either. Please consult prior AHRs for historical data.

There was no active pumping performed at the mine since July 2013. A plot of the measured discharge for this point is presented in Figure 14. Figure 15 is a historical monthly tabulation of flow measurements.

3.1.3 ALLUVIAL WELLS

Under TC, water data in the Williams Fork River Alluvium is monitored via alluvial well AVF-5, which is located adjacent to the underground discharge sediment ponds area (See Figure 2). Under TC, AVF-5 is measured for water level and field parameters on an annual basis (between July 20th and August 30th) concurrent with the Williams Fork surface water sampling (site WF-1). No water quality analyses were required for AVF-5 under TC.

Out of TC, alluvial wells AVF-3, AVF-5, and AVF-6 require quarterly water quality monitoring (See Table 1B). These wells are located in the general area of the loadout facilities and underground discharge sediment ponds. Historically, groundwater levels in the alluvium have remained fairly regular, with normal seasonal fluctuations, apparently related to changes in river levels. POR groundwater levels are plotted in Figure 16. The data indicates no impact on alluvial water levels related to mining.

Field parameter data for these alluvial wells are presented in Tables 15 through 17. POR water quality data is

provided in Tables 15A through 17A. A plot of field electric conductivity versus time is presented in Figure 17. There has been no conclusive evidence of seasonal variation of water quality in the alluvium. The wells were within historic levels in 2020.

3.2 Surface Water Monitoring

3.2.1 Rivers

There are two rivers in the vicinity of the mine site. The Yampa River, flows in a southeasterly direction across the mine site. The Yampa River drains most of the northeast corner of Colorado and part of south-central Wyoming. The second river is the Williams Fork, which is a major tributary of the Yampa River. The Williams Fork River joins the Yampa River on the mine property. Monitoring data is collected for the Williams Fork River. The Williams Fork River gaging station (WF-2) is near the confluence with the Yampa River, downstream of the Eagle No. 5 Mine discharge. The staff gage (WF-1) is located upstream of the mine discharge points. WF-2 is also monitored concurrent with WF-1.

The flow data for WF-2 was historically provided by the United States Geologic Survey (USGS) via one gaging station and one staff gage for collection of Williams Fork River flow data (former site 09249750). however, their monitoring of the Williams Fork stations was discontinued in 2001. In 2010 the State Division of Water Resources (Office of State Engineer) reactivated the site. Data for the former USGS site can be found on the State Water Resources website under station No. WMFKMHCO. A copy of their 2020 daily average flow data is provided at the back of this AHR under Support Data.

Historically, comparisons between up gradient site WF-1, and down gradient site WF-2, have not show any stream depletion impacts from mine dewatering. Summaries of WF-1 and WF-2 water quality data are presented in Tables 18 through 19. POR data is provided in Tables 18A and 19A, respectively. A plot of upstream and downstream dissolved solids measurements for the river is presented in Figure 18. Water quality data does not show any significant variation from expected values. The comparisons of data from the upstream and downstream station on the Williams Fork River indicate that there is no detectable effect of mining on river water quality. As expected, dissolved solids decrease with increasing flow rate in the rivers, due to dilution from runoff.

3.2.2 Springs

There is one active spring on the mine site area, known as the No. 1 Strip Pit Discharge, or 1SP. There are a few other ephemeral springs and local permanent "damp spots" in the area; however, their combined flow is normally less than 5-10 gpm, and therefore are not significant. The 1SP Discharge is a CDPS monitoring point (Outfall 022). There is no sediment pond associated with this spring. Spring water runs down a narrow path through a vegetative filter, drops down onto an isolated sand bar, and during the spring discharges directly to the Williams Fork River. The POR discharges for the 1SP are presented in Figure 19. 2020

discharge data is presented in Figure 20. The site flows sporadically during the spring. The discharge typically begins in March during the spring melt, and may be dry by the end of June. 1SP is typically dry from July through November, and freezes over from December into February/March.

Table 20 provides 2020 data for this site, while Table 20A provides POR data. A plot of POR total dissolved solids for 1SP is presented in Figure 21, and POR iron concentrations are presented on Figure 22. Figure 21 indicates TDS concentrations that are consistent with historic concentrations. Figure 22 illustrates the variable nature of total recoverable iron concentrations in 1SP discharge. Since 2002 there has been slight general upward trend in iron concentrations, however these levels are still within historic ranges seen for this site. We will continue to monitor this trend.

3.2.3 Ponds

There was no recorded discharge from any on-site sediment ponds in 2020.

4.0 SUMMARY AND CONCLUSIONS

The subject mine site ceased active mining operations in 1995, thus total mined acreage has not changed since then. The mine was subsequently placed in Temporary Cessation in 2001. The TC status ended in the second quarter of 2006, when WFM re-activated full water monitoring activities in anticipation of future re-activation of the mine site, and because a bond release application was also being contemplated for the Utah Tract and Williams Fork Strip Pit portions of the mine property. After the second quarter of 2013, the mine was again placed in TC, as no near future mining activities were anticipated. The site was taken off TC in November 2016 for reclamation and will continue until further notice. DRMS will be notified of our intensions well in advance.

No significant, unpredicted, or adverse environmental impacts were noted during hydrologic monitoring for 2020. All environmental precautions have been taken to a max extent during the reclamation process. BMP are being followed. During 2018 most of the major structures were demolished and removed from site. Final grading started in 2019 and reclamation should be finalized in 2021.

TABLES

LIST OF TABLES

TABLE 1A
SUMMARY OF HYDROLOGIC MONITORING STATIONS UNDER TEMPORARY CESSATION

BEDROCK WELLS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	DEPTH (ft)	SCREEN INTERVAL (ft)	FREQUENCY OF MEASUREMENT* WATER LEVEL	FIELD PARAMETER**	FULL QUALITY**	COMMENTS
TR-7A	Middle SS	6,244.30	740	624-725	A	A	NA	

ALLUVIAL WELLS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	DEPTH (ft)	FREQUENCY OF MEASUREMENT* WATER LEVEL	FIELD PARAMETER**	FULL QUALITY**	COMMENTS
AVF-5	Wms. Fk. Alluvial	6,132.59	16	A	A	NA	.

MINE DISCHARGES

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT* WATER LEVEL	FIELD PARAMETER**	CDPS	FULL QUALITY**	COMMENTS
No. 5 Mine Sump	F Seam	6,300-5,600	W	W	Outfall 003 (5D)	S/Q	No Discharge in 2014
7 N. Angle Sump	F Seam		W	W	Outfall 024 (9P3)	S/Q	No Discharge in 2014

SURFACE WATERS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT* WATER LEVEL	FIELD PARAMETER**	CDPS	FULL QUALITY**	COMMENTS
WF-1	Wms. Fk. Upstrm	6,142.39	A	A	NA	A	
WF-2	Wms. Fk. Dwnstrm	6,119.87	A	A	NA	A	

SPRINGS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT* WATER LEVEL	FIELD PARAMETER**	CDPS	FULL QUALITY**	COMMENTS
No. 1 Strip Pit	Spoils	6,120.00	W	W	Outfall 022 (1SP)	S/Q	Limited discharge in 2014

* W=Weekly, S=Semi-Monthly, M=Monthly, Q=Quarterly, A=Annually

** Surface water parameters for surface water stations, and CDPS parameters for mine discharges and No. 1 Strip Pit

TABLE 1B
SUMMARY OF HYDROLOGIC MONITORING STATIONS
BEDROCK WELLS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	DEPTH (ft)	SCREEN INTERVAL (ft)	FREQUENCY OF MEASUREMENT*			COMMENTS	
					FLOW LEVEL	FIELD PARAMETER**	FULL QUALITY**		
No. 5 Mine Well	Trout Creek SS	6,143.62	437	400-437	Q	Q	A	Water Supply	No Power
Okie Plaza Well	Trout Creek SS	6,551.68	800					Abandoned 6/94	
TR-4	Middle SS	6,308.30	1,335	1,230-1,330	Q	Q	A		
TR-7A	Middle SS	6,244.30	740	624-725	Q	Q	A		
81-01	Middle SS	6,413.00	533	384-533	Q	Q	A		
83-01	Middle SS	6,172.13	509	405-509	Q				
83-02	Middle SS	6,678.50	708	620-708	Q				
83-03	Middle SS	6,131.22	1,640	1,520-1,640	Q				
259	Twentymile SS	6,128.00	104	18-104	Q	Q	A		
84-01	Twentymile SS	6,307.47	962	585-959	Q				
No. 9 Mine Well	Twentymile SS	6,383.29	600		Q	Q	A	Water Supply	

* C=Continuous, D=Daily, W=Weekly, S=Semi-Monthly, M=Montly, Q=Quarterly, A=Annually
** Groundwater Parameters

TABLE 1B - CONTINUED
SUMMARY OF HYDROLOGIC MONITORING STATIONS

ALLUVIAL WELLS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	DEPTH (ft)	FREQUENCY OF MEASUREMENT*			COMMENTS
				FLOW LEVEL	FIELD PARAMETER**	FULL QUALITY**	
AVF-3	Wms. Fk. Alluvial	6,137.95	17	Q	Q	Q	
AVF-5	Wms. Fk. Alluvial	6,132.59	16	Q	Q	Q	Replaced AVF-5 9/82
AVF-6	Wms. Fk. Alluvial	6,146.23	16	Q	Q	Q	

MINE DISCHARGES

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT*				COMMENTS
			FLOW LEVEL	FIELD PARAMETER**	NPDES	FULL QUALITY**	
No. 5 Mine Sump	F Seam	6,300-5,600	W	W	S/Q	--	NPDES # 003
7 N. Angle Sump	F Seam		W	W	S/Q		NPDES #024 (9P3)

SURFACE WATERS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT*				COMMENTS
			FLOW LEVEL	FIELD PARAMETER**	NPDES	FULL QUALITY**	
WF-1	Wms. Fk. Upstrm	6,142.39	M	M	--	Q	
WF-2	Wms. Fk. Dwnstrm	6,119.87	C	M	--	Q	

SPRINGS

STATION NAME	WATER SOURCE	DATUM ELEVATION (ft)	FREQUENCY OF MEASUREMENT*				COMMENTS
			FLOW LEVEL	FIELD PARAMETER**	NPDES	FULL QUALITY**	
No. 1 Strip Pit	Spoils	6,120.00	W	W	S/Q	--	NPDES #022

* C=Continuous, D=Daily, W=Weekly, S=Semi-Monthly, M=Monthly, Q=Quarterly, A=Annually

** Surface water parameters for surface water stations, ground water parameters for spring stations, and NPDES parameters for mine discharges and No. 1 Strip Pit

TABLE 2
FIELD PARAMETERS

PARAMETER	SAMPLE SOURCE		
	Ground Water	Surface Water	NPDES
Temperature	X	X	X
Conductivity	X	X	X
pH	X	X	X
Suspended Solids		X	
Flow		X	X
Depth	X		

TABLE 3A
FULL SUITE OF WATER QUALITY ANALYSES
UNDER TEMPORARY CESSATION

PARAMETER	SURFACE WATER
Conductivity	**X**
pH	**X**
Acidity (as CaCO3)	**X**
Solids, Total Dissolved	**X**
Solids, Total Suspended	**X**
Chloride	**X**
Iron, Total Recoverable	**X**
Manganese, Total Recoverable	**X**

TABLE 3B
FULL SUITE OF WATER QUALITY ANALYSES

PARAMETER	GROUND WATER	SURFACE WATER
Conductivity*	X	X
pH	X	X
Alkalinity (CaCO3)	X	
Acidity (as CaCO3)		X
Solids, Dissolved		X
Suspended		X
Calcium	X	
Magnesium	X	
Bicarbonate (as HCO3)	X	
Carbonate (as CO3)	X	
Chloride	X	
Sulfate	X	X
Hydroxide	X	
Arsenic	X	
Cadmium	X	
Lead	X	
Mercury	X	
Selenium	X	
Iron	X	X
Manganese	X	X
Zinc	X	
Boron	X	
Molybdenum	X	
Nitrate (as N)	X	

* umhos/cm3 @ 25 C

TABLE 4
NPDES PARAMETERS

PARAMETER	WEEKLY	BI-MONTHLY	MONTHLY	QUARTERLY	ANNUAL
Discharge Points 003, 022, and 024					
Flow	X				
pH	X				
Solids, Total Suspended		X			
Oil and Grease		X			
Solids, Total Dissolved				X	
Arsenic, Total			X		
Arsenic, PD			X		
Cadmium, PD			X		
Chromium, PD			X		
Chromium- Tri, TR			X		
Copper, PD			X		
Iron, TR		X			
Lead, PD			X		
Manganese, PD			X		
Mercury, Total			X		
Nickel, PD			X		
Selenium, PD			X		
Silver, PD			X		
Zinc, Total Recoverable		X	X		
Sulfide			X		
WET, Chronic					**X**

Outfalls 003A, 022A, 024A

Effluent Parameter	Effluent Limitations Maximum Concentrations			Monitoring Requirements	
	30-Day Average	7-Day Average	Daily Maximum	Frequency	Sample Type
Effluent Flow (MGD)	Report		Report	Monthly	Instantaneous
Temp Daily Max (°C) Beginning May 1, 2013			Report	Continuous	Recorder
Temp MWAT (°C) Beginning May 1, 2013		Report		Continuous	Recorder
pH (su)			6.5-9	2 Days/Month	Grab
TSS (mg/l)	35		70	2 Days/Month	Grab
Oil and Grease (mg/l)			10	2 Days/Month	Visual
TDS (mg/l)	Report		Report	Quarterly	Grab
Arsenic, Tot (ug/l)	Report			Monthly	Grab
As, PD (µg/l)			Report	Monthly	Grab
Cd, PD (µg/l)	Report		Report	Monthly	Grab
Cr, TR (µg/l)			Report	Monthly	Grab
Cr+3, TR (µg/l)			Report	Monthly	Grab
Cu, PD (µg/l)	Report		Report	Monthly	Grab
Fe, TR (µg/l)	1,000		6,000	2 Days/Month	Grab
Pb, PD (µg/l)	Report		Report	Monthly	Grab
Mn, PD (µg/l)	Report		Report	Monthly	Grab
Hg, Tot (µg/l)	Report			Monthly	Grab
Ni, PD (µg/l)	Report		Report	Monthly	Grab
Se, PD (µg/l)	Report		Report	Monthly	Grab
Ag, PD (µg/l)	Report		Report	Monthly	Grab
Zn, PD (µg/l)	Report		Report	Monthly	Grab
Sulfide (mg/l)	Report			Monthly	Grab
WET, chronic					
Pimephales Lethality			Stat Diff & IC25 ≥ IWC	Annual	3 Grabs / Test
Ceriodaphnia Lethality				Annual	3 Grabs / Test
Pimephales Toxicity			Report Stat Diff & IC25	Annual	3 Grabs / Test
Ceriodaphnia Toxicity				Annual	3 Grabs / Test

ALTERNATE LIMITATIONS

Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may comply with the following limitations subject to burden of proof requirements described in Part I.B.4.

The following limits may be substituted for those contained in the previous table. All other parameters remain unchanged.

Table: 5
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 5MN, NO. 5 Mine Well, Trout Creek Sandstone Datum: 6143.62

Date	3/8/2020	5/18/2020	9/7/2020	11/7/2020
Depth to Water (FT)	41.27	35.15	34.11	UNABLE TO OBTAIN DUE TO RECLAMATION

POWER HAS BEEN DISCONNECTED AND WATER LEVEL IS TO LOW TO OBTAIN SAMPLE SINCE 2013

Table: 6
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: T4, Well TR-4, Middle Sandstone Datum: 6308.3

				Date	3/8/2020		5/18/2020		9/7/2020		11/8/2020	
				Depth to Water (FT)	18.75		14.91		15.37		17.49	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				541	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				59.3	Y				
ANION	Chloride	N	MG/L				35.6	Y				
ANION	Sulfates	N	MG/L				557	Y				
CATION	Calcium	D	MG/L				6.8	Y				
CATION	Magnesium	D	MG/L				3.5	Y				
CATION	Sodium	D	MG/L				543	Y				
FIELD	pH, Field	N	S.U.		8.62	Y	8.56	Y	8.57	Y	8.6	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		2330	Y	2310	Y	2330	Y	2340	Y
FIELD	Temperature, Field	N	DEG-C		10.9	Y	11.1	Y	11.3	Y	11.1	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N				
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L				601	Y				
PHYSICAL	Hardness	N	MG/L				31	Y				
PHYSICAL	Hydroxide as OH	N	MG/L				20	N				
PHYSICAL	pH, Lab	N	S.U.				8.8	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				2260	Y				
PRIMARY	Arsenic	D	UG/L				1	N				
PRIMARY	Cadmium	D	UG/L				0.3	N				
PRIMARY	Lead	D	UG/L				0.7	Y				
PRIMARY	Mercury	D	UG/L				1	N				
PRIMARY	Selenium	D	UG/L				0.3	N				
SECONDARY	Iron	D	UG/L				250	Y				
SECONDARY	Manganese	D	UG/L				50	N				
SECONDARY	Zinc	D	UG/L				50	N				
TRACE	Boron	D	UG/L				220	Y				
TRACE	Molybdenum	D	UG/L				100	N				

Table: 6A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: T4, Well TR-4, Middle Sandstone Datum: 6308.3

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/27/1996	5/18/2020	6	45.1	37.5	112	2	37.9
ANION	Chloride	N	MG/L	3/30/1981	5/18/2020	36	11.5	3	41	1	15.6
ANION	Sulfates	N	MG/L	3/30/1981	5/18/2020	36	164	39	620	2	240
CATION	Calcium	D	MG/L	7/8/1983	5/18/2020	28	7.8	4	100	2	18
CATION	Magnesium	D	MG/L	7/8/1983	5/18/2020	28	13.8	7	51.3	1	12.1
CATION	Sodium	D	MG/L	7/8/1983	5/18/2020	28	191	40.2	553	16.3	226
FIELD	pH, Field	N	S.U.	1/26/1982	11/8/2020	100	8.55	8.63	9.5	6.97	0.498
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/8/2020	100	718.21	350	2410	180	730.18
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/8/2020	96	11.5	11	26.5	4.5	2.91
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/5/1985	4/11/2017	22	0.03	0.03	0.07	0.02	0.01
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/30/1981	5/18/2020	37	0.06	0.03	0.1	0.02	0.04
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	3/30/1981	5/18/2020	0.1	N	242	630	117	184
PHYSICAL	Hardness	N	MG/L	5/5/2011	5/18/2020	8	31	32	42	18	7.9
PHYSICAL	Hydroxide as OH	N	MG/L	6/11/1992	5/18/2020	12	10	20	20	0	9
PHYSICAL	pH, Lab	N	S.U.	3/30/1981	5/18/2020	36	8.55	8.6	10.3	6.9	0.632
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/30/1981	5/18/2020	36	872	485	2340	180	833
PRIMARY	Arsenic	D	UG/L	7/8/1983	5/18/2020	28	3	1	40	1	7
PRIMARY	Cadmium	D	UG/L	7/8/1983	5/18/2020	28	5	5	50	0.3	9
PRIMARY	Lead	D	UG/L	7/8/1983	5/18/2020	28	18	20	50	0.1	14
PRIMARY	Mercury	D	UG/L	7/8/1983	5/18/2020	28	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	7/8/1983	5/18/2020	28	0.9	1	2	0.2	0.5
SECONDARY	Iron	D	UG/L	3/5/1985	5/18/2020	27	333	90	1510	10	460
SECONDARY	Manganese	D	UG/L	7/8/1983	5/18/2020	28	18	10	54	5	14
SECONDARY	Zinc	D	UG/L	7/8/1983	5/18/2020	28	56	10	990	5	180
TRACE	Boron	D	UG/L	7/8/1983	5/18/2020	28	88	45	220	10	81
TRACE	Molybdenum	D	UG/L	7/8/1983	5/18/2020	28	60	50	200	5	50

Table: 7
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: T7A, Well TR-7A, Middle Sandstone Datum: 6244.3

				Date	3/8/2020		5/18/2020		9/7/2020		11/8/2020	
				Depth to Water (FT)	105.72		147.26		106.6		106.08	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				188	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				23.9	Y				
ANION	Chloride	N	MG/L				2.1	Y				
ANION	Sulfates	N	MG/L				5	N				
CATION	Calcium	D	MG/L				7.3	Y				
CATION	Magnesium	D	MG/L				28.7	Y				
CATION	Sodium	D	MG/L				33.3	Y				
FIELD	pH, Field	N	S.U.		8.42	Y	8.6	Y	8.62	Y	8.51	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		390	Y	410	Y	420	Y	410	Y
FIELD	Temperature, Field	N	DEG-C		11.2	Y	11.4	Y	11.5	Y	11.4	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N				
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L				211	Y				
PHYSICAL	Hardness	N	MG/L				136	Y				
PHYSICAL	Hydroxide as OH	N	MG/L				20	N				
PHYSICAL	pH, Lab	N	S.U.				8.7	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				363	Y				
PRIMARY	Arsenic	D	UG/L				1	N				
PRIMARY	Cadmium	D	UG/L				0.06	Y				
PRIMARY	Lead	D	UG/L				6.4	Y				
PRIMARY	Mercury	D	UG/L				1	N				
PRIMARY	Selenium	D	UG/L				0.3	N				
SECONDARY	Iron	D	UG/L				540	Y				
SECONDARY	Manganese	D	UG/L				30	Y				
SECONDARY	Zinc	D	UG/L				50	N				
TRACE	Boron	D	UG/L				40	Y				
TRACE	Molybdenum	D	UG/L				100	N				

Table: 7A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: T7A, Well TR-7A, Middle Sandstone Datum: 6244.3

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/25/1996	5/18/2020	6	21.7	21.1	33	12	7.23
ANION	Chloride	N	MG/L	3/30/1981	5/18/2020	36	3.3	2	8	1	2
ANION	Sulfates	N	MG/L	3/30/1981	5/18/2020	36	22.4	11	85	1	21.8
CATION	Calcium	D	MG/L	6/29/1983	5/18/2020	28	7.3	5.2	28	2	5.8
CATION	Magnesium	D	MG/L	6/29/1983	5/18/2020	28	26.1	27.9	32	14	5.54
CATION	Sodium	D	MG/L	6/29/1983	5/18/2020	28	36.6	33.2	63	19.6	10.4
FIELD	pH, Field	N	S.U.	1/26/1982	11/8/2020	103	8.65	8.7	10.1	7.1	0.494
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/8/2020	103	406	390	1320	122	121
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/8/2020	98	11.7	11.5	21	5.4	2.44
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/5/1985	4/11/2017	22	0.03	0.02	0.05	0.02	0.01
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/30/1981	5/18/2020	38	0.072	0.065	0.35	0.02	0.064
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	3/30/1981	5/18/2020	0.1	N	195	231	127	29.6
PHYSICAL	Hardness	N	MG/L	5/5/2011	5/18/2020	8	132	135	146	120	9.15
PHYSICAL	Hydroxide as OH	N	MG/L	6/11/1992	5/18/2020	12	10	20	20	0	9
PHYSICAL	pH, Lab	N	S.U.	3/30/1981	5/18/2020	36	8.717	8.78	10.14	6.5	0.568
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/30/1981	5/18/2020	36	379	370	600	265	60.3
PRIMARY	Arsenic	D	UG/L	6/29/1983	5/18/2020	28	3	1	40	1	7
PRIMARY	Cadmium	D	UG/L	6/29/1983	5/18/2020	28	3	5	10	0.06	2
PRIMARY	Lead	D	UG/L	6/29/1983	5/18/2020	28	27	20	290	0.7	53
PRIMARY	Mercury	D	UG/L	6/29/1983	5/18/2020	28	0.5	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	6/29/1983	5/18/2020	28	0.9	1	2	0.3	0.5
SECONDARY	Iron	D	UG/L	3/5/1985	5/18/2020	27	293	80	3780	10	719
SECONDARY	Manganese	D	UG/L	6/29/1983	5/18/2020	28	24	21	50	10	11
SECONDARY	Zinc	D	UG/L	6/29/1983	5/18/2020	28	20	10	50	5	17
TRACE	Boron	D	UG/L	6/29/1983	5/18/2020	28	40	40	100	10	20
TRACE	Molybdenum	D	UG/L	6/29/1983	5/18/2020	28	60	50	200	10	50

Table: 8
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 01, Well 81-01, Middle Sandstone Datum: 6413.0

				Date	3/8/2020		5/18/2020		9/7/2020		11/8/2020	
				Depth to Water (FT)	253.64		252.76		253.78		253.81	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				278	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				20	N				
ANION	Chloride	N	MG/L				40.2	Y				
ANION	Sulfates	N	MG/L				405	Y				
CATION	Calcium	D	MG/L				86.6	Y				
CATION	Magnesium	D	MG/L				110	Y				
CATION	Sodium	D	MG/L				35.5	Y				
FIELD	pH, Field	N	S.U.		7.24	Y	7.26	Y	7.24	Y	7.26	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		1310	Y	1320	Y	1310	Y	1300	Y
FIELD	Temperature, Field	N	DEG-C		10.9	Y	11.1	Y	11.2	Y	11	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N				
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L				278	Y				
PHYSICAL	Hardness	N	MG/L				669	Y				
PHYSICAL	Hydroxide as OH	N	MG/L				20	N				
PHYSICAL	pH, Lab	N	S.U.				8.1	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				1230	Y				
PRIMARY	Arsenic	D	UG/L				1	N				
PRIMARY	Cadmium	D	UG/L				0.3	N				
PRIMARY	Lead	D	UG/L				0.3	Y				
PRIMARY	Mercury	D	UG/L				1	N				
PRIMARY	Selenium	D	UG/L				0.3	N				
SECONDARY	Iron	D	UG/L				3300	Y				
SECONDARY	Manganese	D	UG/L				230	Y				
SECONDARY	Zinc	D	UG/L				50	N				
TRACE	Boron	D	UG/L				30	Y				
TRACE	Molybdenum	D	UG/L				100	N				

Table: 8A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: 01, Well 81-01, Middle Sandstone Datum: 6413.0

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/20/2009	5/18/2020	4	20	20	20	1	10
ANION	Chloride	N	MG/L	5/20/2009	5/18/2020	9	35.1	40	44.3	7	12.4
ANION	Sulfates	N	MG/L	5/20/2009	5/18/2020	9	334	365	421	170	80.6
CATION	Calcium	D	MG/L	5/20/2009	5/18/2020	9	98.7	102	120	69	16.8
CATION	Magnesium	D	MG/L	5/20/2009	5/18/2020	9	97.4	103	111	54	18.2
CATION	Sodium	D	MG/L	5/20/2009	5/18/2020	9	34.7	34.9	48.7	22	6.95
FIELD	pH, Field	N	S.U.	2/13/2019	11/8/2020	8	7.24	7.25	7.28	7.16	0.0364
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2/13/2019	11/8/2020	8	1310	1310	1320	1300	7.07
FIELD	Temperature, Field	N	DEG-C	2/13/2019	11/8/2020	8	11.1	11	11.6	10.8	0.25
NUTRIENT	Nitrate Nitrogen	N	MG/L	5/20/2009	4/11/2017	4	0.05	0.05	0.05	0.05	0
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/5/2011	5/18/2020	16	0.09	0.1	0.1	0.03	0.03
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	5/20/2009	5/18/2020	0.1	N	330	390	278	41.2
PHYSICAL	Hardness	N	MG/L	5/5/2011	5/18/2020	8	663	666	736	588	49.3
PHYSICAL	Hydroxide as OH	N	MG/L	5/5/2011	5/18/2020	8	20	20	20	20	0
PHYSICAL	pH, Lab	N	S.U.	5/20/2009	5/18/2020	9	8.06	8.1	8.3	7.75	0.162
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/20/2009	5/18/2020	9	1210	1230	1370	880	155
PRIMARY	Arsenic	D	UG/L	5/20/2009	5/18/2020	9	1	1	2	1	0.5
PRIMARY	Cadmium	D	UG/L	5/20/2009	5/18/2020	9	0.5	0.5	0.5	0.3	0.09
PRIMARY	Lead	D	UG/L	5/20/2009	5/18/2020	9	0.8	0.3	5	0.1	2
PRIMARY	Mercury	D	UG/L	5/20/2009	5/18/2020	9	0.9	1	1	0.2	0.3
PRIMARY	Selenium	D	UG/L	5/20/2009	5/18/2020	9	0.67	0.3	2	0.3	0.7
SECONDARY	Iron	D	UG/L	5/20/2009	5/18/2020	9	5490	5520	12800	30	3500
SECONDARY	Manganese	D	UG/L	5/20/2009	5/18/2020	9	238	230	372	98	90.8
SECONDARY	Zinc	D	UG/L	5/20/2009	5/18/2020	9	50	50	50	5	20
TRACE	Boron	D	UG/L	5/20/2009	5/18/2020	9	40	40	80	20	20
TRACE	Molybdenum	D	UG/L	5/20/2009	5/18/2020	9	80	100	100	50	30

Table: 9
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 301, Well 83-01, Middle Sandstone Datum: 6172.13

Date	3/8/2020	5/18/2020	9/7/2020	11/7/2020
Depth to Water (FT)	33.94	28.01	30.03	29.27

Table: 10
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 302, Well 83-02, Middle Sandstone Datum: 6678.50

Date	3/8/2020	5/18/2020	9/7/2020	11/7/2020
Depth to Water (FT)	86.81	84.33	84.57	85.92

Table: 11
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 303, Well 83-03, Middle Sandstone Datum: 6131.22

Date	3/8/2020	5/18/2020	9/7/2020	11/7/2020
Depth to Water (FT)	76.23	78.54	76.23	73.92

Table: 12
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 259, Well 259, Twentymile Sandstone Datum: 6128.0

				Date	3/8/2020		5/18/2020		9/7/2020		11/7/2020	
				Depth to Water (FT)	2.31		6.93		6.93		2.31	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				254	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				20	N				
ANION	Chloride	N	MG/L				2.9	Y				
ANION	Sulfates	N	MG/L				60	Y				
CATION	Calcium	D	MG/L				52.4	Y				
CATION	Magnesium	D	MG/L				23	Y				
CATION	Sodium	D	MG/L				36	Y				
FIELD	pH, Field	N	S.U.		7.69	Y	7.47	Y	7.44	Y	7.42	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		590	Y	610	Y	600	Y	620	Y
FIELD	Temperature, Field	N	DEG-C		11.1	Y	11.4	Y	11.4	Y	11.7	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N				
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L				254	Y				
PHYSICAL	Hardness	N	MG/L				226	Y				
PHYSICAL	Hydroxide as OH	N	MG/L				20	N				
PHYSICAL	pH, Lab	N	S.U.				8.2	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				549	Y				
PRIMARY	Arsenic	D	UG/L				1	N				
PRIMARY	Cadmium	D	UG/L				0.3	N				
PRIMARY	Lead	D	UG/L				0.5	N				
PRIMARY	Mercury	D	UG/L				1	N				
PRIMARY	Selenium	D	UG/L				0.3	N				
SECONDARY	Iron	D	UG/L				130	Y				
SECONDARY	Manganese	D	UG/L				30	Y				
SECONDARY	Zinc	D	UG/L				50	N				
TRACE	Boron	D	UG/L				60	Y				
TRACE	Molybdenum	D	UG/L				100	N				

Table: 12A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: 259, Well 259, Twentymile Sandstone Datum: 6128.0

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	11/25/1996	5/18/2020	6	7.9	2.8	20	1	9.4
ANION	Chloride	N	MG/L	3/30/1981	5/18/2020	34	7.21	4	30.6	1	7.38
ANION	Sulfates	N	MG/L	3/30/1981	5/18/2020	34	36	45	95	1	29
CATION	Calcium	D	MG/L	6/29/1983	5/18/2020	26	24.8	13	76	2.4	22.2
CATION	Magnesium	D	MG/L	6/29/1983	5/18/2020	26	12	7.65	24.2	1.1	9.13
CATION	Sodium	D	MG/L	6/29/1983	5/18/2020	26	22.7	20.5	39.3	4.7	11.2
FIELD	pH, Field	N	S.U.	1/26/1982	11/7/2020	98	7.58	7.65	9.21	6	0.673
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/7/2020	98	407.2	417.5	1440	109.2	252.5
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/7/2020	94	10.9	11	18.9	4	2.81
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/5/1985	4/11/2017	20	0.03	0.02	0.09	0.01	0.02
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/30/1981	5/18/2020	37	0.064	0.04	0.26	0.02	0.051
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	3/30/1981	5/18/2020	33	141	180	254	6.8	92.6
PHYSICAL	Hardness	N	MG/L	5/5/2011	5/18/2020	8	76.6	36	226	25	83.2
PHYSICAL	Hydroxide as OH	N	MG/L	6/11/1992	5/18/2020	12	10	20	20	0	9
PHYSICAL	pH, Lab	N	S.U.	6/29/1981	5/18/2020	33	7.75	7.82	9.2	5.9	0.765
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/30/1981	5/18/2020	34	350	450	570	67	191
PRIMARY	Arsenic	D	UG/L	6/29/1983	5/18/2020	26	3	1	40	1	8
PRIMARY	Cadmium	D	UG/L	6/29/1983	5/18/2020	26	3	4	10	0.06	2
PRIMARY	Lead	D	UG/L	6/29/1983	5/18/2020	26	31	20	380	0.1	73
PRIMARY	Mercury	D	UG/L	6/29/1983	5/18/2020	26	0.5	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	6/29/1983	5/18/2020	26	1	1	6	0.3	1
SECONDARY	Iron	D	UG/L	3/5/1985	5/18/2020	25	948	70	7400	10	2070
SECONDARY	Manganese	D	UG/L	6/29/1983	5/18/2020	26	105	54	330	7	96.5
SECONDARY	Zinc	D	UG/L	6/29/1983	5/18/2020	26	56.1	25	540	5	105
TRACE	Boron	D	UG/L	6/29/1983	5/18/2020	26	64	55	240	10	46
TRACE	Molybdenum	D	UG/L	6/29/1983	5/18/2020	26	60	50	200	10	50

Table: 13
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 401, Well 84-01, Twentymile Sandstone Datum: 6307.47

Date	3/8/2020	5/18/2020	9/7/2020	11/7/2020
Depth to Water (FT)	44.06	45.92	44.81	44.21

Table: 14
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 9MN, #9 Mine Well, Twentymile Sandstone Datum: 6383.29

				Date	3/8/2020		5/18/2020		9/7/2020		11/8/2020	
				Depth to Water (FT)	65.31		64.72		64.92		65.01	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				259	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				20	N				
ANION	Chloride	N	MG/L				52.3	Y				
ANION	Sulfates	N	MG/L				198	Y				
CATION	Calcium	D	MG/L				90.1	Y				
CATION	Magnesium	D	MG/L				58.3	Y				
CATION	Sodium	D	MG/L				35.6	Y				
FIELD	pH, Field	N	S.U.		7.08	Y	6.95	Y	7.1	Y	7.06	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		1130	Y	1110	Y	1100	Y	1120	Y
FIELD	Temperature, Field	N	DEG-C		10.8	Y	11.1	Y	11.4	Y	11.2	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N				
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L				259	Y				
PHYSICAL	Hardness	N	MG/L				465	Y				
PHYSICAL	Hydroxide as OH	N	MG/L				20	N				
PHYSICAL	pH, Lab	N	S.U.				7.8	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				974	Y				
PRIMARY	Arsenic	D	UG/L				1	N				
PRIMARY	Cadmium	D	UG/L				0.07	Y				
PRIMARY	Lead	D	UG/L				0.2	Y				
PRIMARY	Mercury	D	UG/L				1	N				
PRIMARY	Selenium	D	UG/L				0.3	N				
SECONDARY	Iron	D	UG/L				1030	Y				
SECONDARY	Manganese	D	UG/L				1080	Y				
SECONDARY	Zinc	D	UG/L				50	N				
TRACE	Boron	D	UG/L				60	Y				
TRACE	Molybdenum	D	UG/L				100	N				

Table: 14A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: 9MN, #9 Mine Well, Twentymile Sandstone Datum: 6383.29

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/13/1996	5/18/2020	5	10	20	20	1	10
ANION	Chloride	N	MG/L	3/30/1981	5/18/2020	30	13.3	3.5	54.7	2	17
ANION	Sulfates	N	MG/L	3/30/1981	5/18/2020	30	84.9	48.5	365	4	86.1
CATION	Calcium	D	MG/L	6/29/1983	5/18/2020	23	81.5	79.4	163	35.1	30.1
CATION	Magnesium	D	MG/L	6/29/1983	5/18/2020	23	39.8	32	87.3	22	16
CATION	Sodium	D	MG/L	6/29/1983	5/18/2020	23	20.431	16.6	43.5	9.9	9.1867
FIELD	pH, Field	N	S.U.	1/26/1982	11/8/2020	99	7.37	7.3	8.7	6.6	0.427
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/8/2020	99	772	638	3500	428	378
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/8/2020	95	13.2	12.5	23.1	9.7	2.84
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/5/1985	4/11/2017	17	0.03	0.02	0.08	0.02	0.02
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/30/1981	5/18/2020	35	0.052	0.04	0.12	0.02	0.035
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	3/30/1981	5/18/2020	0.1	302	297	441	193	46.8
PHYSICAL	Hardness	N	MG/L	5/5/2011	5/18/2020	8	513	481	767	358	121
PHYSICAL	Hydroxide as OH	N	MG/L	6/4/1992	5/18/2020	12	10	20	20	0	9
PHYSICAL	pH, Lab	N	S.U.	3/30/1981	5/18/2020	31	7.88	7.86	9.1	7	0.41
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/30/1981	5/18/2020	31	717	620	1470	380	263
PRIMARY	Arsenic	D	UG/L	6/29/1983	5/18/2020	23	3.8	1.3	40	0.5	8.2
PRIMARY	Cadmium	D	UG/L	6/29/1983	5/18/2020	23	3	3	10	0.07	3
PRIMARY	Lead	D	UG/L	6/29/1983	5/18/2020	23	20	20	50	0.1	10
PRIMARY	Mercury	D	UG/L	6/29/1983	5/18/2020	23	0.5	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	6/29/1983	5/18/2020	23	1	1	4	0.2	0.9
SECONDARY	Iron	D	UG/L	3/5/1985	5/18/2020	22	622	110	3760	10	1010
SECONDARY	Manganese	D	UG/L	6/29/1983	5/18/2020	23	202	61	1080	40	272
SECONDARY	Zinc	D	UG/L	6/29/1983	5/18/2020	23	268	128	1200	10	300
TRACE	Boron	D	UG/L	6/29/1983	5/18/2020	23	40	30	90	20	20
TRACE	Molybdenum	D	UG/L	6/29/1983	5/18/2020	23	70	50	200	10	50

Table: 15
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AV3, Well AVF-3, Williams Fork Alluvium Datum: 6137.95

				Date	3/8/2020		5/18/2020		9/7/2020		11/7/2020	
				Depth to Water (FT)	5.92		3.87		3.04		3.01	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L		551	Y	283	Y	170	Y	270	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L		20	N	20	N	20	N	20	N
ANION	Chloride	N	MG/L		153	Y	35.4	Y	8.4	Y	11.3	Y
ANION	Sulfates	N	MG/L		285	Y	10.4	Y	5	N	5	N
CATION	Calcium	D	MG/L		115	Y	55.8	Y	39	Y	55.8	Y
CATION	Magnesium	D	MG/L		73.1	Y	16.3	Y	8.3	Y	11.2	Y
CATION	Sodium	D	MG/L		169	Y	33.8	Y	5.4	Y	6.31	Y
FIELD	pH, Field	N	S.U.		7.5	Y	7.01	Y	7.13	Y	7.18	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		1760	Y	900	Y	390	Y	650	Y
FIELD	Temperature, Field	N	DEG-C		8.7	Y	11.4	Y	15.2	Y	12.4	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L		0.62	Y	0.1	N	0.1	N	0.1	N
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L		672	Y	283	Y	170	Y	270	Y
PHYSICAL	Hardness	N	MG/L		588	Y	206	Y	132	Y	185	Y
PHYSICAL	Hydroxide as OH	N	MG/L		20	N	20	N	20	N	20	N
PHYSICAL	pH, Lab	N	S.U.		8.3	Y	6.7	Y	7.9	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM		1740	Y	851	Y	363	Y	526	Y
PRIMARY	Arsenic	D	UG/L		0.2	Y	1.3	Y	5	Y	11.5	Y
PRIMARY	Cadmium	D	UG/L		0.3	N	0.3	N	3	N	2.5	N
PRIMARY	Lead	D	UG/L		0.1	Y	0.3	Y	5	N	5	N
PRIMARY	Mercury	D	UG/L		1	N	1	N	1	N	1	N
PRIMARY	Selenium	D	UG/L		0.3	N	25.6	Y	2	Y	2.5	N
SECONDARY	Iron	D	UG/L		140	Y	730	Y	2080	Y	3460	Y
SECONDARY	Manganese	D	UG/L		70	Y	420	Y	340	Y	698	Y
SECONDARY	Zinc	D	UG/L		50	N	50	N	50	N	50	N
TRACE	Boron	D	UG/L		120	Y	40	Y	60	Y	69	Y
TRACE	Molybdenum	D	UG/L		100	N	100	N	100	N	100	N

Table: 15A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: AV3, Well AVF-3, Williams Fork Alluvium Datum: 6137.95

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/16/1996	11/7/2020	21	7.61	2	20	1	8.87
ANION	Chloride	N	MG/L	6/29/1981	11/7/2020	107	209	190	2300	8.4	230
ANION	Sulfates	N	MG/L	6/29/1981	11/7/2020	107	298	290	531	5	101
CATION	Calcium	D	MG/L	3/30/1983	11/7/2020	100	115	114	167	39	21.5
CATION	Magnesium	D	MG/L	3/30/1983	11/7/2020	100	72.9	73.8	104	8.3	15.9
CATION	Sodium	D	MG/L	3/30/1983	11/7/2020	100	186	182	288	5.4	47.2
FIELD	pH, Field	N	S.U.	1/26/1982	11/7/2020	147	7.42	7.4	8.7	6.8	0.278
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/7/2020	147	1673.732	1660	2750	390	323.0926
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/7/2020	143	9.39	9	18.5	3.7	2.93
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/26/1984	11/15/2017	81	0.14	0.08	0.71	0.02	0.15
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/29/1981	11/7/2020	104	0.223	0.1	1.99	0.01	0.28
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	6/29/1981	11/7/2020	100	422	413	980	170	92.5
PHYSICAL	Hardness	N	MG/L	3/16/1992	11/7/2020	23	498	532	661	132	133
PHYSICAL	Hydroxide as OH	N	MG/L	8/14/1991	11/7/2020	45	10	2	20	0	10
PHYSICAL	pH, Lab	N	S.U.	6/29/1981	11/7/2020	107	7.76	7.7	8.4	6.7	0.345
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	6/29/1981	11/7/2020	107	1753	1780	2700	363	377.3
PRIMARY	Arsenic	D	UG/L	3/30/1983	11/7/2020	100	2.31	1	40	0.2	5.62
PRIMARY	Cadmium	D	UG/L	3/30/1983	11/7/2020	100	3.7	5	10	0.1	2.1
PRIMARY	Lead	D	UG/L	3/30/1983	11/7/2020	100	20	20	100	0.1	20
PRIMARY	Mercury	D	UG/L	3/30/1983	11/7/2020	100	0.5	0.2	10	0.1	1
PRIMARY	Selenium	D	UG/L	3/30/1983	11/7/2020	100	1.61	1	25.6	0.1	2.71
SECONDARY	Iron	D	UG/L	3/26/1984	11/7/2020	96	256	50	3460	5	563
SECONDARY	Manganese	D	UG/L	3/30/1983	11/7/2020	100	129	121	698	5	89.5
SECONDARY	Zinc	D	UG/L	3/30/1983	11/7/2020	100	23	10	190	5	28
TRACE	Boron	D	UG/L	3/30/1983	11/7/2020	99	110	100	280	10	47
TRACE	Molybdenum	D	UG/L	3/30/1983	11/7/2020	100	60	50	200	10	50

Table: 16
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AV5, Well AVF-5, Williams Fork Alluvium Datum: 6132.59

				Date	3/8/2020		5/18/2020		9/7/2020		11/7/2020	
				Depth to Water (FT)	7.9		6.22		8.08		8.31	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L		668	Y	702	Y	795	Y	749	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L		12	Y	20	N	20	N	12.9	Y
ANION	Chloride	N	MG/L		37.8	Y	40.4	Y	47.9	Y	46.4	Y
ANION	Sulfates	N	MG/L		420	Y	356	Y	447	Y	443	Y
CATION	Calcium	D	MG/L		44	Y	51.6	Y	61.1	Y	55.1	Y
CATION	Magnesium	D	MG/L		20.2	Y	23.7	Y	26.9	Y	26.9	Y
CATION	Sodium	D	MG/L		375	Y	425	Y	448	Y	405	Y
FIELD	pH, Field	N	S.U.		7.54	Y	7.37	Y	7.31	Y	7.34	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		1930	Y	2100	Y	2270	Y	2210	Y
FIELD	Temperature, Field	N	DEG-C		6.3	Y	11.3	Y	14.5	Y	12.2	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L		0.2	Y	4.5	Y	0.4	Y	0.1	N
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L		814	Y	702	Y	795	Y	762	Y
PHYSICAL	Hardness	N	MG/L		193	Y	226	Y	263	Y	248	Y
PHYSICAL	Hydroxide as OH	N	MG/L		20	N	20	N	20	N	20	N
PHYSICAL	pH, Lab	N	S.U.		8.3	Y	8.2	Y	8.2	Y	8.3	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM		1890	Y	2030	Y	2300	Y	1960	Y
PRIMARY	Arsenic	D	UG/L		0.5	Y	0.7	Y	0.8	Y	0.77	Y
PRIMARY	Cadmium	D	UG/L		0.3	N	0.12	Y	0.3	N	0.25	N
PRIMARY	Lead	D	UG/L		0.1	Y	0.3	Y	0.5	N	0.14	Y
PRIMARY	Mercury	D	UG/L		1	N	1	N	1	N	1	N
PRIMARY	Selenium	D	UG/L		1.8	Y	21	Y	5.1	Y	3.03	Y
SECONDARY	Iron	D	UG/L		70	Y	70	Y	210	Y	109	Y
SECONDARY	Manganese	D	UG/L		890	Y	430	Y	1730	Y	2000	Y
SECONDARY	Zinc	D	UG/L		50	N	50	N	50	N	50	N
TRACE	Boron	D	UG/L		280	Y	310	Y	410	Y	355	Y
TRACE	Molybdenum	D	UG/L		100	N	100	N	100	N	100	N

Table: 16A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: AVF, Well AVF-5, Williams Fork Alluvium Datum: 6132.59

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/16/1996	11/7/2020	21	8.06	2	43.6	1	11.1
ANION	Chloride	N	MG/L	6/29/1981	11/7/2020	107	27.1	27	47.9	7	7.62
ANION	Sulfates	N	MG/L	6/29/1981	11/7/2020	107	194	165	733	4	174
CATION	Calcium	D	MG/L	3/30/1983	11/7/2020	100	71.5	50.8	225	28.3	43.8
CATION	Magnesium	D	MG/L	3/30/1983	11/7/2020	100	45.6	32	149	12.2	30.7
CATION	Sodium	D	MG/L	3/30/1983	11/7/2020	100	304	332	967	59.4	118
FIELD	pH, Field	N	S.U.	1/26/1982	11/7/2020	146	7.42	7.4	9.7	6.3	0.351
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/7/2020	146	1727.9	1678.5	3700	220	465.893
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/7/2020	142	10.3	10.3	18.7	2	3.74
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/26/1984	11/19/2017	81	0.546	0.05	26.4	0.01	3
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/29/1981	11/7/2020	104	1.25	0.085	74	0.02	7.4
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	6/29/1981	11/7/2020	101	792.5	840	1215	243	180.7
PHYSICAL	Hardness	N	MG/L	3/16/1992	11/7/2020	23	192	187	263	121	40.3
PHYSICAL	Hydroxide as OH	N	MG/L	8/14/1991	11/7/2020	44	10	10	20	0	10
PHYSICAL	pH, Lab	N	S.U.	6/29/1981	11/7/2020	107	7.84	7.8	9.72	7	0.41
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	6/29/1981	11/7/2020	107	1695	1710	2580	860	277
PRIMARY	Arsenic	D	UG/L	3/30/1983	11/7/2020	100	2.2	1	40	0.3	5.6
PRIMARY	Cadmium	D	UG/L	3/30/1983	11/7/2020	100	3.6	5	10	0.07	2.1
PRIMARY	Lead	D	UG/L	3/30/1983	11/7/2020	100	25	20	310	0.1	33
PRIMARY	Mercury	D	UG/L	3/30/1983	11/7/2020	100	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	3/30/1983	11/7/2020	100	2.27	1.9	27.8	0.1	3.47
SECONDARY	Iron	D	UG/L	3/26/1984	11/7/2020	95	91.8	40	1230	10	181
SECONDARY	Manganese	D	UG/L	3/30/1983	11/7/2020	100	292	157	2000	5	375
SECONDARY	Zinc	D	UG/L	3/30/1983	11/7/2020	100	20	10	60	5	17
TRACE	Boron	D	UG/L	3/30/1983	11/7/2020	100	245	260	440	30	107
TRACE	Molybdenum	D	UG/L	3/30/1983	11/7/2020	100	60	50	200	10	50

Table: 17
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AV6, Well AVF-6, Williams Fork Alluvium Datum: 6146.23

				Date	3/8/2020		5/18/2020		9/7/2020		11/7/2020	
				Depth to Water (FT)	7.23		6.03		8.46		8.24	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L		302	Y	399	Y	613	Y	533	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L		20	N	20	N	20	N	20	N
ANION	Chloride	N	MG/L		3.6	Y	12.8	Y	22.7	Y	20	Y
ANION	Sulfates	N	MG/L		64.4	Y	294	Y	404	Y	393	Y
CATION	Calcium	D	MG/L		55.6	Y	119	Y	174	Y	144	Y
CATION	Magnesium	D	MG/L		34.6	Y	72.8	Y	107	Y	89.1	Y
CATION	Sodium	D	MG/L		36.6	Y	66.1	Y	82.9	Y	79	Y
FIELD	pH, Field	N	S.U.		7.56	Y	7.18	Y	6.94	Y	7.02	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		690	Y	1290	Y	1710	Y	1550	Y
FIELD	Temperature, Field	N	DEG-C		8.3	Y	10.7	Y	15.8	Y	12.7	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L		0.1	N	0.3	Y	0.05	Y	0.1	N
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L		369	Y	399	Y	613	Y	533	Y
PHYSICAL	Hardness	N	MG/L		281	Y	597	Y	875	Y	726	Y
PHYSICAL	Hydroxide as OH	N	MG/L		20	N	20	N	20	N	20	N
PHYSICAL	pH, Lab	N	S.U.		8.3	Y	8.1	Y	7.9	Y	8.1	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM		651	Y	1220	Y	1730	Y	1290	Y
PRIMARY	Arsenic	D	UG/L		1	N	0.3	Y	0.4	Y	0.27	Y
PRIMARY	Cadmium	D	UG/L		0.3	N	0.3	N	0.09	Y	0.25	N
PRIMARY	Lead	D	UG/L		0.2	Y	0.3	Y	0.2	Y	0.5	N
PRIMARY	Mercury	D	UG/L		1	N	1	N	1	N	1	N
PRIMARY	Selenium	D	UG/L		0.3	Y	0.3	Y	0.5	Y	0.58	Y
SECONDARY	Iron	D	UG/L		130	Y	270	Y	430	Y	92	Y
SECONDARY	Manganese	D	UG/L		140	Y	200	Y	360	Y	95	Y
SECONDARY	Zinc	D	UG/L		50	N	50	N	50	N	50	N
TRACE	Boron	D	UG/L		80	Y	80	Y	110	Y	102	Y
TRACE	Molybdenum	D	UG/L		100	N	100	N	100	N	100	N

Table: 17A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: AV6, Well AVF-6, Williams Fork Alluvium Datum: 6146.23

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/16/1996	11/7/2020	21	7.1	2	20	1	8.5
ANION	Chloride	N	MG/L	6/29/1981	11/7/2020	107	25	21	92	3.2	19
ANION	Sulfates	N	MG/L	6/29/1981	11/7/2020	107	331	335	759	10	180
CATION	Calcium	D	MG/L	3/30/1983	11/7/2020	100	127	133	234	30.3	46.1
CATION	Magnesium	D	MG/L	3/30/1983	11/7/2020	100	70.9	73.3	123	19.5	22.6
CATION	Sodium	D	MG/L	3/30/1983	11/7/2020	100	139	120	451	30	83.7
FIELD	pH, Field	N	S.U.	1/26/1982	11/7/2020	146	7.38	7.4	8.22	6.8	0.255
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/7/2020	146	1535.25	1594	3000	630	319.416
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/7/2020	142	10.4	10.5	23.1	4	3.54
NUTRIENT	Nitrate Nitrogen	N	MG/L	3/26/1984	11/19/2017	81	0.046	0.02	0.5	0.02	0.074
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/29/1981	11/7/2020	104	0.067	0.04	0.47	0.02	0.079
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	6/29/1981	11/7/2020	101	536	540	917	263	125
PHYSICAL	Hardness	N	MG/L	3/16/1992	11/7/2020	23	499	504	875	258	156
PHYSICAL	Hydroxide as OH	N	MG/L	8/14/1991	11/7/2020	45	10	2	20	0	10
PHYSICAL	pH, Lab	N	S.U.	6/29/1981	11/7/2020	106	7.73	7.7	8.6	6.8	0.35
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	6/29/1981	11/7/2020	107	1462	1490	2230	556	374.6
PRIMARY	Arsenic	D	UG/L	3/30/1983	11/7/2020	100	2.2	1	40	0.2	5.6
PRIMARY	Cadmium	D	UG/L	3/30/1983	11/7/2020	100	3.7	5	11	0.09	2.3
PRIMARY	Lead	D	UG/L	3/30/1983	11/7/2020	100	23	20	130	0.1	21
PRIMARY	Mercury	D	UG/L	3/30/1983	11/7/2020	100	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	3/30/1983	11/7/2020	100	2.2	1	32	0.1	5.1
SECONDARY	Iron	D	UG/L	3/26/1984	11/7/2020	96	157	60	1600	5	242
SECONDARY	Manganese	D	UG/L	3/30/1983	11/7/2020	100	145	120	769	8	125
SECONDARY	Zinc	D	UG/L	3/30/1983	11/7/2020	100	20	10	100	5	19
TRACE	Boron	D	UG/L	3/30/1983	11/7/2020	100	109	90	390	20	74.7
TRACE	Molybdenum	D	UG/L	3/30/1983	11/7/2020	100	60	50	200	10	50

Table: 18
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF1, Williams Fork River, Upstream Datum: 6142.39

Date				1/22/2020		2/3/2020		3/8/2020		4/21/2020		5/18/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	8.29	Y	8.23	Y	8.04	Y	8.55	Y	7.71	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	620	Y	850	Y	600	Y	640	Y	230	Y
FIELD	Temperature, Field	N	DEG-C	1.4	Y	1.9	Y	3.4	Y	14.1	Y	11.1	Y
PHYSICAL	Acidity	N	MG/L					20	N			20	N
PHYSICAL	pH, Lab	N	S.U.					8.4	Y			8.3	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	9	Y	6	Y	249	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					332	Y			156	Y
SECONDARY	Iron	TR	UG/L					450	Y			6700	Y
SECONDARY	Manganese	TR	UG/L					30	Y			110	Y

Table: 18
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF1, Williams Fork River, Upstream Datum: 6142.39

Date				6/4/2020		7/22/2020		8/26/2020		9/7/2020		10/24/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	8.12	Y	8.4	Y	8.51	Y	7.54	Y	7.51	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	230	Y	520	Y	640	Y	550	Y	550	Y
FIELD	Temperature, Field	N	DEG-C	16.8	Y	21.1	Y	26.1	Y	21.9	Y	3.9	Y
PHYSICAL	Acidity	N	MG/L							20	N		
PHYSICAL	pH, Lab	N	S.U.							8.7	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	56	Y	20	N	9	Y	5	Y	20	N
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							366	Y		
SECONDARY	Iron	TR	UG/L							290	Y		
SECONDARY	Manganese	TR	UG/L							20	Y		

Table: 18
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF1, Williams Fork River, Upstream Datum: 6142.39

Date				11/7/2020		12/19/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	7.5	Y	7.41	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	490	Y	510	Y
FIELD	Temperature, Field	N	DEG-C	7	Y	3.2	Y
PHYSICAL	Acidity	N	MG/L			20	N
PHYSICAL	pH, Lab	N	S.U.			8.4	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			274	Y
SECONDARY	Iron	TR	UG/L			132	Y
SECONDARY	Manganese	TR	UG/L			50	N

Table: 18A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site:WF1, Williams Fork River, Upstream Datum: 6142.39

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
FIELD	pH, Field	N	S.U.	1/26/1982	11/8/2020	298	9.82	8.1	524	7.11	29.9
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/8/2020	297	544.87	560	1125	8.77	164.53
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/8/2020	293	8.86	8	27.8	0	7.19
PHYSICAL	Acidity	N	MG/L	3/23/1984	12/19/2020	98	2.95	1	20	-241	26.3
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	6/19/1981	2/12/1997	14	163	180	225	69	52.1
PHYSICAL	pH, Lab	N	S.U.	6/19/1981	12/19/2020	109	8.21	8.3	8.79	7.3	0.313
PHYSICAL	Solids, Total Suspended	N	MG/L	6/19/1981	12/19/2020	293	84.91	13	2810	2	258.8
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	6/19/1981	12/19/2020	113	324	336	588	94	114
SECONDARY	Iron	TR	UG/L	3/23/1984	12/19/2020	79	1610	360	19500	60	3320
SECONDARY	Manganese	TR	UG/L	6/19/1981	12/19/2020	91	57.6	35	336	5	63.3

Table: 19
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF2, Williams Fork River, Upstream Datum: 6119.87

Date				1/22/2020		2/3/2020		3/8/2020		4/21/2020		5/18/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	8.27	Y	8.11	Y	7.93	Y	8.53	Y	7.67	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	560	Y	830	Y	590	Y	630	Y	220	Y
FIELD	Temperature, Field	N	DEG-C	1.1	Y	1.7	Y	3.5	Y	14.2	Y	10.9	Y
PHYSICAL	Acidity	N	MG/L					20	N			20	N
PHYSICAL	pH, Lab	N	S.U.					8.4	Y			8.3	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	7	Y	20	N	264	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					338	Y			154	Y
SECONDARY	Iron	TR	UG/L					290	Y			7700	Y
SECONDARY	Manganese	TR	UG/L					30	Y			130	Y

Table: 19
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF2, Williams Fork River, Upstream Datum: 6119.87

Date				6/4/2020		7/22/2020		8/26/2020		9/7/2020		10/24/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	8.07	Y	8.42	Y	8.52	Y	7.53	Y	7.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	230	Y	500	Y	630	Y	550	Y	540	Y
FIELD	Temperature, Field	N	DEG-C	16.6	Y	21	Y	26	Y	21.4	Y	3.8	Y
PHYSICAL	Acidity	N	MG/L							20	N		
PHYSICAL	pH, Lab	N	S.U.							8.5	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	59	Y	20	N	8	Y	8	Y	20	N
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							348	Y		
SECONDARY	Iron	TR	UG/L							330	Y		
SECONDARY	Manganese	TR	UG/L							20	Y		

Table: 19
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:WF2, Williams Fork River, Upstream Datum: 6119.87

Date				11/7/2020		12/19/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	7.54	Y	7.4	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	480	Y	500	Y
FIELD	Temperature, Field	N	DEG-C	6.1	Y	3.1	Y
PHYSICAL	Acidity	N	MG/L			20	N
PHYSICAL	pH, Lab	N	S.U.			8.4	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			276	Y
SECONDARY	Iron	TR	UG/L			120	Y
SECONDARY	Manganese	TR	UG/L			50	N

Table: 19A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site:WF2, Williams Fork River, Upstream Datum: 6119.87

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
FIELD	pH, Field	N	S.U.	1/26/1982	11/8/2020	304	8.07	8.1	8.83	6.77	0.385
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/26/1982	11/8/2020	303	552.14	566	1200	174.9	169.02
FIELD	Temperature, Field	N	DEG-C	5/27/1982	11/8/2020	299	8.8	8	27.8	0	7.06
PHYSICAL	Acidity	N	MG/L	3/23/1984	12/19/2020	100	2.9	1	20	-245	26.4
PHYSICAL	Alkalinity as CaCO3, @ pH 4.5	N	MG/L	6/19/1981	2/12/1997	13	179	203	223	71	51.7
PHYSICAL	pH, Lab	N	S.U.	6/19/1981	12/19/2020	111	8.22	8.26	8.7	7.1	0.274
PHYSICAL	Solids, Total Suspended	N	MG/L	6/19/1981	12/19/2020	296	84.4	13.5	2800	2	249
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	6/19/1981	12/19/2020	115	333	342	602	85	115
SECONDARY	Iron	TR	UG/L	3/23/1984	12/19/2020	81	1650	330	22400	100	3770
SECONDARY	Manganese	TR	UG/L	6/19/1981	12/19/2020	92	57.9	30	423	5	70.8

Table: 20
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1SP, Spoil Spring Datum: 6120.0

Date				3/19/2020		3/24/2020		4/3/2020		4/7/2020		4/16/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	Flow	N	CFS	0.0189	Y	0.0312	Y	0.0495	Y	0.0495	Y	0.0312	Y
FIELD	pH, Field	N	S.U.	7.8	Y	7.8	Y	7.8	Y	7.7	Y	7.6	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1830	Y	1760	Y	1960	Y	2040	Y	1970	Y
FIELD	Temperature, Field	N	DEG-C	6.1	Y	9.5	Y	13.1	Y	14.5	Y	4.7	Y
PRIMARY	Arsenic	PD	UG/L	1.7	Y					0.6	Y		
PRIMARY	Arsenic	T	UG/L	0.8	Y					0.6	Y		
PRIMARY	Cadmium	PD	UG/L	0.3	N					0.3	N		
PRIMARY	Chromium	TR	UG/L	50	N					50	N		
PRIMARY	Copper	PD	UG/L	50	N					50	N		
PRIMARY	Lead	PD	UG/L	0.5	N					0.5	N		
PRIMARY	Mercury	T	UG/L	1	N					1	N		
PRIMARY	Selenium	PD	UG/L	12.9	Y					1	Y		
TRACE	Nickel	PD	UG/L	40	N					40	N		
TRACE	Sulfide	N	UG/L	100	N					100	N		
SECONDARY	Iron	TR	UG/L	40	Y	200	N			70	Y		
SECONDARY	Manganese	PD	UG/L	20	Y					70	Y		
SECONDARY	Silver	PD	UG/L	30	N					30	N		
SECONDARY	Zinc	PD	UG/L	50	N					50	N		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y					8.3	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	5	Y			20	N		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	2110	Y					2330	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			1610	Y						

Table: 20
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1SP, Spoil Spring Datum: 6120.0

Date				4/22/2020		5/1/2020		5/5/2020		5/15/2020		5/19/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	Flow	N	CFS	0.0312	Y	0.0189	Y	0.0189	Y	0.0189	Y	0.0087	Y
FIELD	pH, Field	N	S.U.	7.4	Y	7.4	Y	7.4	Y	7.3	Y	7.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2050	Y	1900	Y	2090	Y	2070	Y	1980	Y
FIELD	Temperature, Field	N	DEG-C	5.2	Y	17	Y	13.7	Y	10.3	Y	15.4	Y
PRIMARY	Arsenic	PD	UG/L					0.5	Y				
PRIMARY	Arsenic	T	UG/L					0.5	Y				
PRIMARY	Cadmium	PD	UG/L					0.3	N				
PRIMARY	Chromium	TR	UG/L					50	N				
PRIMARY	Copper	PD	UG/L					50	N				
PRIMARY	Lead	PD	UG/L					0.5	N				
PRIMARY	Mercury	T	UG/L					1	N				
PRIMARY	Selenium	PD	UG/L					0.2	Y				
TRACE	Nickel	PD	UG/L					40	N				
TRACE	Sulfide	N	UG/L					100	N				
SECONDARY	Iron	TR	UG/L	170	Y			280	Y			170	Y
SECONDARY	Manganese	PD	UG/L					260	Y				
SECONDARY	Silver	PD	UG/L					30	N				
SECONDARY	Zinc	PD	UG/L					50	N				
PHYSICAL	pH, Lab	N	S.U.					8.1	Y				
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N			20	N			20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					2260	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1790	Y							1790	Y

Table: 20
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1SP, Spoil Spring Datum: 6120.0

Date				5/28/2020		6/4/2020		6/9/2020		6/16/2020		6/25/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	Flow	N	CFS	0.0005	Y	0.0031	Y	0.0031	Y	0.0031	Y	0.0031	Y
FIELD	pH, Field	N	S.U.	7.2	Y	7.2	Y	7.2	Y	7.1	Y	7.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1830	Y	1780	Y	2120	Y	2100	Y	1920	Y
FIELD	Temperature, Field	N	DEG-C	18.5	Y	17.4	Y	17	Y	18	Y	15.1	Y
PRIMARY	Arsenic	PD	UG/L					0.6	Y				
PRIMARY	Arsenic	T	UG/L					0.7	Y				
PRIMARY	Cadmium	PD	UG/L					0.3	N				
PRIMARY	Chromium	TR	UG/L					50	N				
PRIMARY	Copper	PD	UG/L					50	N				
PRIMARY	Lead	PD	UG/L					0.5	N				
PRIMARY	Mercury	T	UG/L					1	N				
PRIMARY	Selenium	PD	UG/L					0.3	N				
TRACE	Nickel	PD	UG/L					40	N				
TRACE	Sulfide	N	UG/L					100	N				
SECONDARY	Iron	TR	UG/L					460	Y	350	Y		
SECONDARY	Manganese	PD	UG/L					550	Y				
SECONDARY	Silver	PD	UG/L					30	N				
SECONDARY	Zinc	PD	UG/L					50	N				
PHYSICAL	pH, Lab	N	S.U.					8.2	Y				
PHYSICAL	Solids, Total Suspended	N	MG/L					20	N	5	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					2360	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							1830	Y		

Table: 20
Williams Fork Mine
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1SP, Spoil Spring Datum: 6120.0

Date				6/30/2020		7/7/2020		7/14/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	Flow	N	CFS	0.0031	Y	0.0006	Y	0.0001	Y
FIELD	pH, Field	N	S.U.	7.1	Y	7.2	Y	7.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1970	Y	2100	Y	2250	Y
FIELD	Temperature, Field	N	DEG-C	13.1	Y	20.3	Y	24.2	Y
PRIMARY	Arsenic	PD	UG/L					0.6	Y
PRIMARY	Arsenic	T	UG/L					0.77	Y
PRIMARY	Cadmium	PD	UG/L					0.3	N
PRIMARY	Chromium	TR	UG/L					50	N
PRIMARY	Copper	PD	UG/L					50	N
PRIMARY	Lead	PD	UG/L					0.5	N
PRIMARY	Mercury	T	UG/L					1	N
PRIMARY	Selenium	PD	UG/L					0.16	Y
TRACE	Nickel	PD	UG/L					40	N
TRACE	Sulfide	N	UG/L					100	N
SECONDARY	Iron	TR	UG/L			600	Y	844	Y
SECONDARY	Manganese	PD	UG/L					532	Y
SECONDARY	Silver	PD	UG/L					30	N
SECONDARY	Zinc	PD	UG/L					50	N
PHYSICAL	pH, Lab	N	S.U.					8.2	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			6	Y	5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					2550	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			2010	Y		

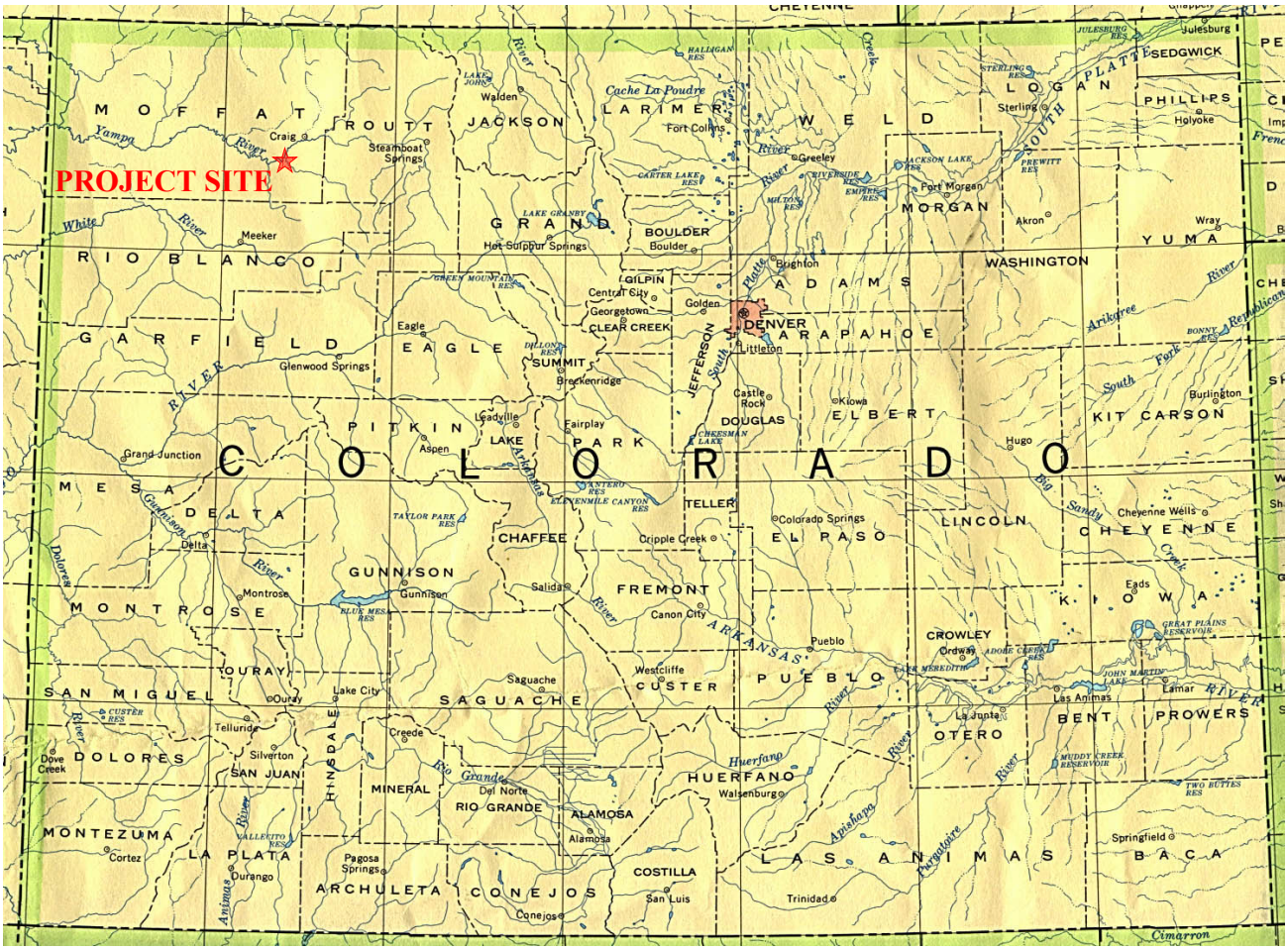
Table: 20A
Williams Fork Mine
2020 Annual Hydrology Report
Period of Record

Site: 1SP, Spoil Spring Datum: 6120.0

Type	Parameter	Fraction	Units	Start Date	End Date	Count	Average	Median	Max	Min	STD
FIELD	pH, Field	N	S.U.	5/28/1982	7/14/2020	1230	8.03	8.02	9.06	6.7	0.322
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/28/1982	7/14/2020	1229	1622.55	1626	3080	585	238.463
FIELD	Temperature, Field	N	DEG-C	5/28/1982	7/14/2020	1226	9.32	9.5	30	0	5.69
PRIMARY	Arsenic	PD	UG/L	11/20/2012	7/14/2020	39	0.78	0.6	5	0.3	0.75
PRIMARY	Arsenic	T	UG/L	9/22/1983	7/14/2020	41	0.87	0.8	2	0.4	0.34
PRIMARY	Cadmium	PD	UG/L	11/20/2012	7/14/2020	39	0.5	0.5	3	0.1	0.4
PRIMARY	Chromium	TR	UG/L	11/20/2012	7/14/2020	39	50	50	50	50	0
PRIMARY	Copper	PD	UG/L	11/20/2012	7/14/2020	39	50	50	100	50	8
PRIMARY	Lead	PD	UG/L	11/20/2012	7/14/2020	39	0.5	0.5	3	0.1	0.4
PRIMARY	Mercury	T	UG/L	1/17/1983	7/14/2020	45	0.7	1	1	0.1	0.3
PRIMARY	Selenium	PD	UG/L	11/20/2012	7/14/2020	39	0.85	0.3	12.9	0.1	2.06
TRACE	Nickel	PD	UG/L	11/20/2012	7/14/2020	39	0.5	40	80	10	12
TRACE	Sulfide	N	UG/L	5/31/1990	7/14/2020	39	95	100	210	10	32
SECONDARY	Iron	TR	UG/L	3/23/1984	7/14/2020	322	408	230	2350	0.16	442
SECONDARY	Manganese	PD	UG/L	11/20/2012	7/14/2020	39	508	491	1450	20	360
SECONDARY	Silver	PD	UG/L	11/20/2012	7/14/2020	39	30	30	50	30	3
SECONDARY	Zinc	PD	UG/L	11/20/2012	7/14/2020	39	57	50	330	10	47
PHYSICAL	pH, Lab	N	S.U.	9/28/1981	7/14/2020	174	8.11	8.1	8.5	7.08	0.227
PHYSICAL	Solids, Total Suspended	N	MG/L	9/28/1981	7/14/2020	640	10	6	76	1	9.3
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	9/28/1981	7/14/2020	174	2020	2080	2680	7.8	359.5
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	9/28/1981	7/7/2020	194	1289	1154	5160	820	427.4

FIGURES

LIST OF FIGURES



SCALE

0 50 100

MILES

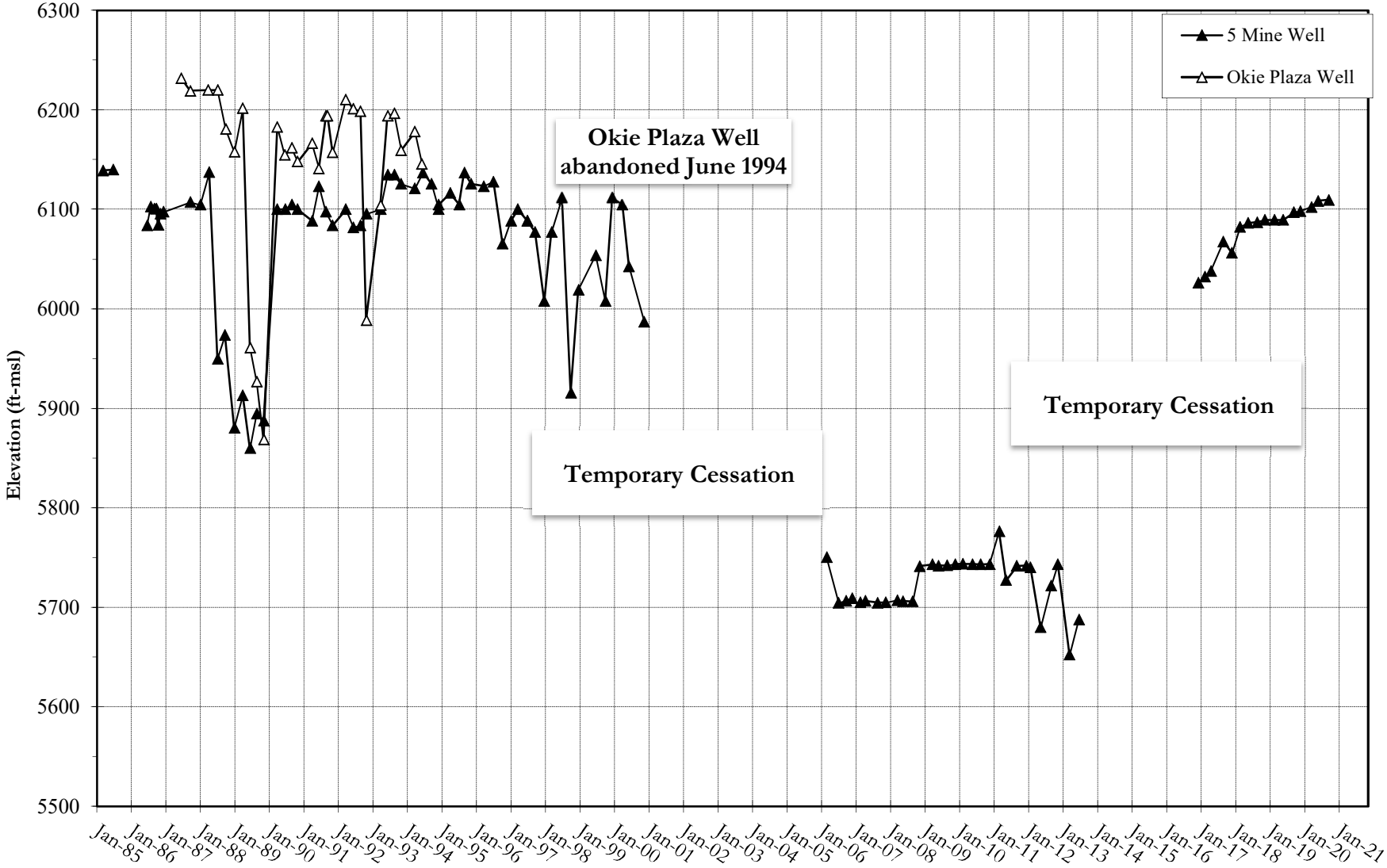
GENERAL LOCATION MAP

I:\Environmental\CDMG - CDRMS\AHR\WF FIGURE 1.doc

FIGURE 1

PLOT OF WATER LEVELS

Trout Creek Sandstone Wells

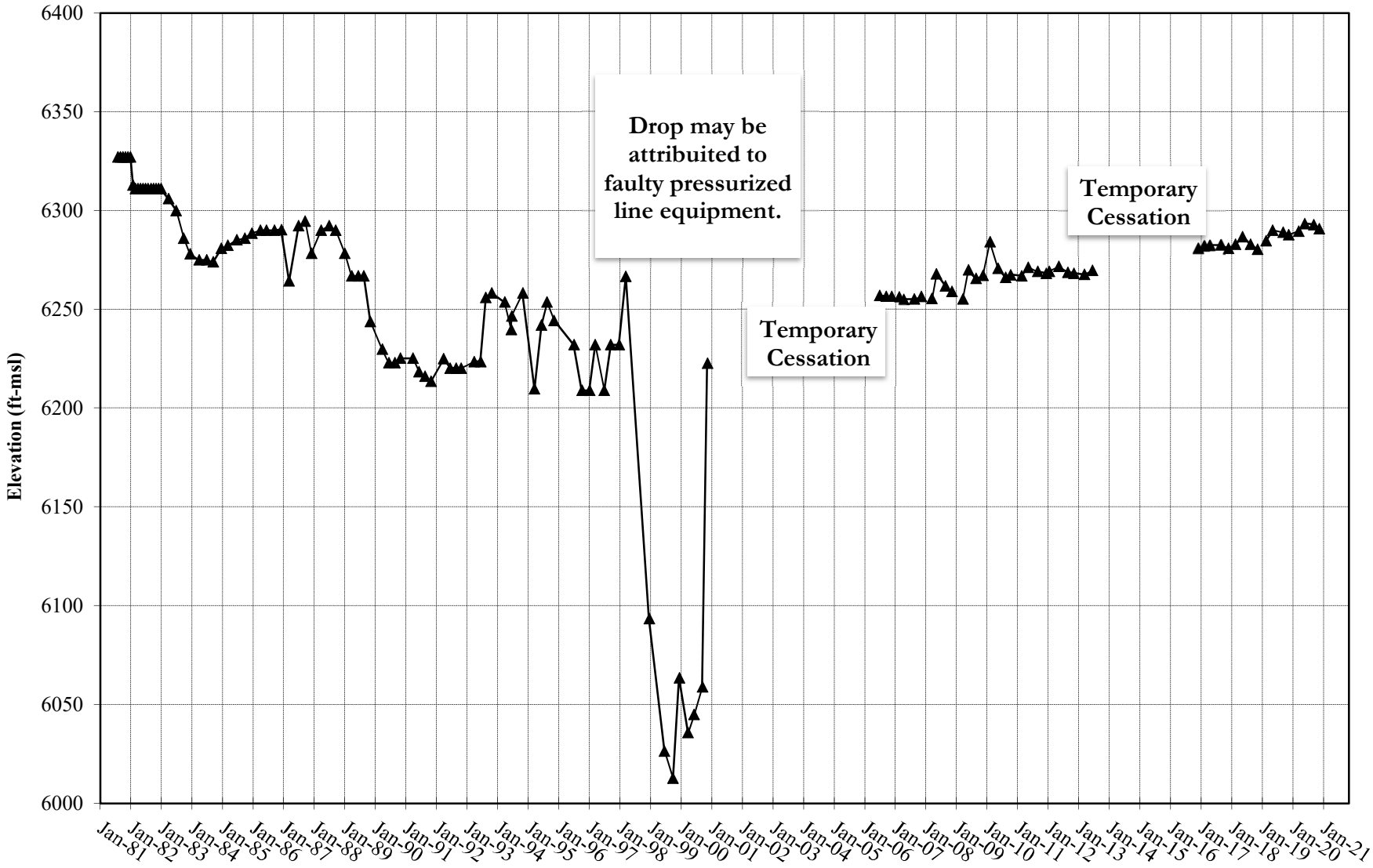


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\3 TROUT CREEK SS WL

FIGURE 3

PLOT OF WATER LEVELS

Well TR-4, Middle Sandstone

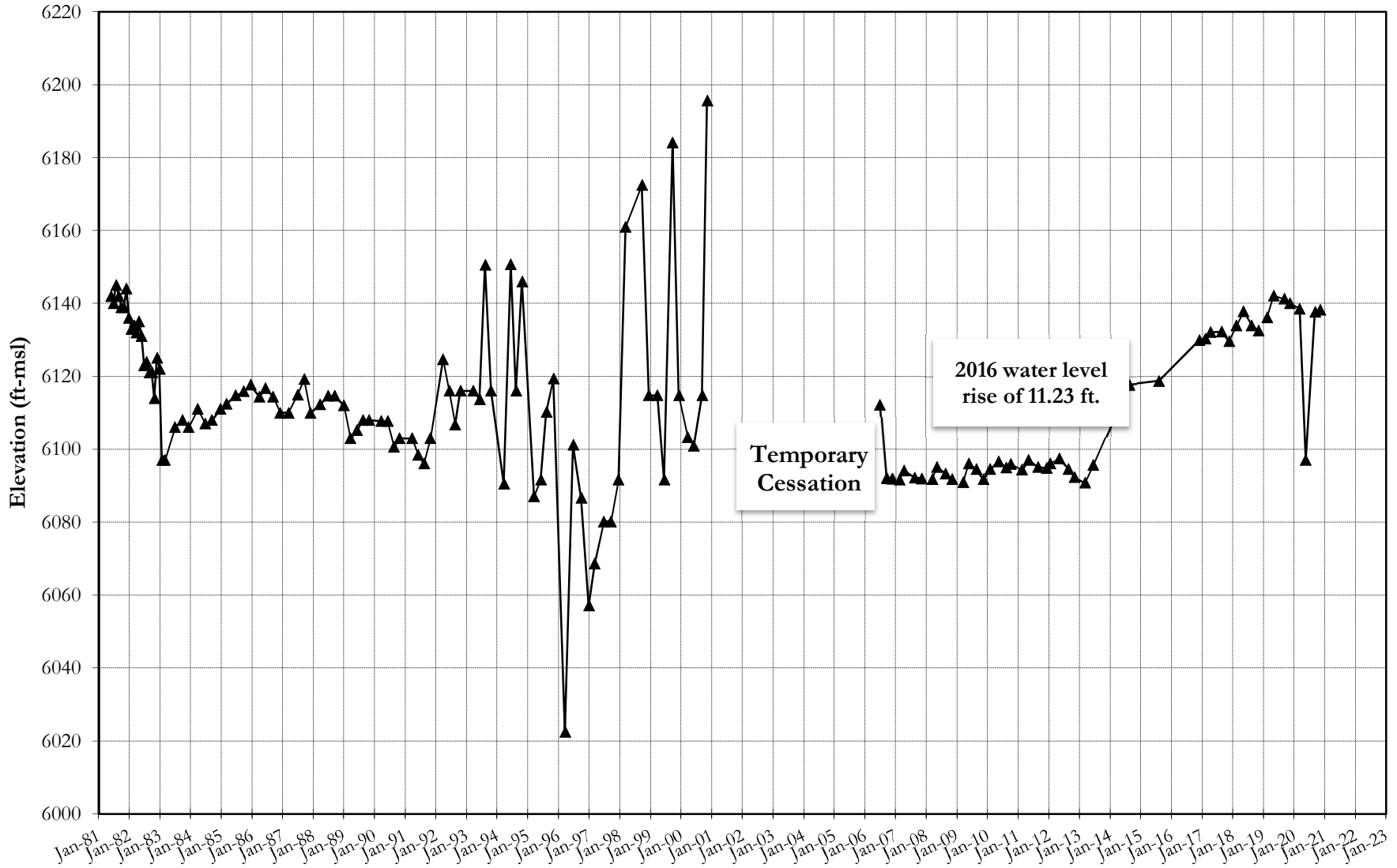


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\4 MIDDLE SS TR-4 WL

FIGURE 4

PLOT OF WATER LEVELS

Well TR-7a, Middle Sandstone

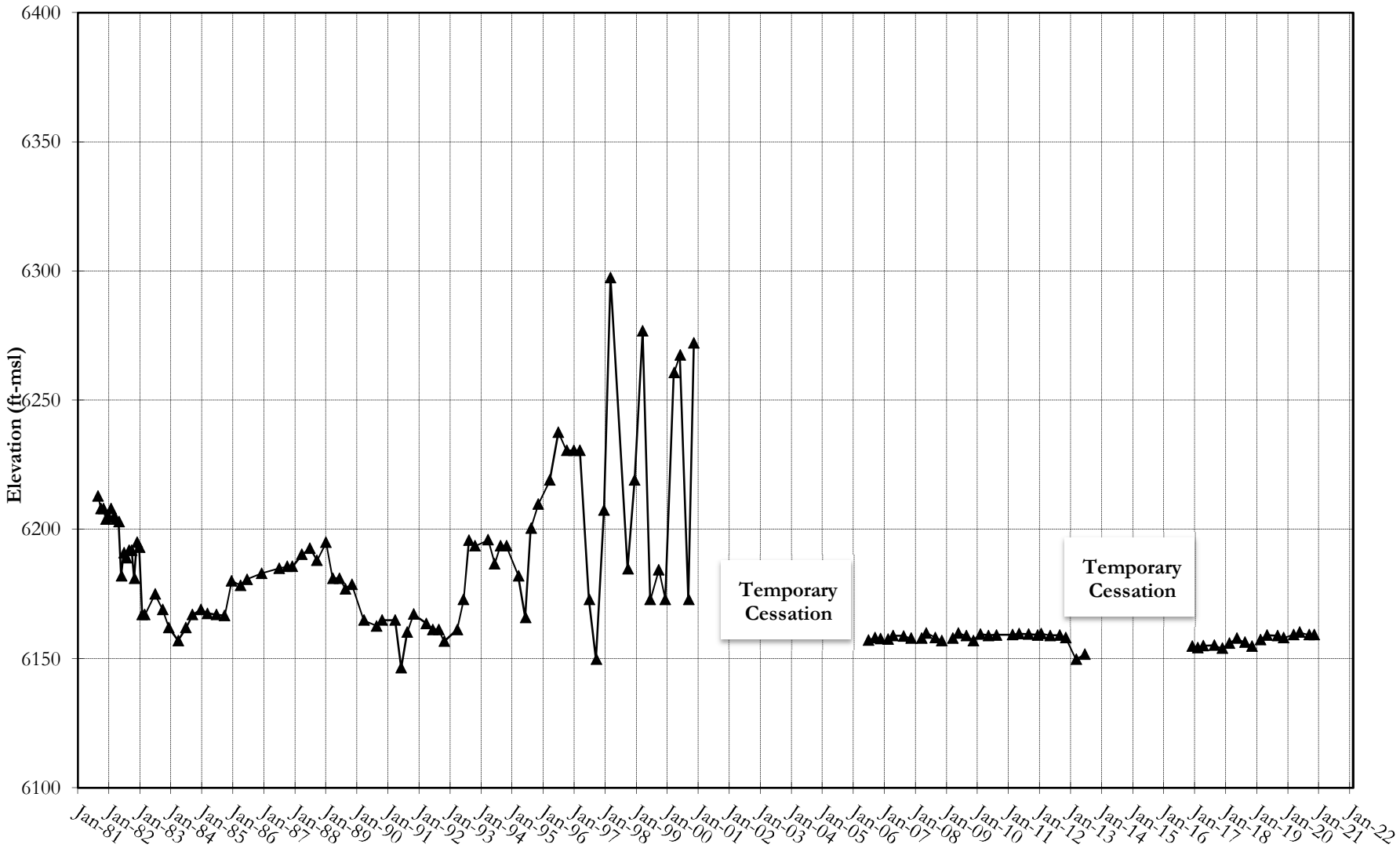


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\5 MIDDLE SS TR-7A WL

FIGURE 5

PLOT OF WATER LEVELS

Well 81-01, Middle Sandstone

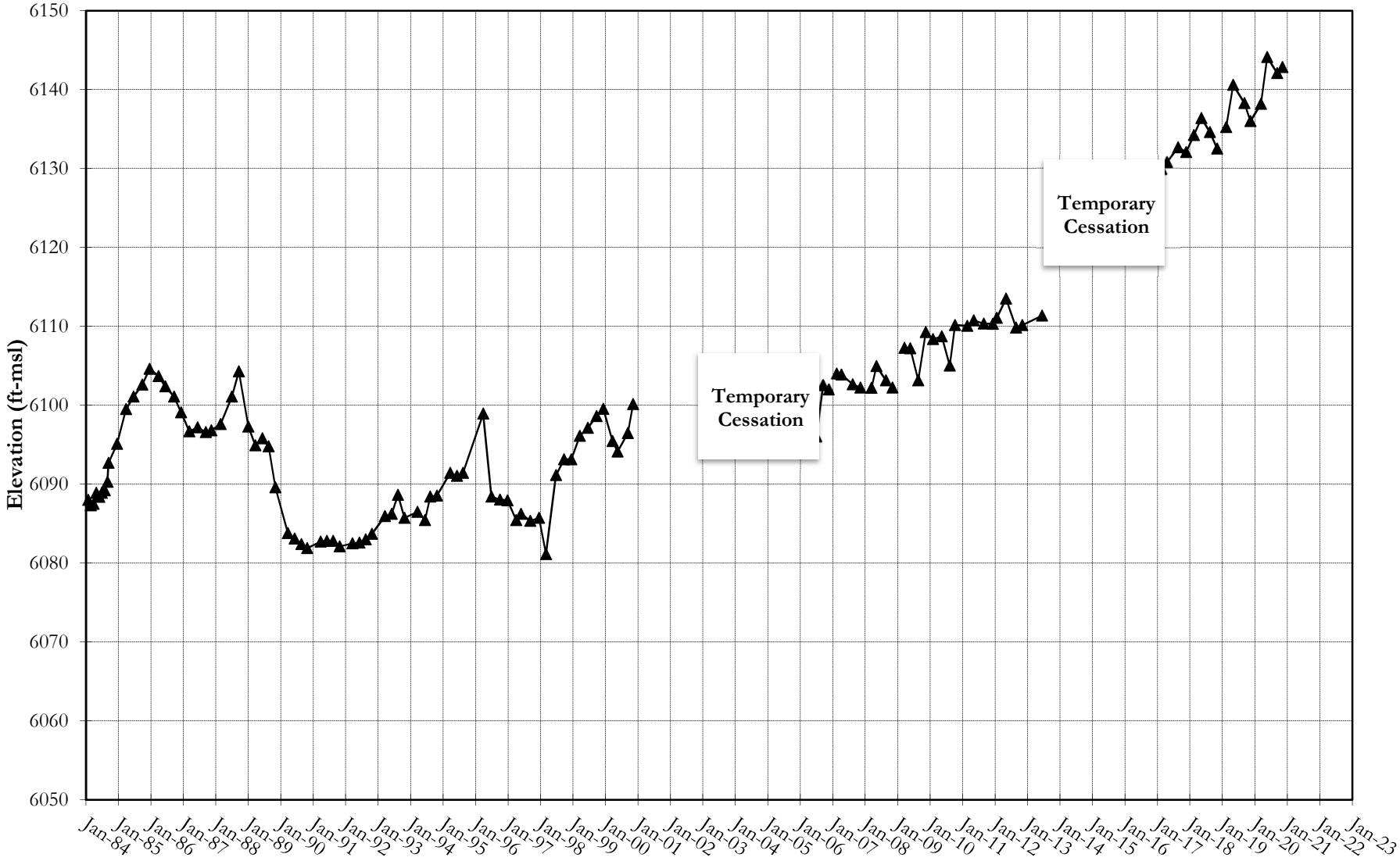


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\6 MIDDLE SS 81-01 WL

FIGURE 6

PLOT OF WATER LEVELS

Well 83-01, Middle Sandstone

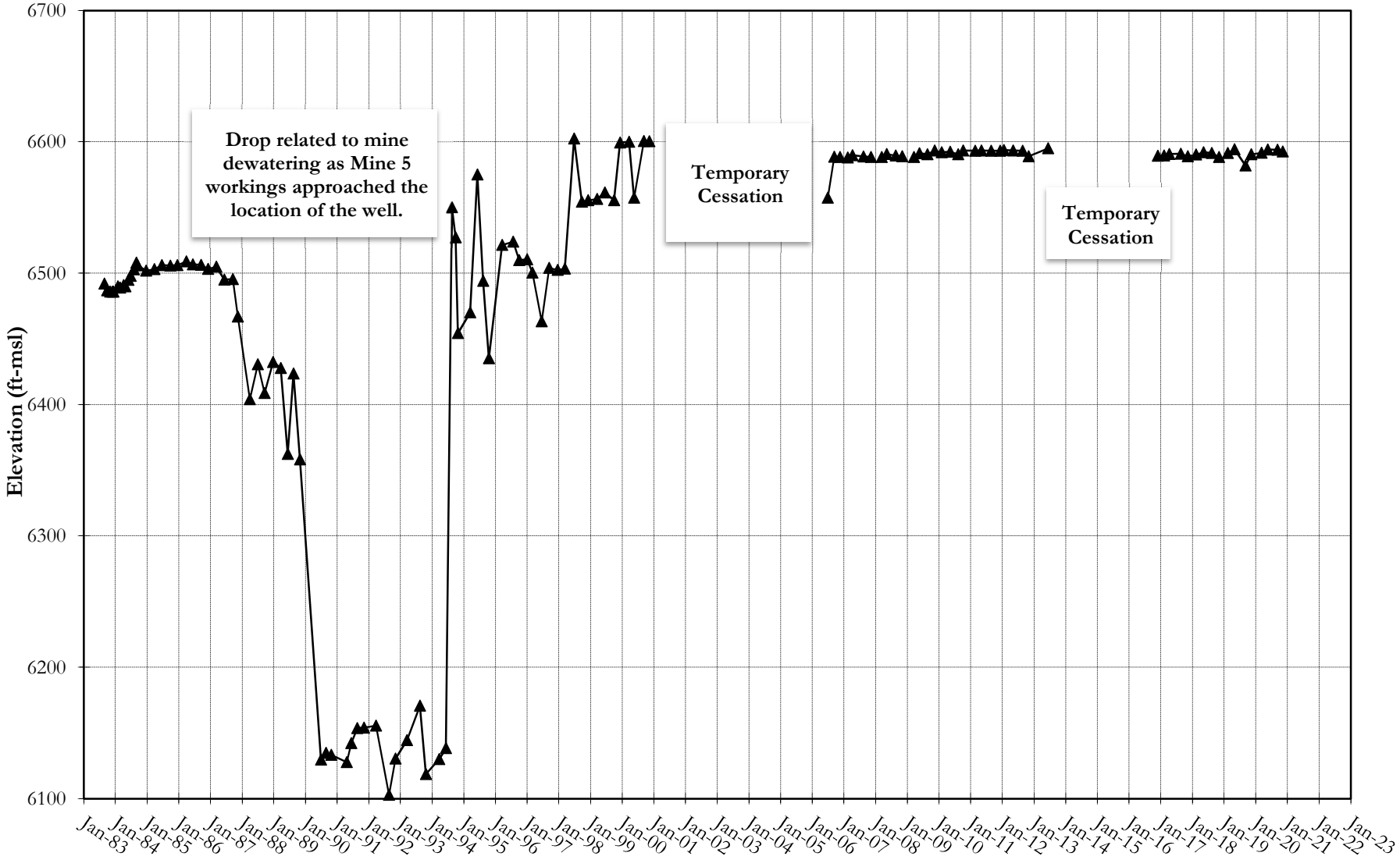


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\7 MIDDLE SS 83-01 WL

FIGURE 7

PLOT OF WATER LEVELS

Well 83-02, Middle Sandstone

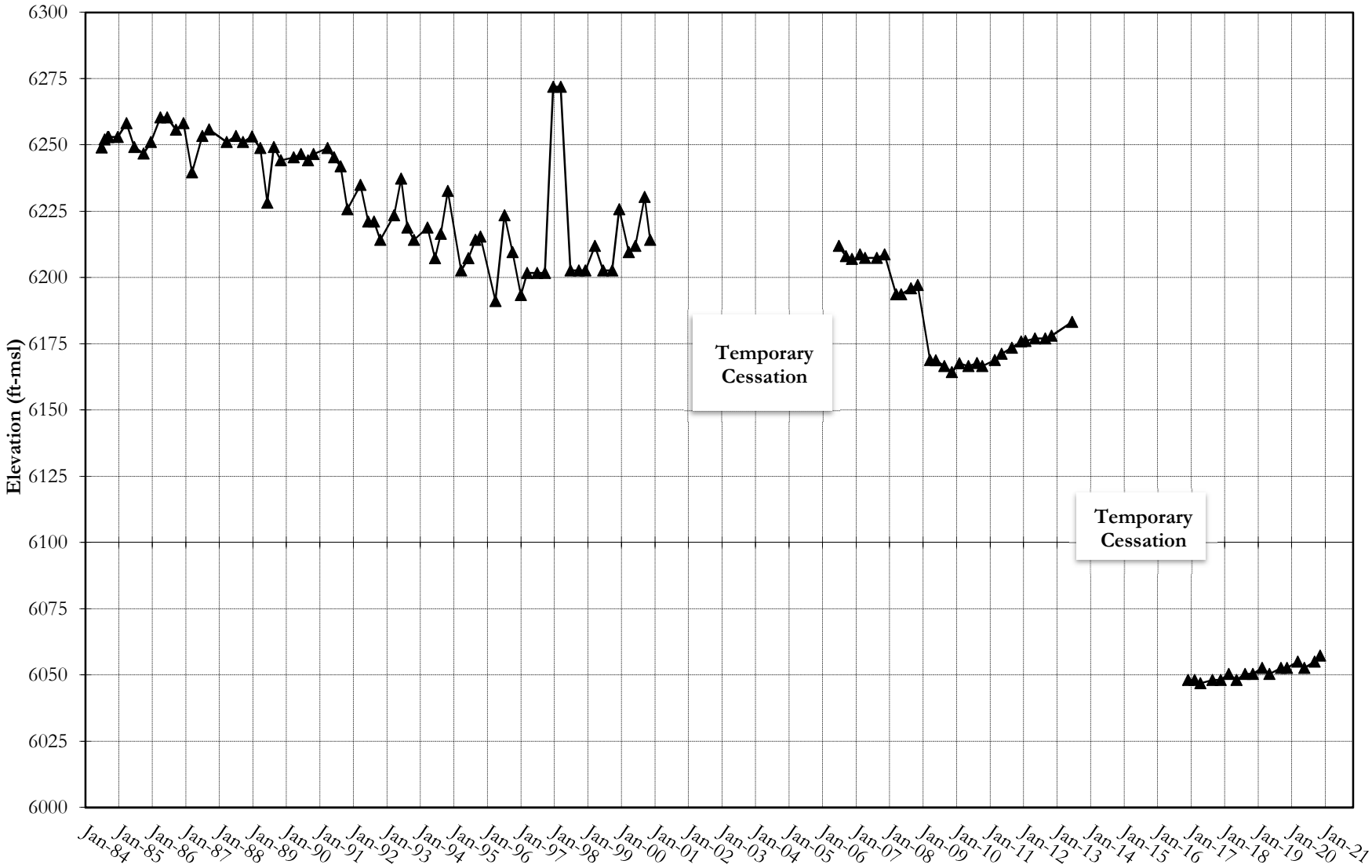


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\8 MIDDLE SS 83-02 WL

FIGURE 8

PLOT OF WATER LEVELS

Well 83-03, Middle Sandstone

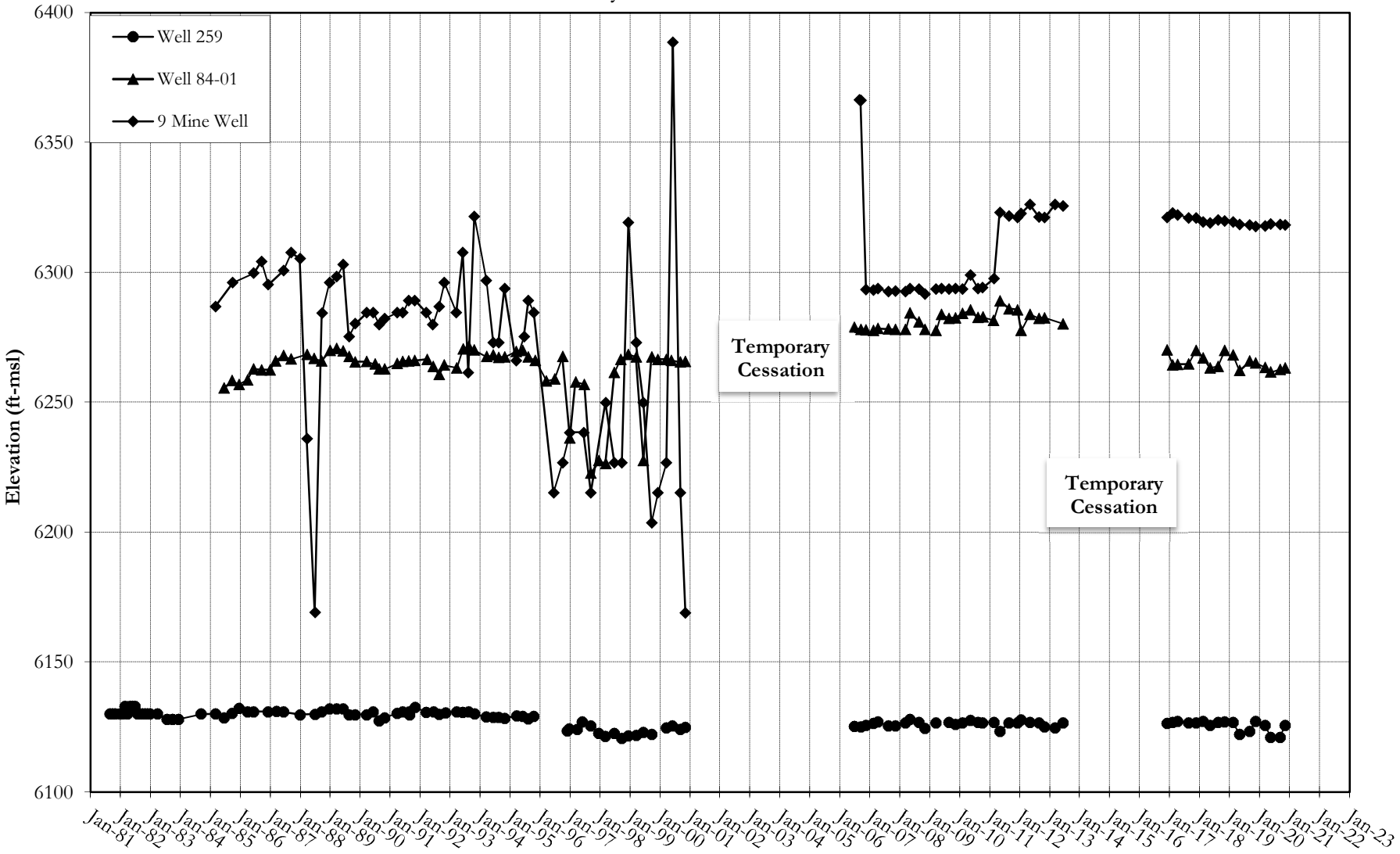


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\9 MIDDLE SS 83-03 WL

FIGURE 9

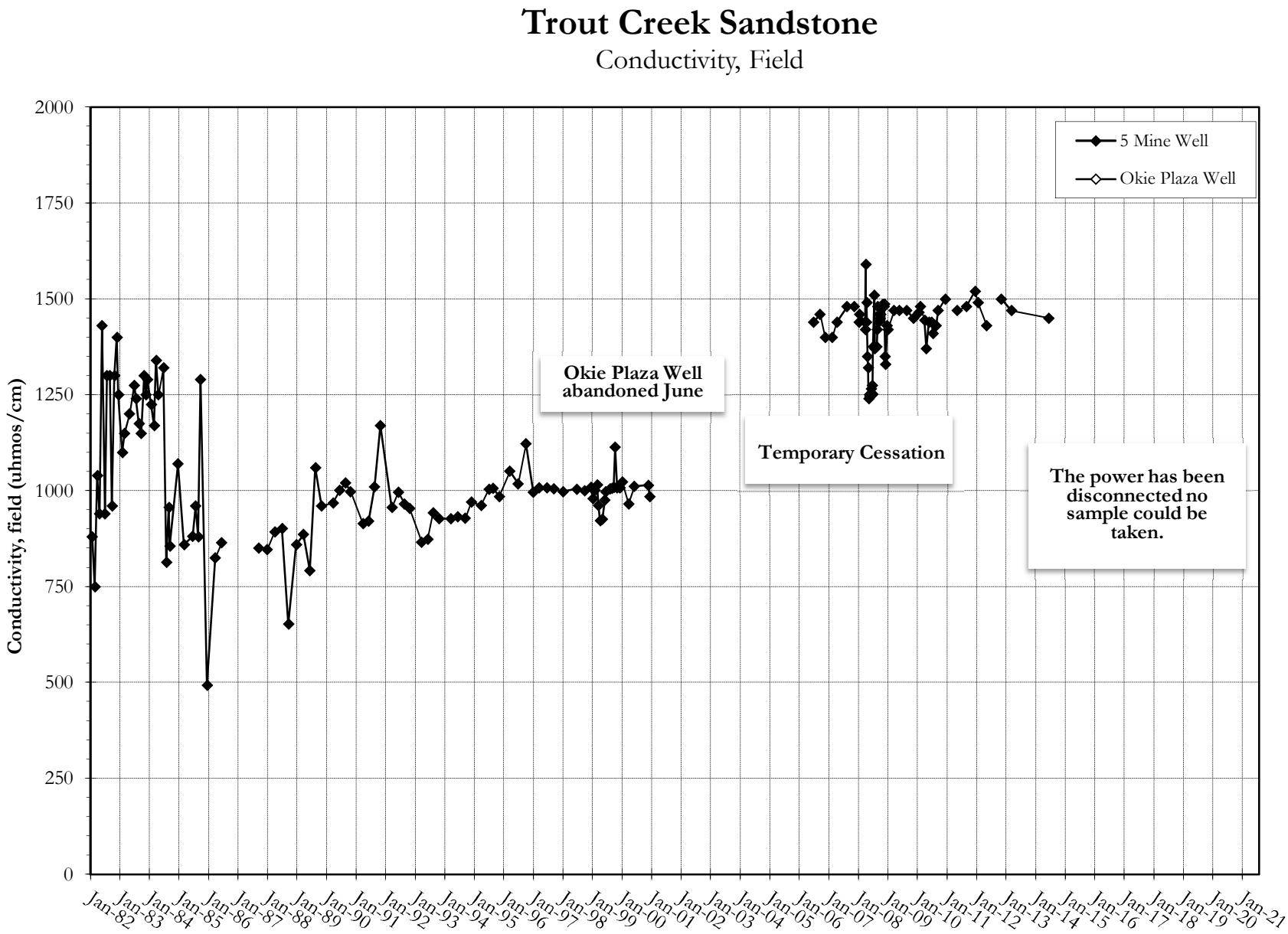
PLOT OF WATER LEVELS

Twentymile Sandstone Wells



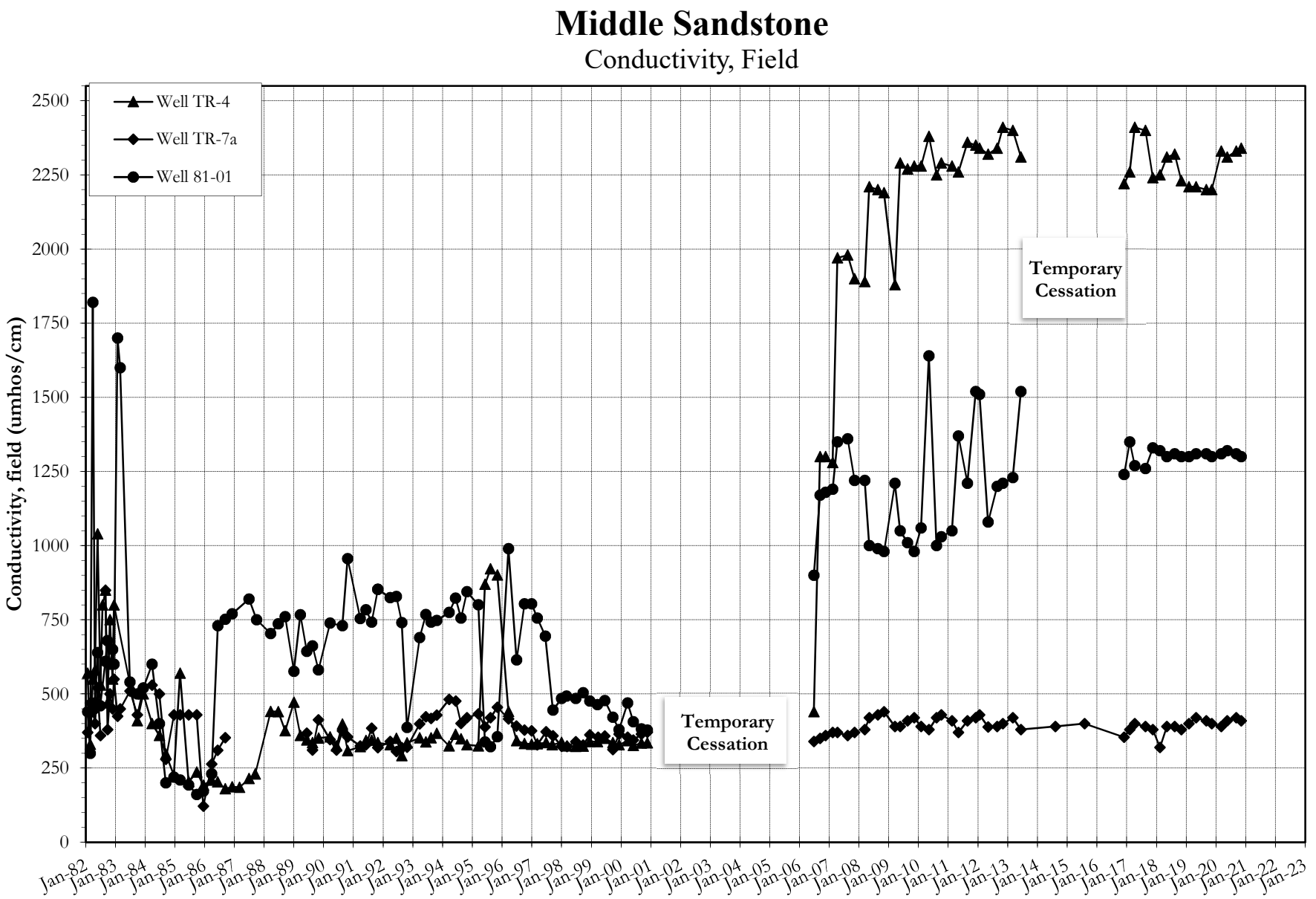
I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\10 TWENTYMILE SS WL

FIGURE 10



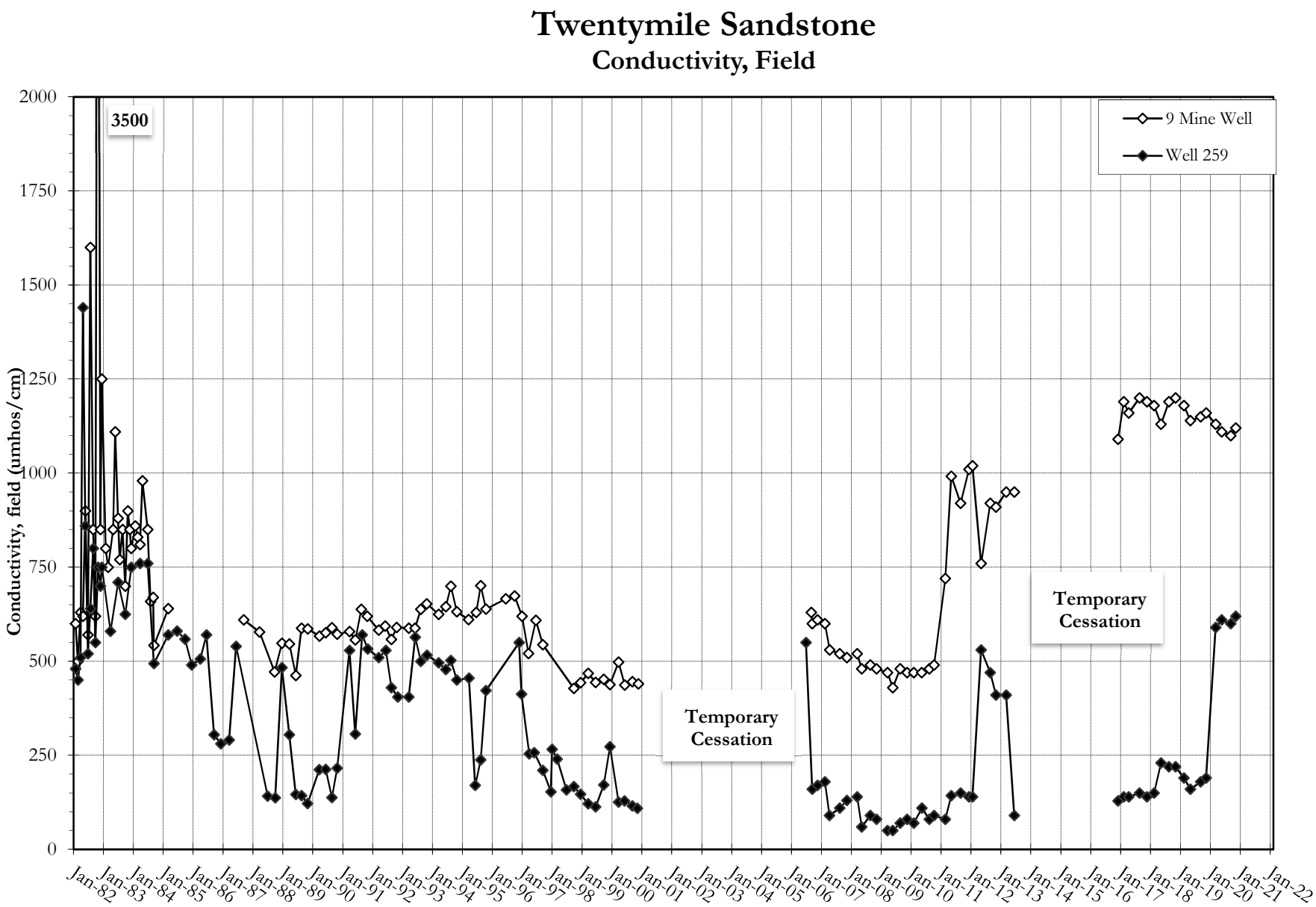
I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\11 TROUT CREEK SS EC

FIGURE 11



I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\12 MIDDLE SS EC

FIGURE 12



I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\13 TWENTYMILE SS EC

FIGURE 13

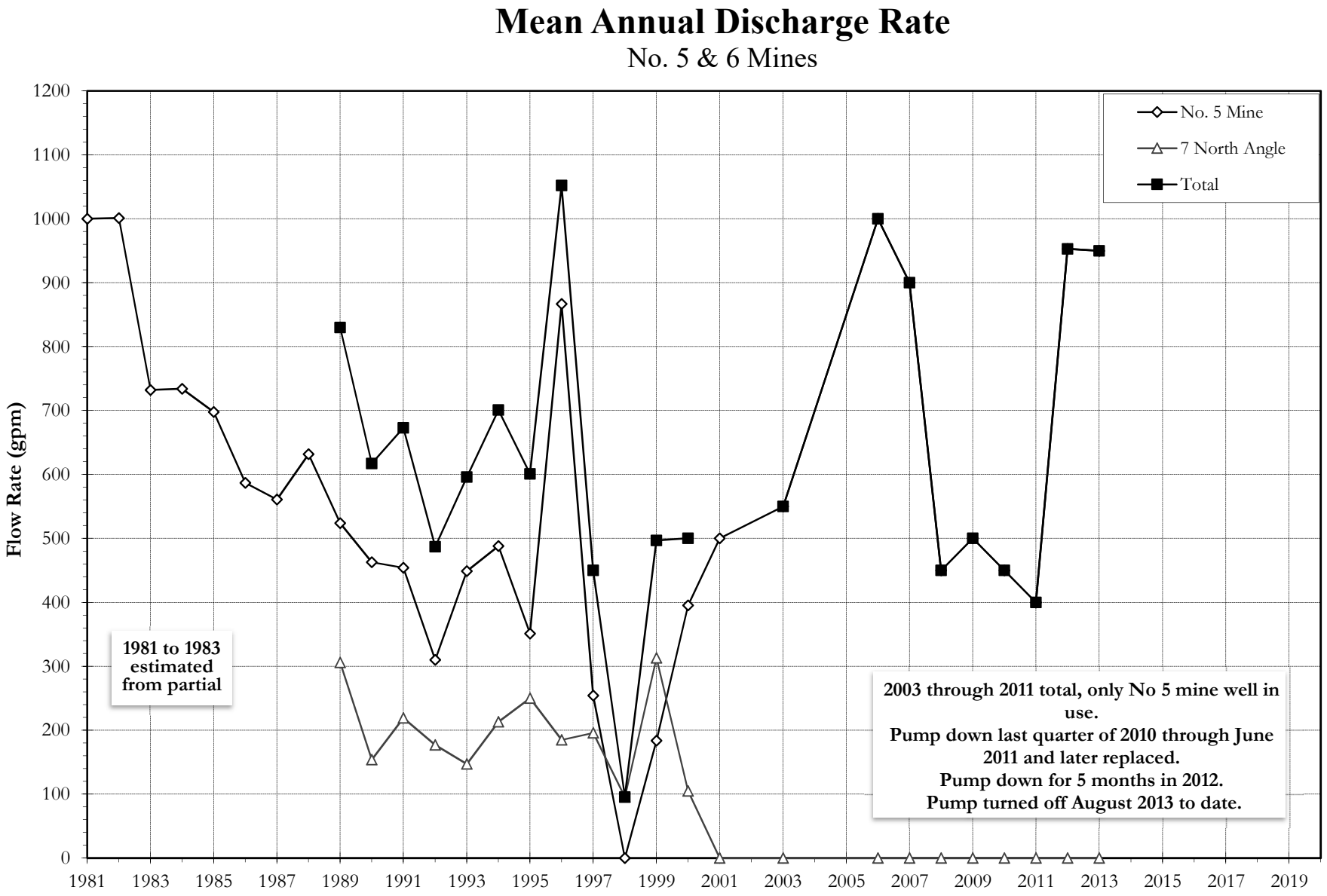
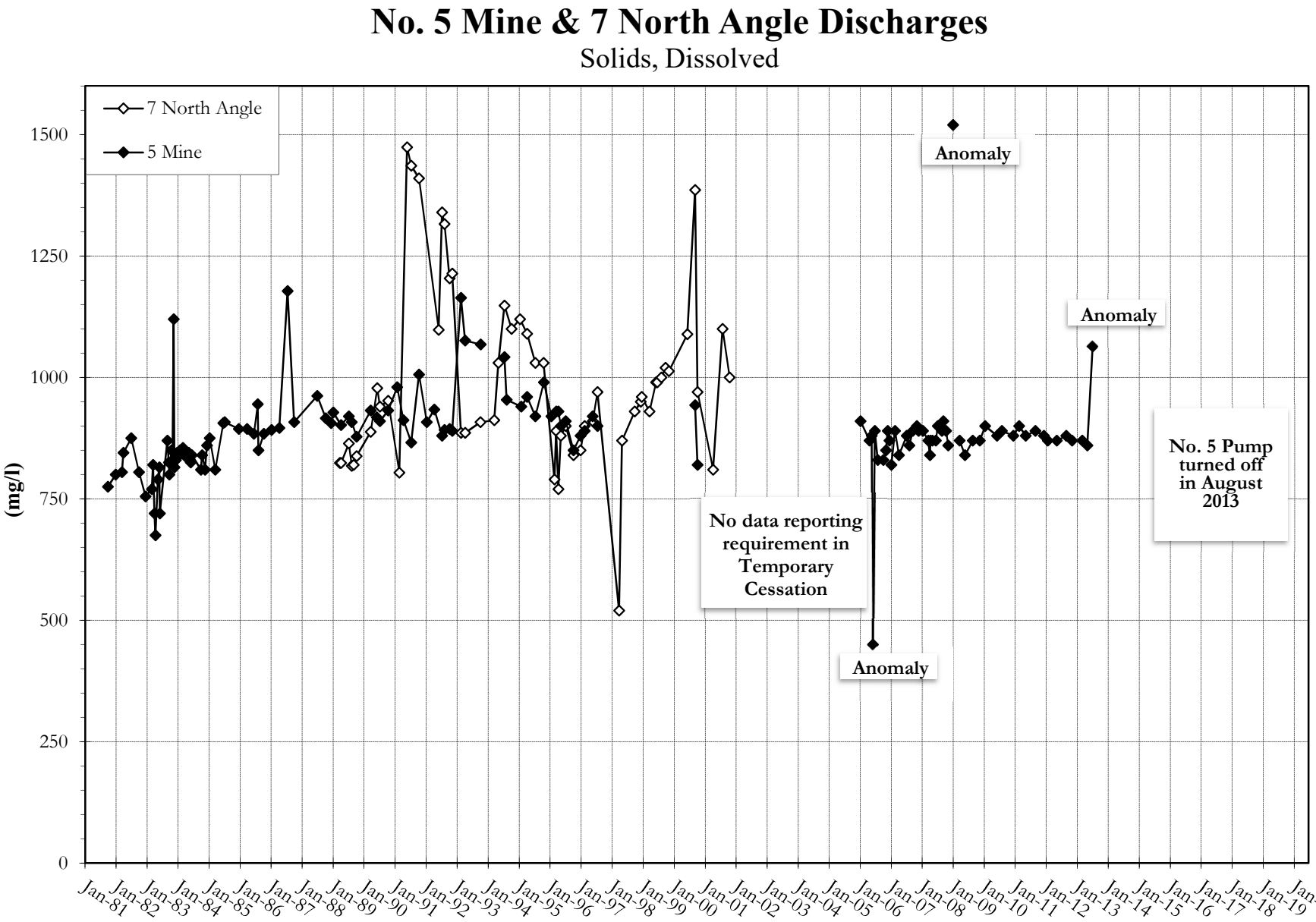

Mean Annual Discharge Rate
No. 5 & 6 Mines
Flow Rate (gpm)
No. 5 Mine
7 North Angle
Total
1981 to 1983 estimated from partial
2003 through 2011 total, only No 5 mine well in use.
Pump down last quarter of 2010 through June 2011 and later replaced.
Pump down for 5 months in 2012.
Pump turned off August 2013 to date.

FIGURE 14

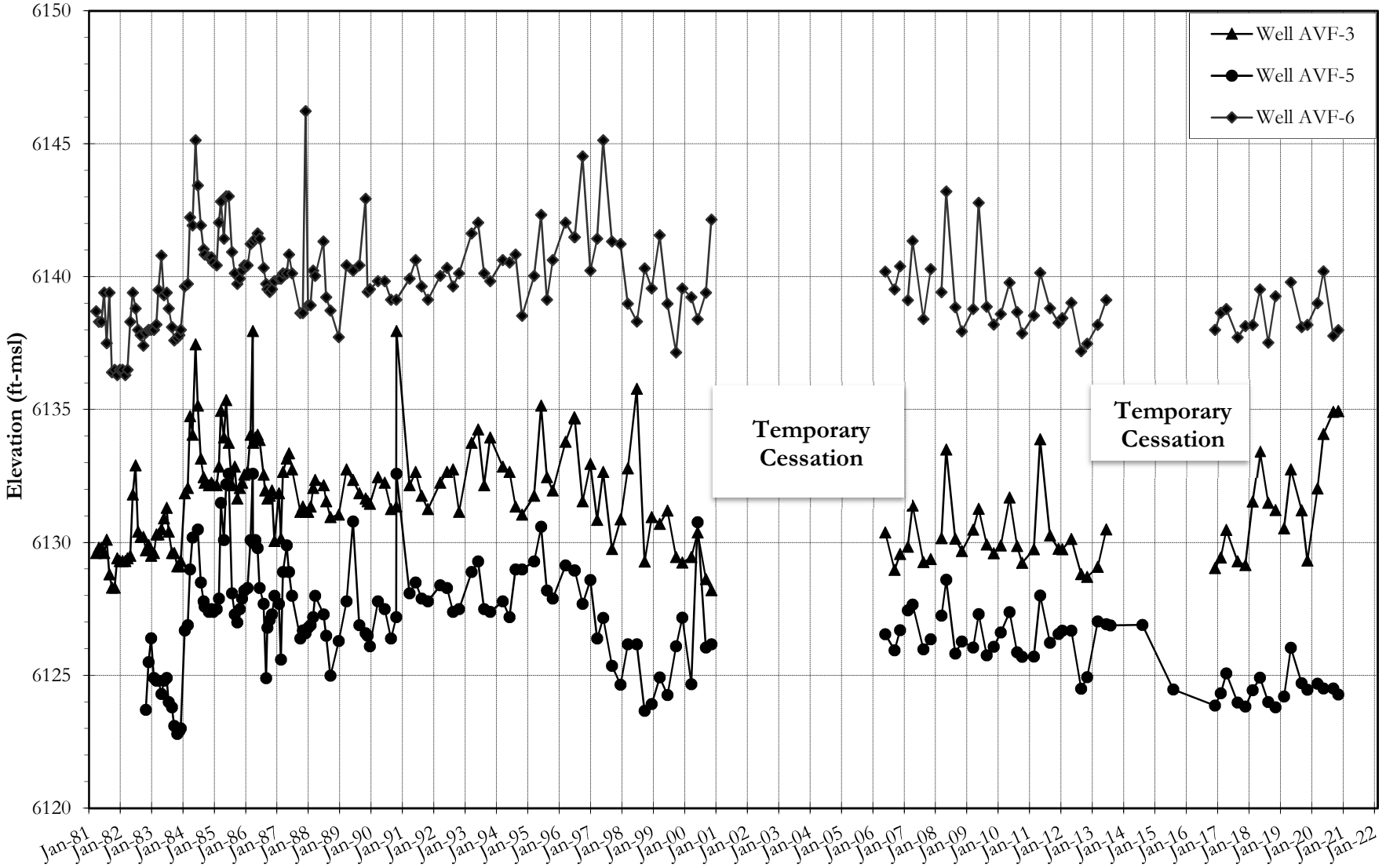


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\15 5MN & 7NA POR TDS

FIGURE 15

PLOT OF WATER LEVELS

Williams Fork Alluvium



I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\16 WILLIAMS FK ALLUVIUM POR WL

FIGURE 16

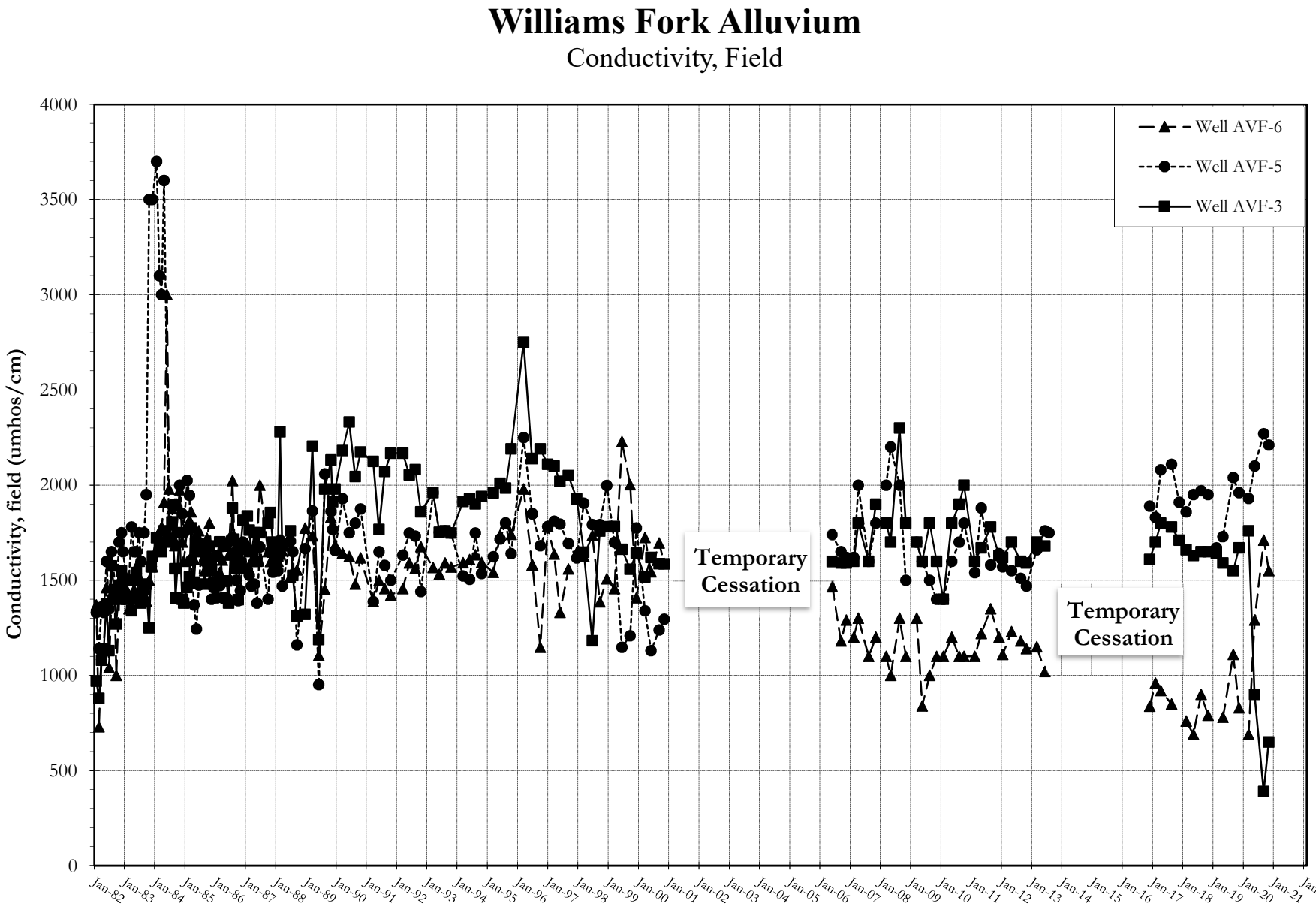
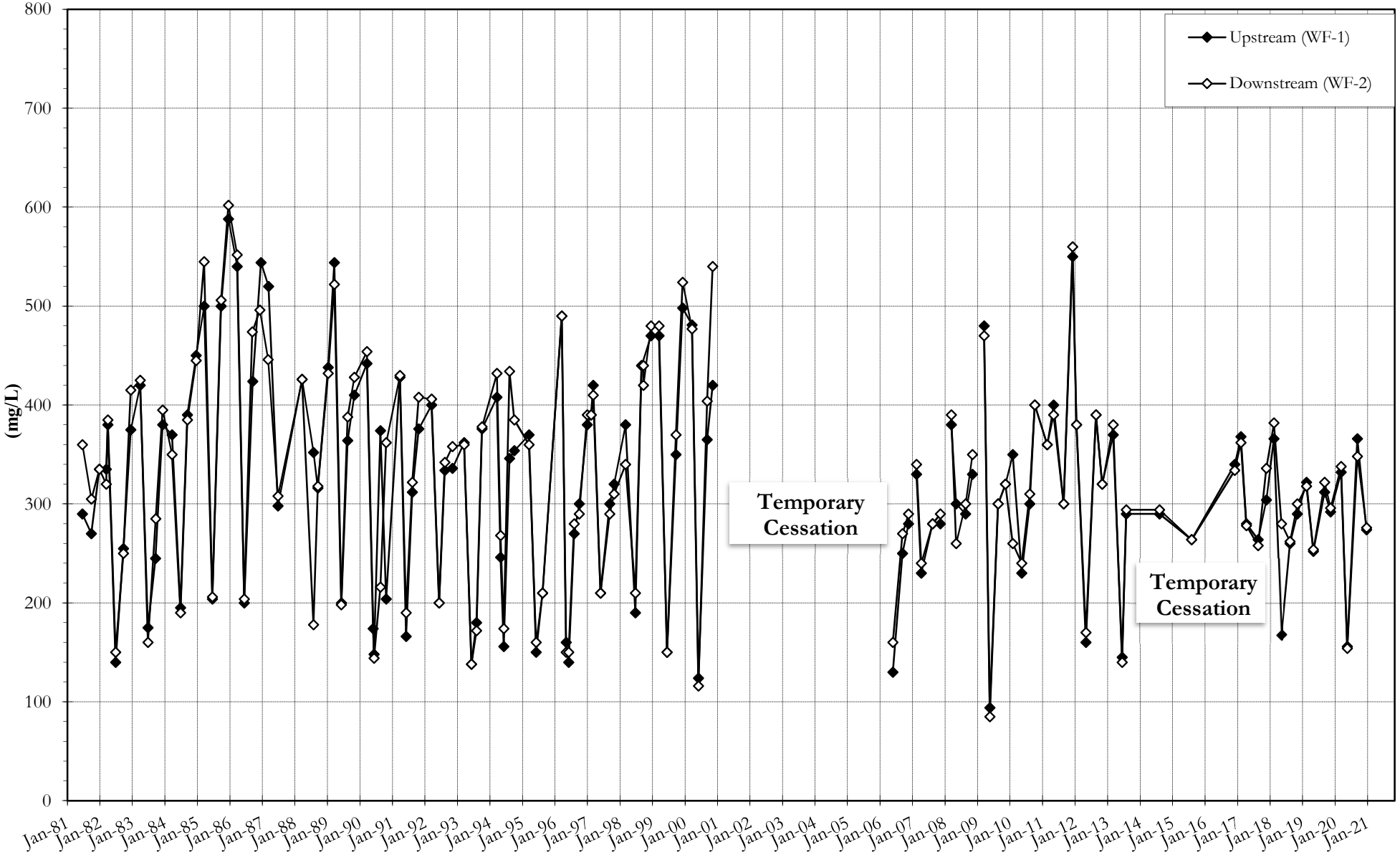

Williams Fork Alluvium
Conductivity, Field
Conductivity, field (umhos/cm)
Well AVF-6
Well AVF-5
Well AVF-3
Temporary Cessation
Temporary Cessation
4000
3500
3000
2500
2000
1500
1000
500
0
Jan-82
Jan-83
Jan-84
Jan-85
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22

FIGURE 17

Williams Fork River

Solids, Total Dissolved

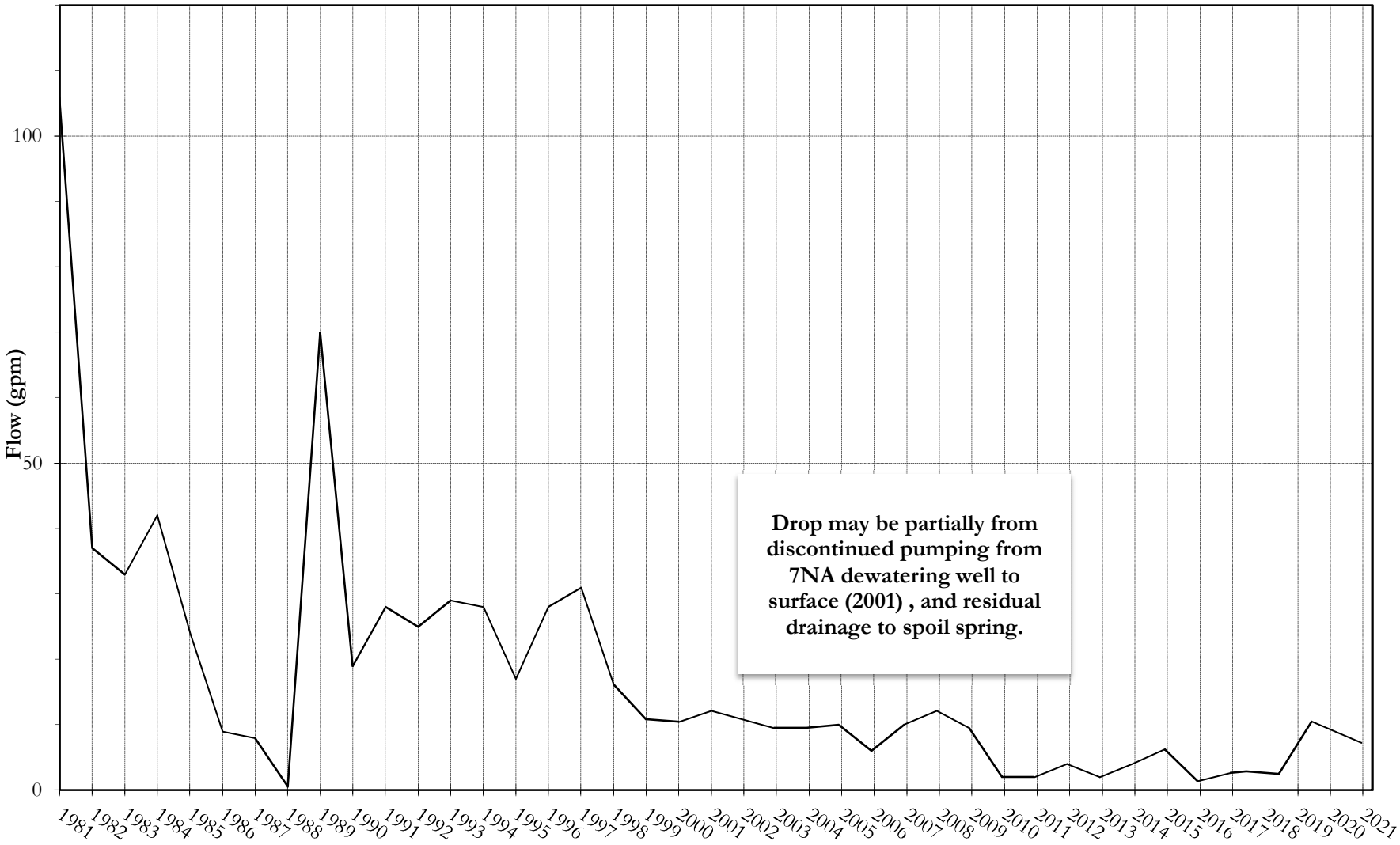


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\18 WILLIAMS FK RIVER POR TDS

FIGURE 18

Average Discharge From No. 1 Strip Pit

Period of Record

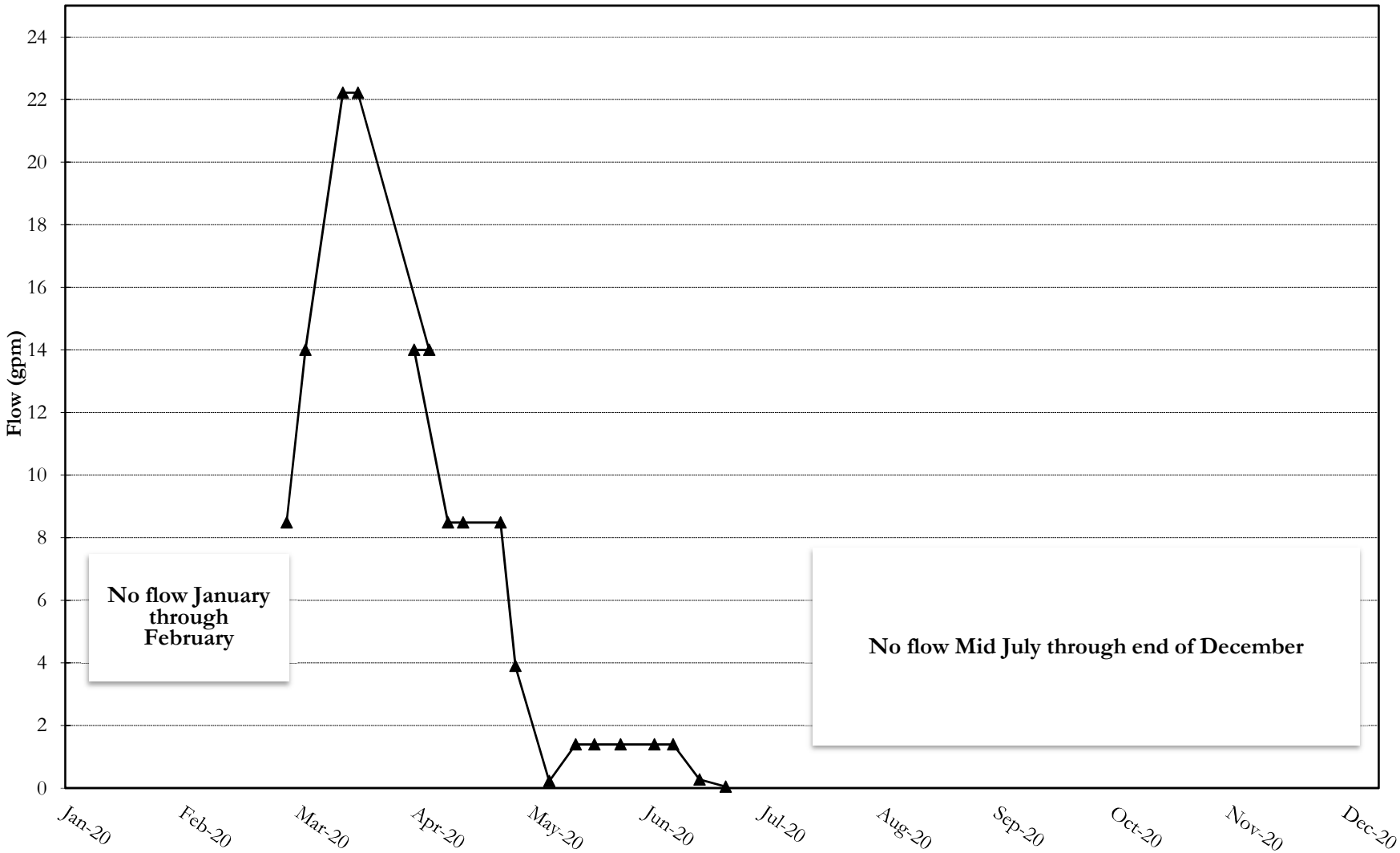


I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\19 STRIP PIT 1, 1SP POR DISCHARGE

FIGURE 19

Plot of Flow Rates

No. 1 Strip Pit Discharge, 2020 Water Year



I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\20 STRIP PIT 1, 1SP WY DISCHARGE

FIGURE 20

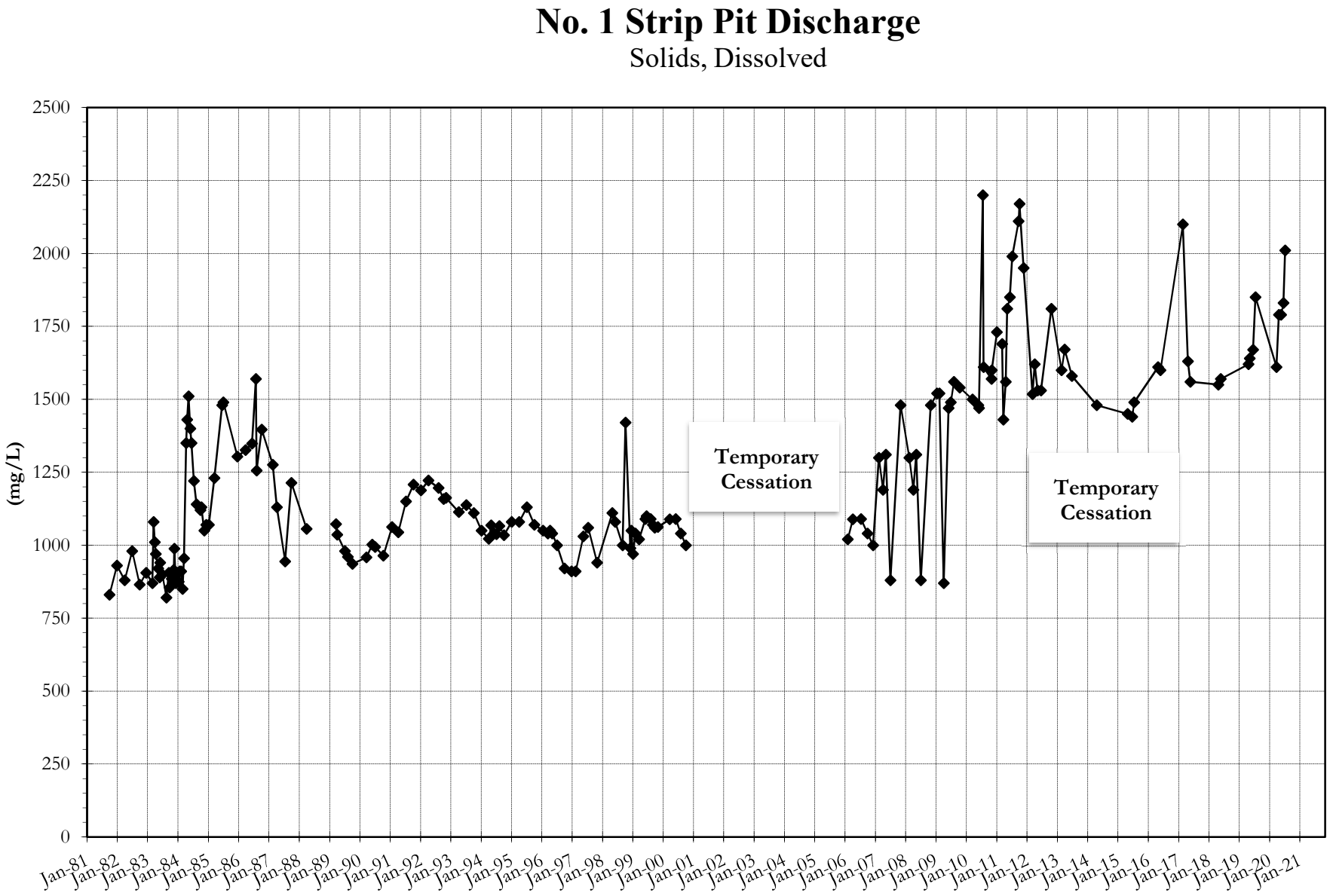
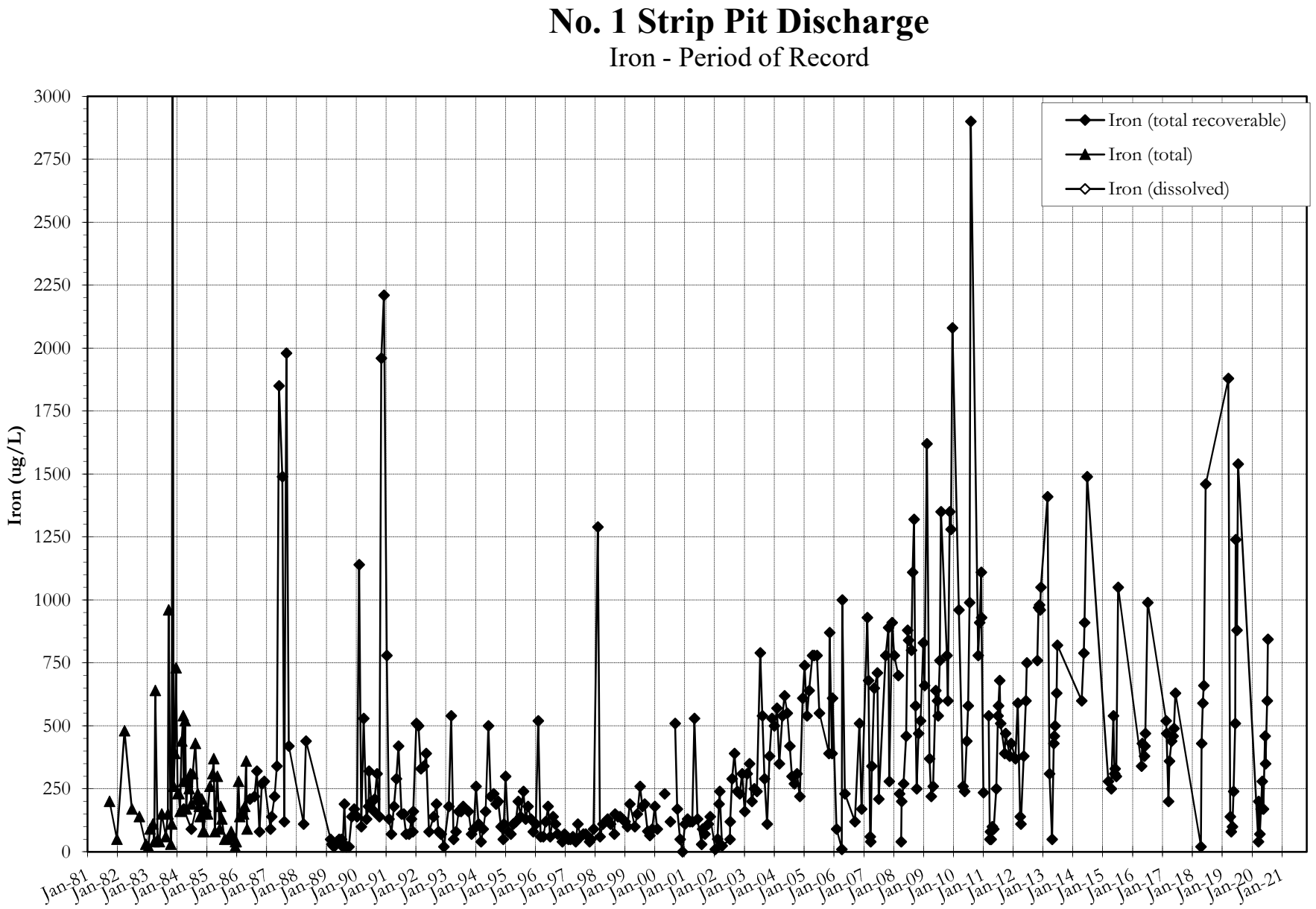

No. 1 Strip Pit Discharge
Solids, Dissolved
(mg/L)
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
Temporary Cessation
Temporary Cessation
Jan-81
Jan-82
Jan-83
Jan-84
Jan-85
Jan-86
Jan-87
Jan-88
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21

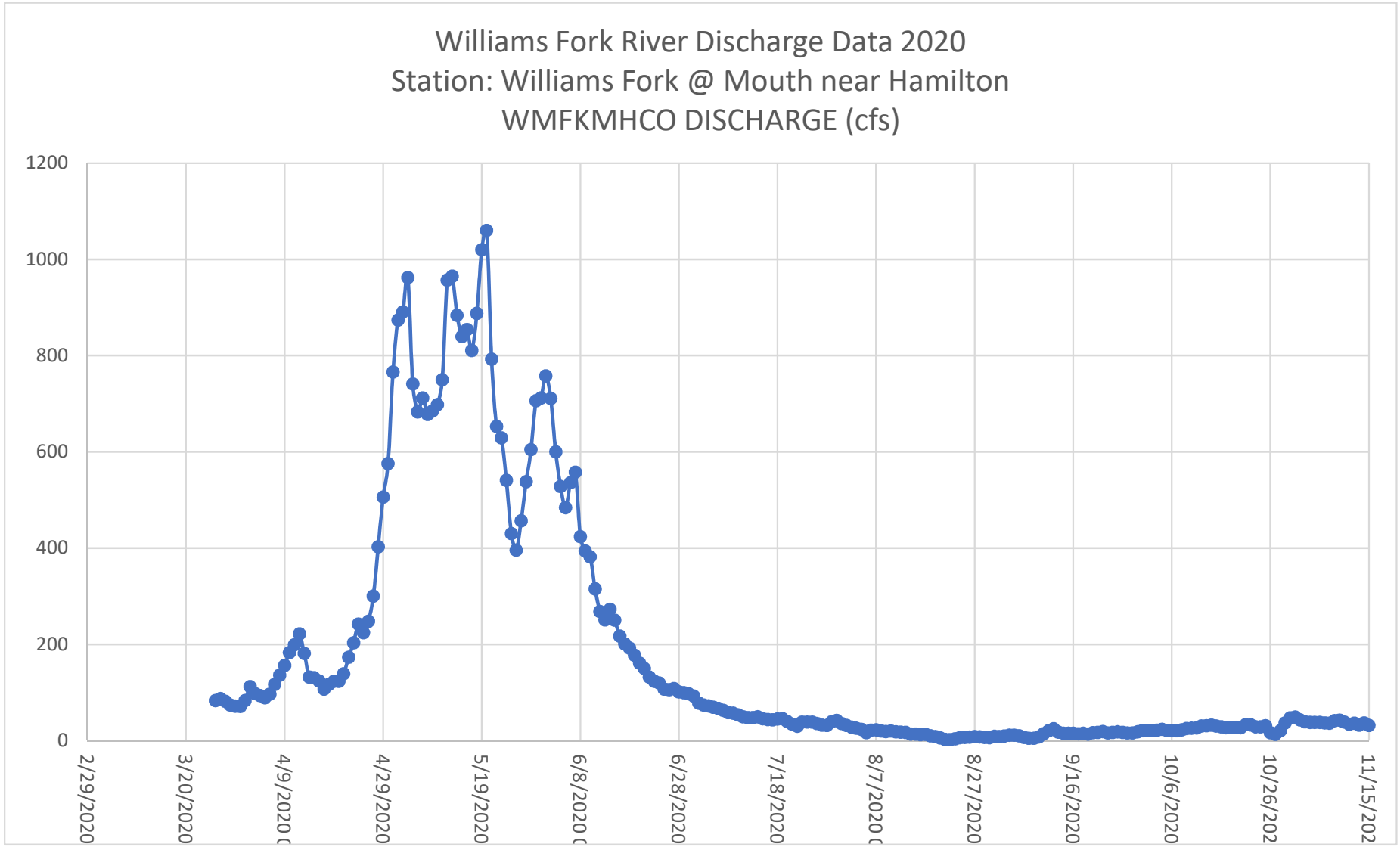
FIGURE 21



I:\Environmental\CDMG - CDRMS\AHR\2020\Williams Fork\Figures 2020\22 STRIP PIT 1, 1SP POR FE

FIGURE 22

SUPPORTING DATA


Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO DISCHARGE (cfs)
1200
1000
800
600
400
200
0
2/29/2020
3/20/2020
4/9/2020
4/29/2020
5/19/2020
6/8/2020
6/28/2020
7/18/2020
8/7/2020
8/27/2020
9/16/2020
10/6/2020
10/26/202
11/15/202

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
03/26/2020 00:00	83
03/27/2020 00:00	87
03/28/2020 00:00	81.2
03/29/2020 00:00	73.9
03/30/2020 00:00	71.5
03/31/2020 00:00	70.9
04/01/2020 00:00	82.9
04/02/2020 00:00	112
04/03/2020 00:00	97.4
04/04/2020 00:00	93.7
04/05/2020 00:00	89.1
04/06/2020 00:00	96.6
04/07/2020 00:00	117
04/08/2020 00:00	136
04/09/2020 00:00	156
04/10/2020 00:00	183
04/11/2020 00:00	199
04/12/2020 00:00	222
04/13/2020 00:00	181
04/14/2020 00:00	132
04/15/2020 00:00	131
04/16/2020 00:00	124
04/17/2020 00:00	107
04/18/2020 00:00	117
04/19/2020 00:00	123
04/20/2020 00:00	123
04/21/2020 00:00	139
04/22/2020 00:00	173
04/23/2020 00:00	203
04/24/2020 00:00	242
04/25/2020 00:00	224
04/26/2020 00:00	248
04/27/2020 00:00	300
04/28/2020 00:00	403
04/29/2020 00:00	506
04/30/2020 00:00	576
05/01/2020 00:00	766
05/02/2020 00:00	874
05/03/2020 00:00	891
05/04/2020 00:00	962
05/05/2020 00:00	741

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
05/06/2020 00:00	683
05/07/2020 00:00	712
05/08/2020 00:00	678
05/09/2020 00:00	685
05/10/2020 00:00	698
05/11/2020 00:00	750
05/12/2020 00:00	957
05/13/2020 00:00	965
05/14/2020 00:00	884
05/15/2020 00:00	840
05/16/2020 00:00	854
05/17/2020 00:00	811
05/18/2020 00:00	888
05/19/2020 00:00	1020
05/20/2020 00:00	1060
05/21/2020 00:00	793
05/22/2020 00:00	653
05/23/2020 00:00	629
05/24/2020 00:00	541
05/25/2020 00:00	430
05/26/2020 00:00	396
05/27/2020 00:00	457
05/28/2020 00:00	538
05/29/2020 00:00	605
05/30/2020 00:00	706
05/31/2020 00:00	712
06/01/2020 00:00	758
06/02/2020 00:00	711
06/03/2020 00:00	600
06/04/2020 00:00	528
06/05/2020 00:00	484
06/06/2020 00:00	536
06/07/2020 00:00	558
06/08/2020 00:00	424
06/09/2020 00:00	394
06/10/2020 00:00	382
06/11/2020 00:00	315
06/12/2020 00:00	268
06/13/2020 00:00	251
06/14/2020 00:00	273
06/15/2020 00:00	250

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
06/16/2020 00:00	217
06/17/2020 00:00	201
06/18/2020 00:00	192
06/19/2020 00:00	177
06/20/2020 00:00	161
06/21/2020 00:00	150
06/22/2020 00:00	132
06/23/2020 00:00	123
06/24/2020 00:00	120
06/25/2020 00:00	107
06/26/2020 00:00	106
06/27/2020 00:00	108
06/28/2020 00:00	101
06/29/2020 00:00	99.5
06/30/2020 00:00	97.2
07/01/2020 00:00	92.6
07/02/2020 00:00	78
07/03/2020 00:00	73.6
07/04/2020 00:00	71.9
07/05/2020 00:00	69
07/06/2020 00:00	66.7
07/07/2020 00:00	62.6
07/08/2020 00:00	58.4
07/09/2020 00:00	56.9
07/10/2020 00:00	53.7
07/11/2020 00:00	49.6
07/12/2020 00:00	47.7
07/13/2020 00:00	48
07/14/2020 00:00	49.4
07/15/2020 00:00	45.3
07/16/2020 00:00	43.9
07/17/2020 00:00	42.9
07/18/2020 00:00	45.1
07/19/2020 00:00	45.2
07/20/2020 00:00	39.4
07/21/2020 00:00	33.6
07/22/2020 00:00	29.7
07/23/2020 00:00	38.6
07/24/2020 00:00	38.4
07/25/2020 00:00	38.6
07/26/2020 00:00	35.4

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
07/27/2020 00:00	32.2
07/28/2020 00:00	31.7
07/29/2020 00:00	39.1
07/30/2020 00:00	41.7
07/31/2020 00:00	35.8
08/01/2020 00:00	31.5
08/02/2020 00:00	28.1
08/03/2020 00:00	25.7
08/04/2020 00:00	23.5
08/05/2020 00:00	16.7
08/06/2020 00:00	21.6
08/07/2020 00:00	22.3
08/08/2020 00:00	20.2
08/09/2020 00:00	18.8
08/10/2020 00:00	20.1
08/11/2020 00:00	18.3
08/12/2020 00:00	17.7
08/13/2020 00:00	16.8
08/14/2020 00:00	13.8
08/15/2020 00:00	13.6
08/16/2020 00:00	12.2
08/17/2020 00:00	12.9
08/18/2020 00:00	10.3
08/19/2020 00:00	8.12
08/20/2020 00:00	5.13
08/21/2020 00:00	2.62
08/22/2020 00:00	1.76
08/23/2020 00:00	3.87
08/24/2020 00:00	6.07
08/25/2020 00:00	6.43
08/26/2020 00:00	7.2
08/27/2020 00:00	8.58
08/28/2020 00:00	7.45
08/29/2020 00:00	6.35
08/30/2020 00:00	5.75
08/31/2020 00:00	8.8
09/01/2020 00:00	8.09
09/02/2020 00:00	9.44
09/03/2020 00:00	11.1
09/04/2020 00:00	11.1
09/05/2020 00:00	10.2

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
09/06/2020 00:00	6.77
09/07/2020 00:00	4.7
09/08/2020 00:00	5.09
09/09/2020 00:00	7.92
09/10/2020 00:00	14
09/11/2020 00:00	20.7
09/12/2020 00:00	24.3
09/13/2020 00:00	17.8
09/14/2020 00:00	15.4
09/15/2020 00:00	15.3
09/16/2020 00:00	15.2
09/17/2020 00:00	14
09/18/2020 00:00	15.3
09/19/2020 00:00	13.7
09/20/2020 00:00	16.3
09/21/2020 00:00	17.1
09/22/2020 00:00	18.7
09/23/2020 00:00	15.9
09/24/2020 00:00	17.3
09/25/2020 00:00	18.4
09/26/2020 00:00	17.1
09/27/2020 00:00	15.9
09/28/2020 00:00	15.9
09/29/2020 00:00	18.2
09/30/2020 00:00	20.4
10/01/2020 00:00	20.9
10/02/2020 00:00	21.1
10/03/2020 00:00	21.7
10/04/2020 00:00	23.2
10/05/2020 00:00	21.2
10/06/2020 00:00	20.6
10/07/2020 00:00	20.7
10/08/2020 00:00	22.4
10/09/2020 00:00	25
10/10/2020 00:00	25.8
10/11/2020 00:00	26.3
10/12/2020 00:00	30.4
10/13/2020 00:00	31.1
10/14/2020 00:00	32
10/15/2020 00:00	30.1
10/16/2020 00:00	28.8

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
10/17/2020 00:00	26.6
10/18/2020 00:00	27.4
10/19/2020 00:00	27.3
10/20/2020 00:00	26.8
10/21/2020 00:00	33
10/22/2020 00:00	32.7
10/23/2020 00:00	28.9
10/24/2020 00:00	28.6
10/25/2020 00:00	31
10/26/2020 00:00	16.2
10/27/2020 00:00	12.8
10/28/2020 00:00	20.3
10/29/2020 00:00	36.7
10/30/2020 00:00	47
10/31/2020 00:00	49.2
11/01/2020 00:00	43
11/02/2020 00:00	39.1
11/03/2020 00:00	37.8
11/04/2020 00:00	38.1
11/05/2020 00:00	37.8
11/06/2020 00:00	36.9
11/07/2020 00:00	36.4
11/08/2020 00:00	41.1
11/09/2020 00:00	42.4
11/10/2020 00:00	38.6
11/11/2020 00:00	34.1
11/12/2020 00:00	36.2
11/13/2020 00:00	32
11/14/2020 00:00	36.6
11/15/2020 00:00	31.4
11/16/2020 00:00	40
11/17/2020 00:00	41.5
11/18/2020 00:00	41
11/19/2020 00:00	42.4
11/20/2020 00:00	45
11/21/2020 00:00	40.1
11/22/2020 00:00	27.6
11/23/2020 00:00	23.2
11/24/2020 00:00	47.7
11/25/2020 00:00	32.1
11/26/2020 00:00	19.6

Williams Fork River Discharge Data 2020
Station: Williams Fork @ Mouth near Hamilton
WMFKMHCO

DATE	DISCHARGE (cfs)
11/27/2020 00:00	20.2
11/28/2020 00:00	9.59
11/29/2020 00:00	12.6
11/30/2020 00:00	14.9
12/01/2020 00:00	8.27
12/02/2020 00:00	0
12/03/2020 00:00	0
12/04/2020 00:00	0
12/05/2020 00:00	0
12/06/2020 00:00	0
12/07/2020 00:00	0
12/08/2020 00:00	0
12/09/2020 00:00	5.75
12/10/2020 00:00	0
12/11/2020 00:00	0
12/12/2020 00:00	0
12/13/2020 00:00	43.4
12/14/2020 00:00	70.5
12/15/2020 00:00	73.3
12/16/2020 00:00	77.4
12/17/2020 00:00	78.6
12/18/2020 00:00	78.8
12/19/2020 00:00	77.4
12/20/2020 00:00	79
12/21/2020 00:00	81
12/22/2020 00:00	86.2
12/23/2020 00:00	78.9
12/24/2020 00:00	77.9
12/25/2020 00:00	83
12/26/2020 00:00	92
12/27/2020 00:00	103
12/28/2020 00:00	121
12/29/2020 00:00	109
12/30/2020 00:00	120
12/31/2020 00:00	100