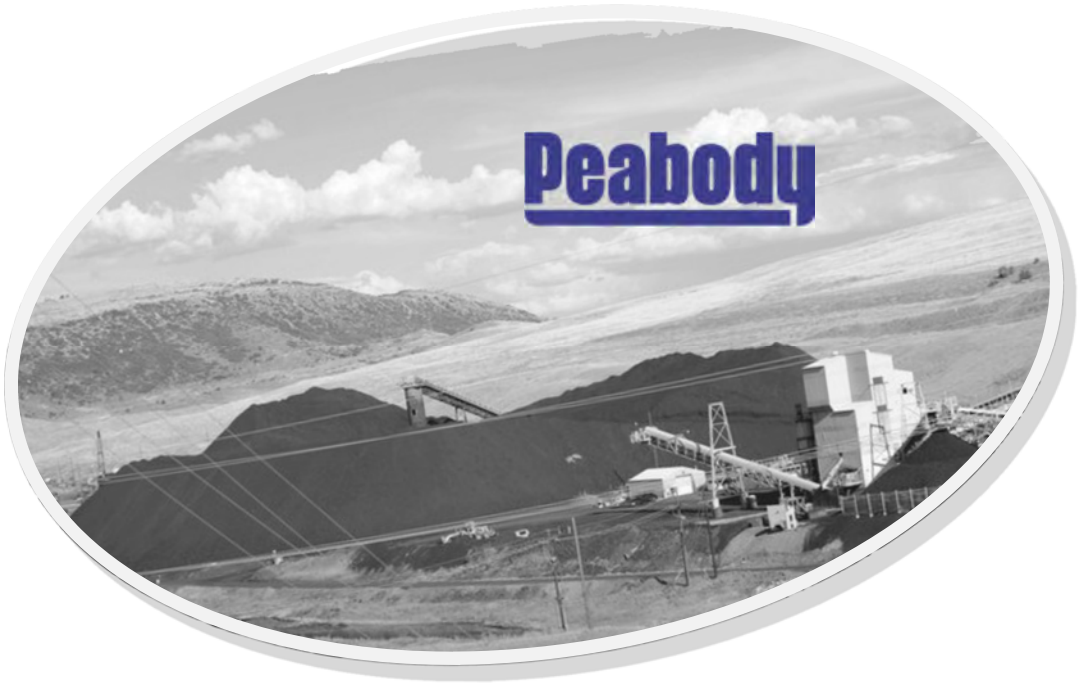
FOIDEL CREEK MINE

Twentymile Coal, LLC



2020 Annual Hydrology Report

Submitted Sept. 2021

To: Colorado Division of Reclamation, Mining, and Safety

BY: Twentymile Coal, LLC

2020 ANNUAL HYDROLOGY REPORT
Permit No. C-82-056

Submitted to:

Colorado Division of Reclamation, Mining, and Safety
Denver, Colorado

Submitted by:

Twentymile Coal Company
Oak Creek, Colorado

Sept 2021

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FOIDEL CREEK
2020 ANNUAL HYDROLOGY REPORT
LIST OF ACRONYMS

AHR	Annual Hydrology Report
CDPHE	Colorado Department of Public Health and Environmental
CDPS	Colorado Discharge Permit System
CT&E	Commercial Testing & Engineering (laboratory)
CYCC	Colorado Yampa Coal Company
DRMS	Colorado Division of Reclamation Mining and Safety
DMR	Discharge Monitoring Report
EMD	Eastern Mining District (of Foidel Creek Mine)
FCBH	Fish Creek Borehole
MR	Minor Revision
NMD	Northern Mining District (of Foidel Creek Mine)
NPDES	National Pollutant Discharge Elimination System
POR	Period of Record
PR	Permit Revision
Rt	Right (as in 13 Rt Longwall Panel)
TC	Twentymile Coal, LLC
TDS	Total Dissolved Solids
TR	Technical Revision
TSS	Total Suspended Solids
USGS	United States Geological Survey
WMD	Western Mining District

1.0 INTRODUCTION

The 2020 Annual Hydrology Report (AHR) presents hydrologic monitoring data collected during the 2020 water year (October 2019 – September 2020) at the Twentymile Coal, LLC's (TC's) Foidel Creek Mine. This AHR fulfills the reporting requirements under the Colorado State Division of Reclamation Mining and Safety (DRMS) Permit No. C-82-056.

2.0 SITE LOCATION AND BACKGROUND

The TC Foidel Creek Mine is located approximately 20 miles southwest of Steamboat Springs, Colorado, at the south end of Twentymile Park (see Figure 1). This is an active underground coal mine, that encompasses roughly 15,200 acres in south Routt County. The total Life-Of-Mine permit area includes approximately 22,647 acres. The primary surface facilities, including sediment basins, coal refuse pile, coal wash plant, and loadout areas, cover about 800 acres. The mine's portals and surface facility areas are bordered on the south and south west by strip mine spoils from the former Colorado Yampa Coal Company (CYCC). Other associated satellite TC support facilities, including borehole and ventilation pads, contribute approximately 150 acres.

Surface coal mining has been conducted in the area since the 1960's. The Foidel Creek Mine is an underground longwall operation that was established in 1983. Longwall mining is a form of underground mining where a 1000-foot-long wall is mined in a single slice (typically 2-3 m thick). The block of coal being mined, known as the longwall "panel", may be on the order of 12,000 feet long. The gate road along one side of the wall is called the main gate, while the other side is called the tail gate. The end of the block that includes the longwall equipment is called the "face". Air is provided by ventilation fans and associated bleeder vent shafts from the surface. The advantage of longwall mining is that over 80 percent of the coal is recovered, compared with about 50 percent for the traditional pillar method. In addition, subsidence is immediate, allowing for better planning by the mining company. The Foidel Creek Mine portals are faced-up in the down dip high-wall of the former strip mine.

The permit area lies within the Trout Creek watershed is drained to the east-northeast by Fish Creek, Foidel Creek, and Middle Creek. Foidel Creek is located adjacent to the TC Foidel Creek Mine surface facilities and receives treated effluent from a series of sediment ponds established at the facility. Mine site drainage is controlled through seven (7) sediment ponds (NPDES Ponds T, B, C, D, E, F, and G – see Figure 2). The Fish Creek drainage is located north of the Foidel Creek Mine surface facilities area and overlies tracts, which have been longwall mined. Fish Creek runs through the Twentymile Park syncline area. Mine water was historically discharged into Fish Creek via the Fish Creek Borehole (FCBH) pump and sodium hydroxide treatment pond facility (discharge site 115), however that practice ceased in early 2005. In 2005, an electro-coagulation treatment system was constructed re-using the FCBH pump. Treated mine water was directed back underground for dust suppression. Electro-coagulation treatment assists in minimizing pipe scaling underground. Middle Creek is located to the south of Foidel Creek, along the eastern margin of the permit boundary. The mines does not discharge into Middle Creek.

Mine water is currently dewatered from wells located at the former Fish Creek vent shaft in the old Western Mining District (WMD) and the 10RT well located in the old Eastern Mining District (EMD). The wells discharge into the Area 1 Pit. The Pit supplies water to the wash plant. If the Pit overflows, it runs through a flume (site 7) into Pond D. Pond D (site 84) is an NPDES point that discharges to Foidel Creek.

The Fish Creek Tipple site is located approximately 15 miles southwest of Steamboat Springs at the northeast end of Twentymile Park, covering an area of approximately 15 acres. The tipple was constructed in 1974 and ceased operation in 1983. Spoil springs (sites 303-1, 303-2, and 303-3) from the former surface operations at the Fish Creek Tipple site (east of the TC Foidel Creek Mine and Twentymile Park area) also discharge to Fish Creek at NPDES site 62. The area was reclaimed in 2012, at which time sites 303-2 and 303-3 ceased to flow.

The previously surface mined area southwest of the Foidel Creek portals and primary surface facilities (Eckman Park area), has been reclaimed and has been released from bond. In addition, the former surface mine area referred to as Area 1 was released from bond in January 2002. As a result, the Colorado Department of Public Health and Environment (CDPHE) subsequently approved eliminating Ponds A (Eckman Park) and H (Area 1) from our ongoing NPDES monitoring program in 2002.

Hydrologic monitoring was initiated for this area by CYCC in 1979. TC continues the monitoring program under updated DRMS permit requirements. Since mid-1987, hydrologic monitoring and reporting has primarily been conducted by TC personnel. In May of 1995, a private firm (Miller Water Monitoring Service) was contracted to assist with hydrologic monitoring at the TC sites, and continues to assist in monitoring to date. Prior to June 1986, water quality analyses were performed by the on-site CYCC laboratory. From 1987 to 2000, water quality analyses were primarily performed by ACZ Laboratories (formerly Bookcliffs) of Steamboat Springs, Colorado. From 2001 through 2005, water quality analysis was primarily been performed by SGS North America laboratory of Denver, Colorado. Since mid-2005, analyses are again primarily performed by ACZ Laboratory of Steamboat Springs, Colorado. Whole Effluent Toxicity (WET) testing was historically conducted by SGS, and then Aqua-Tox of Wheatridge Colorado through May 2018 where TC switched to Environ Chem Analytical of Grand Junction, Colorado.

Note that in 2003, DRMS approved TR03-42 (See Permit Exhibits 14-5, 14-6, and 14-10), and PR 03-06 (See Permit Exhibits 14-7 through 14-9), which eliminated several surface, alluvial, and bedrock well monitoring sites, and reduced the monitoring frequency of other sites, while adding additional monitoring requirements to existing surface site 305 (located downstream at the time of Twentymile Park subsidence). Data from terminated sites can be found in previous AHRs.

Three former US Geologic Survey (USGS) surface water sites (USGS 09243700, USGS 09243800 and USGS 09243900) were monitored for flow by the USGS through the 2001 water year. Prior to the 1989 Water Year, the USGS had collected and analyzed water quality samples from these sites. From the 1989 water year to date, TC has collected water quality samples from these sites for laboratory analysis. Beginning with the 2002 water year, TC took over monitoring of these three sites (referred to as sites 700, 800, and 900, respectively) from the USGS. In 2003, TR03-42 eliminated site 700 on Middle Creek.

3.0 2020 HYDROLOGIC MONITORING PROGRAM

The Foidel Creek Hydrologic Monitoring program includes bedrock and alluvial wells, stream points, springs, mine discharge, and mine inflow monitoring. Specific monitoring site locations and their elevations are shown on Figure 2. Required monitoring frequencies are listed in Permit No. C-82-056, under Exhibit 14, and presented in Table 1, 20, and 34 of this AHR for reference. Data tables and figures for each site are referenced in the following discussions. Statistical summaries of the historical data are also provided after presentation of the 2020 data.

3.1 Bedrock Groundwater Monitoring

Hydrogeology: TC's underground Wadge mining operation is located roughly 1600 feet beneath the surface of Twentymile Park Basin. This is an enclosed synclinal groundwater basin, rimmed by outcrops of major lithologic units. Groundwater in the Twentymile Park Basin exists primarily under confined conditions within the bedrock units. Bedrock aquifers in the general area are recharged by infiltration in outcrop areas, located primarily in the southern and western margins of the Twentymile Park Basin. Recharge is limited, due to the low annual precipitation and high moisture losses from evapotranspiration and sublimation in this semi-arid climatic zone. Groundwater occurrence and movement within the bedrock aquifer system is controlled by geologic structure and lithology. Groundwater movement tends to follow the structural dip of the lithologic units toward the basin axis. Within the permit area, bedrock groundwater generally flows to the north and northwest. This results in confined aquifer conditions down gradient from the outcrop area. A detailed discussion of the geology/hydrology for the site is available in the *Twentymile Coal Company, Foidel Creek Mine Permit C-82-056, Volume I, Rules 2.04.6 and 2.04.7.*

The Twentymile Park Basin is underlain by multiple large, high quality coal reserves. The reserves, mined by underground operations, are known as the Wadge Seam (Pre-2015) and the lower Wolf Creek Seam (Post 2015). The Wadge Seam lies within a sequence of sedimentary rocks characterized by shales, claystones, mudstones, siltstones, sandstones, and minor coal stringers referred to as the Wadge Overburden. The Wadge Overburden is hydrologically isolated from the two major bedrock aquifer units in the Twentymile Park Basin, the Twentymile Sandstone aquifer and the Trout Creek Sandstone aquifer, which lie above and below the Wadge Overburden, respectively. Lying above the Twentymile Sandstone is a minor aquifer unit, known as the Fish Creek Sandstone. All these geologic units are monitored within the Foidel Creek Mine permit area.

The Wadge Overburden is directly affected by the mining operation. Dewatering of this zone in the area of mine operations is currently being conducted. The Wadge Overburden sequence varies in thickness from 50 to 100 feet, averaging approximately 75 feet, and is characterized by low permeability (0.01 to 0.1 ft/day), limited continuity, low yield and relatively poor water quality.

Above the Wadge Overburden is the first major regional aquifer, known as the Twentymile Sandstone. The Twentymile Sandstone aquifer is confined above and below by low permeability shale and interbedded siltstone/shale units. The unit varies in thickness from 100 to 200 feet and is hydrologically isolated from the underlying Wadge Overburden sequence by a low permeability marine shale, which has a thickness of up to 700

feet. Approximately 125 feet above the Twentymile Sandstone is the 35-foot thick Fish Creek Sandstone. The Fish Creek Sandstone is a discontinuous minor unit in the area that was the contact for a small coal seam that had been surface mined.

Beneath the Wadge Overburden is a sequence of low permeability siltstones, shales, and coals, approximately 200 feet thick. This is followed by a fine-grained massive sandstone, approximately 250 feet thick, known as the Trout Creek Sandstone. The Trout Creek sandstone is the second major regional aquifer, which exists in the Twentymile Park Basin. There is very little hydrologic connection between the Trout Creek sandstone and the overlying Wadge Overburden.

The Wolf Creek Reserve (WCR) underlies the Wadge Seam. The WCR underlies portions of the EMD and NMD, and is part of the same water-table groundwater system, so the associated effects of mining on groundwater in this area will be similar to those previously considered and evaluated for the EMD and NMD. In the proposed mine area, the Wolf Creek Seam is present at depths ranging from approximately 1,000 to 1,700 feet below the land surface. Approximately 150 feet of shale, claystone, siltstone and lenticular sandstone known as the Interburden unit separates the Wadge and Wolf Creek seams. Directly below the Wadge Seam in the planned mine area is a persistent and laterally continuous layer of material composed of clay-sized particles called underclay. Beneath this underclay is a zone of alternating thick shales, claystones, siltstones, and intermittent lenticular sandstones. The shales are generally continuous and the sandstones discontinuous. Near the base of this zone of alternating beds is the Wolf Creek Seam. Within the planned mine area, the Wolf Creek Seam splits into four distinct benches separated by rock partings. The combined total seam thickness ranges from 7.5 to 14 feet, and the coal seams are continuous within discrete mining areas. The WC1 Seam is the lowest of the benches, and ranges in thickness from 2 to 4 feet. The interburden between the WC1 and WC2 seams ranges from 0.5 to 1.5 feet. The WC2 Seam ranges from 2 to 5 feet. The WC1 and WC2 benches will be mined over the entire WCR area. The interburden between the WC2 and WC3 ranges from 0.5 to 10 feet, but will not be mined once its thickness is greater than 3 feet. The WC3 Seam ranges from 2.5 to 4 feet. The interburden between WC3 and WC4 ranges from 0.5 feet to 4.5 feet, but will not be mined once its thickness is greater than 3 feet. The WC4 Seam ranges from 2 to 5 feet.

Table 1 presents a summary of bedrock well monitoring frequencies. Water level and field parameters, which include pH, temperature, and conductivity, are measured semiannually at the Wadge and Wolf Creek Overburden wells, the Twentymile Sandstone wells, and Fish Creek Sandstone wells and annually at the Trout Creek Sandstone wells. Note that water level only is measured at two of the three Fish Creek Sandstone wells. Water quality is sampled annually at all Wadge and Wolf Creek Overburden wells, at two of the Twentymile Sandstone wells, and one of the Fish Creek Sandstone wells and biannually at four of the Trout Creek Sandstone Wells. Water quality parameters include total dissolved solids (TDS), dissolved calcium, dissolved magnesium, dissolved sodium, bicarbonate, carbonate, sulfate, dissolved cadmium, dissolved lead, dissolved mercury, dissolved selenium, dissolved iron, dissolved manganese, dissolved molybdenum, nitrate and nitrite, and orthophosphorus. A discussion of the 2020 monitoring results by bedrock unit is provided below.

Wadge And Wolf Creek Overburden: Seven Overburden wells (009-79-4, 006-82-74C, 91M006, 008-77-58, 93M001, WC008A, and WC013A) are currently monitored. Water quality samples are collected annually.

Tables 2 through 8 provide summaries of the 2020 Water Year data. Tables 2a through 8a provide some historical statistical summaries of collected data at each site through 2020. Figures 3 through 15 provide graphical representations of water levels and selected water quality parameters measured at each site.

The potentiometric surface in the Wadge Overburden generally slopes from south to north in the vicinity of the TC facilities, as shown by water levels in wells 009-79-4, 006-82-74C, and 08-77-58 (Figure 3, 5, 8). The water level in wells 009-79-4, 006-82-74C, and 008-77-58 remain within their historic range and have been stable for over a decade. A decline in water level, associated with dewatering impacts from the underground mining operation, has occurred at wells 91M006 and 93M001. The water level at 93M001 began stabilizing in the 2010's and levels measured in 2020 remains within the historic range observed at the well. The water level at 91M006 could not be measured in 2020 as the probe encountered a blockage in the well at approximately 700 ft. This suggests the well, which is constructed of 2-inch steel pipe, sheared somewhere below ground surface. TC will discuss this situation with DRMS. TDS measured at the Wadge Overburden Wells in 2020 remain within historic ranges. TDS has been stable at wells 009-79-4 (~500 mg/L), 008-77-58 (~1100 mg/L), and 93M001 (~1100 mg/L) over the last couple of decades and declined by approximately 2000 mg/L at 006-82-74C (~1700 mg/L) during this time.

The two Wolf Creek Overburden wells, WC008A and WC013A, were installed in the 2015 water year. Less groundwater is expected to be encountered during mining of the Wolf Creek Reserve, given the lengthy history of dewatering within the Wadge workings which overlie the Wolf Creek Reserve. The water level at WC008A has remained stable at approximately 6700 ft since 2015, however, the water level at WC013A has slowly declined from approximately 5540 ft in May 2015 to approximately 5510 ft in 2020. TDS have remained stable at both wells.

No anomalous water quality impacts attributable to mining were evident in data collected from Wadge Overburden wells during 20120, as compared to historical results.

Twentymile Sandstone: TC monitors three wells screened within the Twentymile Sandstone. Well 006-BRDH-7 is monitored for water levels and field parameters only on a semi-annual basis and wells FBR-2, and 97013TM are monitored for water levels and field parameters on a semi-annual basis and water quality parameters on an annual basis. All monitoring requirements were completed at these sites in 2020. Tables 9 through 11 provide summaries of the 2020 Water Year data collected at each site. Tables 9a through 11a provide historical statistical summaries of collected data. Figures 16 through 21 provide graphical representations of water levels and selected water quality parameters recorded at each site.

The potentiometric surface in the Twentymile Sandstone generally slopes from southwest to northeast. The water levels measured in wells 006-BRDH-7, FBR-2, and 97013TM in 2020 are all within their historic range and have remained stable over the last five years. Field conductivity at 006-BRDH-7 exhibits a negative trend, with conductivity dropping from around 850 µmhos/cm in 1987 to approximately 500 µmhos/cm in 2020. TDS at FBR-2 has also exhibited a negative trend since 2007, with the current TDS being measured as 1080 mg/L. The 700 mg/L TDS measured at 97013TM in 2020 remains within the historic range observed at the well.

Trout Creek Sandstone: TC monitored five Trout Creek Sandstone wells in 2020; 001-83-106, 001-83-107, 95M001, FBR-2-E, and 97013TC. Note that per TR03-42, monitoring frequency for water levels and field parameters were reduced to an annual basis at all five wells and water quality sampling was reduced to bi-annual (every other year) at 001-83-106, 95M001, FBR-2-E, and 97013TC. Water quality samples were collected at these four wells in 2019, therefore in 2020 they were only monitored for water levels and field parameters. Also, per TR03-42, Trout Creek Sandstone wells 008-75-EFC and 97012TC were deactivated. Results of the 2020 monitoring are presented in Tables 12 through 16 and Tables 12a through 16a provide period of record water quality statistics. Figures 22 through 29 provide graphical representations of water levels and selected water quality parameters measured at these sites.

The potentiometric surface trends prevalent in the Twentymile Sandstone and Wadge Overburden aquifers are not evident in the Trout Creek Sandstone. Previously monitored well 006-83-48C, located in the south-central portion of the permit, routinely exhibited water levels in the 7100 ft elevation range suggesting the potentiometric surface was mounded in this area. Well 006-83-48C was mined through in 1993 and was subsequently replaced by well FCM#2. The water level measured at well FCM#2 was approximately 6500 ft. Due to concerns related to FCM#2 well construction the mine installed well 95M001 into the Trout Creek Sandstone in the fall of 1995. Water levels measured at well 95M001 confirmed that the levels recorded in well FCM #2 were accurate (Figure 24). Mining in the northern mining district, which is down dip of this well, began in 1995. The water level in well 95M001 has continued to decline but appear to be stabilizing (Figure 24). This decline may be influenced by the underground mining operation however significant inflows from the Trout Creek Sandstone into the mine workings have not been encountered to date.

The water levels in the Trout Creek Sandstone have also been impacted by the mines potable supply well 001-83-106 (Figure 22). Drawdowns, partially associated with the use of the supply well, have also been observed in adjacent well 001-83-107 (Figure 23). The mines use of potable well 001-83-106 has declined over the last couple of years and water levels have started to return in this well. Water levels at 001-83-107 have been stable since the 2000's. Declines in water level observed in the late 1980's into the 1990s reflect effects from longwall mining that began in the western mining district in 1990.

Well FBR-2-E (Figure 28), located along the eastern permit boundary has exhibited a fairly consistent water level of about 6667 ft elevation between 1999 and 2017. The water level dropped by about 15 feet to approximately 6650 ft in 2019. This drop was confirmed in 2020. FBR-2-E is near the current mining area which could be the reason for the decline in the water level although the specific reason for these drops were not apparent. Many historical boreholes have indicated faulting exists in this area. The water level measured in Well 97013TC (Figure 26) in 2020 remained within its historic range. Field conductivity and TDS at the Trout Creek Sandstone wells remained within historic ranges at all locations in 2020.

Fish Creek Sandstone: Two Fish Creek Sandstone wells (91M001 and 91M004) require monitoring on a semiannual basis for water level only. An additional well (Ashley) requires semi-annual monitoring for water levels and field parameters, and annual water quality sampling. Tables 17 through 19 provide summaries of the 2020 Water Year data collected at each site. Tables 17a through 19a provide historical statistical summaries of collected data at each site. Figure 30 provides graphical representation of the period of record water levels

measured at sites 91M001 and 91M004. 91M004 was dry 2012 through 2015 and in 2017 through 2018. Well 91M004 was destroyed in 2019 due to snow removal efforts by Yampa Valley Electric to repair a power line. TC will discuss this situation with DRMS.

Water levels at all of the Fish Creek wells remained within their historic range. TDS at the Ashley well was 336 mg/L in 2020. TDS has been declining since 1995 (Figure 32). The 2020 concentrations are on the low end of the historic range.

3.2 Alluvial Groundwater Monitoring

Table 20 presents a summary of alluvial well monitoring frequencies. Alluvial wells are monitored quarterly for water level and field parameters and semiannually for water quality parameters (except the Jones well which is monitored annually). Field parameters include pH, temperature, and conductivity. Water quality parameters include TDS, dissolved calcium, dissolved magnesium, dissolved sodium, bicarbonate, carbonate, sulfate, dissolved cadmium, dissolved lead, dissolved mercury, dissolved selenium, dissolved iron, dissolved manganese, dissolved molybdenum, nitrate and nitrite, ammonia and orthophosphorus.

Alluvial groundwater in the Twentymile Park Basin exists under unconfined conditions within the alluvial materials underlying the major surface drainages of the area and backfilled areas of adjacent surface mined areas. Stream flows are the primary source of recharge to the alluvial aquifers. Alluvial deposition is limited in areas where stream gradients are relatively steep and in areas where the stream channel has eroded to or intersects resistant bedrock. Consequently, the alluvial deposits do not tend to be continuous. Shallow wells completed in these deposits indicate that they are usually less than 20 feet thick and the depth to groundwater is typically less than 10 feet. The limited extent of the Foidel Creek alluvial deposits, and the lack of base flow in the creek indicates that these deposits are relatively insignificant to the areas groundwater hydrologic system.

Alluvial deposits containing groundwater are monitored in the Foidel Creek, Fish Creek, Trout Creek and Middle Creek drainages. In the Foidel Creek drainage, sites both upstream and downstream of the TC portals and support facilities are monitored. In the Fish Creek Drainage, sites upstream and downstream of the Mine 2 area and the Fish Creek Borehole dewatering facility are monitored.

Foidel Creek Alluvial Groundwater: There are four Foidel Creek alluvial wells, 009-S-10, 001-S-5, 008-AV-1, and 008-AV-2. Tables 21 through 24 provide summaries of 2020 data collected at each site. Tables 21a through 24a provide period of record statistical water quality summaries for each site. Figures 33 through 40 provide graphical representations of water levels and selected water quality parameters measured at these sites.

Water levels at the four Foidel Creek alluvial wells in 2020 remained consistent with established ranges and typical seasonal fluctuations, with elevated water levels occurring in the spring in response to recharge from the snowmelt season. Although conductivity within the Fish Creek alluvium has generally increased since monitoring was initiated, its important to note that this trend has also been observed at upgradient well 009-S-10 (Figure 34). Conductivity measured at all four wells in 2020 remained within the historic range of concentrations.

TDS concentrations at point of compliance well 008-AV-2 has continued to decline since the early 2000's and meets the agricultural use groundwater quality standard.

Fish Creek Alluvial Groundwater: Seven Fish Creek alluvial wells are monitored. Monitoring wells 006-AY-1, 006-AZ-3, 008-AU-3 and 008-AW-3 have been monitored since the 1980's. Wells AVF-13, AVF-14, and AVF-15 were installed in the early 2000's per PR99-05. Tables 25 through 31 provide summaries of the 2019 Water Year data collected at each site. Tables 25a through 31a provide period of record statistical water quality summaries for each site. Figures 41 through 54 provide graphical representations of water levels and selected water quality parameters recorded at each site.

Water levels at the Fish Creek alluvial wells in 2020 remained consistent with the historic range and showed typical seasonal variability, with elevated water levels occurring in the spring in response to recharge from the snowmelt season. Conductivity measured at all wells in 2020 was within the historic range. TDS measured at point of compliance well 008-AU-3 (range: 768 – 836 mg/L) met the agricultural use groundwater standard.

In late 2016 someone destroyed well 006-AZ-3, possibly by mistake, as other historic alluvial wells that are not monitored were also removed. Historic water quality data has been provided in Table 26a. The period of record water levels and conductivity can be found in Figures 43 and 44. TC will discuss this situation with DRMS.

Note that localized mining subsidence along Fish Creek occurred in the area of well AVF-15 during the summer of 2004. The general location area of AVF-15 was subsequently permanently ponded. Per the mines subsidence plan, alluvial well 008-AU3 replaced AVF-15 as the downstream monitoring well until 2014 when AVF-15 was replaced in the same general vicinity.

Trout Creek Alluvial Groundwater: Two Trout Creek alluvial monitoring wells, 008-AT-1, and a privately owned well (Jones well) are monitored. Tables 32 and 33 provide summaries of the 2020 Water Year data collected at each site. Figures 55 through 58 provide graphical representations of the period of record water level and field conductivity.

Well 008-AT-1 was destroyed sometime in 2013 and subsequently replaced in 2014. The water levels in the replaced well are about 3 feet higher than historical, which may relate to the new wells proximity to Trout Creek. Both the water levels and conductivity measured in 2020 fall within the historic range. Note that the Jones well has historically been monitored to access potential mine impacts to their potable water well. In the fall of 2008, TC provided the Jones family with underground water storage tanks, a new plumbing system, and imported water, so that they could discontinue use of the well. At that time, the old plumbing system to the Jones well was decommissioned eliminating alluvial water sampling access. In 2019 TC supplied Jones with a deep fresh water well and a filtration system in place of long-term haulage of potable water. TC will discuss this situation with DRMS.

Middle Creek Alluvial Groundwater: TC has no active Middle Creek alluvial wells. In 1996, two Middle Creek alluvial wells (AVM-1 and AVM-2) were incorporated into the monitoring network however, per TR03-42, these wells were abandoned in the Fall of 2003. Refer to previous AHRs for earlier data.

3.21 Points of Compliance

Rule 4.05.13(1)(b) requires formal establishment of groundwater points of compliance for coal operation which has the potential for negatively impacting the quality of groundwater for which quality standards have been established by the Colorado Water Quality Control Commission. The Commission's Rule 41 sets forth Basic Standards for groundwater. These Standards are applicable to groundwater at the Foidel Creek Mine. In the judgment of DRMS, these Standards are applicable to groundwater at the Foidel Creek Mine, however it is also the judgment of DRMS, the Foidel Creek Mine does not have the potential to negatively impact bedrock aquifers due to the nature of the geology (i.e. synclinal basin) found at the mine's location.

Wells 008-AV-2 (Foidel Creek alluvium), 008-AU-3 (Fish Creek alluvium), and well 008-AT-1 (Trout Creek alluvium) will satisfy the requirements for alluvial groundwater points of compliance.

Water quality at these three wells were within the agricultural use groundwater standards for all parameters except for a single sample for iron at 008-AT-1. The sample collected on 8/30/20 had a dissolved iron concentration of 5.55 mg/L. Its possible that the filter ruptured allowing solids typically removed during the required sample filtration to influence the analysis. The sample collected in May indicated the dissolved iron was 1.36 mg/L, which is more characteristic of the iron concentration at this well, and within the agricultural use groundwater standard. Although dissolved manganese at all three wells exceeded the base agricultural use standard of 0.2 mg/L, its important to acknowledge that CWCC Regulation 41 specifies that this standard is only applicable to irrigation water applied to soils with pH values lower than 6.0. For alkaline soils, as are found in the area, a more appropriate standard would be 10 mg/L (EPA, 1976). Therefore, none of the manganese results above 0.2 mg/L are considered exceedances of the standard.

3.3 Surface Water Monitoring

Monitoring/Sampling Requirements: Stream points have been established within Foidel Creek, Fish Creek, Trout Creek, and Middle Creek (see Figure 2). Table 34 presents the varying frequencies of water level/ field parameter and water quality monitoring required at each point during the three seasonal monitoring periods (i.e. October to February, March to May, and June to September), each of which are further divided into two general categories of sampling frequency: 1) "Regular" monitoring, and 2) "Contingent" monitoring that is conducted only when there is a discharge from underground mine pumping at surface discharge sites 109 and/or 115, neither of which discharged in 2020. Field parameters monitored as part of the "Regular" monitoring include temperature, pH, and conductivity. Water quality parameters analyzed for "Regular" monitoring include TDS, total suspended solids (TSS), sodium adsorption ratio, dissolved calcium, dissolved magnesium, dissolved sodium, bicarbonate, carbonate, sulfate, total recoverable cadmium, total recoverable mercury, total recoverable selenium, total recoverable silver, total recoverable iron, total recoverable manganese, total recoverable molybdenum, total recoverable zinc, nitrate and nitrite, ammonia, and orthophosphorus.

Results of the 2020 surface water monitoring are provided in Tables 35 through 51. Historical summaries of the water quality at these sites is provided in Tables 35a through 51a.

Stream Gaging

Accurately monitoring flow at stream sites can be difficult due to continual damage to gage stations by cows, horses, flooding, and various weather effects. Stations require repair on a regular basis. TC attempts to make repairs as soon as possible. Continuing erosion of stream channel banks impact accurate flow calculations. In the summer of 2007, TC hired consultants (Rivers Unlimited, Inc. of Steamboat Springs) to assist with re-evaluating key stream bed locations, including rating curves for ongoing stream gauging. This study continued into the spring 2017 but due to costly expenditures TC resorted to performing stream gaging with in house staff for the remainder of 2017 and will continue for the foreseeable future.

In 2012, four protective enclosures were constructed by Rivers Unlimited at historic flow meter recorder locations. New recorders were installed and activated in May of 2012 at these sites. The meter locations include sites 16A, downstream of 8, 1003, and site 69. Additional gage station protective steel enclosures were constructed in 2015 at several monitoring sites. Four new flow meters were installed at these sites in 2016, these included sites 900, 29, 1005 and 301. These meter locations are currently not in use due to the costly up-keep and calibration needed for them to properly function.

Foidel Creek: Four monitoring sites are located within Foidel Creek. Site 800 and site 14 are located upstream of the portal, site 8 is located downstream of the TC portal and surface facilities, and site 900 is located further downstream above the confluence with Middle Creek. Former site 304 was eliminated in 2003 per TR03-42.

Tables 35 through 38 provide summaries of the 2020 Water Year data collected at each site. Tables 35a through 38a provide POR statistical summaries of collected data at each site. Figures 59 to 70 provide graphical representations of flow and selected water quality parameters at each site. Typical flow patterns were exhibited at these sites in 2020 with spring runoff accounting for the peak flows. An inverse relationship between flow and field conductivity continues to be evident at each of these sites. The water quality in 2020 remained within the historic ranges observed at these points.

Fish Creek: Nine monitoring sites are located within Fish Creek. Site 16A replaced site 16 in 2000 and is located upstream of the Fish Creek Borehole discharge site 115. Historical data for site 16 may be found in previous AHRs. Site 307 is located approximately one mile downstream of the Fish Creek Borehole mine dewatering site. Site 302 is located approximately two miles downstream of the Fish Creek Borehole mine dewatering site. Site 305 is located upstream of the Fish Creek Tipple. Site 27A is located immediately upstream of the Fish Creek Tipple discharge (a.k.a. CDPS discharge site 62). Site 1003 is located downstream of Fish Creek Tipple site 62.

Three relatively new surface sites were added in conjunction with the new Fish Creek Alluvium well sites (AVF-13, AVF-14, and AVF-15), in order to evaluate potential subsidence impacts in the area. These are surface sites SW-13, SW-14 (both added in August 2001), and SW-15 (added in June 2002). These sites require quarterly water level measurements (March through September), and semi-annual field parameters and water quality sampling.

Tables 39 through 47 provide summaries of the 2020 Water Year data collected at Fish Creek surface flow sites. Tables 39a through 47a provide historical summaries of each sites water quality data for comparison. Figures 71 through 102 provide graphical representations of water levels and selected water quality parameters recorded at each site. Again, typical flow patterns were exhibited at these sites with spring runoff periods accounting for the peak flows observed. In general, an inverse relationship between flow and field conductivity was evident. 2020 water quality parameters for these sites were generally within previously established ranges. However, a pH maximum of 8.9 s.u. was observed at SW-15 on 8/11/2020. This pH was measured during a low flow period (~10 gpm) and may have been influenced by algae and vegetation in the stream channel.

Trout Creek: Three monitoring sites have been established on Trout Creek. Site 301 is located on Trout Creek above the confluence with Middle Creek. Site 69 is located on Trout Creek below the confluence with Middle Creek. Site 1005 (established in 1994) is located downstream of the confluence with Fish Creek and is monitored in conjunction with alluvial well 008-AT-1.

Tables 48 through 50 provide summaries of the 2020 Water Year data collected at Trout Creek surface flow sites. Tables 48a and 50a provide historical summaries of the water quality at sites 301, 69, and 1005. Figures 103 through 112 provide graphical representations of water levels and selected water quality parameters recorded at each site. Typical seasonal flow patterns were observed. Water quality parameters for these sites are typically within previously established ranges. However, a total recoverable iron (9.1 mg/L) and total recoverable manganese (0.52 mg/L) maximum were observed at site 69 in March 2020. Elevated total recoverable iron and manganese in this region are often associated with high concentrations of TSS. The total recoverable analytic method dissolves non-toxic mineral phase iron and manganese particles found naturally in the sediment that makes up the suspended solids in the water column, which overestimates the concentration that could contribute to toxicity. The March sample was collected during the snowmelt season and the TSS measured in this sample were high (351 mg/L). The surface of the stream was frozen during this event and the ice had to be broken to collect the sample. Its likely that additional solids in the channel were disturbed in this process further elevating the TSS, iron, and manganese concentrations. This is further supported by the significantly lower iron (1.5 mg/L) and manganese (0.21 mg/L) concentrations measured at Foidel Creek Site 900, downstream of the mine's sediment basins but upstream of 69, this same week, indicating the concentrations observed at site 69 were unrelated to the mine's activities.

Middle Creek: 2020 data for site 29, located on Middle Creek below the confluence with Foidel Creek, is provided in Table 51. A historical summary of the sites water quality data is provided in Table 51a. Figures 113 through 116 provide graphical representations of water levels and selected water quality parameters recorded at site 29. Except for conductivity, the 2020 water quality parameters for this site were typically within the historic range. A field conductivity maximum of 5820 µmhos/cm was measured during the 4/28/2020 event. This is approximately 1500 µmhos/cm higher than the prior maximum measured in September 2016. The field conductivity measured at Foidel Creek site 900 (upstream of 29 but downstream of Foidel Creeks sediment basins) on 4/28/2020 was 1480 µmhos/cm indicating that the conductivity observed in Middle Creek was not associated with the mine. Its unclear why this measurement was so elevated. The field conductivity in May (1440 µmhos/cm) returned to levels more typically observed at this location.

3.4 Spoil Spring Monitoring

Generally, groundwater migrates along bedding planes, faults, joints, or fracture zones. Given adequate head pressure, if these zones of water migration intercept the surface, a spring or seep results. The TC spoil spring monitoring program was initiated in 1986 and is conducted annually. In accordance with the approved plan, the annual mine wide survey is conducted during May, with springs measured for flow and field parameters. If a spring is discharging at or above 35 gallons per minute, it is monitored for the next year in accordance with the monitoring plan. A few samples are typically collected each year even when the 35 GPM mark is not met. Two spoil spring sites, 7 (Twentymile Pit Pond) and 303 (in Fish Creek Tipple area), require monitoring under Exhibit 14-10.

In addition to the spoil spring monitoring requirements, Site 7 is monitored quarterly for field parameters, and sampled on a semi-annual basis for water quality (if flowing). The 303 spring series (303-1 through 303-3) is monitored semi-annually for field parameters and water quality. Field parameters include flow, temperature, pH, and conductivity. Water quality parameters include TDS, TSS, dissolved calcium, dissolved magnesium, dissolved sodium, bicarbonate, carbonate, sulfate, total recoverable cadmium, total recoverable mercury, total recoverable selenium, total recoverable silver, total recoverable iron, total recoverable manganese, total recoverable molybdenum, total recoverable zinc, nitrate and nitrite, ammonia, and orthophosphorus.

In 2020, site 7 flowed during the first and second quarters of the water year. Spring points 303-2 and 303-3 remained dry in 2020. These points stopped flowing in 2012 after the Fish Creek Tipple area was reclaimed.

Tables 52 provides a summary of the 2020 Water Year data collected at Site 7 and Table 53 includes the data collected at the 303-1 spoil spring site.

3.5 Natural Spring Monitoring

Two natural springs, SW1 and SW2, located over previously mined areas in the Southwest Mining District required semiannual monitoring during 2020. Prior to mining, SW-1 typically flowed throughout the year, while SW2 flows were sporadic. In recent years flows at SW-1 have been minor, and in the case of SW-2, non-existent. Flow was only observed at site SW-1 during the May event. No flow was observed at SW-2 during either 2020 monitoring event. The natural springs are monitored for field parameters, which include flow, temperature, pH, and conductivity, as well as TDS, TSS, dissolved calcium, dissolved magnesium, dissolved sodium, bicarbonate, carbonate, sulfate, total recoverable cadmium, total recoverable mercury, total recoverable selenium, total recoverable silver, total recoverable iron, total recoverable manganese, total recoverable molybdenum, total recoverable zinc, nitrate and nitrite, ammonia, and orthophosphorus. See tables 54 and 55 for the 2020 monitoring results.

In April 2016, a spring and seep survey was also conducted in the northern mining district to identify potential discharges to Fish Creek. No new or significant springs were identified in 2016. The northern mining district is located within the Twentymile Park Syncline. The predominant lithologic unit nearest the surface and occupying most of the basin is the Lewis Shale, which can be upwards of 700 feet thick. The lack of significant bedding

planes, faulting, or fracture zones in this area may account for the lack of springs in the central portion of this basin.

3.6 CDPS Discharge Sites

Under State of Colorado Department of Public Health and Environment (CDPHE), Colorado Discharge Permit System (CDPS) permit No.'s CO-0027154, CO-0036684, CO-0042161, COG-850051 and COG-850054 eleven discharge points are monitored throughout the year. Note that CDPS has also been referred to as the National Pollutant Discharge Elimination System (NPDES) in previous AHRs. Monitoring results (CDPHE Colorado Discharge Monitoring Reports, or DMRs) are copied to DRMS in accordance with CDPS requirements. The monitoring frequencies and analytes required to be analyzed vary by outfall and permit number. See the relevant permits noted above for each outfall's monitoring requirements. Tables 56 through 66 provide the 2020 water year water quality data summaries for the eleven outfalls. Figures 118 through 124 provide graphical representations of the 2020 flow rate and field conductivity data for select outfalls.

During the 2020 water year there were three exceedances of the TSS limits and three exceedances of the iron limits at the outfalls associated with Permit CO-0027154. Outfall 003 exceeded the monthly average TSS limit in March and July and Outfall 006 exceeded the limit in March. In all three cases the suspended solids returned to compliant levels the following month. The TSS concentration were only slightly elevated above the discharge limit (~5 – 10 mg/L) and typically occurred during periods when the flow was minimal (< 5 gpm). Its possible that sediment was disturbed during sample collection resulting the slightly elevated values. All three iron exceedances in 2020 occurred at outfall 006. A daily max and monthly average limit exceedance occurred in January and a monthly average exceedance also occurred in February. The pH during these months was neutral and the TSS was low. All three of these exceedances occurred during the winter after snow and ice had covered the sediment basin for several months, cutting off the basins water from direct contact with the atmosphere, likely resulting in a reduction in available dissolved oxygen within the water column. Iron oxides are mobilized through microbial activity that occurs during reduced conditions (low oxygen) and this may have been the cause of these exceedances. Iron returned to compliance levels in the spring once snowmelt season began. No exceedances occurred at the outfalls associated with permit CO-0036684, CO-0042161, COG-850051 or COG-850054 in 2020.

3.7 Mine Water Discharge Sites

There are three mine water discharge monitoring sites associated with the TC operation. Site 109 (Foidel Creek Mine surface facilities) requires quarterly monitoring for flows, field parameters, and water quality samples (when flowing). Site 109 has not discharged in about 20 years and will not be discharging in the conceivable future. Site 115 (Fish Creek Borehole) is monitored as a CDPS discharge point in accordance with the requirements set forth under CDPS Permit No. CO-0042161. No mine water was discharged through this point in 2020. Site 7 (Area #1 Pit) receives dewatering water from wells located at the former Fish Creek vent shaft in the old Western Mining District (WMD) and the 10RT well located in the old Eastern Mining District (EMD). The Pit supplies water to the wash plant, however if it overflows, it runs through site 7 to Pond D, and subsequently through CDPS Outfall 005A to Foidel Creek. Site 7 requires quarterly analyses when flowing per

DRMS Permit No. C-82-056. Site 7 discharged during the first and second quarter of 2020. Outfall 005A requires weekly, twice monthly, monthly, and quarterly water quality sampling when flowing, under CDPS Permit CO-0027154. There were no exceedances of the CDPS permit limits at Outfall 005A during these quarters. Tables 52 provides a summary of the 2020 Water Year data collected at Site 7. Table 59 includes the 2020 water quality data collected at Pond D/Outfall 005A.

3.8 2020 Inflow Survey

An inflow study was conducted underground in the fall and winter. Flow rates and field parameters were recorded for measurable inflows from the accessible areas of the underground mine. No changes or new water inflows were noted during 2020 please refer to previous years AHR inflow maps flow locations and discharge notes. Note that these maps also includes historic data for older underground areas, the majority of which have subsequently dried up since moving to the Wolf Creek coal seam. In 2020 only one seep remains active.

Background

WMD: The old WMD was closed in 1996. At that time inflows were 52 gpm. Note that water elevations for the old WMD were monitored periodically at the Fish Creek Borehole. Our best estimate is that inflows for the old WMD are still on the order of 50 to 60 gpm. Freeboard in the old WMD in the fall of 2020 was on the order of 60 feet.

EMD: Longwall mining was completed in the EMD by early-January 2001. Production from the NMD, 12 Rt Longwall Panel, was underway by late January 2001. The EMD was permanently sealed in October 2001 removing all access to the 6 Rt and 7 Rt gate roads. Thus, no measurements are available in this area. Historical data is available in previous AHRs. The last flows measured for 2000 showed seasonal variations, with an average annual flow of approximately 65 gpm. Water levels for the EMD are monitored on a periodic basis at the 10RT well shaft. Freeboard in the EMD in the fall of 2020 was on the order of 60 feet.

NMD: At the time of the 2010 inflow study, the mine operation had completed the 23 Rt panel. The primary sources of water came from the two most recent shafts in the 6MN area, and two fault crossings. Total inflow was estimated to be on the order of 80 gpm. Inflows continued in the Northeast Submains, although there appears to be a continued decrease in ceiling dripping. The highest inflows were about 20 gpm for the new 6MN shaft, and about 15 gpm from a floor sump at inflow site 8 (IF8) with a conductivity of 2270 (Trout Creek Water). This may have been impacted by the addition of roof drip collection to the sump system. The next highest inflow was at raise bore area (IF 38 and IF 37), which was on the order of 10-gpm (down from an estimated 20 gpm in 2005), Field conductivity measurements were about 1500 umhos/cm. This site is a blend of Wadge and Twentymile Sandstone water. Inflow at the remaining sites (primarily roof drippers) were either dry or significantly lower, often less than a gallon per minute.

New Western Mining District (new WMD): The most recent inspection along the new gate roads indicated estimated inflows of less than 10 gpm. The majority of sites were modest roof drippers. Sites 70 and 72

exhibiting the highest flow in 2013, are almost dry. The majority of the drippers seen in 2013 and 2014, had dried up by 2015.

Wolf Creek Seam: Inflow notes were made by Twentymile consultant and geologist, Rocky Thompson during 2020. A summary of his observations follows:

Overall there were few long term inflow sites, one floor spring remains in 8 EAST with 0.5 GPM inflow continuing for more than several months, possibly still flowing from fractures in floor. The roof drippers tend to dry out within less than 3,000 feet from active CM face, often in less than three months.

A few roof drippers associated with 15' to 25' deep test holes have been noted but are generally dry within three months. The majorities of roof drippers are less than 0.05 gpm and must be calculated for a larger square area with several often found in one or more entries at the same time. Long term the roof drippers seldom have significant contribution to inflow rates.

10 EAST: 10 East had more roof drippers on development than 9 East. The 10 East roof drippers per the mapping would average about 1 GPM per 1,000 feet of 3-entry gate road. I realize this may seem low - well documented that a small (1/16 gpm) dripper can cause a wet spot in the roadway resulting in a big hole full of mud.

9 EAST: The 9 East roof drippers per the mapping would average about 1 GPM per 1,500 feet of 3-entry gate road, less than observed in 10 East. All active drippers are mostly dry now, 9 East from XC 74+00 into XC 144+00, a distance of 7,000 feet.

3.9 Water Balance

In early 2009, TC conducted a water balance study to better access water use and allocations for mine operations, as well as mine dewatering. A flow chart was provided in the 2009 AHR, illustrating water movement for the mine in early 2009. Note that there have been some changes in flow patterns since this study. Another mine water balance may be performed in 2021, which would require expenditures for flow meters at key locations.

4.0 SUBSIDENCE IMPACTS

Historical subsidence information can be found in previous Annual Hydrology Reports.

No surface water stream were subsided during the 2020 water year.

Wolf Creek Seam Mining:

In 2016, TC hired the consultant SubTerra, Inc. to perform subsidence evaluations for the mine site. Their reports and maps were provided to Tabetha Lynch of DRMS via emails from Michael Berdine of TC, on March 29, 2017. Excerpts from their reports follow in the conclusion section below.

5.0 SUMMARY AND CONCLUSIONS

No significant hydrology impacts, attributable to activities at the Foidel Creek Mine, were noted during 2020. See discussion below, summarizing data assessments.

Water Wells: Water levels monitored in the Twentymile Wadge Overburden wells remained stable and comparable to previously collected data, and no significant water quality influences were evident from data obtained during 2020.

Twentymile Sandstone wells remained stable and comparable to previously collected data, and no significant water quality influences were evident from data obtained during 2020. The mines use of potable supply well 001-83-106 has declined over the last couple of years and the water table in the Trout Creek Sandstone in this area has begun to return (Figure 22). The historical declining water level trend at well 001-83-107 (Figure 23), has stabilized. Well monitoring at 95M001 (Figure 24) indicated a continuing decline in water levels which began in 1997 and appears to be stabilizing. No significant inflows from the Trout Creek formation into the mine workings have been encountered to explain this difference in water level or to suggest that dewatering of the formation is directly attributable to mining activities. No readily apparent water quality impacts associated with mining are noted for the Trout Creek Sandstone aquifer based upon data collected during 2020.

Mining related dewatering impacts were noted for the Fish Creek sandstone wells 91M001 and 91M004 (Figure 30), and the Ashley well (Figure 31). Wells 91M001 and 91M004 were undermined in 1995 and exhibited historic water level declines corresponding to mining activity. Water levels in these wells have subsequently stabilized, exhibiting only seasonal fluctuations. Two springs (SW-1 and SW-2) are monitored in the same vicinity as 91M001 and 91M004, although SW-1 flowed in May but was not flowing in September, SW-2 did not flow in 2020. The Ashley well was undermined in 1999 and exhibited water level declines corresponding to mining activity. The water level in this well began recovering in 2000 and has stabilized.

No unusual observations are noted with respect to Foidel Creek, Fish Creek, or Trout Creek alluvium groundwater levels. Water quality at the proposed point of compliance wells (008-AV-2, 008-AU-3, 008-AT-1) generally meet the agricultural use groundwater standards. A single exceedance of the dissolved iron standard at well 008-AT-1 was likely the result of a ruptured filter. See Section 3.2.1 for additional discussion.

Surface Water: Typical flow patterns were seen in Foidel Creek, Fish Creek, Middle Creek and Trout Creek in 2020 ,with spring runoff accounting for the peak flows. TC is still working to develop stream rating curves for the surface monitoring locations. No new flow meters were installed in 2020. TC implemented in house staff for stream gaging during 2017.

High total recoverable iron and manganese were observed at Trout Creek site 69 in March of 2020. The stream surface was frozen and the sample may have been influenced by sediment that was disturbed when clearing the ice for sample collection. The total recoverable iron and manganese were significantly lower, and within agricultural use surface water standards, at Foidel Creek site 900, upstream of site 69 but downstream of the Foidel Creek Mine surface facilities indicating the elevated data was not associated with the mine's activities.

Middle Creek site 29 also exhibited an unusually high field conductivity in April of 2020. Similarly, the field conductivity measured at Foidel Creek site 900, upstream of point 29, was several thousand μmhos/cm less than site 29, indicating the elevated conductivity unrelated to the mine's activities. Its unclear what caused this elevated reading. See Section 3.3 for additional discussion. Water quality at the stream monitoring points was typically within the historic range observed at each of the sites and no other water quality impacts of concern were evident at the stream points in 2020.

Spoil Springs: Spoil spring 303-1 (303 series) and Site 7 exhibited flow in 2020. The 2012 reclamation at the Fish Creek Tipple, resulted in the loss of two smaller associated springs in the 303 series (303-2 and 303-3). Site 7 flowed during the first and second quarters of the water year. Both of these areas report to CDPS sediment ponds/outfalls. Neither point contributed a significant portion of discharge from the TC mine area and discharges from sedimentation ponds predominately occurred in conformance with applicable CDPS permit limitations and therefore did not constitute significant impacts to receiving waters.

Mine Discharge: Mine water discharge sites 109 and 115 did not discharge in 2020. Site 7 (Area #1 Pit) receives dewatering water from wells located at the former Fish Creek vent shaft in the old Western Mining District (WMD) and the 10RT well located in the old Eastern Mining District (EMD). The Pit overflow goes through DRMS site 7 to Pond D, which may in turn flow into Foidel Creek via CDPS Outfall 005A (a.k.a. site 84). There were no exceedances of the CDPS permit limits at Pond D/Outfall 005A in 2020.

Mine Inflow: No unusual occurrences of inflow were noted as a result of the Annual Mine Inflow study. Inflows are within the projected flows presented in the permit. Water quality has not changed significantly and appears to mirror the quality of the adjacent spoil water. It appears that the elevated EC and iron readings are associated with the water that has pooled in the mine sump, which is in contact with the overlying Marine Shales. This contact has provided the opportunity for additional salts and iron to be leached from this unit. The pumping of mine water and sumps should see a decrease in the elevation of the pool over time, with an anticipated decrease in the EC and concentration of iron in the effluent.

Subsidence: Subsidence data has been submitted with the 2018 report for the subsidence of Fish Creek during the 8 East Panel mining. On Average Fish Creek subsided around 7 feet in the center of the panel out to no subsidence on the edges of the panel. Some pooling was noted on Fish Creek in the area of subsidence, but no major flow obstructions have been observed. See data included in the 2018 AHR report.

Below are some excerpts from the conclusions section of the SubTerra Subsidence report:

8.1. Union Pacific Railroad Energy Spur

Some general conclusions can be drawn from the initial work described in Section 3, including:

1. With the exception of panel 4-East, the majority of the movement associated with each longwall will occur over a one month period starting when the face is about 500-feet from the rail line and ending when the face is about 1,000-feet past the rail line. This distance is measured parallel to face retreat.
2. During pre-ballasting, track differential gradients will generally be maintained below 0.4% between adjacent Stations. Final differential gradients are predicted to be at or below 0.3% following subsidence from each of the planned longwall panels.

3. Both of the two remedial methods outlined in this report have been successfully implemented during undermining of the Energy Spur. There is every reason to conclude that they will continue to be successfully applied to remediating subsidence associated with extraction of the panels in the Wolf Creek Seam.

8.2. County Road 33

Section 4 predicts that County Road 33 will be subject to just under 80-inches of subsidence as it crosses over the shallower panels in the Wolf Creek seam. Gradient changes of just under 1% and surface strains of 0.005 are expected to result in surface cracking of the chip sealed surface. Prior mitigation of similar impacts to County Road 33 has involved sealing of these surface cracks.

8.3. Fish Creek, Foidel Creek, and Middle Creek.

The evaluation presented in Section 5 predicts that Fish Creek will overflow its high bank(s) with the following impacts to Fish Creek and its floodplain:

1. A maximum increase in Fish Creek bottom gradient of 0.024 (2.4%).
2. An increase in the surface area of Fish Creek following coal extraction in Panels 9-East, 8- East, 7-East, and 6-East of under 50 acres. Impacts to Foidel Creek are expected to be minimal with a predicted increase in the surface area of Foidel Creek following coal extraction in Panels 1-East through 4-East of under 5 acres.

It is our understanding that the magnitude of predicted surface water area changes in the Northern Mining District contained in our 1999 and 2002 reports and over the Western Mining district in 2009 were never realized illustrating the conservative nature of these predictions. This is likely due to the dynamic process where differential subsidence displacements are readily accommodated by the natural processes of erosion and deposition that occurs rapidly under the high flow conditions experienced during spring months.

8.4. Power Transmission Lines.

Several conclusions can be drawn from the preliminary work, described in Section 6, including:

1. Structures on the Foidel Creek-Steamboat line are predicted to subside by up to 6-feet
2. Structures on the Archer-Hayden line are predicted to subside by just over 4.5-feet.
3. Structures on the Craig-Hayden-Steamboat line are predicted to subside by just over 4-feet
4. Maximum daily subsidence is predicted to be less than 6-inches per day.
5. The duration of subsidence effects at each structure is expected to be between 25 and 35-days.
6. In the case of the Archer-Hayden and Craig-Hayden-Steamboat lines, the length of the traveling subsidence profile means that each structure will react independently which should for the most part eliminate the potential for complex interactions.
7. Subsidence, tilt and strain magnitude at each Archer-Hayden and Craig-Hayden-Steamboat structure are predicted to be lower than previously experienced by WAPA's line that crossed the Eastern Mining

District and by these two lines when they were previously undermined by 19-Right in the Northern Mining District.

8.5. Water Wells

The evaluation presented in Section 7 predicts impacts to wells completed in the Wolf Creek Seam and its immediate overburden. Minor impacts may also occur in shallow overburden wells but are likely to be minor with recovery within one year after undermining.

8.6. Monitoring Requirements

As noted in the introduction, Twentymile Coal, LLC has collected and submitted a large amount of subsidence data from monitoring coal extraction in the Wadge Seam. They have also monitored subsidence of the Power Lines, Fish and Foidel Creek and the Energy Spur railroad track during sequential undermining. We recommend that monitoring both ground subsidence and structure response continue focusing on verifying the predictions made herein. Additional monitoring requirements associated with each of the evaluated structures

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TABLE 1
HYDROLOGIC MONITORING SITES:
BEDROCK WELLS

SITE [1]	MONITORING FREQUENCY	
	WATER LEVEL & FIELD PARAMETERS	WATER QUALITY SAMPLING
Wadge/Wolf Creek Overburden		
009-79-4	Semi-annually	Annual
006-82-74C	Semi-annually	Annual
91M006	Semi-annually	Annual
008-77-58	Semi-annually	Annual
93-M001	Semi-annually	Annual
WC008A	Semi-annually	Annual
WC013A	Semi-annually	Annual
Twentymile Sandstone		
006-BRDH7	Semi-annually	
91M005	Deactivated	Deactivated
97012TM	Deactivated	Deactivated
97013TM	Semi-annually	Annual
FBR-11B	Abandoned	Abandoned
FBR-2	Semi-annually	Annual
Trout Creek Sandstone		
001-83-106	Annual	Bi-annual
001-83-107	Annual	----------
008-75-EFC	Deactivated	Deactivated
95M001	Annual	Bi-annual
97012TC	Deactivated	Deactivated
97013TC	Annual	Bi-annual
FBR-2-E	Annual	Bi-annual
Fish Creek Sandstone		
91M001	Semi-annually (WL only)	----------
91M004	Semi-annually (WL only)	----------
Ashley	Semi-annually	Annually

(1)

Additional wells will be added as the mining operation expands to assure that at least 2 downgradient Wadge Overburden wells exist. Future wells may include: 021-81-26, 021-82-12, 021-81-3, 021-81-8.

Table: 2
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 09794 (009-79-4, Bedrock Well, Wadge Overburden) Datum: 7004.54

	Date			5/7/2020		9/5/2020	
	Depth to Water (FT)			31.65		33.16	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	364	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5.7	Y		
ANION	Bicarbonate as HCO3	N	MG/L	444	Y		
ANION	Carbonate as CO3	N	MG/L	3.4	Y		
ANION	Sulfates	N	MG/L	110	Y		
CATION	Calcium	D	MG/L	11.8	Y		
CATION	Magnesium	D	MG/L	6.5	Y		
CATION	Sodium	D	MG/L	185	Y		
FIELD	pH, Field	N	S.U.	7.73	Y	7.71	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	970	Y	910	Y
FIELD	Temperature, Field	N	DEG-C	10.8	Y	10.5	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.02	Y		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.05	N		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	876	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	566	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.3	N		
SECONDARY	Iron	D	UG/L	300	Y		
SECONDARY	Manganese	D	UG/L	50	N		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 2a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 09794 (009-79-4, Bedrock Well, Wadge Overburden) Datum: 7004.54

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/17/2006	5/7/2020	14	411	415	478	357	36.5
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/17/2006	5/7/2020	14	14.1	11.3	36.5	3.8	9.15
ANION	Bicarbonate as HCO3	N	MG/L	4/12/2017	5/7/2020	4	437	436	444	433	4.79
ANION	Carbonate as CO3	N	MG/L	4/12/2017	5/7/2020	3	11.3	10.5	20	3.4	8.33
ANION	Sulfates	N	MG/L	5/17/2006	5/7/2020	14	130	130	150	110	14
CATION	Calcium	D	MG/L	5/17/2006	5/7/2020	14	12.2	11	24.7	9.4	4.03
CATION	Magnesium	D	MG/L	5/17/2006	5/7/2020	14	6.95	6.1	13.7	5.2	2.24
CATION	Sodium	D	MG/L	5/17/2006	5/7/2020	14	193	191	212	176	10.7
FIELD	pH, Field	N	S.U.	10/2/2016	9/5/2020	9	7.79	7.68	8.78	7.56	0.384
FIELD	Specific Conductivity, Field	N	UMHOS/CM	10/2/2016	9/5/2020	9	948	950	1030	890	48.2
FIELD	Temperature, Field	N	DEG-C	10/2/2016	9/5/2020	9	10.1	10.4	10.9	9.2	0.663
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/17/2006	5/7/2020	14	0.15	0.1	0.62	0.02	0.17
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/17/2006	5/7/2020	13	0.038	0.02	0.16	0.01	0.04
PHYSICAL	pH, Lab	N	S.U.	5/17/2006	5/7/2020	14	8.3	8.3	8.6	7.8	0.18
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/17/2006	5/7/2020	14	926	922	1010	848	51.3
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/17/2006	5/7/2020	14	583	579	630	540	26
PRIMARY	Cadmium	D	UG/L	5/17/2006	5/7/2020	14	0.5	0.5	0.5	0.2	0.1
PRIMARY	Lead	D	UG/L	5/17/2006	5/7/2020	14	200	200	200	200	0
PRIMARY	Mercury	D	UG/L	5/17/2006	5/7/2020	14	1	1	1	1	0
PRIMARY	Selenium	D	UG/L	5/17/2006	5/7/2020	14	0.3	0.3	0.5	0.1	0.1
SECONDARY	Iron	D	UG/L	5/17/2006	5/7/2020	14	110	65	350	20	100
SECONDARY	Manganese	D	UG/L	5/17/2006	5/7/2020	14	25	30	50	6	15
TRACE	Molybdenum	D	UG/L	5/17/2006	5/7/2020	14	80	100	100	50	30

Table: 3
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 068274C (006-82-74C, Bedrock Well, Wadge Overburden) Datum: 6840.61

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				3.47		3.46	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	7.3	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N		
ANION	Bicarbonate as HCO3	N	MG/L	8.9	Y		
ANION	Carbonate as CO3	N	MG/L	20	N		
ANION	Sulfates	N	MG/L	1100	Y		
CATION	Calcium	D	MG/L	230	Y		
CATION	Magnesium	D	MG/L	45.5	Y		
CATION	Sodium	D	MG/L	218	Y		
FIELD	pH, Field	N	S.U.	8.96	Y	7.32	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2340	Y	2350	Y
FIELD	Temperature, Field	N	DEG-C	9.8	Y	10.4	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.03	Y		
PHYSICAL	pH, Lab	N	S.U.	7.9	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	2220	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1830	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.1	Y		
SECONDARY	Iron	D	UG/L	770	Y		
SECONDARY	Manganese	D	UG/L	120	Y		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 3a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 068274C (006-82-74C, Bedrock Well, Wadge Overburden) Datum: 6840.61

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/8/1987	5/13/2020	44	126	38	451	7	144
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/8/1987	5/13/2020	35	15	3	190	0	32
ANION	Bicarbonate as HCO3	N	MG/L	4/12/2017	5/13/2020	4	14.9	15.4	20	8.9	4.97
ANION	Carbonate as CO3	N	MG/L	4/12/2017	5/13/2020	3	20	20	20	20	0
ANION	Sulfates	N	MG/L	5/8/1987	5/13/2020	45	1626	1800	2552	43	642.6
CATION	Calcium	D	MG/L	5/8/1987	5/13/2020	45	250	240	447	1	131
CATION	Magnesium	D	MG/L	5/8/1987	5/13/2020	45	167	199	318	0.32	101
CATION	Sodium	D	MG/L	5/8/1987	5/13/2020	45	262	249	566	55.8	99.8
FIELD	pH, Field	N	S.U.	5/8/1987	9/5/2020	40	7.97	7.94	9.33	6.9	0.638
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/8/1987	9/5/2020	40	2830	2960	3940	947	644
FIELD	Temperature, Field	N	DEG-C	5/8/1987	9/5/2020	40	11	10.4	16	8	2.11
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/8/1987	5/13/2020	45	0.048	0.02	0.33	0.01	0.06
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/8/1987	5/13/2020	44	0.0343	0.01	0.792	0.005	0.118
PHYSICAL	pH, Lab	N	S.U.	5/6/1997	5/13/2020	26	7.76	7.75	9.2	5.9	0.748
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/8/1987	5/13/2020	45	2919	3060	3800	1150	637.8
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/8/1987	5/13/2020	45	2616	2898	3710	618	807.5
PRIMARY	Cadmium	D	UG/L	5/8/1987	5/13/2020	44	0.9	0.5	5	0.07	1
PRIMARY	Lead	D	UG/L	5/8/1987	5/13/2020	45	100	50	400	20	100
PRIMARY	Mercury	D	UG/L	5/8/1987	5/13/2020	45	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	5/8/1987	5/13/2020	45	5930	1	267000	0.1	39800
SECONDARY	Iron	D	UG/L	5/8/1987	5/13/2020	45	2150	230	31200	5	6550
SECONDARY	Manganese	D	UG/L	5/8/1987	5/13/2020	45	465	420	1670	10	396
TRACE	Molybdenum	D	UG/L	5/8/1987	5/13/2020	45	60	50	200	10	40

Table: 4
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 91M006 Bedrock Well, Wadge Overburden Datum: 7306.9

Well Destroyed in 2016.
TC working to replace well.

Table: 4a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 91M006 Bedrock Well, Wadge Overburden Datum: 7306.9

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	9/30/1991	4/16/2015	33	435.1	334.8	1459	201	284.1
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	9/30/1991	4/16/2015	31	185.7	220	278	0	79.07
ANION	Sulfates	N	MG/L	9/30/1991	4/16/2015	33	117.6	33	1083	5	212.5
CATION	Calcium	D	MG/L	9/30/1991	4/16/2015	31	4.8	1.6	76	0.72	13.4
CATION	Magnesium	D	MG/L	9/30/1991	4/16/2015	31	3.4	1	58	0.03	10
CATION	Sodium	D	MG/L	9/30/1991	4/16/2015	31	335	324	740	77	106
FIELD	pH, Field	N	S.U.	9/30/1991	4/3/2003	23	9.494	9.75	10.14	7.9	0.6196
FIELD	Specific Conductivity, Field	N	UMHOS/CM	9/30/1991	4/3/2003	23	1580	1510	2540	1200	351
FIELD	Temperature, Field	N	DEG-C	9/30/1991	4/3/2003	23	13.5	13.4	18	7	2.11
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	9/30/1991	4/16/2015	31	0.075	0.06	0.33	0.02	0.068
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	9/30/1991	4/16/2015	30	0.16	0.133	0.784	0.005	0.142
PHYSICAL	pH, Lab	N	S.U.	5/7/1997	4/16/2015	20	9.92	9.95	10.2	9.5	0.2009
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	9/30/1991	4/16/2015	31	1487	1410	2780	1190	360.1
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	9/30/1991	4/16/2015	31	887.2	800	1996	670	295.9
PRIMARY	Cadmium	D	UG/L	9/30/1991	4/16/2015	31	1	0.5	5	0.1	1
PRIMARY	Lead	D	UG/L	9/30/1991	4/16/2015	31	140	90	750	20	150
PRIMARY	Mercury	D	UG/L	9/30/1991	4/16/2015	31	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	9/30/1991	4/16/2015	31	2	1	10	0.1	2
SECONDARY	Iron	D	UG/L	9/30/1991	4/16/2015	31	328	200	1400	20	379
SECONDARY	Manganese	D	UG/L	9/30/1991	4/16/2015	31	17	10	90	5	17
TRACCE	Molybdenum	D	UG/L	9/30/1991	4/16/2015	31	40	50	70	10	20

Table: 5
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 087758 (008-77-58 Bedrock Well, Wadge Overburden) Datum: 6719.8

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				7.13		9.87	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	460	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N		
ANION	Bicarbonate as HCO3	N	MG/L	561	Y		
ANION	Carbonate as CO3	N	MG/L	20	N		
ANION	Sulfates	N	MG/L	360	Y		
CATION	Calcium	D	MG/L	58.1	Y		
CATION	Magnesium	D	MG/L	37.6	Y		
CATION	Sodium	D	MG/L	220	Y		
FIELD	pH, Field	N	S.U.	7.56	Y	7.53	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1570	Y	1550	Y
FIELD	Temperature, Field	N	DEG-C	10.1	Y	9.9	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.02	Y		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.2	Y		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1460	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	988	Y		
PRIMARY	Cadmium	D	UG/L	0.06	Y		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.3	N		
SECONDARY	Iron	D	UG/L	110	Y		
SECONDARY	Manganese	D	UG/L	50	N		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 5a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 087758 (008-77-58 Bedrock Well, Wadge Overburden) Datum: 6719.8

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/17/2006	5/13/2020	13	496	508	559	428	42.7
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/17/2006	5/13/2020	13	15.1	20	20	4	7.32
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	5/13/2020	3	541	536	561	526	18
ANION	Carbonate as CO3	N	MG/L	4/23/2019	5/13/2020	2	20	20	20	20	0
ANION	Sulfates	N	MG/L	5/17/2006	5/13/2020	13	470	490	600	360	100
CATION	Calcium	D	MG/L	5/17/2006	5/13/2020	13	86.8	96.3	131	51.2	30.7
CATION	Magnesium	D	MG/L	5/17/2006	5/13/2020	13	59.8	63.5	91.8	35.6	21.4
CATION	Sodium	D	MG/L	5/17/2006	5/13/2020	13	206	199	278	155	35.5
FIELD	pH, Field	N	S.U.	10/1/2016	9/5/2020	9	7.55	7.53	7.74	7.49	0.0751
FIELD	Specific Conductivity, Field	N	UMHOS/CM	10/1/2016	9/5/2020	9	1530	1550	1700	1390	104
FIELD	Temperature, Field	N	DEG-C	10/1/2016	9/5/2020	9	10.6	10.7	11.5	9.9	0.561
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/17/2006	5/13/2020	13	0.072	0.1	0.15	0.02	0.043
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/17/2006	5/13/2020	12	0.05	0.05	0.2	0.01	0.05
PHYSICAL	pH, Lab	N	S.U.	5/17/2006	5/13/2020	13	8.2	8.3	8.5	8	0.15
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/17/2006	5/13/2020	13	1610	1650	1770	1440	125
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/17/2006	5/13/2020	13	1130	1110	1280	988	115
PRIMARY	Cadmium	D	UG/L	5/17/2006	5/13/2020	13	0.4	0.5	0.5	0.06	0.2
PRIMARY	Lead	D	UG/L	5/17/2006	5/13/2020	13	200	200	200	200	0
PRIMARY	Mercury	D	UG/L	5/17/2006	5/13/2020	13	1	1	1	1	0
PRIMARY	Selenium	D	UG/L	5/17/2006	5/13/2020	13	0.4	0.3	0.5	0.3	0.1
SECONDARY	Iron	D	UG/L	5/17/2006	5/13/2020	13	84	60	190	30	46
SECONDARY	Manganese	D	UG/L	5/17/2006	5/13/2020	13	19	18	50	10	11
TRACE	Molybdenum	D	UG/L	5/17/2006	5/13/2020	13	70	100	100	10	30

Table: 6
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 93M001 Bedrock Well, Wadge Overburden Datum: 7013.5

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				514.46		515.31	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	643	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	337	Y		
ANION	Bicarbonate as HCO3	N	MG/L	784	Y		
ANION	Carbonate as CO3	N	MG/L	202	Y		
ANION	Sulfates	N	MG/L	20	Y		
CATION	Calcium	D	MG/L	17.8	Y		
CATION	Magnesium	D	MG/L	1.3	Y		
CATION	Sodium	D	MG/L	412	Y		
FIELD	pH, Field	N	S.U.	9.59	Y	9.35	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1940	Y	1840	Y
FIELD	Temperature, Field	N	DEG-C	12.6	Y	11.8	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.03	Y		
PHYSICAL	pH, Lab	N	S.U.	9.6	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1820	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1110	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.3	N		
SECONDARY	Iron	D	UG/L	70	Y		
SECONDARY	Manganese	D	UG/L	10	Y		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 6a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 93M001 Bedrock Well, Wadge Overburden Datum: 7013.5

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	12/29/1993	5/13/2020	32	688.9	759.5	908	105	194
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	12/29/1993	5/13/2020	33	222.7	196	359	111	75.02
ANION	Bicarbonate as HCO3	N	MG/L	4/26/2018	5/13/2020	3	712	745	784	606	93.6
ANION	Carbonate as CO3	N	MG/L	4/26/2018	5/13/2020	3	380	202	739	199	311
ANION	Sulfates	N	MG/L	12/29/1993	5/13/2020	33	125.2	10	1346	1	326.4
CATION	Calcium	D	MG/L	12/29/1993	5/13/2020	33	2.42	1.7	17.8	1.3	2.85
CATION	Magnesium	D	MG/L	12/29/1993	5/13/2020	33	1.44	1.1	5	0.5	0.955
CATION	Sodium	D	MG/L	12/29/1993	5/13/2020	33	464	456	723	120	103
FIELD	pH, Field	N	S.U.	12/29/1993	9/5/2020	30	9.43	9.4	10.6	8.4	0.427
FIELD	Specific Conductivity, Field	N	UMHOS/CM	12/29/1993	9/5/2020	30	2040	1970	2970	1540	301
FIELD	Temperature, Field	N	DEG-C	12/29/1993	9/5/2020	30	11.6	11.8	19	8	1.97
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	12/29/1993	5/13/2020	33	0.06	0.04	0.1	0.02	0.04
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	12/29/1993	5/13/2020	32	0.021	0.02	0.051	0.005	0.012
PHYSICAL	pH, Lab	N	S.U.	5/6/1997	5/13/2020	25	9.49	9.5	9.9	8.89	0.209
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	12/29/1993	5/13/2020	33	2059	1900	3950	1800	473.5
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	12/29/1993	5/13/2020	33	1214	1110	2564	980	335.7
PRIMARY	Cadmium	D	UG/L	12/29/1993	5/13/2020	33	1	0.5	5	0.1	1
PRIMARY	Lead	D	UG/L	12/29/1993	5/13/2020	33	100	50	200	20	80
PRIMARY	Mercury	D	UG/L	12/29/1993	5/13/2020	33	0.5	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	12/29/1993	5/13/2020	33	1	1	5	0.2	1
SECONDARY	Iron	D	UG/L	12/29/1993	5/13/2020	33	216	50	4970	5	856
SECONDARY	Manganese	D	UG/L	12/29/1993	5/13/2020	33	17	10	50	5	13
TRACE	Molybdenum	D	UG/L	12/29/1993	5/13/2020	33	50	50	100	10	30

Table: 7
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: WC008A Bedrock Well, Wolf Creek Overburden Datum: 6739.0

				Date	5/13/2020		9/5/2020	
				Depth to Water (FT)	39.27		35.81	
Type	**Parameter**	**Units**	**Fraction**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	MG/L	N	1450.00	Y		
ANION	Alkalinity, Carbonate as CaCO3	MG/L	N	201.00	Y		
ANION	Bicarbonate as HCO3	MG/L	N	1770.00	Y		
ANION	Carbonate as CO3	MG/L	N	121.00	Y		
CATION	Sulfates	MG/L	D	50.00	N		
CATION	Calcium	MG/L	D	2.80	Y		
CATION	Magnesium	MG/L	D	1.80	Y		
FIELD	Sodium	MG/L	N	644.00	Y		
FIELD	pH, Field	S.U	N	8.79	Y	8.77	Y
FIELD	Specific Conductivity, Field	UMHOS/CM	N	2780.00	Y	2750.00	Y
NUTRIENT	Temperature, Field	DEG-C	N	14.40	Y	14.60	Y
NUTRIENT	NO3-NO2 Nitrogen	MG/L	N	0.10	N		
NUTRIENT	Phosphorus, Orthophosphorus	S.U	N	0.02	Y		
PHYSICAL	pH, Lab	UMHOS/CM	N	9.00	Y		
PHYSICAL	Specific Conductivity, Lab	MG/L	N	2690.00	Y		
PHYSICAL	Total Dissolved Solids, Lab	UG/L	N	1710.00	Y		
PRIMARY	Cadmium	UG/L	D	0.30	N		
PRIMARY	Lead	UG/L	D	200.00	N		
PRIMARY	Mercury	UG/L	D	1.00	N		
PRIMARY	Selenium	UG/L	D	0.30	N		
SECONDARY	Iron	UG/L	D	520.00	Y		
SECONDARY	Manganese	UG/L	D	10.00	Y		
TRACE	Molybdenum	UG/L	D	100.00	N		

Table: 7a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: WC008A Bedrock Well, Wolf Creek Overburden Datum: 6739.0

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/26/2018	5/13/2020	3	1363.33	1330.00	1450.00	1310.00	75.72
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4/26/2018	5/13/2020	3	248.33	241.00	303.00	201.00	51.39
ANION	Bicarbonate as HCO3	N	MG/L	11/21/2014	5/13/2020	15	1168.80	1100.00	1770.00	608.00	400.20
ANION	Carbonate as CO3	N	MG/L	11/21/2014	5/13/2020	15	217.73	241.00	302.00	90.00	67.75
CATION	Sulfates	D	MG/L	11/21/2014	5/13/2020	15	284.00	210.00	890.00	10.00	287.15
CATION	Calcium	D	MG/L	11/21/2014	5/13/2020	15	2.81	2.80	3.80	1.80	0.64
CATION	Magnesium	D	MG/L	11/21/2014	5/13/2020	15	2.49	2.10	3.80	1.70	0.80
CATION	Sodium	N	MG/L	11/21/2014	5/13/2020	15	693.40	675.00	931.00	457.00	126.63
FIELD	pH, Field	N	S.U	11/19/2014	9/5/2020	20	9.16	9.10	9.90	8.77	0.31
FIELD	Specific Conductivity, Field	N	UMHOS/CM	11/19/2014	9/5/2020	20	3255.50	2990.00	5940.00	2650.00	785.64
FIELD	Temperature, Field	N	DEG-C	11/19/2014	9/5/2020	20	11.26	11.55	14.60	6.40	2.13
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	11/21/2014	5/13/2020	15	0.10	0.10	0.10	0.09	0.00
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	11/21/2014	5/13/2020	15	0.04	0.05	0.07	0.02	0.01
PHYSICAL	pH, Lab	N	S.U	11/21/2014	5/13/2020	15	9.37	9.50	9.60	9.00	0.24
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	11/21/2014	5/13/2020	15	3118.00	3050.00	4380.00	1960.00	609.96
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	11/21/2014	5/13/2020	15	1955.33	1890.00	2770.00	1190.00	390.58
PRIMARY	Cadmium	D	UG/L	11/21/2014	5/13/2020	15	0.65	0.50	1.00	0.08	0.31
PRIMARY	Lead	D	UG/L	11/21/2014	5/13/2020	15	222.00	200.00	300.00	30.00	71.53
PRIMARY	Mercury	D	UG/L	11/21/2014	5/13/2020	15	1.00	1.00	1.00	1.00	0.00
PRIMARY	Selenium	D	UG/L	11/21/2014	5/13/2020	15	0.64	0.30	3.60	0.20	0.85
SECONDARY	Iron	D	UG/L	11/21/2014	5/13/2020	15	650.67	510.00	2880.00	140.00	655.77
SECONDARY	Manganese	D	UG/L	11/21/2014	5/13/2020	15	27.13	22.00	50.00	10.00	16.28
TRACE	Molybdenum	D	UG/L	11/21/2014	5/13/2020	15	137.33	100.00	200.00	60.00	53.91

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: WC013A Bedrock Well, Wolf Creek Overburden Datum: 6770.0

			Date	5/13/2020		9/5/2020	
			Depth to Water (FT)	1256.71		1257.08	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	975.00	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	96.80	Y		
ANION	Bicarbonate as HCO3	N	MG/L	1190.00	Y		
ANION	Carbonate as CO3	N	MG/L	58.10	Y		
CATION	Sulfates	D	MG/L	50.00	N		
CATION	Calcium	D	MG/L	4.30	Y		
CATION	Magnesium	D	MG/L	1.40	Y		
CATION	Sodium	N	MG/L	445.00	Y		
FIELD	pH, Field	N	S.U	8.83	Y	8.81	
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1830	Y	1860	
FIELD	Temperature, Field	N	DEG-C	15.40	Y	15.80	
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.10	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.10	Y		
PHYSICAL	pH, Lab	N	S.U	8.80	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1810.00	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1160.00	Y		
PRIMARY	Cadmium	D	UG/L	0.12	Y		
PRIMARY	Lead	D	UG/L	200.00	N		
PRIMARY	Mercury	D	UG/L	1.00	N		
PRIMARY	Selenium	D	UG/L	0.30	N		
SECONDARY	Iron	D	UG/L	710.00	Y		
SECONDARY	Manganese	D	UG/L	30.00	Y		
TRACE	Molybdenum	D	UG/L	100.00	N		

Table: 8a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: WC013A Bedrock Well, Wolf Creek Overburden Datum: 6770.0

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/26/2018	5/13/2020	3	938.33	949.00	975.00	891.00	43.00
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4/26/2018	5/13/2020	3	108.07	96.80	132.00	95.40	20.74
ANION	Bicarbonate as HCO3	N	MG/L	4/20/2015	5/13/2020	11	981.75	1090.00	1190.00	85.20	313.87
ANION	Carbonate as CO3	N	MG/L	4/20/2015	5/13/2020	11	82.54	86.80	122.00	20.00	29.46
CATION	Sulfates	D	MG/L	4/20/2015	5/13/2020	11	30.91	30.00	50.00	20.00	13.00
CATION	Calcium	D	MG/L	4/20/2015	5/13/2020	11	3.84	3.70	4.30	3.30	0.30
CATION	Magnesium	D	MG/L	4/20/2015	5/13/2020	11	1.84	1.70	2.90	1.40	0.44
CATION	Sodium	N	MG/L	4/20/2015	5/13/2020	11	439.27	444.00	487.00	387.00	31.15
FIELD	pH, Field	N	S.U	4/20/2015	9/5/2020	16	8.88	8.82	9.25	8.54	0.20
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/20/2015	9/5/2020	16	1874.38	1860.00	2170.00	1540.00	166.21
FIELD	Temperature, Field	N	DEG-C	4/20/2015	9/5/2020	16	18.19	18.80	21.40	13.90	2.22
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	4/20/2015	5/13/2020	11	0.10	0.10	0.10	0.10	0.00
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/20/2015	5/13/2020	11	0.08	0.05	0.35	0.03	0.09
PHYSICAL	pH, Lab	N	S.U	4/20/2015	5/13/2020	11	8.83	9.00	9.10	7.30	0.52
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/20/2015	5/13/2020	11	1886.36	1870.00	2170.00	1630.00	162.19
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/20/2015	5/13/2020	11	1164.36	1160.00	1290.00	948.00	100.17
PRIMARY	Cadmium	D	UG/L	4/20/2015	5/13/2020	11	0.69	0.50	3.00	0.12	0.77
PRIMARY	Lead	D	UG/L	4/20/2015	5/13/2020	11	184.55	200.00	200.00	30.00	51.26
PRIMARY	Mercury	D	UG/L	4/20/2015	5/13/2020	11	1.00	1.00	1.00	1.00	0.00
PRIMARY	Selenium	D	UG/L	4/20/2015	5/13/2020	11	1.25	0.30	11.00	0.10	3.23
SECONDARY	Iron	D	UG/L	4/20/2015	5/13/2020	11	519.09	380.00	1300.00	150.00	332.61
SECONDARY	Manganese	D	UG/L	4/20/2015	5/13/2020	11	23.55	21.00	40.00	11.00	9.90
TRACE	Molybdenum	D	UG/L	4/20/2015	5/13/2020	11	100.00	100.00	100.00	100.00	0.00

Table: 9
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 06BR7 (006-BRDH7 Bedrock Well, Twentymile Sandstone) Datum: 6826.5

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				4.62		2.31	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	7.61	Y	7.71	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	480	Y	510	Y
FIELD	Temperature, Field	N	DEG-C	7.9	Y	8.1	Y

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 06BR7 (006-BRDH7 Bedrock Well, Twentymile Sandstone) Datum: 6826.5

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	12/2/1987	4/30/1998	5	391.2	373	430.8	367.2	29.93
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	12/2/1987	4/30/1998	5	24.3	24.6	32	17	6.34
ANION	Sulfates	N	MG/L	12/2/1987	4/30/1998	5	76	70	100	50	23
CATION	Calcium	D	MG/L	12/2/1987	4/30/1998	5	2.4	2	3.7	1.4	0.94
CATION	Magnesium	D	MG/L	12/2/1987	4/30/1998	5	1	1	2	0.4	0.6
CATION	Sodium	D	MG/L	12/2/1987	4/30/1998	5	201	200	214	186	12.4
FIELD	pH, Field	N	S.U.	1/15/1987	9/5/2020	35	8.78	8.94	9.7	7.61	0.57
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/15/1987	9/5/2020	35	755.3	780	1021	480	147.1
FIELD	Temperature, Field	N	DEG-C	1/15/1987	9/5/2020	35	11.8	11.1	19	4	3.64
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	12/2/1987	4/30/1998	5	0.04	0.02	0.1	0.02	0.03
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	12/2/1987	4/30/1998	5	0.049	0.04	0.078	0.024	0.024
PHYSICAL	pH, Lab	N	S.U.	4/30/1998	4/30/1998	1	8.6	8.6	8.6	8.6	0
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	12/2/1987	4/30/1998	5	799	807	855	722	51
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	12/2/1987	4/30/1998	5	490	480	540	440	38
PRIMARY	Cadmium	D	UG/L	12/2/1987	4/30/1998	5	0.4	0.5	0.5	0.1	0.2
PRIMARY	Lead	D	UG/L	12/2/1987	4/30/1998	5	60	20	200	20	80
PRIMARY	Mercury	D	UG/L	12/2/1987	4/30/1998	5	0.2	0.2	0.2	0.2	0
PRIMARY	Selenium	D	UG/L	12/2/1987	4/30/1998	5	1	1	1	1	0
SECONDARY	Iron	D	UG/L	12/2/1987	4/30/1998	5	60	50	100	30	30
SECONDARY	Manganese	D	UG/L	12/2/1987	4/30/1998	5	18	10	50	5	19
TRACE	Molybdenum	D	UG/L	12/2/1987	4/30/1998	5	40	10	100	10	40

Table: 10
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 97013TM Bedrock Well, Twentymile Sandstone Datum: 6672.27

Date				5/19/2020		9/5/2020	
Depth to Water (FT)				48.51		32.34	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	351	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	128	Y		
ANION	Bicarbonate as HCO3	N	MG/L	428	Y		
ANION	Carbonate as CO3	N	MG/L	76.9	Y		
ANION	Sulfates	N	MG/L	150	Y		
CATION	Calcium	D	MG/L	2.2	Y		
CATION	Magnesium	D	MG/L	0.4	Y		
CATION	Sodium	D	MG/L	274	Y		
FIELD	pH, Field	N	S.U.	9.48	Y	9.46	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1200	Y	1110	Y
FIELD	Temperature, Field	N	DEG-C	10.8	Y	11.1	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.06	Y		
PHYSICAL	pH, Lab	N	S.U.	9.4	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1160	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	702	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.1	Y		
SECONDARY	Iron	D	UG/L	90	Y		
SECONDARY	Manganese	D	UG/L	50	N		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 10a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 97013TM Bedrock Well, Twentymile Sandstone Datum: 6672.27

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/15/1998	5/19/2020	29	323	349	460	2	104
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	10/15/1998	5/19/2020	29	87.9	87	162	2	32
ANION	Bicarbonate as HCO3	N	MG/L	4/24/2018	5/19/2020	3	387	377	428	355	37.4
ANION	Carbonate as CO3	N	MG/L	5/14/2019	5/19/2020	2	76.9	76.9	76.9	76.9	0
ANION	Sulfates	N	MG/L	10/15/1998	5/19/2020	29	168	140	490	60	92
CATION	Calcium	D	MG/L	10/15/1998	5/19/2020	29	1.62	1.2	6.3	0.24	1.23
CATION	Magnesium	D	MG/L	10/15/1998	5/19/2020	29	0.44	0.4	1.2	0.01	0.29
CATION	Sodium	D	MG/L	10/15/1998	5/19/2020	29	253	251	334	71	48.4
FIELD	pH, Field	N	S.U.	10/15/1998	9/5/2020	24	9.594	9.495	10.89	8.79	0.4511
FIELD	Specific Conductivity, Field	N	UMHOS/CM	10/15/1998	9/5/2020	24	1240	1210	1650	1110	133
FIELD	Temperature, Field	N	DEG-C	10/15/1998	9/5/2020	24	10.7	10.8	14.2	6.1	1.52
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/15/1998	5/19/2020	29	0.05	0.03	0.1	0.02	0.04
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/15/1998	5/19/2020	28	0.087	0.06	0.294	0.02	0.0672
PHYSICAL	pH, Lab	N	S.U.	10/15/1998	5/19/2020	29	9.56	9.47	10.8	9.27	0.334
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	10/15/1998	5/19/2020	29	1176	1160	1610	933	147.1
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	10/15/1998	5/19/2020	29	695	690	960	540	87
PRIMARY	Cadmium	D	UG/L	10/15/1998	5/19/2020	29	2	0.5	5	0.3	2
PRIMARY	Lead	D	UG/L	10/15/1998	5/19/2020	29	100	200	200	40	80
PRIMARY	Mercury	D	UG/L	10/15/1998	5/19/2020	29	0.6	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	10/15/1998	5/19/2020	29	2.3	1	17	0.1	4
SECONDARY	Iron	D	UG/L	10/15/1998	5/19/2020	29	150	100	720	30	150
SECONDARY	Manganese	D	UG/L	10/15/1998	5/19/2020	29	20	6	50	5	10
TRACE	Molybdenum	D	UG/L	10/15/1998	5/19/2020	29	60	50	100	10	30

Table: 11
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: FBR2 (FBR-2 Bedrock Well, Twentymile Sandstone) Datum: 6794.3

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				429.26		430.01	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	831	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	122	Y		
ANION	Bicarbonate as HCO3	N	MG/L	1010	Y		
ANION	Carbonate as CO3	N	MG/L	73.2	Y		
ANION	Sulfates	N	MG/L	50	N		
CATION	Calcium	D	MG/L	6.7	Y		
CATION	Magnesium	D	MG/L	1.9	Y		
CATION	Sodium	D	MG/L	408	Y		
FIELD	pH, Field	N	S.U.	8.89	Y	8.82	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1790	Y	1700	Y
FIELD	Temperature, Field	N	DEG-C	11.8	Y	10.4	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.04	Y		
PHYSICAL	pH, Lab	N	S.U.	9	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1730	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1080	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.3	N		
SECONDARY	Iron	D	UG/L	210	Y		
SECONDARY	Manganese	D	UG/L	50	N		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 11a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: FBR2 (FBR-2 Bedrock Well, Twentymile Sandstone) Datum: 6794.3

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	11/29/1995	5/13/2020	26	888	833	1190	780	116
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	11/29/1995	5/13/2020	27	70.1	68	122	54	13
ANION	Bicarbonate as HCO3	N	MG/L	4/26/2018	5/13/2020	2	889	889	1010	768	171
ANION	Carbonate as CO3	N	MG/L	4/26/2018	5/13/2020	2	505	505	937	73.2	611
ANION	Sulfates	N	MG/L	11/29/1995	5/13/2020	27	20	10	50	1	20
CATION	Calcium	D	MG/L	11/29/1995	5/13/2020	27	4.65	4.3	6.9	3.5	0.948
CATION	Magnesium	D	MG/L	11/29/1995	5/13/2020	27	2.11	2	3.1	1.11	0.451
CATION	Sodium	D	MG/L	11/29/1995	5/13/2020	27	399	412	485	100	78.1
FIELD	pH, Field	N	S.U.	11/29/1995	9/5/2020	26	8.86	8.84	9.14	8.53	0.149
FIELD	Specific Conductivity, Field	N	UMHOS/CM	11/29/1995	9/5/2020	26	1710	1730	1910	1540	72.5
FIELD	Temperature, Field	N	DEG-C	11/29/1995	9/5/2020	26	11.3	11.4	13	9.3	0.869
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	11/29/1995	5/13/2020	27	0.06	0.04	0.1	0.02	0.04
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	11/29/1995	5/13/2020	26	0.018	0.015	0.05	0.005	0.014
PHYSICAL	pH, Lab	N	S.U.	5/12/1997	5/13/2020	23	8.95	9	9.2	8.6	0.143
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	11/29/1995	5/13/2020	27	1722	1700	1910	1541	101.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	11/29/1995	5/13/2020	27	1020	990	1170	928	79.6
PRIMARY	Cadmium	D	UG/L	11/29/1995	5/13/2020	27	1	0.5	5	0.3	1
PRIMARY	Lead	D	UG/L	11/29/1995	5/13/2020	27	110	90	200	20	77
PRIMARY	Mercury	D	UG/L	11/29/1995	5/13/2020	27	0.6	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	11/29/1995	5/13/2020	27	1	1	6	0.3	1
SECONDARY	Iron	D	UG/L	11/29/1995	5/13/2020	27	187	130	1190	10	251
SECONDARY	Manganese	D	UG/L	11/29/1995	5/13/2020	27	14	8	50	5	12
TRACE	Molybdenum	D	UG/L	11/29/1995	5/13/2020	27	50	50	100	10	30

Table: 12
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 0183106 (001-83-106, Bedrock Well, Trout Creek Sandstone) Datum: 6892.7

Date				5/13/2020	
Depth to Water (FT)				292.31	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	Could not obtain sample	
FIELD	Specific Conductivity, Field	N	UMHOS/CM		
FIELD	Temperature, Field	N	DEG-C		

Table: 12a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 0183106 (001-83-106, Bedrock Well, Trout Creek Sandstone) Datum: 6892.7

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/17/2007	4/23/2019	7	568	590	635	463	69.4
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4/17/2007	4/23/2019	7	40.3	37.3	75	24	17.3
ANION	Bicarbonate as HCO3	N	MG/L	4/12/2017	4/23/2019	2	578	578	590	565	17.7
ANION	Carbonate as CO3	N	MG/L	4/12/2017	4/23/2019	2	45	45	45	44	0.71
ANION	Sulfates	N	MG/L	4/17/2007	4/23/2019	7	190	190	210	160	16
CATION	Calcium	D	MG/L	4/17/2007	4/23/2019	7	2	1.8	2.8	1.6	0.45
CATION	Magnesium	D	MG/L	4/17/2007	4/23/2019	7	0.6	0.5	1	0.4	0.2
CATION	Sodium	D	MG/L	4/17/2007	4/23/2019	7	326	325	339	306	10.3
FIELD	pH, Field	N	S.U.	4/12/2017	4/23/2019	3	8.52	8.51	8.74	8.31	0.215
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/12/2017	4/23/2019	3	1410	1400	1450	1370	40.4
FIELD	Temperature, Field	N	DEG-C	4/12/2017	4/23/2019	3	14.3	14.4	14.8	13.8	0.503
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	4/17/2007	4/23/2019	7	0.3	0.29	0.9	0.05	0.29
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/17/2007	4/23/2019	6	0.05	0.04	0.09	0.04	0.02
PHYSICAL	pH, Lab	N	S.U.	4/17/2007	4/23/2019	7	8.8	8.8	9	8.6	0.13
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/17/2007	4/23/2019	7	1370	1380	1420	1260	52.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/17/2007	4/23/2019	7	867	860	920	820	33.9
PRIMARY	Cadmium	D	UG/L	4/17/2007	4/23/2019	7	0.5	0.5	0.5	0.3	0.08
PRIMARY	Lead	D	UG/L	4/17/2007	4/23/2019	7	200	200	200	200	0
PRIMARY	Mercury	D	UG/L	4/17/2007	4/23/2019	7	1	1	1	1	0
PRIMARY	Selenium	D	UG/L	4/17/2007	4/23/2019	7	0.3	0.3	0.5	0.3	0.08
SECONDARY	Iron	D	UG/L	4/17/2007	4/23/2019	7	63	50	110	30	28
SECONDARY	Manganese	D	UG/L	4/17/2007	4/23/2019	7	181	30	671	7	267
TRACE	Molybdenum	D	UG/L	4/17/2007	4/23/2019	7	80	100	100	50	30

Table: 13
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 0183107 (001-83-107, Bedrock Well, Trout Creek Sandstone) Datum: 6886.6

Date				5/13/2020	
Depth to Water (FT)				84.18	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	9.19	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1250	Y
FIELD	Temperature, Field	N	DEG-C	10.3	Y

Table: 13a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 0183107 (001-83-107, Bedrock Well, Trout Creek Sandstone) Datum: 6886.6

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
FIELD	pH, Field	N	S.U.	4/12/2017	5/13/2020	4	9.16	9.17	9.21	9.11	0.0457
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/12/2017	5/13/2020	4	1250	1250	1250	1240	5.77
FIELD	Temperature, Field	N	DEG-C	4/12/2017	5/13/2020	4	10.3	10.3	10.6	10.1	0.216

Table: 14
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 95M001 Bedrock Well, Trout Creek Sandstone Datum: 7184.68

Date				5/13/2020	
Depth to Water (FT)				1030.91	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	10.19	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1070	Y
FIELD	Temperature, Field	N	DEG-C	12.4	Y

Table: 14a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 95M001 Bedrock Well, Trout Creek Sandstone Datum: 7184.68

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/2/1996	4/6/2017	19	158	129	410	62	85.6
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/2/1996	4/6/2017	20	136	134	253	42	65.5
ANION	Sulfates	N	MG/L	5/2/1996	4/6/2017	20	180	210	430	20	100
CATION	Calcium	D	MG/L	5/2/1996	4/6/2017	20	3.68	3.26	8.2	0.31	2.34
CATION	Magnesium	D	MG/L	5/2/1996	4/6/2017	20	1.3	0.65	5.2	0.01	1.5
CATION	Sodium	D	MG/L	5/2/1996	4/6/2017	20	221	228	410	72	70.4
FIELD	pH, Field	N	S.U.	5/2/1996	5/13/2020	18	9.988	9.895	11.14	9.16	0.4169
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/2/1996	5/13/2020	18	1180	1220	1790	700	260
FIELD	Temperature, Field	N	DEG-C	5/2/1996	5/13/2020	18	12.8	13.1	15.1	10.3	1.17
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/2/1996	4/6/2017	20	0.04	0.02	0.1	0.02	0.03
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/2/1996	4/6/2017	19	0.954	0.89	4.3	0.017	0.902
PHYSICAL	pH, Lab	N	S.U.	5/7/1997	4/6/2017	18	10.07	9.95	11.39	9.6	0.4184
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/2/1996	4/6/2017	20	1127	1150	1761	651	275.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/2/1996	4/6/2017	20	665	684	1010	450	140
PRIMARY	Cadmium	D	UG/L	5/2/1996	4/6/2017	20	3	0.5	30	0.5	7
PRIMARY	Lead	D	UG/L	5/2/1996	4/6/2017	20	80	50	200	20	70
PRIMARY	Mercury	D	UG/L	5/2/1996	4/6/2017	20	0.4	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	5/2/1996	4/6/2017	20	2.9	1	18	0.1	4.5
SECONDARY	Iron	D	UG/L	5/2/1996	4/6/2017	20	174	95	1110	5	260
SECONDARY	Manganese	D	UG/L	5/2/1996	4/6/2017	20	10	5	30	5	10
TRACE	Molybdenum	D	UG/L	5/2/1996	4/6/2017	20	50	50	70	30	10

Table: 15
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 97013TC Bedrock Well, Trout Creek Sandstone Datum: 6685.35

Date				5/19/2020	
Depth to Water (FT)				286.17	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	10.19	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1260	Y
FIELD	Temperature, Field	N	DEG-C	11.4	Y

Table: 15a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 97013TC Bedrock Well, Trout Creek Sandstone Datum: 6685.35

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/15/1998	5/14/2019	20	368	403	534	114	109
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	10/15/1998	5/14/2019	20	131	65.5	780	2	180
ANION	Bicarbonate as HCO3	N	MG/L	5/14/2019	5/14/2019	1	140	140	140	140	0
ANION	Carbonate as CO3	N	MG/L	5/14/2019	5/14/2019	1	240	240	240	240	0
ANION	Sulfates	N	MG/L	10/15/1998	5/14/2019	20	192	205	280	90	52.7
CATION	Calcium	D	MG/L	10/15/1998	5/14/2019	20	1.2	1.2	2.8	0.25	0.62
CATION	Magnesium	D	MG/L	10/15/1998	5/14/2019	20	0.65	0.65	1.6	0.1	0.47
CATION	Sodium	D	MG/L	10/15/1998	5/14/2019	20	276	281	380	77	56.8
FIELD	pH, Field	N	S.U.	10/15/1998	5/19/2020	19	9.404	9.25	10.4	8.79	0.5132
FIELD	Specific Conductivity, Field	N	UMHOS/CM	10/15/1998	5/19/2020	19	1290	1290	1340	1190	40.9
FIELD	Temperature, Field	N	DEG-C	10/15/1998	5/19/2020	19	10.4	10.8	12.4	6.8	1.43
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/15/1998	5/14/2019	20	0.046	0.02	0.19	0.02	0.047
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/15/1998	5/14/2019	19	0.057	0.05	0.13	0.01	0.035
PHYSICAL	pH, Lab	N	S.U.	10/15/1998	5/14/2019	20	9.44	9.29	10.5	8.87	0.449
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	10/15/1998	5/14/2019	20	1243	1275	1400	820	129.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	10/15/1998	5/14/2019	20	751	755	810	590	52.4
PRIMARY	Cadmium	D	UG/L	10/15/1998	5/14/2019	20	2	0.5	5	0.3	2
PRIMARY	Lead	D	UG/L	10/15/1998	5/14/2019	20	100	50	200	40	80
PRIMARY	Mercury	D	UG/L	10/15/1998	5/14/2019	20	0.5	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	10/15/1998	5/14/2019	20	4	2	30	0.1	6.8
SECONDARY	Iron	D	UG/L	10/15/1998	5/14/2019	20	140	110	590	10	130
SECONDARY	Manganese	D	UG/L	10/15/1998	5/14/2019	20	40	27	250	5	61
TRACE	Molybdenum	D	UG/L	10/15/1998	5/14/2019	20	40	50	100	10	20

Table: 16
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: FBR2E (FBR-2-E, Bedrock Well, Trout Creek Sandstone) Datum: 6794.29

Date				5/13/2020	
Depth to Water (FT)				144.07	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	7.83	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	510	Y
FIELD	Temperature, Field	N	DEG-C	10.5	Y

Table: 16a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: FBR2E (FBR-2-E, Bedrock Well, Trout Creek Sandstone) Datum: 6794.29

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	11/29/1995	5/6/2019	25	407	393	810	2	270
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	11/29/1995	5/6/2019	25	213	160	497	2	153
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2019	5/6/2019	2	624	624	970	277	490
ANION	Carbonate as CO3	N	MG/L	4/23/2019	5/6/2019	2	50.2	50.2	80.4	20	42.7
ANION	Sulfates	N	MG/L	11/29/1995	5/6/2019	25	31	20	140	4	30
CATION	Calcium	D	MG/L	11/29/1995	5/6/2019	25	4.16	1.2	44.3	0.7	9.17
CATION	Magnesium	D	MG/L	11/29/1995	5/6/2019	25	3.69	0.65	60	0.1	12
CATION	Sodium	D	MG/L	11/29/1995	5/6/2019	25	326	382	454	42.8	138
FIELD	pH, Field	N	S.U.	11/29/1995	5/13/2020	21	9.49	9.41	11.46	7.76	0.9019
FIELD	Specific Conductivity, Field	N	UMHOS/CM	11/29/1995	5/13/2020	21	1550	1720	1870	500	440
FIELD	Temperature, Field	N	DEG-C	11/29/1995	5/13/2020	21	11.2	11.2	12.7	9.6	0.819
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	11/29/1995	5/6/2019	25	0.061	0.02	0.43	0.02	0.088
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	11/29/1995	5/6/2019	24	0.018	0.01	0.05	0.005	0.015
PHYSICAL	pH, Lab	N	S.U.	5/12/1997	5/6/2019	21	9.6	9.6	10.6	8.3	0.621
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	11/29/1995	5/6/2019	25	1473	1700	1850	246	472
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	11/29/1995	5/6/2019	25	813	960	1100	96	285
PRIMARY	Cadmium	D	UG/L	11/29/1995	5/6/2019	25	2	0.5	5	0.3	2
PRIMARY	Lead	D	UG/L	11/29/1995	5/6/2019	25	90	50	200	30	70
PRIMARY	Mercury	D	UG/L	11/29/1995	5/6/2019	25	0.4	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	11/29/1995	5/6/2019	25	2.2	1	29	0.3	5.6
SECONDARY	Iron	D	UG/L	11/29/1995	5/6/2019	25	83	60	290	5	75
SECONDARY	Manganese	D	UG/L	11/29/1995	5/6/2019	25	25.6	6	150	5	37.7
TRACE	Molybdenum	D	UG/L	11/29/1995	5/6/2019	25	40	50	100	10	30

Table: 17
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 91M001 Bedrock Well, Fish Creek Sandstone Datum: 6986.9

Date	5/7/2020	9/26/2020
Depth to Water (FT)	9.94	15.21

Table: 17a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 91M001 Bedrock Well, Fish Creek Sandstone Datum: 6986.9

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	3/31/1993	4/30/1996	13	414.9	439.2	531	310	74.27
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/31/1993	4/30/1996	13	1	0	5	0	2
ANION	Sulfates	N	MG/L	12/30/1992	4/30/1996	14	38.1	23.5	134	6	35.7
CATION	Calcium	D	MG/L	12/30/1992	4/30/1996	14	80.4	82.5	103	54	17.6
CATION	Magnesium	D	MG/L	12/30/1992	4/30/1996	14	35.8	36.5	42.1	28	5.67
CATION	Sodium	D	MG/L	12/30/1992	4/30/1996	14	16	15.1	23	11.7	3.43
FIELD	pH, Field	N	S.U.	12/30/1992	11/2/1999	27	7.67	7.67	8.4	6.86	0.366
FIELD	Specific Conductivity, Field	N	UMHOS/CM	12/30/1992	11/2/1999	27	640	640	860	490	71
FIELD	Temperature, Field	N	DEG-C	12/30/1992	11/2/1999	27	11.3	9.6	56	5	9.2
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	12/30/1992	4/30/1996	14	0.559	0.09	2.41	0.02	0.838
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	12/30/1992	4/30/1996	14	0.0264	0.005	0.131	0.005	0.0402
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	12/30/1992	4/30/1996	14	642	676	755	345	107
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	12/30/1992	4/30/1996	14	370	375	452	278	48.4
PRIMARY	Cadmium	D	UG/L	12/30/1992	4/30/1996	14	0.3	0.2	0.5	0.1	0.2
PRIMARY	Lead	D	UG/L	12/30/1992	4/30/1996	14	20	20	40	20	5
PRIMARY	Mercury	D	UG/L	12/30/1992	4/30/1996	14	0.2	0.2	0.2	0.1	0.04
PRIMARY	Selenium	D	UG/L	12/30/1992	4/30/1996	14	1	1	1	1	0
SECONDARY	Iron	D	UG/L	12/30/1992	4/30/1996	14	56	45	160	20	47
SECONDARY	Manganese	D	UG/L	12/30/1992	4/30/1996	14	47	27	270	10	68
TRACE	Molybdenum	D	UG/L	12/30/1992	4/30/1996	14	20	10	50	10	10

Table: 18
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 91M004 Bedrock Well, Fish Creek Sandstone Datum: 7036.79

Date	5/7/2020	9/26/2020
Depth to Water (FT)		

Well Destroyed in 2019 by Utility Company during winter plowing. TC looking in to replacing well.

Table: 18a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 91M004 Bedrock Well, Fish Creek Sandstone Datum: 7036.79

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	nity, Bicarbonate as C	N	MG/L	3/30/1993	4/30/1996	13	499.3	434	805	393.6	145.5
ANION	inity, Carbonate as Ca	N	MG/L	3/30/1993	4/30/1996	13	0.8	0	2	0	1
ANION	Sulfates	N	MG/L	12/30/1992	4/30/1996	14	64	47	220	14	56
CATION	Calcium	D	MG/L	12/30/1992	4/30/1996	14	93.8	91.5	113	77	11.6
CATION	Magnesium	D	MG/L	12/30/1992	4/30/1996	14	32.2	32.7	38.3	26	3.61
CATION	Sodium	D	MG/L	12/30/1992	4/30/1996	14	17	14.1	63.7	9	14
FIELD	pH, Field	N	S.U.	12/30/1992	11/2/1999	27	7.57	7.56	8.6	6.69	0.372
FIELD	ecific Conductivity, Fi	N	UMHOS/CM	12/30/1992	11/2/1999	27	700	700	950	510	100
FIELD	Temperature, Field	N	DEG-C	12/30/1992	11/2/1999	27	11.9	10.2	54	5	8.75
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	12/30/1992	4/30/1996	14	0.552	0.07	2.78	0.02	0.957
NUTRIENT	phorus, Orthophosph	N	MG/L	12/30/1992	4/30/1996	14	0.0089	0.0065	0.025	0.005	0.0059
PHYSICAL	ecific Conductivity, L	N	UMHOS/CM	12/30/1992	4/30/1996	14	702	692	833	568	87.8
PHYSICAL	tal Dissolved Solids, L	N	MG/L	12/30/1992	4/30/1996	14	431	407	690	324	99.6
PRIMARY	Cadmium	D	UG/L	12/30/1992	4/30/1996	14	0.2	0.2	0.5	0.1	0.2
PRIMARY	Lead	D	UG/L	12/30/1992	4/30/1996	14	20	20	40	20	5
PRIMARY	Mercury	D	UG/L	12/30/1992	4/30/1996	14	0.2	0.2	0.5	0.1	0.1
PRIMARY	Selenium	D	UG/L	12/30/1992	4/30/1996	14	4.1	1	18	1	5.5
SECONDARY	Iron	D	UG/L	12/30/1992	4/30/1996	14	91	70	350	20	94
SECONDARY	Manganese	D	UG/L	12/30/1992	4/30/1996	14	190	190	520	13	150
TRACE	Molybdenum	D	UG/L	12/30/1992	4/30/1996	14	20	10	50	10	10

Table: 19
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: Ashley Bedrock Well, Fish Creek Sandstone Datum: 6820.0

Date				5/13/2020		9/5/2020	
Depth to Water (FT)				42.86		44.13	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	308	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N		
ANION	Bicarbonate as HCO3	N	MG/L	376	Y		
ANION	Carbonate as CO3	N	MG/L	20	N		
ANION	Sulfates	N	MG/L	30	Y		
CATION	Calcium	D	MG/L	60.1	Y		
CATION	Magnesium	D	MG/L	15.2	Y		
CATION	Sodium	D	MG/L	41.3	Y		
FIELD	pH, Field	N	S.U.	7.7	Y	7.61	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	610	Y	720	Y
FIELD	Temperature, Field	N	DEG-C	10.9	Y	10.5	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.9	Y		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.02	Y		
PHYSICAL	pH, Lab	N	S.U.	8	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	560	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	336	Y		
PRIMARY	Cadmium	D	UG/L	0.3	N		
PRIMARY	Lead	D	UG/L	200	N		
PRIMARY	Mercury	D	UG/L	1	N		
PRIMARY	Selenium	D	UG/L	0.8	Y		
SECONDARY	Iron	D	UG/L	200	N		
SECONDARY	Manganese	D	UG/L	50	N		
TRACE	Molybdenum	D	UG/L	100	N		

Table: 19a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: Ashley Bedrock Well, Fish Creek Sandstone Datum: 6820.0

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	3/18/1996	5/13/2020	20	409	378	680	308	85.2
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/18/1996	5/13/2020	21	32.7	20	410	1	86.9
ANION	Bicarbonate as HCO3	N	MG/L	4/26/2018	5/13/2020	3	383	376	451	322	64.8
ANION	Carbonate as CO3	N	MG/L	4/26/2018	5/13/2020	3	143	20	392	15.8	216
ANION	Sulfates	N	MG/L	3/18/1996	5/13/2020	21	43	40	70	22	12
CATION	Calcium	D	MG/L	3/18/1996	5/13/2020	21	46.6	43.3	98.2	1.7	30.7
CATION	Magnesium	D	MG/L	3/18/1996	5/13/2020	21	12.7	12.9	33	0.38	8.9
CATION	Sodium	D	MG/L	3/18/1996	5/13/2020	21	89.2	51.1	207	16	59.1
FIELD	pH, Field	N	S.U.	3/18/1996	9/5/2020	20	7.7	7.71	8.2	6.89	0.283
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3/18/1996	9/5/2020	20	760	746	960	610	99.6
FIELD	Temperature, Field	N	DEG-C	3/18/1996	9/5/2020	20	10.7	10.6	15.1	8.6	1.55
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/18/1996	5/13/2020	21	1.61	0.74	9.1	0.15	2.27
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	3/18/1996	5/13/2020	20	0.027	0.024	0.05	0.006	0.014
PHYSICAL	pH, Lab	N	S.U.	7/2/1997	5/13/2020	20	8.02	8	8.66	7.24	0.335
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/18/1996	5/13/2020	21	692	688	841	542	92.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/18/1996	5/13/2020	21	426	410	560	328	69.2
PRIMARY	Cadmium	D	UG/L	3/18/1996	5/13/2020	21	2.7	0.5	39	0.1	8.4
PRIMARY	Lead	D	UG/L	3/18/1996	5/13/2020	21	100	200	200	5	80
PRIMARY	Mercury	D	UG/L	3/18/1996	5/13/2020	21	0.7	1	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	3/18/1996	5/13/2020	21	1.4	0.8	8	0.3	1.8
SECONDARY	Iron	D	UG/L	3/18/1996	5/13/2020	21	53	50	250	6	61
SECONDARY	Manganese	D	UG/L	3/18/1996	5/13/2020	21	24	30	50	5	14
TRACE	Molybdenum	D	UG/L	3/18/1996	5/13/2020	21	60	50	100	10	30

TABLE 20
HYDROLOGIC MONITORING SITES:
ALLUVIAL GROUNDWATER

SITE	MONITORING FREQUENCY	
	WATER LEVEL & FIELD PARAMETERS	WATER QUALITY SAMPLING
Foidel Creek		
009-S-10	Quarterly	Semi-annual
001-S-5	Quarterly	Semi-annual
008-AV-2	Quarterly	Semi-annual
008-AV-1	Quarterly	----------
FO-1	abandoned	abandoned
FO-2	abandoned	abandoned
Fish Creek		
006-AY-1	Quarterly	Semi-annual
006-AZ-3	Quarterly	Semi-annual
006-AW-2	abandoned	abandoned
008-AU-3	Quarterly	Semi-annual
008-AW-3	Quarterly	Semi-annual
AVF-13	Quarterly	Semi-annual
AVF-14	Quarterly	Semi-annual
AVF-15	Quarterly	Semi-annual
Trout Creek		
008-AT-1	Quarterly	Semi-annual
Well Jones	Quarterly	Annual*
Middle Creek		
AVM-1	abandoned	abandoned
AVM-2	abandoned	abandoned

* Sulfate sampling quarterly

Table:21
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 09S10 (009-S-10, Alluvial Well, Foidel Creek Alluvium) Datum: 6906.67

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				5.69		5.47		3.43		5.76	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					456	Y	413	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	6.3	Y
ANION	Bicarbonate as HCO3	N	MG/L					556	Y	504	Y
ANION	Carbonate as CO3	N	MG/L					20	N	3.8	Y
ANION	Sulfates	N	MG/L					230	Y	220	Y
CATION	Calcium	D	MG/L					47.4	Y	44.1	Y
CATION	Magnesium	D	MG/L					22.5	Y	21.1	Y
CATION	Sodium	D	MG/L					204	Y	188	Y
FIELD	pH, Field	N	S.U.	7.61	Y	7.65	Y	7.9	Y	7.67	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1330	Y	1320	Y	1310	Y	1160	Y
FIELD	Temperature, Field	N	DEG-C	9.4	Y	9.2	Y	9.1	Y	11.4	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.79	Y	0.13	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.37	Y	1.32	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.02	Y	0.27	Y
PHYSICAL	pH, Lab	N	S.U.					8.3	Y	8.3	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1210	Y	1150	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					816	Y	740	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.05	Y
PRIMARY	Lead	D	UG/L					200	N	200	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.3	N	0.3	N
SECONDARY	Iron	D	UG/L					110	Y	200	N
SECONDARY	Manganese	D	UG/L					20	Y	110	Y
TRACE	Molybdenum	D	UG/L					100	N	100	N

Table: 21a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 09S10 (009-S-10, Alluvial Well, Foidel Creek Alluvium) Datum: 6906.67

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	6/4/1979	8/30/2020	143	510.933	523	625	204	63.4483
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/4/1979	8/30/2020	90	11.8	9.1	43.2	0	11.4
ANION	Bicarbonate as HCO3	N	MG/L	4/12/2017	8/30/2020	7	512	504	556	485	26
ANION	Carbonate as CO3	N	MG/L	4/12/2017	8/30/2020	5	15.9	20	24.2	3.8	8.18
ANION	Sulfates	N	MG/L	3/8/1979	8/30/2020	146	212	209	550	110	62.3
CATION	Calcium	D	MG/L	3/8/1979	8/30/2020	146	43.31	42.75	122	13.16	12.55
CATION	Magnesium	D	MG/L	3/8/1979	8/30/2020	146	21	21	92	1.23	8.77
CATION	Sodium	D	MG/L	3/8/1979	8/30/2020	146	213	211	310	20	31.4
FIELD	pH, Field	N	S.U.	7/2/1979	8/30/2020	304	7.65	7.7	8.8	6.2	0.455
FIELD	Specific Conductivity, Field	N	UMHOS/CM	6/18/1979	8/30/2020	304	1073	1168	3220	330	301.6
FIELD	Temperature, Field	N	DEG-C	6/18/1979	8/30/2020	306	9.09	8.6	20	3	3.14
NUTRIENT	Ammonia Nitrogen	N	MG/L	7/5/1979	8/30/2020	105	0.273	0.03	3	0.001	0.513
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/4/1979	8/30/2020	144	0.752	0.71	2.91	0.02	0.515
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	6/18/1979	8/30/2020	118	0.14	0.04	2.36	0.005	0.315
PHYSICAL	pH, Lab	N	S.U.	7/3/1986	8/30/2020	54	8.16	8.2	8.6	7.57	0.276
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/3/1986	8/30/2020	94	1198	1202	1540	920	79.99
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/8/1979	8/30/2020	146	760.8	758	1220	580	75.82
PRIMARY	Cadmium	D	UG/L	6/18/1979	8/30/2020	117	3.7	0.5	33	0.05	6.7
PRIMARY	Lead	D	UG/L	6/18/1979	8/30/2020	105	80	40	200	10	80
PRIMARY	Mercury	D	UG/L	6/18/1979	8/30/2020	122	0.49	0.2	3	0.1	0.45
PRIMARY	Selenium	D	UG/L	6/18/1979	8/30/2020	121	1.3	1	24	0.1	2.3
SECONDARY	Iron	D	UG/L	3/8/1979	8/30/2020	146	121	40	4300	5	396
SECONDARY	Manganese	D	UG/L	3/8/1979	8/30/2020	145	67.3	33	568	5	83.6
TRACE	Molybdenum	D	UG/L	6/18/1979	8/30/2020	105	63	50	500	10	71

Table: 22
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 01S5 (001-S-5, Alluvial Well, Foidel Creek Alluvium) Datum: 6804.95

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				3.28		3.05		1.31		3.38	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					438	Y	415	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					534	Y	506	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					990	Y	930	Y
CATION	Calcium	D	MG/L					267	Y	229	Y
CATION	Magnesium	D	MG/L					112	Y	99.3	Y
CATION	Sodium	D	MG/L					210	Y	195	Y
FIELD	pH, Field	N	S.U.	7.18	Y	7.19	Y	7.33	Y	7.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2610	Y	2590	Y	2750	Y	2250	Y
FIELD	Temperature, Field	N	DEG-C	10.3	Y	9.4	Y	8	Y	11.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.11	Y	0.13	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.72	Y	0.72	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N	0.05	N
PHYSICAL	pH, Lab	N	S.U.					8	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					2460	Y	2310	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					2130	Y	1920	Y
PRIMARY	Cadmium	D	UG/L					0.5	N	0.08	Y
PRIMARY	Lead	D	UG/L					300	N	200	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.5	N	0.3	N
SECONDARY	Iron	D	UG/L					400	Y	290	Y
SECONDARY	Manganese	D	UG/L					90	Y	70	Y
TRACE	Molybdenum	D	UG/L					200	N	100	N

Table: 22a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 01S5 (001-S-5, Alluvial Well, Foidel Creek Alluvium) Datum: 6804.95

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/8/1979	8/30/2020	134	490.737	495	892.8	174	96.8672
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/8/1979	8/30/2020	79	9.69	2	33.6	0	9.48
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	523	523	564	491	25.4
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	20	20	20	20	0
ANION	Sulfates	N	MG/L	3/15/1979	8/30/2020	137	607	604	1190	253	232
CATION	Calcium	D	MG/L	3/15/1979	8/30/2020	135	154	145	440	4	58.5
CATION	Magnesium	D	MG/L	3/15/1979	8/30/2020	134	66.7	61.6	156	0.65	24.2
CATION	Sodium	D	MG/L	3/15/1979	8/30/2020	134	179	185	318	20	46.5
FIELD	pH, Field	N	S.U.	7/18/1979	8/30/2020	291	7.5	7.5	8.5	6.19	0.374
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/18/1979	8/30/2020	289	1587	1542	3020	225	534.8
FIELD	Temperature, Field	N	DEG-C	7/18/1979	8/30/2020	287	9.38	9	19	4	3.34
NUTRIENT	Ammonia Nitrogen	N	MG/L	5/4/1981	8/30/2020	101	1.31	0.05	17.6	0.001	3.15
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	7/18/1979	8/30/2020	131	0.7915	0.21	12.75	0.01	1.959
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/4/1981	8/30/2020	110	0.18	0.02	1.78	0.005	0.387
PHYSICAL	pH, Lab	N	S.U.	7/2/1986	8/30/2020	53	7.9	7.9	8.3	7.15	0.285
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/27/1987	8/30/2020	92	1921	1940	2810	1230	371.1
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/15/1979	8/30/2020	134	1315	1282	2350	728	397.7
PRIMARY	Cadmium	D	UG/L	5/4/1981	8/30/2020	114	3.2	0.5	36	0.08	6.5
PRIMARY	Lead	D	UG/L	5/4/1981	8/30/2020	97	100	50	400	20	100
PRIMARY	Mercury	D	UG/L	5/4/1981	8/30/2020	113	0.49	0.2	7	0.1	0.73
PRIMARY	Selenium	D	UG/L	5/4/1981	8/30/2020	114	1.81	1	35.3	0.1	3.79
SECONDARY	Iron	D	UG/L	3/15/1979	8/30/2020	134	404	100	15000	4	1340
SECONDARY	Manganese	D	UG/L	3/15/1979	8/30/2020	132	134	106	640	3	136
TRACE	Molybdenum	D	UG/L	5/4/1981	8/30/2020	97	60	50	300	10	54

Table: 23
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 08AV2 (008-AV-2, Alluvial Well, Foidel Creek Alluvium) Datum: 6677.1

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				9.81		9.79		7.2		10.34	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					416	Y	415	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					507	Y	506	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					410	Y	450	Y
CATION	Calcium	D	MG/L					149	Y	160	Y
CATION	Magnesium	D	MG/L					61.2	Y	63.7	Y
CATION	Sodium	D	MG/L					97.8	Y	98.9	Y
FIELD	pH, Field	N	S.U.	7.31	Y	7.22	Y	7.29	Y	7.03	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1700	Y	1680	Y	1560	Y	1540	Y
FIELD	Temperature, Field	N	DEG-C	10.6	Y	8.1	Y	7.8	Y	11.5	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.5	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.18	Y	0.24	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.					8.2	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1430	Y	1540	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					1080	Y	1130	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.3	N
PRIMARY	Lead	D	UG/L					30	N	30	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.7	Y	0.1	Y
SECONDARY	Iron	D	UG/L					280	Y	540	Y
SECONDARY	Manganese	D	UG/L					190	Y	680	Y
TRACE	Molybdenum	D	UG/L					20	N	20	N

Table: 23a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 08AV2 (008-AV-2, Alluvial Well, Foidel Creek Alluvium) Datum: 6677.1

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/7/1980	8/30/2020	116	388.63	396	483.12	153	55.551
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	10/7/1982	8/30/2020	71	8.89	2	20	0	9.1
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	487	504	512	445	30.2
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	20	20	20	20	0
ANION	Sulfates	N	MG/L	9/23/1980	8/30/2020	117	599	600	1070	348	126
CATION	Calcium	D	MG/L	9/23/1980	8/30/2020	116	185	185	570	21	47.5
CATION	Magnesium	D	MG/L	9/23/1980	8/30/2020	116	75	77	120	7.4	13.7
CATION	Sodium	D	MG/L	9/23/1980	8/30/2020	116	86.1	87.5	142	8.6	15.8
FIELD	pH, Field	N	S.U.	9/23/1980	8/30/2020	277	7.37	7.4	8.37	6.1	0.354
FIELD	Specific Conductivity, Field	N	UMHOS/CM	9/23/1980	8/30/2020	277	1436	1535	2130	560	329
FIELD	Temperature, Field	N	DEG-C	9/23/1980	8/30/2020	277	9.61	9	24	2	3.7
NUTRIENT	Ammonia Nitrogen	N	MG/L	11/10/1980	8/30/2020	97	0.218	0.05	5	0.001	0.608
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/7/1980	8/30/2020	116	0.221	0.11	3.1	0.02	0.357
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	11/10/1980	8/30/2020	105	0.024	0.012	0.29	0.005	0.037
PHYSICAL	pH, Lab	N	S.U.	1/11/1987	8/30/2020	53	7.78	7.9	8.3	6.91	0.393
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1/11/1987	8/30/2020	93	1598	1590	2420	1180	182.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	9/23/1980	8/30/2020	117	1210	1220	1970	808	163.7
PRIMARY	Cadmium	D	UG/L	11/10/1980	8/30/2020	106	2.4	0.5	20	0.1	4.8
PRIMARY	Lead	D	UG/L	11/10/1980	8/30/2020	98	90	50	300	20	80
PRIMARY	Mercury	D	UG/L	11/10/1980	8/30/2020	106	0.49	0.2	5	0.1	0.59
PRIMARY	Selenium	D	UG/L	11/10/1980	8/30/2020	106	1.5	1	16	0.1	2.2
SECONDARY	Iron	D	UG/L	9/23/1980	8/30/2020	116	657	150	23000	5	2590
SECONDARY	Manganese	D	UG/L	9/23/1980	8/30/2020	115	1230	1080	4310	5	997
TRACE	Molybdenum	D	UG/L	11/10/1980	8/30/2020	98	54	50	300	10	45

Table: 24
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 08AV1 (008-AV-1, Alluvial Well, Foidel Creek Alluvium) Datum: 6676.84

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				5.42		5.4		3.09		5.23	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
FIELD	pH, Field	N	S.U.	7.15	Y	7.17	Y	7.25	Y	7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1370	Y	1420	Y	1140	Y	1150	Y
FIELD	Temperature, Field	N	DEG-C	10.2	Y	8	Y	8	Y	11.7	Y

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 08AV1 (008-AV-1, Alluvial Well, Foidel Creek Alluvium) Datum: 6676.84

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	3/19/1986	3/31/1995	9	477.4	483	866	167	249.8
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/19/1986	3/31/1995	5	2	2	8	0	3
ANION	Sulfates	N	MG/L	3/19/1986	3/31/1995	9	616	760	889	280	253
CATION	Calcium	D	MG/L	3/19/1986	3/31/1995	9	221	217	255	182	24.5
CATION	Magnesium	D	MG/L	3/19/1986	3/31/1995	9	83.5	87.6	103	57	16.1
CATION	Sodium	D	MG/L	3/19/1986	3/31/1995	9	101	116	127	68	22.6
FIELD	pH, Field	N	S.U.	8/13/1984	8/30/2020	182	7.46	7.45	8.5	6.7	0.29
FIELD	Specific Conductivity, Field	N	UMHOS/CM	8/13/1984	8/30/2020	182	1642	1698	2420	500	352.4
FIELD	Temperature, Field	N	DEG-C	8/13/1984	8/30/2020	182	9.5	9.2	20	2	3.55
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/13/1986	3/31/1995	6	0.0455	0.0325	0.104	0.001	0.048
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/19/1986	3/31/1995	9	0.967	0.25	5.85	0.02	1.86
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/13/1986	3/31/1995	8	0.416	0.282	1.76	0.038	0.566
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	11/28/1990	3/31/1995	5	1770	1770	2190	1040	452
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/19/1986	3/31/1995	9	1270	1280	1788	632	412.2
PRIMARY	Cadmium	D	UG/L	4/13/1986	3/31/1995	7	4	0.5	20	0.1	7
PRIMARY	Lead	D	UG/L	11/28/1990	3/31/1995	4	20	20	30	20	5
PRIMARY	Mercury	D	UG/L	4/13/1986	3/31/1995	7	0.2	0.2	0.4	0.2	0.08
PRIMARY	Selenium	D	UG/L	4/13/1986	3/31/1995	7	3.6	2	14	1	4.7
SECONDARY	Iron	D	UG/L	3/19/1986	3/31/1995	8	200	140	580	50	180
SECONDARY	Manganese	D	UG/L	3/19/1986	3/31/1995	8	1290	462	4500	10	1650
TRACE	Molybdenum	D	UG/L	11/28/1990	3/31/1995	4	20	10	50	10	20

Table: 25
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 06AY1 (006-AY-1, Alluvial Well, Fish Creek Alluvium) Datum: 6827.99

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				8.56		7.61		5.42		5.91	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					393	Y	303	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					479	Y	369	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					110	Y	130	Y
CATION	Calcium	D	MG/L					90.5	Y	79.1	Y
CATION	Magnesium	D	MG/L					47.8	Y	41.5	Y
CATION	Sodium	D	MG/L					24.1	Y	27	Y
FIELD	pH, Field	N	S.U.	7.35	Y	7.34	Y	7.92	Y	7.46	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	970	Y	970	Y	970	Y	770	Y
FIELD	Temperature, Field	N	DEG-C	11.1	Y	7.9	Y	6.8	Y	11.5	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.04	Y	0.04	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.04	Y	0.01	Y
PHYSICAL	pH, Lab	N	S.U.					8.1	Y	7.8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					831	Y	775	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					548	Y	496	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.14	Y
PRIMARY	Lead	D	UG/L					200	N	200	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					1.9	Y	0.3	Y
SECONDARY	Iron	D	UG/L					200	N	70	Y
SECONDARY	Manganese	D	UG/L					50	N	50	Y
TRACE	Molybdenum	D	UG/L					100	N	100	N

Table: 25a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 06AY1 (006-AY-1, Alluvial Well, Fish Creek Alluvium) Datum: 6827.99

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	1/16/1985	8/30/2020	101	332.131	312	604	163	78.3704
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	2/28/1991	8/30/2020	65	8.98	2	20	0	8.9
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	419	415	479	364	52.1
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	20	20	20	6	7
ANION	Sulfates	N	MG/L	1/16/1985	8/30/2020	101	306	171	2930	40	453.9
CATION	Calcium	D	MG/L	1/16/1985	8/30/2020	97	104	83.9	520	5.1	75.4
CATION	Magnesium	D	MG/L	1/16/1985	8/30/2020	97	52.9	42.6	252	2.3	37.7
CATION	Sodium	D	MG/L	1/16/1985	8/30/2020	97	60.8	29.3	609	1.4	90.2
FIELD	pH, Field	N	S.U.	2/12/1985	8/30/2020	228	7.6	7.52	10.4	6.53	0.453
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/16/1985	8/30/2020	229	984.3	810	5180	410	626.8
FIELD	Temperature, Field	N	DEG-C	1/16/1985	8/30/2020	229	8.87	9	20	2.9	3.31
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/8/1985	8/30/2020	89	0.153	0.05	5	0.001	0.54
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	1/16/1985	8/30/2020	96	0.139	0.03	3.39	0.02	0.389
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/8/1985	8/30/2020	94	0.0463	0.02	0.87	0.005	0.136
PHYSICAL	pH, Lab	N	S.U.	7/9/1986	8/30/2020	52	7.8	8	8.4	6.88	0.436
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1/15/1987	8/30/2020	89	850.3	775	2390	443	348.6
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1/16/1985	8/30/2020	98	713.9	522	4592	253	668.3
PRIMARY	Cadmium	D	UG/L	1/16/1985	8/30/2020	97	1.2	0.5	5	0.08	1.8
PRIMARY	Lead	D	UG/L	1/15/1987	8/30/2020	88	80	40	200	20	80
PRIMARY	Mercury	D	UG/L	1/16/1985	8/30/2020	97	0.5	0.2	5	0.1	0.6
PRIMARY	Selenium	D	UG/L	1/16/1985	8/30/2020	97	2.71	1	48.8	0.2	5.39
SECONDARY	Iron	D	UG/L	1/16/1985	8/30/2020	98	451	70	17000	5	1920
SECONDARY	Manganese	D	UG/L	1/16/1985	8/30/2020	96	1100	460	10200	5	1910
TRACE	Molybdenum	D	UG/L	1/15/1987	8/30/2020	88	49	50	250	10	37

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 06AZ3 (006-AZ-3, Alluvial Well, Fish Creek Alluvium) Datum: 6749.6

Well destroyed in 2016. TC looking into replacing well.

Table: 26a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 06AZ3 (006-AZ-3, Alluvial Well, Fish Creek Alluvium) Datum: 6749.6

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	1/15/1987	5/4/2016	85	406.2	412	690	168	63.84
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	2/28/1991	5/4/2016	59	7.8	2	20	0	8.9
ANION	Sulfates	N	MG/L	1/15/1987	5/4/2016	86	528	479	1870	263	218
CATION	Calcium	D	MG/L	1/15/1987	5/4/2016	82	132	126	240	19	38.6
CATION	Magnesium	D	MG/L	1/15/1987	5/4/2016	82	57	53.8	93.5	6.2	16.8
CATION	Sodium	D	MG/L	1/15/1987	5/4/2016	82	139	138	180	13	20.7
FIELD	pH, Field	N	S.U.	1/15/1987	4/11/2003	186	7.65	7.67	8.5	6.86	0.331
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/15/1987	4/11/2003	187	1403	1410	3490	438.2	320.4
FIELD	Temperature, Field	N	DEG-C	1/15/1987	4/11/2003	187	8.74	8.9	18	1.8	3.25
NUTRIENT	Ammonia Nitrogen	N	MG/L	1/15/1987	5/4/2016	73	0.589	0.05	4.11	0.001	0.879
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	1/15/1987	5/4/2016	82	0.334	0.2	2.1	0.02	0.366
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	1/15/1987	5/4/2016	79	0.0512	0.01	1.05	0.005	0.175
PHYSICAL	pH, Lab	N	S.U.	1/15/1987	5/4/2016	43	7.73	7.68	8.3	7.06	0.372
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1/15/1987	5/4/2016	82	1454	1435	2070	878	277.2
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1/15/1987	5/4/2016	82	1079	1041	1720	596	275.4
PRIMARY	Cadmium	D	UG/L	1/15/1987	5/4/2016	81	0.9	0.5	5	0.1	1
PRIMARY	Lead	D	UG/L	1/15/1987	5/4/2016	81	70	40	200	20	70
PRIMARY	Mercury	D	UG/L	1/15/1987	5/4/2016	81	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	1/15/1987	5/4/2016	81	1	1	6	0.1	0.9
SECONDARY	Iron	D	UG/L	1/15/1987	5/4/2016	82	485	165	13000	10	1470
SECONDARY	Manganese	D	UG/L	1/15/1987	5/4/2016	81	128	130	680	5	78.4
TRACE	Molybdenum	D	UG/L	1/15/1987	5/4/2016	81	43	50	250	10	34

Table: 27
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 08AU3 (008-AU-3, Alluvial Well, Fish Creek Alluvium) Datum: 6609.86

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				10.53		10.51		7.76		10.66	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					324	Y	350	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					395	Y	427	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					290	Y	340	Y
CATION	Calcium	D	MG/L					112	Y	125	Y
CATION	Magnesium	D	MG/L					41.9	Y	45.5	Y
CATION	Sodium	D	MG/L					72.4	Y	79	Y
FIELD	pH, Field	N	S.U.	7.24	Y	7.29	Y	7.12	Y	7.13	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1100	Y	1080	Y	1200	Y	1190	Y
FIELD	Temperature, Field	N	DEG-C	10.9	Y	9.2	Y	8.2	Y	11.8	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.1	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N	0.09	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N	0.05	N
PHYSICAL	pH, Lab	N	S.U.					8.1	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1060	Y	1190	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					768	Y	836	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.3	N
PRIMARY	Lead	D	UG/L					30	N	30	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.1	Y	0.3	N
SECONDARY	Iron	D	UG/L					140	Y	760	Y
SECONDARY	Manganese	D	UG/L					670	Y	240	Y
TRACE	Molybdenum	D	UG/L					20	N	20	N

Table: 27a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 08AU3 (008-AU-3, Alluvial Well, Fish Creek Alluvium) Datum: 6609.86

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	9/23/1980	8/30/2020	116	370.463	369.83	756	220	57.4915
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	11/9/1981	8/30/2020	66	8.68	2	20	0	8.86
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	401	398	427	378	16.5
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	17	20	20	9.5	5.3
ANION	Sulfates	N	MG/L	9/23/1980	8/30/2020	117	309	282	2330	97	203
CATION	Calcium	D	MG/L	9/23/1980	8/30/2020	112	119	111	475	12	45.2
CATION	Magnesium	D	MG/L	9/23/1980	8/30/2020	112	48.8	46	321	3.9	28.1
CATION	Sodium	D	MG/L	9/23/1980	8/30/2020	112	63.3	64.8	200	6	18.9
FIELD	pH, Field	N	S.U.	9/23/1980	11/13/2019	266	7.39	7.4	8.21	6.2	0.335
FIELD	Specific Conductivity, Field	N	UMHOS/CM	9/23/1980	11/13/2019	266	993.8	1020	1425	390	231.4
FIELD	Temperature, Field	N	DEG-C	9/23/1980	11/13/2019	267	9.63	9.4	20	2.6	3.64
NUTRIENT	Ammonia Nitrogen	N	MG/L	5/8/1981	8/30/2020	91	0.13	0.05	5	0.001	0.53
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	9/23/1980	8/30/2020	111	0.143	0.06	1.21	0.02	0.245
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	11/10/1980	8/30/2020	103	0.021	0.01	0.22	0.005	0.027
PHYSICAL	pH, Lab	N	S.U.	7/3/1986	8/30/2020	52	7.77	7.9	8.4	7.1	0.389
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	10/3/1986	8/30/2020	89	1077	1050	3310	780	272.2
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	9/23/1980	8/30/2020	113	769.2	740	3760	470	321.9
PRIMARY	Cadmium	D	UG/L	11/10/1980	8/30/2020	104	2.5	0.5	20	0.1	4.8
PRIMARY	Lead	D	UG/L	11/10/1980	8/30/2020	93	90	50	300	20	80
PRIMARY	Mercury	D	UG/L	11/10/1980	8/30/2020	104	0.5	0.2	7	0.1	0.7
PRIMARY	Selenium	D	UG/L	11/10/1980	8/30/2020	104	1.5	1	16	0.1	2
SECONDARY	Iron	D	UG/L	9/23/1980	8/30/2020	112	1590	230	52000	5	5980
SECONDARY	Manganese	D	UG/L	9/23/1980	8/30/2020	111	549	569	1240	8	218
TRACE	Molybdenum	D	UG/L	11/10/1980	8/30/2020	93	57	50	300	10	48

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 08AW3 (008-AW-3, Alluvial Well, Fish Creek Alluvium) Datum: 6599.39

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				4.92		4.79		3.73		5.18	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					480	Y	589	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					586	Y	719	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					1240	Y	1950	Y
CATION	Calcium	D	MG/L					305	Y	450	Y
CATION	Magnesium	D	MG/L					196	Y	304	Y
CATION	Sodium	D	MG/L					64.5	Y	98.1	Y
FIELD	pH, Field	N	S.U.	6.81	Y	6.9	Y	6.92	Y	6.76	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3510	Y	3640	Y	2710	Y	3390	Y
FIELD	Temperature, Field	N	DEG-C	11.5	Y	9	Y	8.9	Y	12.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N	0.11	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N	0.05	N
PHYSICAL	pH, Lab	N	S.U.					7.9	Y	7.7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					2490	Y	3570	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					2280	Y	3430	Y
PRIMARY	Cadmium	D	UG/L					0.5	N	0.5	N
PRIMARY	Lead	D	UG/L					200	N	300	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.5	N	0.5	N
SECONDARY	Iron	D	UG/L					70	Y	200	Y
SECONDARY	Manganese	D	UG/L					60	Y	170	Y
TRACE	Molybdenum	D	UG/L					200	N	200	N

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 08AW3 (008-AW-3, Alluvial Well, Fish Creek Alluvium) Datum: 6599.39

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	1/13/1984	8/30/2020	108	649.879	653.5	983	274	139.044
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	2/28/1991	8/30/2020	69	9	2	20	0	9
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	592	613	747	334	151
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	20	20	20	20	0
ANION	Sulfates	N	MG/L	1/13/1984	8/30/2020	109	2113	1900	23000	270	2067
CATION	Calcium	D	MG/L	1/13/1984	8/30/2020	105	441	437	1100	52	116
CATION	Magnesium	D	MG/L	1/13/1984	8/30/2020	105	273	272	448	28	77.8
CATION	Sodium	D	MG/L	1/13/1984	8/30/2020	103	106	112	179	5	31.3
FIELD	pH, Field	N	S.U.	7/8/1983	8/30/2020	244	7.03	6.97	8.3	6.1	0.323
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/8/1983	8/30/2020	245	3142	3320	4670	950	664.3
FIELD	Temperature, Field	N	DEG-C	7/8/1983	8/30/2020	245	10.2	10	21	2.1	4.03
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/10/1984	8/30/2020	91	0.998	0.05	70	0.001	7.33
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	1/13/1984	8/30/2020	103	0.296	0.1	3.38	0.02	0.618
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/10/1984	8/30/2020	97	0.021	0.01	0.18	0.005	0.027
PHYSICAL	pH, Lab	N	S.U.	7/3/1986	8/30/2020	56	7.48	7.7	8.2	6.7	0.463
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	10/3/1986	8/30/2020	95	3300	3400	4130	945	522.7
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1/13/1984	8/30/2020	105	3243	3260	4310	706	609.5
PRIMARY	Cadmium	D	UG/L	4/10/1984	8/30/2020	99	1.2	0.5	5	0.08	1.7
PRIMARY	Lead	D	UG/L	4/15/1987	8/30/2020	92	100	50	400	20	100
PRIMARY	Mercury	D	UG/L	4/10/1984	8/30/2020	99	0.4	0.2	1	0.1	0.4
PRIMARY	Selenium	D	UG/L	4/10/1984	8/30/2020	99	1.6	1	15	0.1	2.4
SECONDARY	Iron	D	UG/L	1/13/1984	8/30/2020	104	5620	275	52600	5	10400
SECONDARY	Manganese	D	UG/L	1/13/1984	8/30/2020	104	3013	3315	7790	10	2515
TRACE	Molybdenum	D	UG/L	4/15/1987	8/30/2020	92	64	50	250	10	58

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AVF13 (AVF-13, Alluvial Well, Fish Creek Alluvium) Datum: 6685.68

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				6.52		6.55		3.96		7.14	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					529	Y	355	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					646	Y	433	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					340	Y	220	Y
CATION	Calcium	D	MG/L					147	Y	98.7	Y
CATION	Magnesium	D	MG/L					68.6	Y	46.1	Y
CATION	Sodium	D	MG/L					86.2	Y	54.4	Y
FIELD	pH, Field	N	S.U.	7.36	Y	7.38	Y	7.44	Y	7.07	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	900	Y	990	Y	1520	Y	1000	Y
FIELD	Temperature, Field	N	DEG-C	10.8	Y	8.22	Y	7.8	Y	11.7	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.1	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.03	Y	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.02	Y	0.03	Y
PHYSICAL	pH, Lab	N	S.U.					8.1	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1410	Y	982	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					1030	Y	660	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.3	N
PRIMARY	Lead	D	UG/L					200	N	200	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.2	Y	0.4	Y
SECONDARY	Iron	D	UG/L					280	Y	190	Y
SECONDARY	Manganese	D	UG/L					730	Y	240	Y
TRACE	Molybdenum	D	UG/L					100	N	100	N

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: AVF13 (AVF-13, Alluvial Well, Fish Creek Alluvium) Datum: 6685.68

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	8/27/2001	8/30/2020	33	431	402	587	302	73.5
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	8/27/2001	8/30/2020	33	16	20	20	1	7.7
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	490	431	649	369	124
ANION	Carbonate as CO3	N	MG/L	4/23/2019	8/30/2020	4	16	20	20	4.1	8
ANION	Sulfates	N	MG/L	8/27/2001	8/30/2020	33	250	230	460	120	87
CATION	Calcium	D	MG/L	8/27/2001	8/30/2020	33	109	98.7	240	72.7	34.7
CATION	Magnesium	D	MG/L	8/27/2001	8/30/2020	33	49.4	48.4	72.1	13	13.1
CATION	Sodium	D	MG/L	8/27/2001	8/30/2020	33	72.8	74.3	100	49.6	17.2
FIELD	pH, Field	N	S.U.	8/27/2001	8/30/2020	24	7.51	7.41	8.5	7.03	0.311
FIELD	Specific Conductivity, Field	N	UMHOS/CM	8/27/2001	8/30/2020	24	1106	1065	1520	795	214.2
FIELD	Temperature, Field	N	DEG-C	8/27/2001	8/30/2020	24	9.39	8.35	14.2	2.8	2.97
NUTRIENT	Ammonia Nitrogen	N	MG/L	8/27/2001	8/30/2020	33	0.42	0.15	5	0.05	0.97
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	8/27/2001	8/30/2020	33	0.071	0.1	0.17	0.02	0.04
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	8/27/2001	8/30/2020	30	0.035	0.02	0.17	0.01	0.034
PHYSICAL	pH, Lab	N	S.U.	8/27/2001	8/30/2020	33	7.95	8.1	8.4	7.22	0.324
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	8/27/2001	8/30/2020	33	1067	962	1550	786	221.1
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	8/27/2001	8/30/2020	33	739	712	1110	510	178
PRIMARY	Cadmium	D	UG/L	8/27/2001	8/30/2020	33	0.9	0.5	5	0.1	1
PRIMARY	Lead	D	UG/L	8/27/2001	8/30/2020	33	200	200	200	50	60
PRIMARY	Mercury	D	UG/L	8/27/2001	8/30/2020	33	0.8	1	1	0.2	0.3
PRIMARY	Selenium	D	UG/L	8/27/2001	8/30/2020	33	0.7	0.3	3	0.1	0.8
SECONDARY	Iron	D	UG/L	8/27/2001	8/30/2020	33	682	150	15000	5	2600
SECONDARY	Manganese	D	UG/L	8/27/2001	8/30/2020	33	848	768	2000	5	587
TRACE	Molybdenum	D	UG/L	8/27/2001	8/30/2020	33	70	50	100	50	30

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AVF14 (AVF-14, Alluvial Well, Fish Creek Alluvium) Datum: 6650.39

Date				11/13/2019		2/16/2020		5/22/2020		8/30/2020	
Depth to Water (FT)				8.25		8.27		5.97		8.96	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					277	Y	292	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					338	Y	356	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					190	Y	200	Y
CATION	Calcium	D	MG/L					77.3	Y	85.2	Y
CATION	Magnesium	D	MG/L					34.1	Y	36.5	Y
CATION	Sodium	D	MG/L					45.6	Y	50.3	Y
FIELD	pH, Field	N	S.U.	7.21	Y	7.31	Y	7.49	Y	7.12	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	860	Y	850	Y	910	Y	880	Y
FIELD	Temperature, Field	N	DEG-C	10.7	Y	8.4	Y	8.9	Y	11.9	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N	0.05	N
PHYSICAL	pH, Lab	N	S.U.					8.2	Y	8.1	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					807	Y	870	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					532	Y	576	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.3	N
PRIMARY	Lead	D	UG/L					200	N	200	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.4	Y	0.1	Y
SECONDARY	Iron	D	UG/L					450	Y	340	Y
SECONDARY	Manganese	D	UG/L					30	Y	40	Y
TRACE	Molybdenum	D	UG/L					100	N	100	N

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: AVF14 (AVF-14, Alluvial Well, Fish Creek Alluvium) Datum: 6650.39

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	8/27/2001	8/30/2020	31	328	332	388	277	28.2
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	8/27/2001	8/30/2020	31	15.2	20	20	1	7.86
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	5	359	358	377	338	14.5
ANION	Carbonate as CO3	N	MG/L	9/3/2019	8/30/2020	3	16	20	20	6.7	7.7
ANION	Sulfates	N	MG/L	8/27/2001	8/30/2020	30	190	170	330	140	43
CATION	Calcium	D	MG/L	8/27/2001	8/30/2020	31	86.7	85.2	130	71.1	12
CATION	Magnesium	D	MG/L	8/27/2001	8/30/2020	31	35.2	34.2	54	14	6.96
CATION	Sodium	D	MG/L	8/27/2001	8/30/2020	31	54.2	52.7	94	44.7	8.95
FIELD	pH, Field	N	S.U.	8/27/2001	8/30/2020	23	7.52	7.49	8.55	7.05	0.356
FIELD	Specific Conductivity, Field	N	UMHOS/CM	8/27/2001	8/30/2020	23	937.8	910	1359	820	112.8
FIELD	Temperature, Field	N	DEG-C	8/27/2001	8/30/2020	23	9.39	8.9	15	2.7	2.98
NUTRIENT	Ammonia Nitrogen	N	MG/L	8/27/2001	8/30/2020	31	0.52	0.2	5	0.05	1.2
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	8/27/2001	8/30/2020	31	0.099	0.1	0.87	0.02	0.15
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	8/27/2001	8/30/2020	28	0.03	0.04	0.05	0.01	0.02
PHYSICAL	pH, Lab	N	S.U.	8/27/2001	8/30/2020	31	8.04	8.1	8.4	7.31	0.286
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	8/27/2001	8/30/2020	31	838	819	990	723	78.7
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	8/27/2001	8/30/2020	31	558	540	710	450	67.3
PRIMARY	Cadmium	D	UG/L	8/27/2001	8/30/2020	31	0.9	0.5	5	0.3	1
PRIMARY	Lead	D	UG/L	8/27/2001	8/30/2020	31	200	200	200	50	60
PRIMARY	Mercury	D	UG/L	8/27/2001	8/30/2020	31	0.8	1	1	0.2	0.3
PRIMARY	Selenium	D	UG/L	8/27/2001	8/30/2020	31	0.91	0.3	13	0.1	2.3
SECONDARY	Iron	D	UG/L	8/27/2001	8/30/2020	31	310	140	4500	5	790
SECONDARY	Manganese	D	UG/L	8/27/2001	8/30/2020	31	95.2	79	310	5	65.5
TRACE	Molybdenum	D	UG/L	8/27/2001	8/30/2020	31	70	50	100	50	30

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: AVF15 (AVF-15, Alluvial Well, Fish Creek Alluvium) Datum: 6628.4

Date				11/15/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				DRY		DRY		3.37		DRY	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					251	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N		
ANION	Bicarbonate as HCO3	N	MG/L					307	Y		
ANION	Carbonate as CO3	N	MG/L					20	N		
ANION	Sulfates	N	MG/L					190	Y		
CATION	Calcium	D	MG/L					63.9	Y		
CATION	Magnesium	D	MG/L					38.1	Y		
CATION	Sodium	D	MG/L					53.7	Y		
FIELD	pH, Field	N	S.U.					7.16	Y		
FIELD	Specific Conductivity, Field	N	UMHOS/CM					950	Y		
FIELD	Temperature, Field	N	DEG-C					8.9	Y		
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.02	Y		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.01	Y		
PHYSICAL	pH, Lab	N	S.U.					7.9	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					808	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					550	Y		
PRIMARY	Cadmium	D	UG/L					0.3	N		
PRIMARY	Lead	D	UG/L					200	N		
PRIMARY	Mercury	D	UG/L					1	N		
PRIMARY	Selenium	D	UG/L					0.2	Y		
SECONDARY	Iron	D	UG/L					2190	Y		
SECONDARY	Manganese	D	UG/L					220	Y		
TRACE	Molybdenum	D	UG/L					100	N		

Table: 31a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: AVF15 (AVF-15, Alluvial Well, Fish Creek Alluvium) Datum: 6628.4

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	7/23/2014	5/7/2020	18	411	424	497	251	77.9
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	7/23/2014	5/7/2020	18	19	20	20	3.4	3.9
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	5/7/2020	3	346	338	393	307	43.6
ANION	Carbonate as CO3	N	MG/L	4/22/2019	5/7/2020	2	20	20	20	20	0
ANION	Sulfates	N	MG/L	7/23/2014	5/7/2020	18	220	170	400	110	100
CATION	Calcium	D	MG/L	7/23/2014	5/7/2020	18	94.2	91	138	63.9	18.5
CATION	Magnesium	D	MG/L	7/23/2014	5/7/2020	18	43.3	39.6	62.5	33.6	9
CATION	Sodium	D	MG/L	7/23/2014	5/7/2020	18	55.6	48.7	89.2	32.9	21.3
FIELD	pH, Field	N	S.U.	4/13/2017	5/7/2020	6	7.15	7.18	7.38	6.84	0.221
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/13/2017	5/7/2020	6	1230	1270	1370	950	148
FIELD	Temperature, Field	N	DEG-C	4/13/2017	5/7/2020	6	7.7	7.8	9	6.1	1.2
NUTRIENT	Ammonia Nitrogen	N	MG/L	7/23/2014	5/7/2020	18	0.25	0.2	0.73	0.09	0.15
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	7/23/2014	5/7/2020	18	0.088	0.1	0.21	0.02	0.043
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	7/23/2014	5/7/2020	18	0.03	0.03	0.05	0.01	0.02
PHYSICAL	pH, Lab	N	S.U.	7/23/2014	5/7/2020	18	7.9	7.9	8.3	7.6	0.2
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/23/2014	5/7/2020	18	976	924	1400	765	178
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	7/23/2014	5/7/2020	18	669	623	986	480	147
PRIMARY	Cadmium	D	UG/L	7/23/2014	5/7/2020	18	0.5	0.5	0.5	0.1	0.1
PRIMARY	Lead	D	UG/L	7/23/2014	5/7/2020	18	200	200	200	200	0
PRIMARY	Mercury	D	UG/L	7/23/2014	5/7/2020	18	1	1	1	1	0
PRIMARY	Selenium	D	UG/L	7/23/2014	5/7/2020	18	0.81	0.3	4.2	0.1	1.2
SECONDARY	Iron	D	UG/L	7/23/2014	5/7/2020	18	1050	200	6690	40	1720
SECONDARY	Manganese	D	UG/L	7/23/2014	5/7/2020	18	524	440	1210	217	268
TRACE	Molybdenum	D	UG/L	7/23/2014	5/7/2020	18	100	100	100	100	0

Table: 32
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site:08AT1 (008-AT-1, Alluvial Well, Trout Creek Alluvium) Datum: 6580.43

Date				11/13/2019		2/16/2020		5/7/2020		8/30/2020	
Depth to Water (FT)				4.58		4.5		3.99		5.03	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					240	Y	242	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L					292	Y	295	Y
ANION	Carbonate as CO3	N	MG/L					20	N	20	N
ANION	Sulfates	N	MG/L					250	Y	290	Y
CATION	Calcium	D	MG/L					81.6	Y	91.8	Y
CATION	Magnesium	D	MG/L					46.5	Y	46	Y
CATION	Sodium	D	MG/L					39.4	Y	32.8	Y
FIELD	pH, Field	N	S.U.	7.28	Y	7.3	Y	7.28	Y	7.04	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	910	Y	910	Y	980	Y	980	Y
FIELD	Temperature, Field	N	DEG-C	11.8	Y	7.8	Y	9.1	Y	12.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N	0.01	Y
PHYSICAL	pH, Lab	N	S.U.					8	Y	7.6	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					866	Y	905	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					610	Y	646	Y
PRIMARY	Cadmium	D	UG/L					0.3	N	0.3	N
PRIMARY	Lead	D	UG/L					30	N	30	N
PRIMARY	Mercury	D	UG/L					1	N	1	N
PRIMARY	Selenium	D	UG/L					0.1	Y	1.8	Y
SECONDARY	Iron	D	UG/L					1360	Y	5550	Y
SECONDARY	Manganese	D	UG/L					730	Y	900	Y
TRACE	Molybdenum	D	UG/L					20	N	20	N

Table: 32a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site:08AT1 (008-AT-1, Alluvial Well, Trout Creek Alluvium) Datum: 6580.43

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	3/18/1994	8/30/2020	70	307.3	299	476	178	61.08
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/18/1994	8/30/2020	70	10	2	20	0	9
ANION	Bicarbonate as HCO3	N	MG/L	4/23/2018	8/30/2020	6	287	292	332	246	29
ANION	Carbonate as CO3	N	MG/L	4/22/2019	8/30/2020	4	20	20	20	20	0
ANION	Sulfates	N	MG/L	3/18/1994	8/30/2020	70	294	282	901	110	109
CATION	Calcium	D	MG/L	3/18/1994	8/30/2020	70	112	114	240	10	33.3
CATION	Magnesium	D	MG/L	3/18/1994	8/30/2020	70	49.3	50.9	105	3.7	13.3
CATION	Sodium	D	MG/L	3/18/1994	8/30/2020	70	34	32.8	122	2.6	13
FIELD	pH, Field	N	S.U.	2/17/1994	8/30/2020	124	7.49	7.5	8.21	6.59	0.326
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2/17/1994	8/30/2020	124	1010	990	1350	460	153
FIELD	Temperature, Field	N	DEG-C	2/17/1994	8/30/2020	124	9.24	9.1	19	3.5	2.98
NUTRIENT	Ammonia Nitrogen	N	MG/L	12/28/1994	8/30/2020	66	0.23	0.06	5	0.01	0.65
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/18/1994	8/30/2020	70	0.071	0.055	0.37	0.02	0.059
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	3/18/1994	8/30/2020	67	0.023	0.01	0.12	0.005	0.021
PHYSICAL	pH, Lab	N	S.U.	3/4/1997	8/30/2020	58	7.69	7.85	8.3	6.81	0.396
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3/18/1994	8/30/2020	70	943.7	949	1250	643	145
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/18/1994	8/30/2020	70	678	666	980	426	124
PRIMARY	Cadmium	D	UG/L	3/18/1994	8/30/2020	70	1	0.5	5	0.1	2
PRIMARY	Lead	D	UG/L	3/18/1994	8/30/2020	70	100	60	200	20	80
PRIMARY	Mercury	D	UG/L	3/18/1994	8/30/2020	70	0.6	0.2	1	0.02	0.4
PRIMARY	Selenium	D	UG/L	3/18/1994	8/30/2020	70	1.3	1	15	0.1	1.9
SECONDARY	Iron	D	UG/L	3/18/1994	8/30/2020	70	866	490	5550	5	1060
SECONDARY	Manganese	D	UG/L	3/18/1994	8/30/2020	70	906	807	2550	5	464
TRACE	Molybdenum	D	UG/L	3/18/1994	8/30/2020	70	50	50	100	10	40

Table: 33
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: JONES (Alluvial Well, Lower Trout Creek Alluvium) Datum: 6600

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/15/1996	10/20/2008	14	224	231	317	21	75.2
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/15/1996	10/20/2008	14	9	2	20	1	10
ANION	Sulfates	N	MG/L	5/15/1996	10/20/2008	39	206	210	320	30	49.4
CATION	Calcium	D	MG/L	5/15/1996	10/20/2008	14	87.8	91.3	130	4.1	28.6
CATION	Magnesium	D	MG/L	5/15/1996	10/20/2008	14	30.4	32.4	48.3	0.6	13
CATION	Sodium	D	MG/L	5/15/1996	10/20/2008	14	25.1	24.7	49	11.8	8.98
FIELD	pH, Field	N	S.U.	5/15/1996	12/29/2003	29	7.63	7.6	8.47	6.74	0.399
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/15/1996	12/29/2003	29	819	830	1010	540	93.5
FIELD	Temperature, Field	N	DEG-C	5/15/1996	8/21/2003	28	11.6	11.7	19.4	1.5	4.44
NUTRIENT	Ammonia Nitrogen	N	MG/L	5/15/1996	10/20/2008	13	0.36	0.08	3	0.01	0.81
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/15/1996	10/20/2008	14	0.176	0.075	1.05	0.02	0.289
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/15/1996	4/23/2008	13	0.018	0.01	0.05	0.005	0.014
PHYSICAL	pH, Lab	N	S.U.	4/7/1997	10/20/2008	14	7.74	7.7	8.2	7.2	0.397
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/15/1996	10/20/2008	17	717	751	1080	82	214
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/15/1996	10/20/2008	14	500	525	720	50	153
PRIMARY	Cadmium	D	UG/L	5/15/1996	10/20/2008	14	1	0.5	5	0.5	2
PRIMARY	Lead	D	UG/L	5/15/1996	10/20/2008	13	100	80	200	20	80
PRIMARY	Mercury	D	UG/L	5/15/1996	10/20/2008	14	0.4	0.2	1	0.2	0.4
PRIMARY	Selenium	D	UG/L	5/15/1996	10/20/2008	14	1.5	1	7.2	0.1	1.8
SECONDARY	Iron	D	UG/L	5/15/1996	10/20/2008	14	302	55	2190	10	584
SECONDARY	Manganese	D	UG/L	5/15/1996	10/20/2008	14	620	547	1220	29	379
TRACE	Molybdenum	D	UG/L	5/15/1996	10/20/2008	14	40	50	50	10	20

TABLE 34 (continued)
MONITORING SITES & FREQUENCY
SURFACE FLOW *MARCH - MAY*

	REGULAR SAMPLING		CONTINGENT SAMPLING (sample only when pumping site 109 or 115 is discharging, between 24 hours after the discharge begins and 36 hours after it ends)	
SITE	**WATER LEVEL & FIELD PARAMETERS**	**WATER QUALITY (see note, below)**	**WATER LEVEL & FIELD EC**	**LAB SULFATE & LAB EC**
Foidel Creek				
USGS 09243800	Schedule A	Once in March		
8	Schedule A	Once in March		
14	Schedule A	Once in March		
USGS 09243900	Schedule A	Once in March		
Fish Creek				
16A	Schedule A	Once in March	Weekly	
302				
27A	Schedule A	Once in March		
1003	Schedule A	Once in March	Weekly	Monthly
SW-13	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-14	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-15	Quarterly - Flow only, fields semi-annually	semi-annually		
307	Monthly - Flow only, fields semi-annually			
305	Monthly - Flow only, fields semi-annually			
Trout Creek				
301	Monthly	Once in March	Weekly	Monthly
69	Monthly	Once in March	Weekly	Monthly
1005	Monthly	Once in March	Weekly	Monthly
Middle Creek				
29	Schedule A	Once in March	Weekly	Monthly

Schedule A
March - Monthly
April - Two times during month
May - Monthly

Note: If site is frozen, March quality sample may be taken in April.

TABLE 34 (continued)
MONITORING SITES & FREQUENCY
SURFACE FLOW *JUNE - SEPTEMBER*

	REGULAR SAMPLING		CONTINGENT SAMPLING (sample only when pumping site 109 or 115 is discharging, between 24 hours after the discharge begins and 36 hours after it ends)	
SITE	**WATER LEVEL & FIELD PARAMETERS**	**WATER QUALITY**	**WATER LEVEL & FIELD EC**	**LAB SULFATE AND LAB EC**
Foidel Creek				
USGS 09243800	Schedule B	Monthly only in Jun, Aug, Sept		
8	Schedule B	Monthly only in Jun, Aug, Sept		
14	Schedule B	Monthly only in Jun, Aug, Sept		
USGS 09243900	Schedule B	Monthly only in Jun, Aug, Sept		
Fish Creek				
16A	Schedule B	Monthly only in Jun, Aug, Sept	Weekly	
302	Monthly	One time only: During Jun-Sept.		
SW-13	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-14	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-15	Quarterly - Flow only, fields semi-annually	semi-annually		
27A	Schedule B	Monthly only in Jun, Aug, Sept		
1003	Schedule B	Monthly only in Jun, Aug, Sept	Weekly	Monthly
307	Monthly - Flow only, fields semi-annually			
305	Monthly - Flow only, fields semi-annually			
Trout Creek				
301	Monthly	Monthly	Weekly	Monthly
69	Monthly	Monthly	Weekly	Monthly
1005	Monthly	Monthly	Weekly (EC only)	Monthly
Middle Creek				
29	Schedule B	Monthly only in Jun, Aug, Sept	Weekly	Monthly

Schedule B
June- Monthly
July - Monthly
August - Weekly
Sept. - First two weeks of month

TABLE 34 (continued)
MONITORING SITES & FREQUENCY
SURFACE FLOW *OCTOBER - FEBRUARY*

	REGULAR SAMPLING		CONTINGENT SAMPLING (sample only when pumping site 109 or 115 is discharging, between 24 hours after the discharge begins and 36 hours after it ends)	
SITE	**WATER LEVEL & FIELD PARAMETERS**	**WATER QUALITY**	**WATER LEVEL & FIELD EC**	**LAB SULFATE & LAB EC**
Foidel Creek				
USGS 09243800				
8				
14				
USGS 09243900				
Fish Creek				
16A			Weekly	
302				
SW-13	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-14	Quarterly - Flow only, fields semi-annually	semi-annually		
SW-15	Quarterly - Flow only, fields semi-annually	semi-annually		
27A				
1003			Weekly	Monthly
307				
305				
Trout Creek				
301			Weekly (EC only	Monthly
69			Weekly	Monthly
1005			Weekly	Monthly
Middle Creek				
29			Weekly	Monthly

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Twentymile Coal, LLC
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Water Year Monitoring Data

Site: 14 (Surface Water, Foidel Creek) Datum: 6915

			Date	3/24/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020		July	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	291	Y							278	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	8.3	Y							21.5	Y		
ANION	Bicarbonate as HCO3	N	MG/L	355	Y							339	Y		
ANION	Carbonate as CO3	N	MG/L	5	Y							12.9	Y		
ANION	Sulfates	N	MG/L	390	Y							290	Y		
CATION	Calcium	D	MG/L	120	Y							104	Y		
CATION	Magnesium	D	MG/L	66.9	Y							48.5	Y		
CATION	Sodium	D	MG/L	51.8	Y							41.9	Y		
FIELD	Flow	N	CFS	0.1	Y	5.78	Y	5.094	Y	0.736	Y	0.141	Y		
FIELD	pH, Field	N	S.U.	7.9	Y	7.7	Y	7.7	Y	8.2	Y	8	Y		
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1000	Y	350	Y	330	Y	770	Y	810	Y		
FIELD	Temperature, Field	N	DEG-C	6.2	Y	7.3	Y	12	Y	13.2	Y	16	Y		
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.22	Y							0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.03	Y							0.02	Y		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.5	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.95	Y							0.86	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	24	Y							8	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1170	Y							964	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	870	Y							686	Y		
PRIMARY	Cadmium	TR	MG/L	7E-05	Y							0.0003	N		
PRIMARY	ercury	T	MG/L	0.001	N							0.001	N		
PRIMARY	Selenium	TR	UG/L	0.5	Y							0.3	Y		
SECONDARY	Iron	TR	UG/L	1020	Y							340	Y		
SECONDARY	Manganese	TR	UG/L	40	Y							50	Y		
SECONDARY	Silver	TR	UG/L	0.5	N							0.5	N		
SECONDARY	Zinc	TR	UG/L	50	N							50	N		
TRACE	Molybdenum	TR	UG/L	100	N							100	N		

Table: 35
Twentymile Coal, LLC
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Water Year Monitoring Data

Site: 14 (Surface Water, Foidel Creek) Datum: 6915

			Date	August		Septmeber	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				
ANION	Bicarbonate as HCO3	N	MG/L				
ANION	Carbonate as CO3	N	MG/L				
ANION	Sulfates	N	MG/L				
CATION	Calcium	D	MG/L				
CATION	Magnesium	D	MG/L				
CATION	Sodium	D	MG/L				
FIELD	Flow	N	CFS				
FIELD	pH, Field	N	S.U.				
FIELD	Specific Conductivity, Field	N	UMHOS/CM				
FIELD	Temperature, Field	N	DEG-C				
NUTRIENT	Ammonia Nitrogen	N	MG/L				
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L				
PHYSICAL	pH, Lab	N	S.U.				
PHYSICAL	Sodium Adsorption Ratio	N	RATIO				
PHYSICAL	Solids, Total Suspended	N	MG/L				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L				
PRIMARY	Cadmium	TR	MG/L				
PRIMARY	ercury	T	MG/L				
PRIMARY	Selenium	TR	UG/L				
SECONDARY	Iron	TR	UG/L				
SECONDARY	Manganese	TR	UG/L				
SECONDARY	Silver	TR	UG/L				
SECONDARY	Zinc	TR	UG/L				
TRACE	Molybdenum	TR	UG/L				

NO FLOW DURING JULY, AUGUST, OR SEPTEMBER

Table: 35a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 14 (Surface Water, Foidel Creek) Datum: 6915

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	6/18/1979	6/22/2020	188	245.7	244.61	437	15	84.492
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/18/1979	6/22/2020	82	10.8	5.3	48	0	11.3
ANION	Bicarbonate as HCO3	N	MG/L	4/5/2018	6/22/2020	6	272	329	355	112	107
ANION	Carbonate as CO3	N	MG/L	4/16/2019	6/22/2020	5	14.7	15.8	20	5	6.22
ANION	Sulfates	N	MG/L	6/18/1979	6/22/2020	189	274	247	1470	33	154
CATION	Calcium	D	MG/L	6/18/1979	6/22/2020	191	93.9	92	342	30	41.1
CATION	Magnesium	D	MG/L	6/18/1979	6/22/2020	192	47.6	47	175	10	20.6
CATION	Sodium	D	MG/L	6/18/1979	6/22/2020	187	36	35	140	10	17.6
FIELD	Flow	N	CFS	5/26/1981	6/22/2020	196	1.026	0.29	11.57	0.01	1.744
FIELD	pH, Field	N	S.U.	4/5/1979	6/22/2020	263	7.79	7.88	9.6	6.3	0.479
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/30/1979	6/22/2020	261	758.7	700	3910	190	410.2
FIELD	Temperature, Field	N	DEG-C	4/5/1979	6/22/2020	266	9.23	9	28.4	0.4	5.23
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/1/1983	6/22/2020	69	0.15	0.05	3	0.001	0.38
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/18/1979	6/22/2020	187	0.32	0.09	22.4	0.005	1.68
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/15/1982	6/22/2020	122	0.045	0.03	0.5	0.005	0.0554
PHYSICAL	pH, Lab	N	S.U.	6/30/1986	6/22/2020	55	8.07	8.15	8.6	6.9	0.347
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	6/18/1979	6/22/2020	176	0.73706	0.72295	2.25	0.336	0.25051
PHYSICAL	Solids, Total Suspended	N	MG/L	4/5/1979	6/22/2020	227	47.7	24	1390	2	110
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	8/26/1986	6/22/2020	88	826.2	811	2770	294	345.5
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/5/1979	6/22/2020	228	614.4	587	2790	140	309.2
PRIMARY	Cadmium	T	UG/L	4/15/1982	12/1/1986	44	6	5	37	3	5.3
PRIMARY	Cadmium	TR	MG/L	5/5/2006	6/22/2020	21	0.0004	0.0005	0.001	0.00006	0.0002
PRIMARY	Cadmium	TR	UG/L	4/15/1987	6/1/2010	57	1.1	0.5	8	0.1	1.8
PRIMARY	Mercury	T	MG/L	5/5/2006	6/22/2020	21	0.0009	0.001	0.001	0.0002	0.0002
PRIMARY	Selenium	TR	UG/L	4/15/1987	6/22/2020	78	1.4	1	10	0.2	1.6
SECONDARY	Iron	TR	UG/L	4/15/1987	6/22/2020	84	1640	1000	7120	140	1580
SECONDARY	Manganese	TR	UG/L	1/15/1987	6/22/2020	97	127	70	1910	10	215
SECONDARY	Silver	TR	UG/L	4/15/1987	6/22/2020	78	0.8	0.5	10	0.0001	2
SECONDARY	Zinc	TR	UG/L	4/15/1987	6/22/2020	78	24	20	80	5	16
TRACE	Molybdenum	TR	UG/L	4/15/1987	6/22/2020	77	50	50	100	10	30

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Water Year Monitoring Data

Site: 800 (USGS 09243800, Surface Water, Foidel Creek) Datum: 6940

Date				3/24/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	433	Y							291	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N							20	N
ANION	Bicarbonate as HCO3	N	MG/L	528	Y							355	Y
ANION	Carbonate as CO3	N	MG/L	20	N							20	N
ANION	Sulfates	N	MG/L	1750	Y							2080	Y
CATION	Calcium	D	MG/L	369	Y							348	Y
CATION	Magnesium	D	MG/L	279	Y							358	Y
CATION	Sodium	D	MG/L	44.2	Y							41.1	Y
FIELD	Flow	N	CFS	1.369	Y	11.5	Y	9.91	Y	6.345	Y	2.766	Y
FIELD	pH, Field	N	S.U.	7.9	Y	7.8	Y	7.9	Y	7.9	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2430	Y	700	Y	1310	Y	2766	Y	2810	Y
FIELD	Temperature, Field	N	DEG-C	9.7	Y	7.5	Y	12.9	Y	17.8	Y	20.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.05	Y							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.05	N							0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.3	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.43	Y							0.37	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N							7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3000	Y							3230	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	2850	Y							3250	Y
PRIMARY	Cadmium	TR	MG/L	0.0003	N							0.0005	N
PRIMARY	Mercury	T	MG/L	0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L	0.3	Y							0.3	Y
SECONDARY	Iron	TR	UG/L	200	Y							300	N
SECONDARY	Manganese	TR	UG/L	400	Y							90	Y
SECONDARY	Silver	TR	UG/L	0.5	N							1	N
SECONDARY	Zinc	TR	UG/L	100	N							100	N
TRACE	Molybdenum	TR	UG/L	200	N							200	N

Table: 36
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 800 (USGS 09243800, Surface Water, Foidel Creek) Datu

Date				7/27/2020		8/3/2020		8/11/2020		8/19/2020		8/26/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					232	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					20	N				
ANION	Bicarbonate as HCO3	N	MG/L					283	Y				
ANION	Carbonate as CO3	N	MG/L					20	N				
ANION	Sulfates	N	MG/L					2500	Y				
CATION	Calcium	D	MG/L					350	Y				
CATION	Magnesium	D	MG/L					409	Y				
CATION	Sodium	D	MG/L					45.2	Y				
FIELD	Flow	N	CFS	0.37	Y	0.9651	Y	0.9651	Y	0.9631	Y	0.818	Y
FIELD	pH, Field	N	S.U.	7.7	Y	7.8	Y	7.8	Y	7.8	Y	7.4	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3100	Y	3210	Y	3200	Y	2970	Y	3290	Y
FIELD	Temperature, Field	N	DEG-C	24.3	Y	25.7	Y	20.2	Y	27.8	Y	25.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N				
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N				
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N				
PHYSICAL	pH, Lab	N	S.U.					8.1	Y				
PHYSICAL	Sodium Adsorption Ratio	N	RATIO					0.39	Y				
PHYSICAL	Solids, Total Suspended	N	MG/L					9	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					3610	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					3660	Y				
PRIMARY	Cadmium	TR	MG/L					0.0005	N				
PRIMARY	Mercury	T	MG/L					0.001	N				
PRIMARY	Selenium	TR	UG/L					0.3	Y				
SECONDARY	Iron	TR	UG/L					300	Y				
SECONDARY	Manganese	TR	UG/L					410	Y				
SECONDARY	Silver	TR	UG/L					1	N				
SECONDARY	Zinc	TR	UG/L					100	N				
TRACE	Molybdenum	TR	UG/L					200	N				

Table: 36
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 800 (USGS 09243800, Surface Water, Foidel Creek) Datu

Date				9/3/2020		9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**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	Bicarbonate as HCO3	N	MG/L			339	Y
ANION	Carbonate as CO3	N	MG/L			20	N
ANION	Sulfates	N	MG/L			2470	Y
CATION	Calcium	D	MG/L			371	Y
CATION	Magnesium	D	MG/L			415	Y
CATION	Sodium	D	MG/L			47	Y
FIELD	Flow	N	CFS	0.9651	Y	0.9651	Y
FIELD	pH, Field	N	S.U.	7.7	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3260	Y	3840	Y
FIELD	Temperature, Field	N	DEG-C	17.8	Y	14.4	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.01	Y
PHYSICAL	pH, Lab	N	S.U.			8.2	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			0.4	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			3570	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			3780	Y
PRIMARY	Cadmium	TR	MG/L			0.0005	N
PRIMARY	Mercury	T	MG/L			0.001	N
PRIMARY	Selenium	TR	UG/L			0.5	N
SECONDARY	Iron	TR	UG/L			300	Y
SECONDARY	Manganese	TR	UG/L			320	Y
SECONDARY	Silver	TR	UG/L			1	N
SECONDARY	Zinc	TR	UG/L			100	N
TRACE	Molybdenum	TR	UG/L			200	N

Table: 36a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record of Water Quality

Site: 800 (USGS 09243800, Surface Water, Foidel Creek) Datum: 6940

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	3/5/1976	9/9/2020	128	333.9	329	564	140	93.71
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/25/1992	9/9/2020	95	10.2	6	31	0	9.16
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	13	362	339	580	227	125
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	11	43.7	20	281	20	78.7
ANION	Sulfates	N	MG/L	3/5/1976	9/9/2020	177	1288	1400	2530	46	763.6
CATION	Calcium	D	MG/L	3/5/1976	9/9/2020	177	262	290	730	25	119
CATION	Magnesium	D	MG/L	3/5/1976	9/9/2020	178	200	190	429	10	121
CATION	Sodium	D	MG/L	3/5/1976	9/9/2020	177	48.9	46.4	160	6.1	20.3
FIELD	Flow	N	CFS	3/5/1976	9/9/2020	169	2.8741	0.965	56	0.001971	6.5626
FIELD	pH, Field	N	S.U.	3/5/1976	9/9/2020	296	7.96	8	9.2	6.8	0.355
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3/5/1976	9/9/2020	300	2382	2580	4300	210	935.9
FIELD	Temperature, Field	N	DEG-C	4/8/1976	9/9/2020	292	13.1	14.3	27.8	0	6.66
NUTRIENT	Ammonia Nitrogen	N	MG/L	2/12/1985	9/9/2020	126	0.16	0.095	0.5	0.001	0.17
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3/5/1976	9/9/2020	173	1.26	0.1	66	0.01	6.14
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	3/5/1976	9/9/2020	167	0.0253	0.01	0.21	0.005	0.0304
PHYSICAL	pH, Lab	N	S.U.	11/5/1986	9/9/2020	88	8.14	8.2	8.7	7.68	0.199
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	3/5/1976	9/9/2020	181	18.28	0.554	3200	0.057	237.8
PHYSICAL	Solids, Total Suspended	N	MG/L	3/5/1976	9/9/2020	175	86	20	2400	2	249
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	10/2/1980	9/9/2020	151	2505	2800	4400	660	888.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	11/5/1986	9/9/2020	118	2716	2980	3830	8	795.3
PRIMARY	Cadmium	D	UG/L	3/5/1976	9/7/1989	13	1	1	3	0.1	0.9
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	48	0.00074	0.001	0.001	0.0001	0.0003
PRIMARY	Cadmium	TR	UG/L	4/9/1979	8/2/2011	83	1	1	5	0.1	1
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	48	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	6/17/1987	9/9/2020	109	1.5	1	20	0.1	2.7
SECONDARY	Iron	TR	UG/L	4/9/1979	9/9/2020	170	1270	400	33000	30	3490
SECONDARY	Manganese	TR	UG/L	4/9/1979	9/9/2020	154	319	191	4080	10	480
SECONDARY	Silver	TR	UG/L	11/5/1986	9/9/2020	117	0.7	0.5	5	0.0001	1
SECONDARY	Zinc	TR	UG/L	4/9/1979	9/9/2020	133	44	23	240	5	39
TRACE	Molybdenum	TR	UG/L	4/9/1979	9/9/2020	130	67	50	300	1	69

Table: 37
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 8 (Surface Water, Foidel Creek) Datum: 6789.95

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	369	Y							289	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N							30.7	Y
ANION	Bicarbonate as HCO3	N	MG/L	450	Y							352	Y
ANION	Carbonate as CO3	N	MG/L	20	N							18.4	Y
ANION	Sulfates	N	MG/L	1290	Y							2200	Y
CATION	Calcium	D	MG/L	231	Y							320	Y
CATION	Magnesium	D	MG/L	167	Y							335	Y
CATION	Sodium	D	MG/L	226	Y							162	Y
FIELD	Flow	N	CFS	5.396	Y	25.27	Y	16.09	Y	8.41	Y	3.55	Y
FIELD	pH, Field	N	S.U.	7.9	Y	8.1	Y	8	Y	8.1	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2060	Y	1180	Y	1620	Y	2270	Y	2850	Y
FIELD	Temperature, Field	N	DEG-C	8	Y	10.3	Y	13.8	Y	24.1	Y	21.4	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.51	Y							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.06	Y							0.02	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.5	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	2.8	Y							1.5	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	24	Y							13	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	2730	Y							3510	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	2400	Y							3460	Y
PRIMARY	Cadmium	TR	MG/L	6E-05	Y							0.0005	N
PRIMARY	Mercury	T	MG/L	0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L	1.2	Y							0.8	Y
SECONDARY	Iron	TR	UG/L	1000	Y							200	Y
SECONDARY	Manganese	TR	UG/L	210	Y							50	Y
SECONDARY	Silver	TR	UG/L	0.5	N							1	N
SECONDARY	Zinc	TR	UG/L	100	N							100	N
TRACE	Molybdenum	TR	UG/L	200	N							200	N

Table: 37
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 8 (Surface Water, Foidel Creek) Datum: 6789.95

			Date	7/27/2020		8/3/2020		8/11/2020		8/19/2020		8/26/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					213	Y				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					23.8	Y				
ANION	Bicarbonate as HCO3	N	MG/L					260	Y				
ANION	Carbonate as CO3	N	MG/L					14.3	Y				
ANION	Sulfates	N	MG/L					2430	Y				
CATION	Calcium	D	MG/L					378	Y				
CATION	Magnesium	D	MG/L					451	Y				
CATION	Sodium	D	MG/L					61.4	Y				
FIELD	Flow	N	CFS	1.27	Y	0.811	Y	0.541	Y	0.453	Y	0.524	Y
FIELD	pH, Field	N	S.U.	8	Y	8.2	Y	8.1	Y	8.2	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2860	Y	3160	Y	2970	Y	3290	Y	3330	Y
FIELD	Temperature, Field	N	DEG-C	25.7	Y	27.6	Y	22.2	Y	24.9	Y	28	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N				
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N				
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.02	Y				
PHYSICAL	pH, Lab	N	S.U.					8.5	Y				
PHYSICAL	Sodium Adsorption Ratio	N	RATIO					0.51	Y				
PHYSICAL	Solids, Total Suspended	N	MG/L					22	Y				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					3680	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					3780	Y				
PRIMARY	Cadmium	TR	MG/L					0.0005	N				
PRIMARY	Mercury	T	MG/L					0.001	N				
PRIMARY	Selenium	TR	UG/L					0.4	Y				
SECONDARY	Iron	TR	UG/L					900	Y				
SECONDARY	Manganese	TR	UG/L					580	Y				
SECONDARY	Silver	TR	UG/L					1	N				
SECONDARY	Zinc	TR	UG/L					100	N				
TRACE	Molybdenum	TR	UG/L					200	N				

Table: 37
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 8 (Surface Water, Foidel Creek) Datum: 6789.95

			Date	9/3/2020		9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			253	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			7.3	Y
ANION	Bicarbonate as HCO3	N	MG/L			309	Y
ANION	Carbonate as CO3	N	MG/L			4.4	Y
ANION	Sulfates	N	MG/L			2520	Y
CATION	Calcium	D	MG/L			357	Y
CATION	Magnesium	D	MG/L			423	Y
CATION	Sodium	D	MG/L			60.9	Y
FIELD	Flow	N	CFS	0.561	Y	0.986	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3130	Y	3570	Y
FIELD	Temperature, Field	N	DEG-C	15	Y	13.8	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.04	Y
PHYSICAL	pH, Lab	N	S.U.			8.3	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			0.52	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			30	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			3660	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			3830	Y
PRIMARY	Cadmium	TR	MG/L			0.0005	N
PRIMARY	Mercury	T	MG/L			0.001	N
PRIMARY	Selenium	TR	UG/L			0.2	Y
SECONDARY	Iron	TR	UG/L			900	Y
SECONDARY	Manganese	TR	UG/L			210	Y
SECONDARY	Silver	TR	UG/L			1	N
SECONDARY	Zinc	TR	UG/L			100	N
TRACE	Molybdenum	TR	UG/L			200	N

Table: 37a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 8 (Surface Water, Foidel Creek) Datum: 6789.95

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/20/1980	9/9/2020	290	333.33	315.49	900	115.9	109.59
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/19/1981	9/9/2020	155	13.2	11.1	52.2	0	11.6
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	13	343	327	474	260	69.1
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	12	15.6	16.9	31.3	3.4	8.3
ANION	Sulfates	N	MG/L	10/20/1980	9/9/2020	296	1354	1285	2690	20	649.3
CATION	Calcium	D	MG/L	10/20/1980	9/9/2020	292	247	251	770	65	97.8
CATION	Magnesium	D	MG/L	10/20/1980	9/9/2020	292	187	171	458	38	95.5
CATION	Sodium	D	MG/L	10/20/1980	9/9/2020	293	136	91	880	30	131
FIELD	Flow	N	CFS	4/9/1979	9/9/2020	208	3.69702724	1.725	52	0.01	5.79278891
FIELD	pH, Field	N	S.U.	3/15/1979	9/9/2020	461	7.84	7.98	8.74	6.1	0.443
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/1/1979	9/9/2020	449	2226	2290	5350	100	1077
FIELD	Temperature, Field	N	DEG-C	3/15/1979	9/9/2020	462	12.39	13	29.3	0	6.734
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/1/1981	9/9/2020	144	0.47	0.05	44	0	3.7
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/20/1980	9/9/2020	289	1.96	0.6	18.7	0.005	2.83
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/20/1980	9/9/2020	196	0.407	0.02	30	0.003	3.08
PHYSICAL	pH, Lab	N	S.U.	7/14/1986	9/9/2020	135	8.24	8.3	8.6	7.3	0.217
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	10/20/1980	9/9/2020	287	1.6818	1.201	13	0.13	1.722
PHYSICAL	Solids, Total Suspended	N	MG/L	3/15/1979	9/9/2020	359	61.66	26	1352	2	120.2
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/14/1986	9/9/2020	176	3051	3160	8400	434	913.1
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/15/1979	9/9/2020	353	2163	2100	4590	330	1032
PRIMARY	Cadmium	T	UG/L	10/20/1980	1/12/1987	51	6.8	5	28	5	5.1
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	69	0.0009	0.001	0.005	0.00006	0.0007
PRIMARY	Cadmium	TR	UG/L	4/15/1987	5/21/2012	78	1.3	0.5	5	0.1	1.5
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	68	0.001	0.001	0.01	0.0002	0.001
PRIMARY	Selenium	TR	UG/L	4/15/1987	9/9/2020	148	2.11	1	20	0.2	3.1
SECONDARY	Iron	TR	UG/L	4/15/1987	9/9/2020	149	719	440	11000	20	1050
SECONDARY	Manganese	TR	UG/L	2/3/1987	9/9/2020	175	311	203	2020	5	327
SECONDARY	Silver	TR	UG/L	4/15/1987	9/9/2020	147	0.73	0.5	17	0.0001	1.6
SECONDARY	Zinc	TR	UG/L	4/15/1987	9/9/2020	147	55	30	340	5	61
TRACE	Molybdenum	TR	UG/L	4/15/1987	9/9/2020	147	80	50	500	10	80

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 900 (USGS 09243900, Surface Water, Foidel Creek) Datum: 6730

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020		7/27/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	360	Y							274	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	2.1	Y							40.4	Y		
ANION	Bicarbonate as HCO3	N	MG/L	439	Y							334	Y		
ANION	Carbonate as CO3	N	MG/L	20	N							24.3	Y		
ANION	Sulfates	N	MG/L	1250	Y							1730	Y		
CATION	Calcium	D	MG/L	201	Y							250	Y		
CATION	Magnesium	D	MG/L	154	Y							259	Y		
CATION	Sodium	D	MG/L	232	Y							186	Y		
FIELD	Flow	N	CFS	9.121	Y	25.36	Y	20.49	Y	10.08	Y	4.37	Y	0.969	Y
FIELD	pH, Field	N	S.U.	7.8	Y	8	Y	8.2	Y	8.2	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2020	Y	1280	Y	1480	Y	2260	Y	2520	Y	2550	Y
FIELD	Temperature, Field	N	DEG-C	8	Y	12.9	Y	14.5	Y	22.6	Y	20.4	Y	23.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.39	Y							0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.06	Y							0.02	Y		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.5	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	3	Y							2	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	64	Y							13	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	2640	Y							3070	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	2290	Y							2890	Y		
PRIMARY	Cadmium	TR	MG/L	6E-05	Y							0.0005	N		
PRIMARY	Mercury	T	MG/L	0.001	N							0.001	N		
PRIMARY	Selenium	TR	UG/L	1	Y							0.6	Y		
SECONDARY	Iron	TR	UG/L	1500	Y							300	Y		
SECONDARY	Manganese	TR	UG/L	210	Y							70	Y		
SECONDARY	Silver	TR	UG/L	0.5	N							1	N		
SECONDARY	Zinc	TR	UG/L	100	N							100	N		
TRACE	Molybdenum	TR	UG/L	200	N							200	N		

Table: 38
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 900 (USGS 09243900, Surface Water, Foidel Creek) Datum: 6730

			Date	8/3/2020		8/11/2020		8/19/2020		8/26/2020		9/3/2020		9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			241	Y							262	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			34	Y							16.4	Y
ANION	Bicarbonate as HCO3	N	MG/L			294	Y							320	Y
ANION	Carbonate as CO3	N	MG/L			20.4	Y							9.8	Y
ANION	Sulfates	N	MG/L			1580	Y							1940	Y
CATION	Calcium	D	MG/L			222	Y							265	Y
CATION	Magnesium	D	MG/L			262	Y							301	Y
CATION	Sodium	D	MG/L			150	Y							129	Y
FIELD	Flow	N	CFS	0.639	Y	0.228	Y	0.306	Y	0.29	Y	0.4	Y	0.45	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.2	Y	7.9	Y	8.4	Y	8	Y	7.9	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2490	Y	2410	Y	2460	Y	2400	Y	2540	Y	3130	Y
FIELD	Temperature, Field	N	DEG-C	25.9	Y	19.9	Y	22.8	Y	26.8	Y			12.9	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.01	Y							0.03	Y
PHYSICAL	pH, Lab	N	S.U.			8.5	Y							8.4	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			1.6	Y							1.3	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			7	Y							8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			2880	Y							3080	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			2700	Y							3030	Y
PRIMARY	Cadmium	TR	MG/L			0.0005	N							0.0005	N
PRIMARY	Mercury	T	MG/L			0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L			0.2	Y							0.2	Y
SECONDARY	Iron	TR	UG/L			400	Y							300	Y
SECONDARY	Manganese	TR	UG/L			80	Y							110	Y
SECONDARY	Silver	TR	UG/L			1	N							1	N
SECONDARY	Zinc	TR	UG/L			100	N							100	N
TRACE	Molybdenum	TR	UG/L			200	N							200	N

Table: 38a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 900 (USGS 09243900, Surface Water, Foidel Creek) Datum: 6730

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/8/1976	9/9/2020	137	341.7	339	790	106	90.84
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/25/1992	9/9/2020	100	12.6	8	48.6	0	12.4
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	13	355	334	481	268	68.1
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	12	20.1	19.8	47.7	6.4	11
ANION	Sulfates	N	MG/L	4/8/1976	9/9/2020	185	1087	1100	2150	100	529.9
CATION	Calcium	D	MG/L	4/8/1976	9/9/2020	183	196	190	430	45	86.8
CATION	Magnesium	D	MG/L	4/8/1976	9/9/2020	184	139	140	325	16	74.6
CATION	Sodium	D	MG/L	4/9/1979	9/9/2020	150	164	119	750	18.6	129
FIELD	Flow	N	CFS	9/2/1975	9/9/2020	192	6.494	1.6	82	0.01	11.89
FIELD	pH, Field	N	S.U.	9/2/1975	9/9/2020	306	8.1	8.11	9.3	7	0.318
FIELD	Specific Conductivity, Field	N	UMHOS/CM	9/2/1975	9/9/2020	320	2228	2265	4970	400	798.4
FIELD	Temperature, Field	N	DEG-C	10/4/1983	9/9/2020	262	14.1	15.1	26.8	0.2	6.75
NUTRIENT	Ammonia Nitrogen	N	MG/L	10/4/1983	9/9/2020	137	0.16	0.09	0.77	0.001	0.17
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/4/1983	9/9/2020	148	0.708	0.1	6.4	0.01	1.3
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/4/1983	9/9/2020	143	0.0623	0.03	1	0.005	0.142
PHYSICAL	pH, Lab	N	S.U.	3/20/1986	9/9/2020	96	8.36	8.39	8.8	7.95	0.204
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	4/9/1979	9/9/2020	202	2.1053	1.3	11	0.211	2.1268
PHYSICAL	Solids, Total Suspended	N	MG/L	10/4/1983	9/9/2020	150	76	25.5	1510	2	184
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	12/2/1985	9/9/2020	131	2492	2460	4300	693	665.2
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	11/5/1986	9/9/2020	124	2163	2210	3760	480	675.7
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	54	0.0006	0.0005	0.001	0.00006	0.0003
PRIMARY	Cadmium	TR	UG/L	11/5/1986	8/2/2011	66	1	0.5	5	0.1	1
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	54	0.001	0.001	0.001	0.0002	0.0001
PRIMARY	Selenium	TR	UG/L	6/17/1987	9/9/2020	115	1.5	1	11	0.1	1.9
SECONDARY	Iron	TR	UG/L	9/2/1975	9/9/2020	174	2410	700	68000	20	7120
SECONDARY	Manganese	TR	UG/L	9/2/1975	9/9/2020	155	364	269	1800	20	334
SECONDARY	Silver	TR	UG/L	11/5/1986	9/9/2020	120	0.71	0.5	11	0.1	1.2
SECONDARY	Zinc	TR	UG/L	4/15/1981	9/9/2020	120	44	21	410	5	48
TRACE	Molybdenum	TR	UG/L	11/5/1986	9/9/2020	122	70	50	200	1	60

Table: 39
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 16A (Surface Water, Fish Creek) Datum: 6915

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020		7/27/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	187	Y							263	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6.3	Y							33.3	Y		
ANION	Bicarbonate as HCO3	N	MG/L	228	Y							320	Y		
ANION	Carbonate as CO3	N	MG/L	3.8	Y							20	Y		
ANION	Sulfates	N	MG/L	120	Y							130	Y		
CATION	Calcium	D	MG/L	56.1	Y							74.5	Y		
CATION	Magnesium	D	MG/L	29.2	Y							38.4	Y		
CATION	Sodium	D	MG/L	25.7	Y							24.3	Y		
FIELD	Flow	N	CFS	10.245	Y	40.61	Y	66.07	Y	45.24	Y	8.55	Y	2.78	Y
FIELD	pH, Field	N	S.U.	8	Y	8.1	Y	8.2	Y	8.1	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	440	Y	400	Y	320	Y	310	Y	610	Y	680	Y
FIELD	Temperature, Field	N	DEG-C	9.2	Y	11.7	Y	11.5	Y	18	Y	20.5	Y	24.6	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.09	Y							0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.05	Y							0.03	Y		
PHYSICAL	pH, Lab	N	S.U.	8.4	Y							8.6	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.7	Y							0.58	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	94	Y							7	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	573	Y							707	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	396	Y							484	Y		
PRIMARY	Cadmium	TR	MG/L	7E-05	Y							0.0003	N		
PRIMARY	Mercury	T	MG/L	0.001	N							0.001	N		
PRIMARY	Selenium	TR	UG/L	0.7	Y							0.4	Y		
SECONDARY	Iron	TR	UG/L									310	Y		
SECONDARY	Manganese	TR	UG/L	90	Y							30	Y		
SECONDARY	Silver	TR	UG/L	0.5	N							0.5	N		
SECONDARY	Zinc	TR	UG/L	50	N							50	N		
TRACE	Molybdenum	TR	UG/L	100	N							100	N		

Table: 39
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 16A (Surface Water, Fish Creek) Datum: 6915

				Date	8/3/2020		8/11/2020		8/19/2020		8/26/2020		9/3/2020		9/9/2020	
Type	**Parameter**	**Fraction**	**Units**		**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				283	Y							279	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				22.9	Y							18.4	Y
ANION	Bicarbonate as HCO3	N	MG/L				345	Y							340	Y
ANION	Carbonate as CO3	N	MG/L				13.7	Y							11.1	Y
ANION	Sulfates	N	MG/L				140	Y							170	Y
CATION	Calcium	D	MG/L				61.2	Y							60.4	Y
CATION	Magnesium	D	MG/L				41.7	Y							48.5	Y
CATION	Sodium	D	MG/L				33.9	Y							33.6	Y
FIELD	Flow	N	CFS		1.538	Y	1.077	Y	0.945	Y	1.206	Y	1.313	Y	2.082	Y
FIELD	pH, Field	N	S.U.		8.2	Y	8.1	Y	8.3	Y	8.3	Y	8.1	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM		640	Y	670	Y	690	Y	700	Y	730	Y	810	Y
FIELD	Temperature, Field	N	DEG-C		24.7	Y	18.3	Y	27.1	Y	26.5	Y	15.2	Y	11.9	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L				0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				0.1	N							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L				0.05	N							0.01	Y
PHYSICAL	pH, Lab	N	S.U.				8.5	Y							8.5	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO				0.83	Y							0.79	Y
PHYSICAL	Solids, Total Suspended	N	MG/L				20	N							20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				742	Y							775	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L				502	Y							504	Y
PRIMARY	Cadmium	TR	MG/L				0.0003	N							0.0003	N
PRIMARY	Mercury	T	MG/L				0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L				0.4	Y							0.5	Y
SECONDARY	Iron	TR	UG/L				210	Y							390	Y
SECONDARY	Manganese	TR	UG/L				40	Y							40	Y
SECONDARY	Silver	TR	UG/L				0.5	N							0.5	N
SECONDARY	Zinc	TR	UG/L				100	N							50	N
TRACE	Molybdenum	TR	UG/L				200	N							100	N

Table: 39a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 16A (Surface Water, Fish Creek) Datum: 6915

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	5/15/2001	9/9/2020	67	246	244	360	100	57.6
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/15/2001	9/9/2020	67	13.8	13	38.9	1	10.1
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	13	282	309	345	157	60.9
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	11	15.2	17.9	26.1	3.8	7.63
ANION	Sulfates	N	MG/L	5/15/2001	9/9/2020	79	124	122	290	26	46.9
CATION	Calcium	D	MG/L	5/15/2001	9/9/2020	67	59.9	60	200	27.4	21.1
CATION	Magnesium	D	MG/L	5/15/2001	9/9/2020	67	36.1	36	59	12.3	11.9
CATION	Sodium	D	MG/L	5/15/2001	9/9/2020	67	26.3	24	85	8.8	11.9
FIELD	Flow	N	CFS	7/28/2017	9/9/2020	41	17.613	2.91	92.28	0.247	27.549
FIELD	pH, Field	N	S.U.	11/7/2000	9/9/2020	243	8.28	8.3	8.74	7.25	0.217
FIELD	Specific Conductivity, Field	N	UMHOS/CM	11/7/2000	9/9/2020	252	586.8	574.5	4600	179.2	333.3
FIELD	Temperature, Field	N	DEG-C	11/7/2000	9/9/2020	234	12.02	11.2	28.8	0.1	6.502
NUTRIENT	Ammonia Nitrogen	N	MG/L	5/15/2001	9/9/2020	68	0.25	0.2	0.5	0.001	0.19
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	5/15/2001	9/9/2020	68	0.11	0.1	0.44	0.02	0.076
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	5/15/2001	9/9/2020	64	0.035	0.03	0.12	0.01	0.021
PHYSICAL	pH, Lab	N	S.U.	5/15/2001	9/9/2020	96	8.45	8.5	8.8	7.62	0.236
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	5/15/2001	9/9/2020	67	0.668	0.62	2.8	0.31	0.325
PHYSICAL	Solids, Total Suspended	N	MG/L	5/15/2001	9/9/2020	90	78.2	20	678	5	123
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	5/15/2001	9/9/2020	88	624	633	1900	205	208
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	5/15/2001	9/9/2020	70	449	415	3500	150	385
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	52	0.0004	0.0005	0.0005	0.00006	0.0002
PRIMARY	Cadmium	TR	UG/L	5/15/2001	8/2/2011	16	2	2	5	2	1
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	51	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	5/15/2001	9/9/2020	68	1	0.5	4	0.2	0.82
SECONDARY	Iron	TR	UG/L	5/15/2001	9/9/2020	68	2210	1070	11000	55	2650
SECONDARY	Manganese	TR	UG/L	5/15/2001	9/9/2020	68	74.1	50.5	440	9	67.6
SECONDARY	Silver	TR	UG/L	5/15/2001	9/9/2020	68	0.5	0.3	5	0.0001	0.8
SECONDARY	Zinc	TR	UG/L	5/15/2001	9/9/2020	68	34	47	100	5	20
TRACE	Molybdenum	TR	UG/L	5/15/2001	9/9/2020	67	80	50	300	10	40

Table: 40
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 302 (Surface Water, Fish Creek) Datum: 6705.97

			Date	3/25/2020		4/9/2020		5/28/2020		6/22/2020		7/27/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L											252	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L											35.8	Y
ANION	Bicarbonate as HCO3	N	MG/L											308	Y
ANION	Carbonate as CO3	N	MG/L											21.5	Y
ANION	Sulfates	N	MG/L											300	Y
CATION	Calcium	D	MG/L											79.1	Y
CATION	Magnesium	D	MG/L											58.4	Y
CATION	Sodium	D	MG/L											61.1	Y
FIELD	Flow	N	CFS	10.245	Y	40.61	Y	45.24	Y	8.55	Y	2.78	Y	0.844	Y
FIELD	pH, Field	N	S.U.	8	Y	8.1	Y	8.1	Y	8.2	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	440	Y	400	Y	310	Y	610	Y	680	Y	840	Y
FIELD	Temperature, Field	N	DEG-C	9.2	Y	11.7	Y	18	Y	20.5	Y	24.6	Y	20.7	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L											0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L											0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L											0.05	N
PHYSICAL	pH, Lab	N	S.U.											8.6	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO											1.3	Y
PHYSICAL	Solids, Total Suspended	N	MG/L											5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM											1040	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L											738	Y
PRIMARY	Cadmium	TR	MG/L											0.0003	N
PRIMARY	Mercury	T	MG/L											0.001	N
PRIMARY	Selenium	TR	UG/L											0.4	Y
SECONDARY	Iron	TR	UG/L											320	Y
SECONDARY	Manganese	TR	UG/L											50	Y
SECONDARY	Silver	TR	UG/L											0.5	N
SECONDARY	Zinc	TR	UG/L											100	N
TRACE	Molybdenum	TR	UG/L											200	N

**Data obtained from site 16A

Table: 40
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 302 (Surface Water, Fish Creek) Datum: 6705.97

			Date	9/3/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L		
ANION	Bicarbonate as HCO3	N	MG/L		
ANION	Carbonate as CO3	N	MG/L		
ANION	Sulfates	N	MG/L		
CATION	Calcium	D	MG/L		
CATION	Magnesium	D	MG/L		
CATION	Sodium	D	MG/L		
FIELD	Flow	N	CFS	1.313	Y
FIELD	pH, Field	N	S.U.	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	730	Y
FIELD	Temperature, Field	N	DEG-C	15.2	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L		
PHYSICAL	pH, Lab	N	S.U.		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO		
PHYSICAL	Solids, Total Suspended	N	MG/L		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L		
PRIMARY	Cadmium	TR	MG/L		
PRIMARY	Mercury	T	MG/L		
PRIMARY	Selenium	TR	UG/L		
SECONDARY	Iron	TR	UG/L		
SECONDARY	Manganese	TR	UG/L		
SECONDARY	Silver	TR	UG/L		
SECONDARY	Zinc	TR	UG/L		
TRACE	Molybdenum	TR	UG/L		

**Data obtained from site 16A

Table: 40a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 302 (Surface Water, Fish Creek) Datum: 6705.97

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	7/31/1990	8/11/2020	65	314.9	320	508	5	81.08
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	7/31/1990	8/11/2020	62	10.5	9	35.8	0	8.99
ANION	Bicarbonate as HCO3	N	MG/L	8/7/2019	8/11/2020	2	303	303	308	297	7.78
ANION	Carbonate as CO3	N	MG/L	8/7/2019	8/11/2020	2	18.9	18.9	21.5	16.2	3.75
ANION	Sulfates	N	MG/L	7/31/1990	8/11/2020	66	274	190.5	1852	40	291.3
CATION	Calcium	D	MG/L	7/31/1990	8/11/2020	66	76.4	76	219	24	25.1
CATION	Magnesium	D	MG/L	7/31/1990	8/11/2020	66	50.2	49.9	141	10	17.3
CATION	Sodium	D	MG/L	7/31/1990	8/11/2020	66	70.6	34	728	6	108
FIELD	Flow	N	CFS	8/23/1990	8/11/2020	18	3.22	0.877	30.5	0.03	7.07
FIELD	pH, Field	N	S.U.	7/31/1990	8/11/2020	95	8.27	8.31	8.8	7.19	0.294
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/31/1990	8/11/2020	95	1148	860	3750	200	755
FIELD	Temperature, Field	N	DEG-C	7/31/1990	8/11/2020	95	16.7	17.7	27	0.1	5.54
NUTRIENT	Ammonia Nitrogen	N	MG/L	7/31/1990	8/11/2020	56	0.11	0.05	0.5	0.003	0.15
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	7/31/1990	8/11/2020	66	0.07	0.03	0.65	0.02	0.094
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	7/31/1990	8/11/2020	65	0.018	0.01	0.093	0.005	0.018
PHYSICAL	pH, Lab	N	S.U.	6/11/1997	8/11/2020	39	8.44	8.42	8.7	8	0.169
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	7/31/1990	8/11/2020	67	1.4595	0.78	12.1154	0.2569	1.93282
PHYSICAL	Solids, Total Suspended	N	MG/L	7/31/1990	8/11/2020	66	33.6	11.5	378	2	66.9
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/31/1990	8/11/2020	67	952.7	830	4010	246	526.2
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	7/31/1990	8/11/2020	66	738.9	560	5960	156	758.7
PRIMARY	Cadmium	TR	MG/L	6/13/2006	8/11/2020	14	0.0004	0.0005	0.0005	0.0001	0.0002
PRIMARY	Cadmium	TR	UG/L	7/31/1990	6/20/2003	52	1.4	0.5	5	0.1	1.8
PRIMARY	Mercury	T	MG/L	6/13/2006	8/11/2020	14	0.0009	0.001	0.001	0.0002	0.0002
PRIMARY	Selenium	TR	UG/L	7/31/1990	8/11/2020	66	1	1	4	0.3	0.7
SECONDARY	Iron	TR	UG/L	7/31/1990	8/11/2020	77	982	360	11900	60	1900
SECONDARY	Manganese	TR	UG/L	7/31/1990	8/11/2020	66	90.5	50	1500	15	190
SECONDARY	Silver	TR	UG/L	7/31/1990	8/11/2020	66	0.9	0.5	5	0.1	1
SECONDARY	Zinc	TR	UG/L	7/31/1990	8/11/2020	66	29	17	210	5	32
TRACE	Molybdenum	TR	UG/L	7/31/1990	8/11/2020	66	40	50	200	10	30

Table: 41
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 27A (Surface Water, Fish Creek) Datum: 6589.05

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020		7/27/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	220	Y							281	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N							37.1	Y		
ANION	Bicarbonate as HCO3	N	MG/L	269	Y							343	Y		
ANION	Carbonate as CO3	N	MG/L	20	N							22.3	Y		
ANION	Sulfates	N	MG/L	640	Y							250	Y		
CATION	Calcium	D	MG/L	119	Y							88.5	Y		
CATION	Magnesium	D	MG/L	89.3	Y							51.4	Y		
CATION	Sodium	D	MG/L	106	Y							53.2	Y		
FIELD	Flow	N	CFS	52.99	Y	167.94	Y	101.19	Y	42.62	Y	9.27	Y	1.74	Y
FIELD	pH, Field	N	S.U.	8	Y	8.1	Y	8.1	Y	8.2	Y	8.1	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1260	Y	410	Y	790	Y	460	Y	780	Y	880	Y
FIELD	Temperature, Field	N	DEG-C	5	Y	13.2	Y	13.8	Y	22.7	Y	26	Y	29.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.29	Y							0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.09	Y							0.02	Y		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.6	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	1.8	Y							1.1	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	97	Y							20	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1520	Y							959	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1210	Y							674	Y		
PRIMARY	Cadmium	TR	MG/L	0.00011	Y							0.0003	N		
Primary	Mercury	T	MG/L	0.001	N							0.001	N		
PRIMARY	Selenium	TR	UG/L	2.5	Y							0.5	Y		
SECONDARY	Iron	TR	UG/L	3030	Y							660	Y		
SECONDARY	Manganese	TR	UG/L	140	Y							60	Y		
SECONDARY	Silver	TR	UG/L	0.5	N							0.5	N		
SECONDARY	Zinc	TR	UG/L	50	N							50	N		
TRACE	Molybdenum	TR	UG/L	100	N							100	N		

Table: 41
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 27A (Surface Water, Fish Creek) Datum: 6589.05

			Date	8/3/2020		8/11/2020		8/19/2020		8/26/2020		9/3/2020		9/3/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			486	Y								
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			20	N								
ANION	Bicarbonate as HCO3	N	MG/L			593	Y								
ANION	Carbonate as CO3	N	MG/L			20	N								
ANION	Sulfates	N	MG/L			1160	Y								
CATION	Calcium	D	MG/L			245	Y								
CATION	Magnesium	D	MG/L			188	Y								
CATION	Sodium	D	MG/L			114	Y								
FIELD	Flow	N	CFS	0.416	Y	0.1	Y	0.09	Y	0.07	Y	0.056	Y		
FIELD	pH, Field	N	S.U.	8	Y	7.4	Y	7.2	Y	7.3	Y	7.3	Y		
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1030	Y	2100	Y	3350	Y	3410	Y	3400	Y		
FIELD	Temperature, Field	N	DEG-C	26.9	Y	24.1	Y	24.5	Y	27.6	Y	17.6	Y		
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N								
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N								
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.05	N								
PHYSICAL	pH, Lab	N	S.U.			8.3	Y								
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			1.3	Y								
PHYSICAL	Solids, Total Suspended	N	MG/L			12	Y								
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			2520	Y								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			2220	Y								
PRIMARY	Cadmium	TR	MG/L			0.0005	N								
Primary	Mercury	T	MG/L			0.001	N								
PRIMARY	Selenium	TR	UG/L			0.3	Y								
SECONDARY	Iron	TR	UG/L			2200	Y								
SECONDARY	Manganese	TR	UG/L			2430	Y								
SECONDARY	Silver	TR	UG/L			1	N								
SECONDARY	Zinc	TR	UG/L			320	Y								
TRACE	Molybdenum	TR	UG/L			200	N								

No Flow, Stagnant water

Table: 41a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 27A (Surface Water, Fish Creek) Datum: 6589.05

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	1/20/1981	8/11/2020	217	251.822	253.76	1428	78	105.572
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/20/1981	8/11/2020	125	13.9	12	84	0	11.7
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	8/11/2020	11	323	294	613	175	147
ANION	Carbonate as CO3	N	MG/L	8/15/2017	8/11/2020	9	18.7	20	22.3	11.8	3.31
ANION	Sulfates	N	MG/L	1/20/1981	8/11/2020	221	303.7	260	1470	10	208.2
CATION	Calcium	D	MG/L	1/20/1981	8/11/2020	217	73.5	71	307	27	27.9
CATION	Magnesium	D	MG/L	1/20/1981	8/11/2020	217	51.2	51	232	13	23.1
CATION	Sodium	D	MG/L	1/20/1981	8/11/2020	217	60.2	46.6	390	8	50.6
FIELD	Flow	N	CFS	4/16/1985	9/3/2020	118	18.767	5	291.87	0.008	36.825
FIELD	pH, Field	N	S.U.	1/20/1981	9/3/2020	330	8.06	8.17	8.91	6.3	0.441
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1/20/1981	9/3/2020	331	954.5	820	4160	210	617.3
FIELD	Temperature, Field	N	DEG-C	1/20/1981	9/3/2020	331	14.37	15	29.3	0	7.754
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/1/1981	8/11/2020	110	0.18	0.05	3	0.001	0.33
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	1/20/1981	8/11/2020	217	0.523	0.16	3.32	0.005	0.711
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/1/1981	8/11/2020	152	0.029	0.02	0.17	0.005	0.025
PHYSICAL	pH, Lab	N	S.U.	7/28/1986	8/11/2020	88	8.39	8.4	8.8	7.6	0.236
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	1/20/1981	8/11/2020	200	1.2646	1.013	7.7	0.31	0.92936
PHYSICAL	Solids, Total Suspended	N	MG/L	1/20/1981	8/11/2020	216	140.4	33	1692	2	232
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/28/1986	8/11/2020	128	952.7	853.5	2950	297	423.4
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1/20/1981	8/11/2020	217	652.7	592	2660	182	313.2
PRIMARY	Cadmium	T	UG/L	4/1/1981	1/11/1987	41	6	5	20	5	3
PRIMARY	Cadmium	TR	MG/L	3/31/2006	8/11/2020	48	0.00043	0.0005	0.001	0.0001	0.00018
PRIMARY	Cadmium	TR	UG/L	10/3/1986	5/21/2012	69	1	0.5	5	0.1	2
PRIMARY	Mercury	T	MG/L	3/31/2006	8/11/2020	48	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	10/3/1986	8/11/2020	117	1.4	1	9	0.2	1.4
SECONDARY	Iron	TR	UG/L	10/3/1986	8/11/2020	117	2750	970	29900	220	4610
SECONDARY	Manganese	TR	UG/L	10/3/1986	8/11/2020	117	155	86	3430	5	382
SECONDARY	Silver	TR	UG/L	4/1/1981	8/11/2020	118	2	0.4	50	0.0001	7
SECONDARY	Zinc	TR	UG/L	10/3/1986	8/11/2020	117	34	28	320	5	36
TRACE	Molybdenum	TR	UG/L	10/3/1986	8/11/2020	117	50	50	200	10	40

Table: 42
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1003 (Surface Water, Fish Creek) Datum: 6572

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	218	Y							270	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N							36.3	Y
ANION	Bicarbonate as HCO3	N	MG/L	266	Y							329	Y
ANION	Carbonate as CO3	N	MG/L	20	N							21.8	Y
ANION	Sulfates	N	MG/L	590	Y							310	Y
CATION	Calcium	D	MG/L	113	Y							96.9	Y
CATION	Magnesium	D	MG/L	84	Y							58	Y
CATION	Sodium	D	MG/L	105	Y							56.6	Y
FIELD	Flow	N	CFS	60.66	Y	165.4	Y	84.03	Y	43.33	Y	8.21	Y
FIELD	pH, Field	N	S.U.	8	Y	7.9	Y	8.1	Y	8.2	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1160	Y	430	Y	730	Y	490	Y	850	Y
FIELD	Temperature, Field	N	DEG-C	5.1	Y	13.3	Y	13.4	Y	22.5	Y	25.4	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.3	Y							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.07	Y							0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.6	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	1.8	Y							1.1	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	300	Y							13	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1480	Y							1050	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1140	Y							748	Y
PRIMARY	Cadmium	TR	MG/L	0.00014	Y							0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L	2.6	Y							0.5	Y
SECONDARY	Iron	TR	UG/L	7400	Y							540	Y
SECONDARY	Manganese	TR	UG/L	200	Y							70	Y
SECONDARY	Silver	TR	UG/L	0.5	N							0.5	N
SECONDARY	Zinc	TR	UG/L	100	N							50	N
TRACE	Molybdenum	TR	UG/L	200	N							100	N

Table: 42
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 1003 (Surface Water, Fish Creek) Datum: 6572

			Date	7/27/2020		8/3/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L					296	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L					36.8	Y
ANION	Bicarbonate as HCO3	N	MG/L					361	Y
ANION	Carbonate as CO3	N	MG/L					22.1	Y
ANION	Sulfates	N	MG/L					690	Y
CATION	Calcium	D	MG/L					131	Y
CATION	Magnesium	D	MG/L					116	Y
CATION	Sodium	D	MG/L					97.7	Y
FIELD	Flow	N	CFS	2.24	Y	0.703	Y	0.007	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8.1	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	990	Y	1200	Y	1420	Y
FIELD	Temperature, Field	N	DEG-C	29	Y	28.2	Y	23.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L					0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L					0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L					0.05	N
PHYSICAL	pH, Lab	N	S.U.					8.5	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO					1.5	Y
PHYSICAL	Solids, Total Suspended	N	MG/L					25	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1710	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					1360	Y
PRIMARY	Cadmium	TR	MG/L					0.0003	N
PRIMARY	Mercury	T	MG/L					0.001	N
PRIMARY	Selenium	TR	UG/L					0.4	Y
SECONDARY	Iron	TR	UG/L					730	Y
SECONDARY	Manganese	TR	UG/L					170	Y
SECONDARY	Silver	TR	UG/L					0.5	N
SECONDARY	Zinc	TR	UG/L					50	N
TRACE	Molybdenum	TR	UG/L					100	N

Table: 42a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 1003 (Surface Water, Fish Creek) Datum: 6572

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/5/1982	8/11/2020	234	240.821	250.05	430	34.16	71.0977
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5/17/1982	8/11/2020	127	12.5	12	38	0	8.99
ANION	Bicarbonate as HCO3	N	MG/L	4/4/2018	8/11/2020	9	266	292	361	139	79.4
ANION	Carbonate as CO3	N	MG/L	6/26/2018	8/11/2020	8	18.3	20	22.1	12.1	3.96
ANION	Sulfates	N	MG/L	4/5/1982	8/11/2020	325	298.9	270	2045	37	192.4
CATION	Calcium	D	MG/L	4/5/1982	8/11/2020	238	75	76	161	20	23.9
CATION	Magnesium	D	MG/L	4/5/1982	8/11/2020	238	51	51	147	11	21.7
CATION	Sodium	D	MG/L	4/5/1982	8/11/2020	238	58.9	48.5	286	9	41.5
FIELD	Flow	N	CFS	4/6/1984	8/11/2020	168	42.9272462	15	272	0.007	55.9576379
FIELD	pH, Field	N	S.U.	4/5/1982	8/11/2020	643	8.12	8.2	9.1	6.8	0.387
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/5/1982	8/11/2020	673	891.14	830	2650	20	380.45
FIELD	Temperature, Field	N	DEG-C	4/5/1982	8/11/2020	605	12.3	11.7	29	0	7.19
NUTRIENT	Ammonia Nitrogen	N	MG/L	10/12/1982	8/11/2020	118	0.23	0.05	5	0.001	0.55
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	4/5/1982	8/11/2020	236	0.544	0.155	3.21	0.005	0.736
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/13/1982	8/11/2020	169	0.028	0.02	0.26	0.005	0.029
PHYSICAL	pH, Lab	N	S.U.	7/28/1986	8/11/2020	113	8.38	8.4	8.9	7.43	0.252
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	4/5/1982	8/11/2020	242	1.2934	1.0665	7.14	0.29	0.92759
PHYSICAL	Solids, Total Suspended	N	MG/L	4/5/1982	8/11/2020	304	184.1	39	2190	2	309.6
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/28/1986	8/11/2020	204	936.1	899.5	2810	293	365.5
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/5/1982	8/11/2020	240	664	635	2190	200	298
PRIMARY	Cadmium	T	UG/L	4/13/1982	1/13/1987	50	6.1	5	22	5	3.8
PRIMARY	Cadmium	TR	MG/L	3/31/2006	8/11/2020	53	0.00043	0.0005	0.001	0.0001	0.00019
PRIMARY	Cadmium	TR	UG/L	4/15/1987	5/21/2012	72	1.1	0.5	5	0.1	1.5
PRIMARY	Mercury	T	MG/L	3/31/2006	8/11/2020	53	0.001	0.001	0.001	0.0004	0.00008
PRIMARY	Selenium	TR	UG/L	4/15/1987	8/11/2020	125	1.4	1	17	0.005	1.9
SECONDARY	Iron	TR	UG/L	4/15/1987	8/11/2020	125	2680	810	28700	100	4160
SECONDARY	Manganese	TR	UG/L	4/15/1987	8/11/2020	138	117	90	510	5	78
SECONDARY	Silver	TR	UG/L	4/15/1987	8/11/2020	125	0.59	0.4	5	0.05	1
SECONDARY	Zinc	TR	UG/L	4/15/1987	8/11/2020	125	30	20	100	5	21
TRACE	Molybdenum	TR	UG/L	4/15/1987	8/11/2020	125	50	50	200	10	30

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 307 (Surface Water, Fish Creek) Datum: 6742.29

			Date	3/25/2019		4/9/2019		4/28/2019		5/28/2019		6/22/2019		7/27/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	10.245	Y	40.61	Y	66.07	Y	45.24	Y	8.55	Y	2.78	Y
FIELD	pH, Field	N	S.U.	8	Y	8.1	Y	8.2	Y	8.1	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	440	Y	400	Y	320	Y	310	Y	610	Y	680	Y
FIELD	Temperature, Field	N	DEG-C	9.2	Y	11.7	Y	11.5	Y	18	Y	20.5	Y	24.6	Y

**Data obtained from site 16A

Table: 43
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 307 (Surface Water, Fish Creek) Datum: 6742.29

			Date	8/11/2020		9/3/2019		9/9/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.844	Y	1.313	Y	2.082	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.1	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	840	Y	730	Y	810	Y
FIELD	Temperature, Field	N	DEG-C	20.7	Y	15.2	Y	11.9	Y

**Data obtained from site 16A

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Twentymile Coal, LLC
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Period of Record Summary of Water Quality

Site: 307 (Surface Water, Fish Creek) Datum: 6742.29

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	9/28/1994	8/10/2010	2	298	298	317	278	27.6
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	9/28/1994	8/10/2010	2	17	17	33	0	23
ANION	Sulfates	N	MG/L	9/28/1994	8/10/2010	2	134	134	140	128	8.49
CATION	Calcium	D	MG/L	9/28/1994	8/10/2010	2	67.9	67.9	70	65.8	2.97
CATION	Magnesium	D	MG/L	9/28/1994	8/10/2010	2	45.9	45.9	47.7	44	2.62
CATION	Sodium	D	MG/L	9/28/1994	8/10/2010	2	32	32	33	30.9	1.48
FIELD	Flow	N	CFS	7/28/2017	7/28/2017	1	3.31	3.31	3.31	3.31	0
FIELD	pH, Field	N	S.U.	7/29/1993	7/28/2017	83	8.19	8.3	8.74	7.05	0.339
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/29/1993	7/28/2017	83	1272	934	3820	340	904.9
FIELD	Temperature, Field	N	DEG-C	7/29/1993	7/28/2017	83	12.3	12.9	25	0.1	7.11
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/5/1999	8/10/2010	9	0.16	0.08	0.5	0.05	0.16
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	9/28/1994	8/10/2010	2	0.06	0.06	0.1	0.02	0.06
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	9/28/1994	8/10/2010	2	0.03	0.03	0.05	0.005	0.03
PHYSICAL	pH, Lab	N	S.U.	4/5/1999	8/10/2010	12	8.36	8.45	8.8	7.8	0.332
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	9/28/1994	8/10/2010	2	0.7306	0.7306	0.7512	0.71	0.02913
PHYSICAL	Solids, Total Suspended	N	MG/L	9/28/1994	8/10/2010	10	82.7	23.5	396	5	126
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	9/28/1994	8/10/2010	13	937.2	839	2220	315	475.2
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	9/28/1994	8/10/2010	10	667	628	1640	180	415
PRIMARY	Cadmium	TR	MG/L	8/10/2010	8/10/2010	1	0.0005	0.0005	0.0005	0.0005	0
PRIMARY	Mercury	T	MG/L	8/10/2010	8/10/2010	1	0.001	0.001	0.001	0.001	0
PRIMARY	Selenium	TR	UG/L	9/28/1994	8/10/2010	2	0.8	0.8	1	0.5	0.4
SECONDARY	Iron	TR	UG/L	7/29/1993	8/10/2010	27	1030	290	11600	150	2300
SECONDARY	Manganese	TR	UG/L	9/28/1994	8/10/2010	2	37	37	60	14	33
SECONDARY	Silver	TR	UG/L	9/28/1994	8/10/2010	2	0.4	0.4	0.5	0.3	0.1
SECONDARY	Zinc	TR	UG/L	9/28/1994	8/10/2010	2	30	30	50	10	30
TRACE	Molybdenum	TR	UG/L	9/28/1994	8/10/2010	2	30	30	50	10	30

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 305 (Surface Water, Fish Creek) Datum: 6598.45

			Date	5/28/2020		6/22/2020		7/27/2020		8/11/2020		September	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			262	Y			230	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			40.4	Y			50.7	Y		
ANION	Bicarbonate as HCO3	N	MG/L			320	Y			280	Y	**NO FLOW, Stagnant water.**	
ANION	Carbonate as CO3	N	MG/L			24.3	Y			30.4	Y		
ANION	Sulfates	N	MG/L			250	Y			330	Y		
CATION	Calcium	D	MG/L			86.4	Y			58.4	Y		
CATION	Magnesium	D	MG/L			49.9	Y			65.3	Y		
CATION	Sodium	D	MG/L			52.6	Y			83.1	Y		
FIELD	Flow	N	CFS	55.2	Y	11.47	Y	1.6	Y	0.028	Y		
FIELD	pH, Field	N	S.U.	8.2	Y	8.1	Y	8.3	Y	8.2	Y		
FIELD	Specific Conductivity, Field	N	UMHOS/CM	450	Y	750	Y	840	Y	900	Y		
FIELD	Temperature, Field	N	DEG-C	23.4	Y	25.2	Y	28.3	Y	25.5	Y		
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N			0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N			0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.02	Y			0.05	N		
PHYSICAL	pH, Lab	N	S.U.			8.7	Y			8.7	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			1.1	Y			1.8	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L			22	Y			16	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			944	Y			1100	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			662	Y			774	Y		
PRIMARY	Cadmium	TR	MG/L			0.0003	N			0.0003	N		
PRIMARY	Mercury	T	MG/L			0.001	N			0.001	N		
PRIMARY	Selenium	TR	UG/L			0.5	Y			0.5	Y		
SECONDARY	Iron	TR	UG/L			760	Y			630	Y		
SECONDARY	Manganese	TR	UG/L			60	Y			100	Y		
SECONDARY	Silver	TR	UG/L			0.5	N			0.5	N		
SECONDARY	Zinc	TR	UG/L			50	N			50	N		
TRACE	Molybdenum	TR	UG/L			100	N			100	N		

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 305 (Surface Water, Fish Creek) Datum: 6598.45

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	8/15/1994	8/11/2020	49	267	270	672	122	85.3
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	8/15/1994	8/11/2020	49	16	14.6	50.7	1	10
ANION	Bicarbonate as HCO3	N	MG/L	6/26/2018	8/11/2020	6	287	300	329	195	50.8
ANION	Carbonate as CO3	N	MG/L	6/26/2018	8/11/2020	6	21.8	20.3	30.4	17	4.89
ANION	Sulfates	N	MG/L	8/15/1994	8/11/2020	50	273	230	1790	62	239
CATION	Calcium	D	MG/L	8/15/1994	8/11/2020	49	72.7	64.8	386	37	48.2
CATION	Magnesium	D	MG/L	8/15/1994	8/11/2020	49	52.6	49	279	17	35.9
CATION	Sodium	D	MG/L	8/15/1994	8/11/2020	49	56.1	45.7	172	12	34.6
FIELD	Flow	N	CFS	6/13/2017	8/11/2020	12	21.09	6.865	96.6	0.028	31.26
FIELD	pH, Field	N	S.U.	7/29/1994	8/11/2020	39	8.2	8.22	8.55	7	0.305
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/29/1994	8/11/2020	40	917.4	846	1840	297	331.2
FIELD	Temperature, Field	N	DEG-C	7/29/1994	8/11/2020	40	15.6	16.4	29	0	9
NUTRIENT	Ammonia Nitrogen	N	MG/L	8/5/2003	8/11/2020	47	0.27	0.2	0.5	0.001	0.18
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	8/15/1994	8/11/2020	49	0.11	0.1	0.52	0.02	0.11
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	8/15/1994	8/11/2020	46	0.037	0.03	0.32	0.005	0.047
PHYSICAL	pH, Lab	N	S.U.	8/5/2003	8/11/2020	51	8.49	8.57	8.9	7.9	0.219
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	8/15/1994	8/11/2020	49	1.2447	1	4.0472	0.39	0.72655
PHYSICAL	Solids, Total Suspended	N	MG/L	8/15/1994	8/11/2020	49	86.4	22	880	6	168
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	8/15/1994	8/11/2020	53	906.5	838	3390	310	422.3
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	8/15/1994	8/11/2020	49	638	560	3140	130	405
PRIMARY	Cadmium	TR	MG/L	6/12/2006	8/11/2020	39	0.0005	0.0005	0.005	0.00005	0.0007
PRIMARY	Cadmium	TR	UG/L	8/15/1994	8/2/2011	10	2	2	2	0.1	0.8
PRIMARY	Mercury	T	MG/L	6/12/2006	8/11/2020	39	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	8/15/1994	8/11/2020	49	1.3	0.6	10	0.2	1.8
SECONDARY	Iron	TR	UG/L	8/15/1994	8/11/2020	49	3280	940	28800	390	5920
SECONDARY	Manganese	TR	UG/L	8/15/1994	8/11/2020	49	173	67	3270	30	463
SECONDARY	Silver	TR	UG/L	8/15/1994	8/11/2020	49	0.3	0.3	0.5	0.06	0.1
SECONDARY	Zinc	TR	UG/L	8/15/1994	8/11/2020	49	41	50	100	5	25
TRACE	Molybdenum	TR	UG/L	8/15/1994	8/11/2020	49	70	50	100	10	30

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2020 Annual Hydrology Report
Water Year Monitoring Data

Site: SW13 (Surface Water, Fish Creek) Datum: 6685.68

			Date	March		6/22/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			266	Y	271	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			35.3	Y	33.3	Y
ANION	Bicarbonate as HCO3	N	MG/L			324	Y	331	Y
ANION	Carbonate as CO3	N	MG/L			21.2	Y	20	Y
ANION	Sulfates	N	MG/L			200	Y	270	Y
CATION	Calcium	D	MG/L			86.6	Y	77.4	Y
CATION	Magnesium	D	MG/L			45.3	Y	59	Y
CATION	Sodium	D	MG/L			38.8	Y	57.4	Y
FIELD	Flow	N	CFS			8.32	Y	0.182	Y
FIELD	pH, Field	N	S.U.			8.1	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM			670	Y	840	Y
FIELD	Temperature, Field	N	DEG-C			21.8	Y	20.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.			8.6	Y	8.5	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			0.85	Y	1.2	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			20	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			867	Y	1010	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			610	Y	718	Y
PRIMARY	Cadmium	TR	MG/L			0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L			0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L			0.4	Y	0.4	Y
SECONDARY	Iron	TR	UG/L			670	Y	410	Y
SECONDARY	Manganese	TR	UG/L			30	Y	70	Y
SECONDARY	Silver	TR	UG/L			0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L			50	N	50	N
TRACE	Molybdenum	TR	UG/L			100	N	100	N

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: SW13 (Surface Water, Fish Creek) Datum: 6685.68

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	8/29/2006	8/11/2020	34	252	258	400	123	59.4
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	8/29/2006	8/11/2020	34	16.7	16.9	35.3	1	9.39
ANION	Bicarbonate as HCO3	N	MG/L	6/27/2018	8/11/2020	6	303	319	357	182	61.5
ANION	Carbonate as CO3	N	MG/L	6/27/2018	8/11/2020	6	18.1	20	21.2	10	4.31
ANION	Sulfates	N	MG/L	8/29/2006	8/11/2020	34	160	150	460	5	84
CATION	Calcium	D	MG/L	8/29/2006	8/11/2020	34	63.3	63.9	93	32.8	14.4
CATION	Magnesium	D	MG/L	8/29/2006	8/11/2020	34	41.1	40.7	150	15.3	22.8
CATION	Sodium	D	MG/L	8/29/2006	8/11/2020	34	40.2	30.2	249	11.2	41.9
FIELD	Flow	N	CFS	7/28/2017	8/11/2020	7	13.44	3.35	71.92	0.052	26.04
FIELD	pH, Field	N	S.U.	6/20/2017	8/11/2020	8	8.27	8.2	8.68	8.03	0.231
FIELD	Specific Conductivity, Field	N	UMHOS/CM	6/20/2017	8/11/2020	8	858	800	1340	490	275
FIELD	Temperature, Field	N	DEG-C	6/20/2017	8/11/2020	8	20	20.4	28	12.3	4.56
NUTRIENT	Ammonia Nitrogen	N	MG/L	8/29/2006	8/11/2020	34	0.29	0.2	0.5	0.001	0.18
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	8/29/2006	8/11/2020	34	0.11	0.1	0.52	0.02	0.096
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	8/29/2006	8/11/2020	30	0.041	0.03	0.16	0.01	0.033
PHYSICAL	pH, Lab	N	S.U.	8/29/2006	8/11/2020	36	8.54	8.5	8.8	8.17	0.134
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	8/29/2006	8/11/2020	34	0.963	0.71	5.86	0.39	0.962
PHYSICAL	Solids, Total Suspended	N	MG/L	8/29/2006	8/11/2020	34	95.5	20	920	5	179
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	8/29/2006	8/11/2020	36	739	753	1560	335	235
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	8/29/2006	8/11/2020	34	487	490	1100	200	170
PRIMARY	Cadmium	TR	MG/L	8/29/2006	8/11/2020	32	0.0004	0.0005	0.0005	0.00007	0.0001
PRIMARY	Mercury	T	MG/L	8/29/2006	8/11/2020	32	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	8/29/2006	8/11/2020	34	0.66	0.45	2	0.2	0.47
SECONDARY	Iron	TR	UG/L	8/29/2006	8/11/2020	34	3190	705	27400	120	5420
SECONDARY	Manganese	TR	UG/L	8/29/2006	8/11/2020	34	77.5	52.5	539	11	95.6
SECONDARY	Silver	TR	UG/L	8/29/2006	8/11/2020	34	0.31	0.3	0.5	0.06	0.097
SECONDARY	Zinc	TR	UG/L	8/29/2006	8/11/2020	34	44	50	160	5	33
TRACE	Molybdenum	TR	UG/L	8/29/2006	8/11/2020	34	80	100	100	10	30

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Twentymile Coal, LLC
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Water Year Monitoring Data

Site: SW14 (Surface Water, Fish Creek) Datum: 6650.39

			Date	MARCH		6/22/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			281	Y	275	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			24.3	Y	36.3	Y
ANION	Bicarbonate as HCO3	N	MG/L			342	Y	336	Y
ANION	Carbonate as CO3	N	MG/L			14.6	Y	21.8	Y
ANION	Sulfates	N	MG/L			230	Y	290	Y
CATION	Calcium	D	MG/L			88	Y	71.4	Y
CATION	Magnesium	D	MG/L			48.1	Y	59.6	Y
CATION	Sodium	D	MG/L			42.9	Y	61.3	Y
FIELD	Flow	N	CFS			4.25	Y	0.341	Y
FIELD	pH, Field	N	S.U.			8.2	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM			720	Y	860	Y
FIELD	Temperature, Field	N	DEG-C			21.7	Y	20	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.			8.5	Y	8.6	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			0.92	Y	1.3	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			30	Y	18	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			907	Y	1030	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			644	Y	736	Y
PRIMARY	Cadmium	TR	MG/L			0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L			0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L			0.5	Y	0.5	Y
SECONDARY	Iron	TR	UG/L			840	Y	830	Y
SECONDARY	Manganese	TR	UG/L			40	Y	70	Y
SECONDARY	Silver	TR	UG/L			0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L			30	Y	50	N
TRACE	Molybdenum	TR	UG/L			100	N	100	N

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Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: SW14 (Surface Water, Fish Creek) Datum: 6650.39

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/4/2007	8/11/2020	31	264	271	374	125	54.5
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4/4/2007	8/11/2020	31	19.5	20	36.3	3	7.88
ANION	Bicarbonate as HCO3	N	MG/L	6/27/2018	8/11/2020	6	303	327	342	183	61
ANION	Carbonate as CO3	N	MG/L	6/27/2018	8/11/2020	6	17.6	18.8	21.8	10.8	4.19
ANION	Sulfates	N	MG/L	4/4/2007	8/11/2020	31	180	170	440	50	96
CATION	Calcium	D	MG/L	4/4/2007	8/11/2020	31	65.2	66.5	101	32.1	15.5
CATION	Magnesium	D	MG/L	4/4/2007	8/11/2020	31	42.7	42.3	72.5	15	13.8
CATION	Sodium	D	MG/L	4/4/2007	8/11/2020	31	44.3	32.6	235	10.9	42
FIELD	Flow	N	CFS	7/28/2017	8/11/2020	6	14.24	4.465	65.91	0.341	25.45
FIELD	pH, Field	N	S.U.	7/28/2017	8/11/2020	7	8.25	8.2	8.69	8.04	0.249
FIELD	Specific Conductivity, Field	N	UMHOS/CM	7/28/2017	8/11/2020	7	884	830	1430	460	318
FIELD	Temperature, Field	N	DEG-C	7/28/2017	8/11/2020	7	20.1	21.2	26.6	13.1	4.28
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/4/2007	8/11/2020	31	0.32	0.2	0.5	0.05	0.17
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	4/4/2007	8/11/2020	31	0.11	0.1	0.83	0.02	0.14
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/4/2007	8/11/2020	28	0.03	0.02	0.07	0.01	0.02
PHYSICAL	pH, Lab	N	S.U.	4/4/2007	8/11/2020	32	8.6	8.6	8.9	8.3	0.14
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	4/4/2007	8/11/2020	32	1.03	0.785	5.58	0.4	0.939
PHYSICAL	Solids, Total Suspended	N	MG/L	4/4/2007	8/11/2020	31	94.4	22	1020	9	202
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/4/2007	8/11/2020	31	784	776	1500	329	244
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/4/2007	8/11/2020	31	525	500	1050	210	184
PRIMARY	Cadmium	TR	MG/L	4/4/2007	8/11/2020	31	0.0006	0.0005	0.005	0.00007	0.0008
PRIMARY	Mercury	TR	MG/L	4/4/2007	8/11/2020	31	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	4/4/2007	8/11/2020	31	0.52	0.5	1.4	0.3	0.25
SECONDARY	Iron	TR	UG/L	4/4/2007	8/11/2020	31	2960	1070	26700	320	5540
SECONDARY	Manganese	TR	UG/L	4/4/2007	8/11/2020	31	78.1	50	518	12	98.1
SECONDARY	Silver	TR	UG/L	4/4/2007	8/11/2020	31	0.31	0.3	0.5	0.08	0.088
SECONDARY	Zinc	TR	UG/L	4/4/2007	8/11/2020	31	50	50	130	10	23
TRACE	Molybdenum	TR	UG/L	4/4/2007	8/11/2020	31	70	100	100	10	30

Table: 47
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: SW15 (Surface Water, Fish Creek) Datum: 6628.4

			Date	MARCH		6/22/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			266	Y	216	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			34.5	Y	70.6	Y
ANION	Bicarbonate as HCO3	N	MG/L	**FROZEN**		324	Y	264	Y
ANION	Carbonate as CO3	N	MG/L			20.7	Y	42.4	Y
ANION	Sulfates	N	MG/L			230	Y	300	Y
CATION	Calcium	D	MG/L			85.8	Y	58	Y
CATION	Magnesium	D	MG/L			48.7	Y	61.6	Y
CATION	Sodium	D	MG/L			50.4	Y	78.1	Y
FIELD	Flow	N	CFS			10.99	Y	0.026	Y
FIELD	pH, Field	N	S.U.			8	Y	8.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM			670	Y	870	Y
FIELD	Temperature, Field	N	DEG-C			23.1	Y	24.9	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.			8.6	Y	8.9	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			1.1	Y	1.7	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			42	Y	16	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			930	Y	1030	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			654	Y	724	Y
PRIMARY	Cadmium	TR	MG/L			0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L			0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L			0.5	Y	0.5	Y
SECONDARY	Iron	TR	UG/L			1400	Y	590	Y
SECONDARY	Manganese	TR	UG/L			70	Y	50	Y
SECONDARY	Silver	TR	UG/L			0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L			50	N	50	N
TRACE	Molybdenum	TR	UG/L			100	N	100	N

Table: 47a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: SW15 (Surface Water, Fish Creek) Datum: 6628.4

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	4/4/2007	8/11/2020	32	246	248	374	155	52.5
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4/4/2007	8/11/2020	32	16.9	15	70.6	2	13.7
ANION	Bicarbonate as HCO3	N	MG/L	6/26/2018	8/11/2020	5	277	299	324	193	51.7
ANION	Carbonate as CO3	N	MG/L	6/26/2018	8/11/2020	5	23.9	20.3	42.4	16.2	10.5
ANION	Sulfates	N	MG/L	4/4/2007	8/11/2020	32	180	170	440	5	87
CATION	Calcium	D	MG/L	4/4/2007	8/11/2020	32	61.4	62	85.8	39.8	11.8
CATION	Magnesium	D	MG/L	4/4/2007	8/11/2020	32	40.4	40.7	69	20.3	12.7
CATION	Sodium	D	MG/L	4/4/2007	8/11/2020	32	43.8	34.5	234	15.2	39.4
FIELD	Flow	N	CFS	6/20/2017	8/11/2020	7	13.73	2.27	69.08	0.026	24.78
FIELD	pH, Field	N	S.U.	6/20/2017	8/11/2020	7	8.34	8.38	8.65	8	0.237
FIELD	Specific Conductivity, Field	N	UMHOS/CM	6/20/2017	8/11/2020	7	803	840	1140	480	210
FIELD	Temperature, Field	N	DEG-C	6/20/2017	8/11/2020	7	23	24.6	28.3	14.4	4.5
NUTRIENT	Ammonia Nitrogen	N	MG/L	4/4/2007	8/11/2020	32	0.34	0.5	0.5	0.05	0.18
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	4/4/2007	8/11/2020	32	0.194	0.1	3.46	0.02	0.598
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	4/4/2007	8/11/2020	27	0.03	0.03	0.09	0.01	0.02
PHYSICAL	pH, Lab	N	S.U.	4/4/2007	8/11/2020	33	8.59	8.6	8.9	8.3	0.145
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	4/4/2007	8/11/2020	32	1.05	0.815	5.55	0.48	0.903
PHYSICAL	Solids, Total Suspended	N	MG/L	4/4/2007	8/11/2020	32	76	24.5	480	7	108
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/4/2007	8/11/2020	33	766	766	1510	414	226
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4/4/2007	8/11/2020	32	505	495	1050	270	160
PRIMARY	Cadmium	TR	MG/L	4/4/2007	8/11/2020	31	0.00049	0.0005	0.0033	0.0001	0.00054
PRIMARY	Mercury	T	MG/L	4/4/2007	8/11/2020	31	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	4/4/2007	8/11/2020	32	0.6	0.5	2	0.2	0.4
SECONDARY	Iron	TR	UG/L	4/4/2007	8/11/2020	32	2630	1170	13600	390	3200
SECONDARY	Manganese	TR	UG/L	4/4/2007	8/11/2020	32	76.2	60	250	18	49.3
SECONDARY	Silver	TR	UG/L	4/4/2007	8/11/2020	32	0.3	0.3	0.5	0.06	0.09
SECONDARY	Zinc	TR	UG/L	4/4/2007	8/11/2020	32	39	50	50	9.5	16
TRACE	Molybdenum	TR	UG/L	4/4/2007	8/11/2020	32	70	50	100	20	30

Table: 48
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 301 (Surface Water, Trout Creek) Datum: 6666.9

Date				3/24/2020		4/9/2020		5/28/2020		6/22/2020		7/27/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	132	Y					140	Y	191	Y	167	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N					6.7	Y	25.5	Y	29.5	Y
ANION	Bicarbonate as HCO3	N	MG/L	161	Y					171	Y	233	Y	204	Y
ANION	Carbonate as CO3	N	MG/L	20	N					4	Y	15.3	Y	17.7	Y
ANION	Sulfates	N	MG/L	180	Y					170	Y	270	Y	210	Y
CATION	Calcium	D	MG/L	57.7	Y					55.5	Y	90.9	Y	72	Y
CATION	Magnesium	D	MG/L	32.4	Y					30.1	Y	48.3	Y	40.5	Y
CATION	Sodium	D	MG/L	9.9	Y					8.1	Y	14.2	Y	11.1	Y
FIELD	Flow	N	CFS	FROZEN		59.41	Y	181.24	Y	34.56	Y	13.22	Y	11.634	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8	Y	7.9	Y	8.1	Y	8.2	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	420	Y	600	Y	270	Y	390	Y	660	Y	540	Y
FIELD	Temperature, Field	N	DEG-C	8.2	Y	12	Y	16.3	Y	23	Y	24.8	Y	22.6	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N					0.2	N	0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N					0.1	N	0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.02	Y					0.03	Y	0.04	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.3	Y					8.5	Y	8.6	Y	8.6	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.26	Y					0.22	Y	0.3	Y	0.26	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	17	Y					10	Y	20	N	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	568	Y					539	Y	819	Y	684	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	396	Y					388	Y	610	Y	492	Y
PRIMARY	Cadmium	TR	MG/L	0.0003	N					0.0003	N	0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N					0.001	N	0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L	0.2	Y					0.1	Y	0.2	Y	0.1	Y
SECONDARY	Iron	TR	UG/L	1250	Y					540	Y	340	Y	550	Y
SECONDARY	Manganese	TR	UG/L	110	Y					50	Y	40	Y	30	Y
SECONDARY	Silver	TR	UG/L	0.5	N					0.5	N	0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L	50	N					50	N	50	N	50	N
TRACE	Molybdenum	TR	UG/L	100	N					100	N	100	N	100	N

Table: 48
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 301 (Surface Water, Trout Creek) Datum: 6666.9

Date				9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	185	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	5	Y
ANION	Bicarbonate as HCO3	N	MG/L	226	Y
ANION	Carbonate as CO3	N	MG/L	3	Y
ANION	Sulfates	N	MG/L	300	Y
CATION	Calcium	D	MG/L	83.4	Y
CATION	Magnesium	D	MG/L	51.4	Y
CATION	Sodium	D	MG/L	12.8	Y
FIELD	Flow	N	CFS	6.133	Y
FIELD	pH, Field	N	S.U.	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	760	Y
FIELD	Temperature, Field	N	DEG-C	15.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.01	Y
PHYSICAL	pH, Lab	N	S.U.	8.4	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.28	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	821	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	588	Y
PRIMARY	Cadmium	TR	MG/L	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N
PRIMARY	Selenium	TR	UG/L	0.1	Y
SECONDARY	Iron	TR	UG/L	280	Y
SECONDARY	Manganese	TR	UG/L	30	Y
SECONDARY	Silver	TR	UG/L	0.5	N
SECONDARY	Zinc	TR	UG/L	50	N
TRACE	Molybdenum	TR	UG/L	100	N

Table: 48a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 301 (Surface Water, Trout Creek) Datum: 6666.9

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	MIN
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	7/14/1987	9/9/2020	125	148.2	150	430	0	47.22
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	7/31/1990	9/9/2020	118	8.58	6	29.5	0	7.45
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	16	171	173	233	74.9	39.8
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	13	11.1	10.4	20	3	7.76
ANION	Sulfates	N	MG/L	7/14/1987	9/9/2020	211	171	152	702	5	96.7
CATION	Calcium	D	MG/L	7/14/1987	9/9/2020	127	56.7	55.7	220	20.4	24.6
CATION	Magnesium	D	MG/L	7/14/1987	9/9/2020	127	30.4	29.8	100	8.7	13.6
CATION	Sodium	D	MG/L	7/14/1987	9/9/2020	127	9.45	8.6	40	3	5.17
FIELD	Flow	N	CFS	6/26/1987	9/9/2020	63	35.398	24	181.24	1	36.784
FIELD	pH, Field	N	S.U.	2/3/1987	9/9/2020	345	8.3	8.34	9.2	6.7	0.331
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2/3/1987	9/9/2020	350	592.14	540.5	1370	150	201.26
FIELD	Temperature, Field	N	DEG-C	2/3/1987	9/9/2020	307	12.3	12.9	27.2	0.1	7.1
NUTRIENT	Ammonia Nitrogen	N	MG/L	7/14/1987	9/9/2020	118	0.21	0.14	3	0.001	0.32
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	7/14/1987	9/9/2020	126	0.0937	0.07	2.63	0.02	0.236
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	7/14/1987	9/9/2020	121	0.022	0.02	0.11	0.005	0.018
PHYSICAL	pH, Lab	N	S.U.	6/12/1997	9/9/2020	113	8.34	8.4	9	6.8	0.31
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	7/14/1987	9/9/2020	127	0.2445	0.23	1	0	0.09961
PHYSICAL	Solids, Total Suspended	N	MG/L	7/14/1987	9/9/2020	193	17.4	10	154	2	20.7
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	7/14/1987	9/9/2020	195	542	520	1270	189	196
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	7/14/1987	9/9/2020	128	361	360	1064	128	142.2
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	60	0.0005	0.0005	0.0005	0.0003	0.00008
PRIMARY	Cadmium	TR	UG/L	7/14/1987	5/21/2012	65	1	0.5	5	0.1	1
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	60	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	7/14/1987	9/9/2020	125	1	1	10	0.1	1
SECONDARY	Iron	TR	UG/L	7/14/1987	9/9/2020	126	697	475	6350	90	746
SECONDARY	Manganese	TR	UG/L	1/15/1987	9/9/2020	147	50.2	40	272	10	37
SECONDARY	Silver	TR	UG/L	7/14/1987	9/9/2020	125	0.8	0.4	20	0.1	2
SECONDARY	Zinc	TR	UG/L	7/14/1987	9/9/2020	124	35	50	220	5	29
TRACE	Molybdenum	TR	UG/L	7/14/1987	9/9/2020	125	50	50	100	10	30

Table: 49
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 69 (Surface Water, Trout Creek) Datum: 6586.44

			Date	3/24/2020		4/9/2020		5/28/2020		6/22/2020		7/27/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	192	Y					145	Y	171	Y	151	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	4.2	Y					11.9	Y	35.1	Y	44.7	Y
ANION	Bicarbonate as HCO3	N	MG/L	234	Y					177	Y	209	Y	185	Y
ANION	Carbonate as CO3	N	MG/L	2.5	Y					7.1	Y	21.1	Y	26.8	Y
ANION	Sulfates	N	MG/L	450	Y					270	Y	380	Y	260	Y
CATION	Calcium	D	MG/L	101	Y					73	Y	99.2	Y	77.3	Y
CATION	Magnesium	D	MG/L	65.3	Y					46.5	Y	63.5	Y	48.7	Y
CATION	Sodium	D	MG/L	66.7	Y					23.3	Y	22.4	Y	17	Y
FIELD	Flow	N	CFS	FROZEN		118.7	Y	216.7	Y	47.43	Y	17.97	Y	15.913	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y	8.1	Y	8.1	Y	8.4	Y	8.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	830	Y	720	Y	380	Y	610	Y	880	Y	660	Y
FIELD	Temperature, Field	N	DEG-C	7.6	Y	15.1	Y	19.6	Y	24.4	Y	27.3	Y	23.5	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N					0.2	N	0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.15	Y					0.03	Y	0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.02	Y					0.03	Y	0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.3	Y					8.6	Y	8.7	Y	8.8	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	1.3	Y					0.53	Y	0.44	Y	0.38	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	351	Y					11	Y	20	N	5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1180	Y					783	Y	993	Y	789	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	882	Y					562	Y	762	Y	574	Y
PRIMARY	Cadmium	TR	MG/L	0.0002	Y					0.0003	N	0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N					0.001	N	0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L	0.6	Y					0.4	Y	0.3	Y	0.1	Y
SECONDARY	Iron	TR	UG/L	9100	Y					500	Y	180	Y	190	Y
SECONDARY	Manganese	TR	UG/L	520	Y					50	Y	20	Y	30	Y
SECONDARY	Silver	TR	UG/L	0.5	N					0.5	N	0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L	100	N					50	N	50	N	50	N
TRACE	Molybdenum	TR	UG/L	200	N					100	N	100	N	100	N

Table: 49
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 69 (Surface Water, Trout Creek) Datum: 6586.44

			Date	9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	162	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	18	Y
ANION	Bicarbonate as HCO3	N	MG/L	197	Y
ANION	Carbonate as CO3	N	MG/L	10.8	Y
ANION	Sulfates	N	MG/L	300	Y
CATION	Calcium	D	MG/L	77.9	Y
CATION	Magnesium	D	MG/L	51.2	Y
CATION	Sodium	D	MG/L	22.1	Y
FIELD	Flow	N	CFS	12.49	Y
FIELD	pH, Field	N	S.U.	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	830	Y
FIELD	Temperature, Field	N	DEG-C	17.2	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.01	Y
PHYSICAL	pH, Lab	N	S.U.	8.6	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.48	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	842	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	600	Y
PRIMARY	Cadmium	TR	MG/L	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N
PRIMARY	Selenium	TR	UG/L	0.1	Y
SECONDARY	Iron	TR	UG/L	230	Y
SECONDARY	Manganese	TR	UG/L	20	Y
SECONDARY	Silver	TR	UG/L	0.5	N
SECONDARY	Zinc	TR	UG/L	50	N
TRACE	Molybdenum	TR	UG/L	100	N

Table: 49a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 69 (Surface Water, Trout Creek) Datum: 6586.44

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/20/1980	9/9/2020	263	165.577	164.7	363.56	14.64	45.7661
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	10/20/1980	9/9/2020	158	12.6	10	86.4	0	11.5
ANION	Bicarbonate as HCO3	N	MG/L	8/16/2017	9/9/2020	16	175	178	234	88.6	34.6
ANION	Carbonate as CO3	N	MG/L	8/16/2017	9/9/2020	13	13.7	14.2	26.8	2.5	7.51
ANION	Sulfates	N	MG/L	10/20/1980	9/9/2020	354	219	190	704	7	128
CATION	Calcium	D	MG/L	10/20/1980	9/9/2020	268	70.6	62.8	1100	15	69
CATION	Magnesium	D	MG/L	10/20/1980	9/9/2020	268	36.2	33.1	99	10	17
CATION	Sodium	D	MG/L	10/20/1980	9/9/2020	268	21.6	16.2	170	1	17.5
FIELD	Flow	N	CFS	3/14/1979	9/9/2020	217	57.986	27.8	333	0.6	71.49
FIELD	pH, Field	N	S.U.	3/14/1979	9/9/2020	717	8.11	8.23	9.01	6.3	0.493
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5/1/1979	9/9/2020	760	598.229	601	1333.97	17	230.686
FIELD	Temperature, Field	N	DEG-C	3/14/1979	9/9/2020	672	11.3	10.4	29.9	0	6.81
NUTRIENT	Ammonia Nitrogen	N	MG/L	10/20/1980	9/9/2020	129	0.2	0.089	3	0.001	0.31
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/20/1980	9/9/2020	266	0.442	0.1	3.94	0.005	0.705
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/20/1980	9/9/2020	136	0.025	0.02	0.35	0.005	0.034
PHYSICAL	pH, Lab	N	S.U.	6/12/1997	9/9/2020	121	8.44	8.4	9.2	7.2	0.287
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	10/20/1980	9/9/2020	259	0.503	0.4076	3.6	0.039	0.3352
PHYSICAL	Solids, Total Suspended	N	MG/L	3/14/1979	9/9/2020	393	75.2	20	1640	1	158
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	6/12/1987	9/9/2020	203	653	611	1400	226	230
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/14/1979	9/9/2020	326	466.4	432	1370	100	217.6
PRIMARY	Cadmium	T	UG/L	10/20/1980	4/9/1985	10	13	15	21	5	7.6
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	66	0.0005	0.0005	0.001	0.0001	0.0001
PRIMARY	Cadmium	TR	UG/L	6/12/1987	5/21/2012	66	1	0.5	5	0.1	1
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	66	0.001	0.001	0.001	0.001	7E-19
PRIMARY	Selenium	TR	UG/L	6/12/1987	9/9/2020	132	0.94	1	10	0.002	1.1
SECONDARY	Iron	TR	UG/L	6/12/1987	9/9/2020	132	1010	460	9100	50	1430
SECONDARY	Manganese	TR	UG/L	6/12/1987	9/9/2020	132	74.6	45	520	8	84
SECONDARY	Silver	TR	UG/L	6/12/1987	9/9/2020	132	0.9	0.4	50	0.0001	4
SECONDARY	Zinc	TR	UG/L	6/12/1987	9/9/2020	132	34.7	30	566	5	50.9
TRACE	Molybdenum	TR	UG/L	6/12/1987	9/9/2020	132	60	50	300	10	40

Table: 50
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitioring Data

Site: 1005 (Surface Water, Trout Creek) Datum: 6568.88

			Date	3/24/2020		4/9/2020		5/28/2020		6/22/2020		7/27/2020		8/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	205	Y					171	Y	193	Y	181	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N					8.2	Y	31.7	Y	32.7	Y
ANION	Bicarbonate as HCO3	N	MG/L	250	Y					209	Y	235	Y	221	Y
ANION	Carbonate as CO3	N	MG/L	20	N					4.9	Y	19	Y	19.6	Y
ANION	Sulfates	N	MG/L	450	Y					270	Y	360	Y	260	Y
CATION	Calcium	D	MG/L	99.2	Y					74.9	Y	95.2	Y	79.5	Y
CATION	Magnesium	D	MG/L	64.4	Y					47.5	Y	61.1	Y	49.1	Y
CATION	Sodium	D	MG/L	79.5	Y					27.9	Y	26.5	Y	16.3	Y
FIELD	Flow	N	CFS	FROZEN		290.4	Y	230.57	Y	24.848	Y	19.65	Y	12.36	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8.1	Y	8.1	Y	8.1	Y	8.2	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	890	Y	560	Y	420	Y	630	Y	880	Y	650	Y
FIELD	Temperature, Field	N	DEG-C	6	Y	15	Y	20.1	Y	25.1	Y	28.7	Y	23.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N					0.2	N	0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.21	Y					0.1	N	0.1	N	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.03	Y					0.04	Y	0.05	N	0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.3	Y					8.4	Y	8.6	Y	8.7	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	1.5	Y					0.63	Y	0.53	Y	0.36	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	257	Y					17	Y	20	N	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	1200	Y					811	Y	989	Y	809	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	900	Y					576	Y	740	Y	590	Y
PRIMARY	Cadmium	TR	MG/L	0.0001	Y					0.0003	N	0.0003	N	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N					0.001	N	0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L	1.5	Y					0.3	Y	0.2	Y	0.2	Y
SECONDARY	Iron	TR	UG/L	6900	Y					650	Y	230	Y	220	Y
SECONDARY	Manganese	TR	UG/L	300	Y					70	Y	30	Y	30	Y
SECONDARY	Silver	TR	UG/L	0.5	N					0.5	N	0.5	N	0.5	N
SECONDARY	Zinc	TR	UG/L	100	N					50	N	50	N	50	N
TRACE	Molybdenum	TR	UG/L	200	N					100	N	100	N	100	N

Table: 50
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitioring Data

Site: 1005 (Surface Water, Trout Creek) Datum: 6568.88

				Date	9/9/2020
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	173	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	10	Y
ANION	Bicarbonate as HCO3	N	MG/L	211	Y
ANION	Carbonate as CO3	N	MG/L	6	Y
ANION	Sulfates	N	MG/L	290	Y
CATION	Calcium	D	MG/L	75.7	Y
CATION	Magnesium	D	MG/L	49.3	Y
CATION	Sodium	D	MG/L	21.3	Y
FIELD	Flow	N	CFS	8.922	Y
FIELD	pH, Field	N	S.U.	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	790	Y
FIELD	Temperature, Field	N	DEG-C	15.5	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.5	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	0.47	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	826	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	584	Y
PRIMARY	Cadmium	TR	MG/L	0.0003	N
PRIMARY	Mercury	T	MG/L	0.001	N
PRIMARY	Selenium	TR	UG/L	0.1	Y
SECONDARY	Iron	TR	UG/L	180	Y
SECONDARY	Manganese	TR	UG/L	30	Y
SECONDARY	Silver	TR	UG/L	0.5	N
SECONDARY	Zinc	TR	UG/L	50	N
TRACE	Molybdenum	TR	UG/L	100	N

Table: 50a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 1005 (Surface Water, Trout Creek) Datum: 6568.88

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	6/16/1994	9/9/2020	115	171.1	174	280	44	39.76
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	6/16/1994	9/9/2020	115	10.1	9	32.7	0	7.29
ANION	Bicarbonate as HCO3	N	MG/L	8/16/2017	9/9/2020	16	189	186	250	108	35.8
ANION	Carbonate as CO3	N	MG/L	8/16/2017	9/9/2020	13	13	13.1	20	3.5	7.02
ANION	Sulfates	N	MG/L	6/16/1994	9/9/2020	202	230	200	2200	31	170
CATION	Calcium	D	MG/L	6/16/1994	9/9/2020	115	62.8	62.1	140	10.9	19.8
CATION	Magnesium	D	MG/L	6/16/1994	9/9/2020	115	37.9	36.7	83.3	0.7	14.2
CATION	Sodium	D	MG/L	6/16/1994	9/9/2020	115	35.5	19.3	1060	7	98.2
FIELD	Flow	N	CFS	7/27/2017	9/9/2020	20	98.413	45.48	404.15	3.21	116.51
FIELD	pH, Field	N	S.U.	6/16/1994	9/9/2020	564	8.29	8.31	8.94	7	0.252
FIELD	Specific Conductivity, Field	N	UMHOS/CM	6/16/1994	9/9/2020	645	680.522	672	1558	31	180.687
FIELD	Temperature, Field	N	DEG-C	6/16/1994	9/9/2020	503	11.3	10.1	29	0	6.5
NUTRIENT	Ammonia Nitrogen	N	MG/L	6/7/1995	9/9/2020	112	0.27	0.2	3	0.001	0.41
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	6/16/1994	9/9/2020	115	0.239	0.1	14.4	0.02	1.35
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	6/16/1994	9/9/2020	108	0.027	0.02	0.12	0.005	0.02
PHYSICAL	pH, Lab	N	S.U.	6/12/1997	9/9/2020	126	8.42	8.5	9.2	7	0.292
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	6/16/1994	9/9/2020	115	1.356	0.472	84.1	0	7.793
PHYSICAL	Solids, Total Suspended	N	MG/L	6/16/1994	9/9/2020	115	46.6	16	480	2	83.5
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	6/16/1994	9/9/2020	187	686	675	1310	242	208
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	6/16/1994	9/9/2020	115	474	440	1040	110	175
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	70	0.00046	0.0005	0.001	0.0001	0.00012
PRIMARY	Cadmium	TR	UG/L	6/16/1994	5/21/2012	45	2	2	5	0.1	2
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	70	0.001	0.001	0.001	0.0005	0.00006
PRIMARY	Selenium	TR	UG/L	6/16/1994	9/9/2020	115	0.95	0.5	10	0.1	1.2
SECONDARY	Iron	TR	UG/L	6/16/1994	9/9/2020	115	1580	560	19300	130	2620
SECONDARY	Manganese	TR	UG/L	6/16/1994	9/9/2020	115	86.7	51	1100	5	118
SECONDARY	Silver	TR	UG/L	6/16/1994	9/9/2020	115	0.6	0.3	5	0.07	1
SECONDARY	Zinc	TR	UG/L	6/16/1994	9/9/2020	115	45	50	1400	5	130
TRACE	Molybdenum	TR	UG/L	6/16/1994	9/9/2020	115	60	50	200	10	40

Table: 51
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 29 (Surface Water, Middle Creek) Datum: 6666.85

			Date	3/25/2020		4/9/2020		4/28/2020		5/28/2020		6/22/2020		7/27/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	330	Y							248	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	7.1	Y							19.2	Y		
ANION	Bicarbonate as HCO3	N	MG/L	403	Y							303	Y		
ANION	Carbonate as CO3	N	MG/L	4.3	Y							11.5	Y		
ANION	Sulfates	N	MG/L	1010	Y							950	Y		
CATION	Calcium	D	MG/L	175	Y							164	Y		
CATION	Magnesium	D	MG/L	129	Y							145	Y		
CATION	Sodium	D	MG/L	186	Y							107	Y		
FIELD	Flow	N	CFS	14	Y	47.73	Y	56.57	Y	17.91	Y	7.79	Y	3.92	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y	8.3	Y	8.1	Y	8.1	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1790	Y	1020	Y	5820	Y	1440	Y	1540	Y	1310	Y
FIELD	Temperature, Field	N	DEG-C	8.3	Y	12.1	Y	12.3	Y	20.6	Y	21.6	Y	22.3	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.54	Y							0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.3	Y							0.1	N		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.07	Y							0.03	Y		
PHYSICAL	pH, Lab	N	S.U.	8.3	Y							8.5	Y		
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	2.6	Y							1.5	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	93	Y							24	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	2270	Y							1970	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	1910	Y							1690	Y		
PRIMARY	Cadmium	TR	MG/L	9E-05	Y							0.0003	N		
Primary	Mercury	T	MG/L	0.001	N							0.001	N		
PRIMARY	Selenium	TR	UG/L	1	Y							0.5	Y		
SECONDARY	Iron	TR	UG/L	2900	Y							810	Y		
SECONDARY	Manganese	TR	UG/L	260	Y							90	Y		
SECONDARY	Silver	TR	UG/L	0.5	N							0.5	N		
SECONDARY	Zinc	TR	UG/L	100	N							50	N		
TRACE	Molybdenum	TR	UG/L	200	N							100	N		

Table: 51
Twentymile Coal, LLC
2020 Annual Hydrology Report
Water Year Monitoring Data

Site: 29 (Surface Water, Middle Creek) Datum: 6666.85

			Date	8/3/2020		8/11/2020		8/19/2020		8/26/2020		9/3/2020		9/9/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L			239	Y							182	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L			11.8	Y							8.5	Y
ANION	Bicarbonate as HCO3	N	MG/L			291	Y							222	Y
ANION	Carbonate as CO3	N	MG/L			7.1	Y							5.1	Y
ANION	Sulfates	N	MG/L			580	Y							400	Y
CATION	Calcium	D	MG/L			118	Y							84.3	Y
CATION	Magnesium	D	MG/L			91.3	Y							65.7	Y
CATION	Sodium	D	MG/L			58.6	Y							36.8	Y
FIELD	Flow	N	CFS	3.309	Y	1.573	Y	3.172	Y	4.35	Y	1.913	Y	4.12	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y	8.2	Y	8.3	Y	8	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	980	Y	1160	Y	730	Y	520	Y	1020	Y	1090	Y
FIELD	Temperature, Field	N	DEG-C	24	Y	20.4	Y	21.3	Y	24.1	Y	15.1	Y	12.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L			0.2	N							0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L			0.1	N							0.1	N
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L			0.02	Y							0.05	Y
PHYSICAL	pH, Lab	N	S.U.			8.4	Y							8.4	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO			1	Y							0.74	Y
PHYSICAL	Solids, Total Suspended	N	MG/L			9	Y							21	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			1370	Y							1020	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			1080	Y							762	Y
PRIMARY	Cadmium	TR	MG/L			0.0003	N							0.0003	N
Primary	Mercury	T	MG/L			0.001	N							0.001	N
PRIMARY	Selenium	TR	UG/L			0.3	Y							0.2	Y
SECONDARY	Iron	TR	UG/L			270	Y							1160	Y
SECONDARY	Manganese	TR	UG/L			50	Y							70	Y
SECONDARY	Silver	TR	UG/L			0.5	N							0.5	N
SECONDARY	Zinc	TR	UG/L			50	N							50	N
TRACE	Molybdenum	TR	UG/L			100	N							100	N

Table: 51a
Twentymile Coal, LLC
2020 Annual Hydrology Report
Period of Record Summary of Water Quality

Site: 29 (Surface Water, Middle Creek) Datum: 6666.85

Type	Parameter	Fraction	Units	Start Date	End Date	Sample Count	Average	Median	MAX	MIN	STDEV
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	10/20/1980	9/9/2020	291	270.35	270	660	91	81.105
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	3/25/1981	9/9/2020	162	10.4	7.7	74.4	0	10.6
ANION	Bicarbonate as HCO3	N	MG/L	8/15/2017	9/9/2020	13	286	283	415	209	62.2
ANION	Carbonate as CO3	N	MG/L	8/15/2017	9/9/2020	12	6.32	5.15	11.5	3.6	2.74
ANION	Sulfates	N	MG/L	10/20/1980	9/9/2020	366	578.8	512	3700	5	381.1
CATION	Calcium	D	MG/L	10/20/1980	9/9/2020	291	132	121	402	21	62.1
CATION	Magnesium	D	MG/L	10/20/1980	9/9/2020	291	80.2	67	242	18	44.6
CATION	Sodium	D	MG/L	10/20/1980	9/9/2020	291	70.4	57	590	13	57
FIELD	Flow	N	CFS	8/14/1984	9/9/2020	143	9.631	6.1	56.57	0.14	10.49
FIELD	pH, Field	N	S.U.	3/9/1979	9/9/2020	579	7.92	8	18.8	6.2	0.617
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4/25/1979	9/9/2020	580	1323	1240	5820	250	664.7
FIELD	Temperature, Field	N	DEG-C	3/26/1979	9/9/2020	570	12.06	12.4	27	0	6.84
NUTRIENT	Ammonia Nitrogen	N	MG/L	10/20/1980	9/9/2020	131	0.2	0.05	5	0	0.46
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	10/20/1980	9/9/2020	276	0.795	0.345	6.5	0.005	1.03
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	10/20/1980	9/9/2020	159	0.0404	0.021	0.6	0.005	0.07
PHYSICAL	pH, Lab	N	S.U.	4/7/1997	9/9/2020	109	8.35	8.4	8.9	7.82	0.216
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	10/20/1980	9/9/2020	290	1.1916	0.943	9.3	0.3463	0.87737
PHYSICAL	Solids, Total Suspended	N	MG/L	3/9/1979	9/9/2020	412	142	45	4560	2	335
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4/15/1987	9/9/2020	193	1576	1510	3400	450	588.8
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3/9/1979	9/9/2020	344	1045	885	3860	101	592.7
PRIMARY	Cadmium	T	UG/L	10/20/1980	3/10/1986	14	10	6	20	0.1	7
PRIMARY	Cadmium	TR	MG/L	3/31/2006	9/9/2020	59	0.0005	0.0005	0.001	0.00006	0.0002
PRIMARY	Mercury	T	MG/L	3/31/2006	9/9/2020	59	0.001	0.001	0.001	0.0002	0.0002
PRIMARY	Selenium	TR	UG/L	3/17/1986	9/9/2020	152	1.4	1	10	0.1	1.7
SECONDARY	Iron	TR	UG/L	3/3/1986	9/9/2020	154	1690	835	14700	20	2200
SECONDARY	Manganese	TR	UG/L	3/3/1986	9/9/2020	154	276	232	1100	30	173
SECONDARY	Silver	TR	UG/L	4/15/1987	9/9/2020	130	0.58	0.4	5	0.06	0.93
SECONDARY	Zinc	TR	UG/L	3/17/1986	9/9/2020	151	32	29	150	5	25
TRACE	Molybdenum	TR	UG/L	3/17/1986	9/9/2020	151	60	50	200	10	40

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Site: 7 (pit discharge to pond D)

			Date	3/18/2020		6/22/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	735	Y	616	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	50.6	Y	20	N
ANION	Bicarbonate as HCO3	N	MG/L	897	Y	752	Y
ANION	Carbonate as CO3	N	MG/L	30.3	Y	20	N
ANION	Sulfates	N	MG/L	1920	Y	1900	Y
CATION	Calcium	D	MG/L	113	Y	248	Y
CATION	Magnesium	D	MG/L	104	Y	226	Y
CATION	Sodium	D	MG/L	937	Y	621	Y
FIELD	Flow	N	CFS	0.065	Y	0.491	Y
FIELD	pH, Field	N	S.U.	8.1	Y	7.7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3830	Y	4020	Y
FIELD	Temperature, Field	N	DEG-C	11.4	Y	19.1	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	1.73	Y	1.01	Y
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.98	Y	1.79	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.02	Y	0.05	N
PHYSICAL	pH, Lab	N	S.U.	8.4	Y	8.3	Y
PHYSICAL	Sodium Adsorption Ratio	N	RATIO	15	Y	6.9	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	15	Y	17	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4690	Y	4510	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3660	Y	3980	Y
PRIMARY	Cadmium	TR	MG/L	0.0005	N	0.0005	N
PRIMARY	Mercury	T	MG/L	0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L	2.1	Y	4.6	Y
SECONDARY	Iron	TR	UG/L	120	Y	300	N
SECONDARY	Manganese	TR	UG/L	20	Y	140	Y
SECONDARY	Silver	TR	UG/L	1	N	1	N
SECONDARY	Zinc	TR	UG/L	20	Y	100	N
TRACE	Molybdenum	TR	UG/L	100	N	200	N

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Water Year Monitoring Data

Site: 303-1 (5863031) Datum: 6605

			Date	5/20/2020		9/26/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	602	Y	615	Y
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N	20	N
ANION	Bicarbonate as HCO3	N	MG/L	734	Y	750	Y
ANION	Carbonate as CO3	N	MG/L	20	N	20	N
ANION	Sulfates	N	MG/L	2300	Y	2240	Y
CATION	Calcium	D	MG/L	473	Y	447	Y
CATION	Magnesium	D	MG/L	360	Y	344	Y
CATION	Sodium	D	MG/L	133	Y	150	Y
FIELD	Flow	N	CFS	0.009	Y	0.004	Y
FIELD	pH, Field	N	S.U.	7.01	Y	7.09	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3920	Y	3800	Y
FIELD	Temperature, Field	N	DEG-C	10.6	Y	10.6	Y
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N	0.2	N
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	0.28	Y	0.26	Y
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.02	Y	0.01	Y
PHYSICAL	pH, Lab	N	S.U.	8.1	Y	8	Y
PHYSICAL	Solids, Total Suspended	N	MG/L	7	Y	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3990	Y	4030	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3810	Y	4090	Y
PRIMARY	Cadmium	TR	MG/L	0.0002	Y	0.001	N
PRIMARY	Mercury	T	MG/L	0.001	N	0.001	N
PRIMARY	Selenium	TR	UG/L	0.3	Y	1	N
SECONDARY	Iron	TR	UG/L	500	Y	367	Y
SECONDARY	Manganese	TR	UG/L	300	Y	287	Y
SECONDARY	Silver	TR	UG/L	1	N	3	N
SECONDARY	Zinc	TR	UG/L	60	Y	100	N
TRACE	Molybdenum	TR	UG/L	200	N	200	N

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Twentymile Coal, LLC
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SITE: SW1 (SPRING SW-1, SW MINING DISTRICT) Datum: 6970

			Date	5/7/2020		9/26/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L	231	Y		
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L	20	N		
ANION	Bicarbonate as HCO3	N	MG/L	281	Y		
ANION	Carbonate as CO3	N	MG/L	20	N	DRY	
ANION	Sulfates	N	MG/L	20	Y		
CATION	Calcium	D	MG/L	61	Y		
CATION	Magnesium	D	MG/L	21	Y		
CATION	Sodium	D	MG/L	5.8	Y		
FIELD	Flow	N	CFS	0.033	Y		
FIELD	pH, Field	N	S.U.	7.97	Y		
FIELD	Specific Conductivity, Field	N	UMHOS/CM	530	Y		
FIELD	Temperature, Field	N	DEG-C	7.5	Y		
NUTRIENT	Ammonia Nitrogen	N	MG/L	0.2	N		
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L	3.37	Y		
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L	0.01	Y		
PHYSICAL	pH, Lab	N	S.U.	8.2	Y		
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	459	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	292	Y		
PRIMARY	Cadmium	TR	MG/L	0.0003	N		
PRIMARY	Mercury	T	MG/L	0.001	N		
PRIMARY	Selenium	TR	UG/L	0.4	Y		
SECONDARY	Iron	TR	UG/L	200	N		
SECONDARY	Manganese	TR	UG/L	50	N		
SECONDARY	Silver	TR	UG/L	0.5	N		
SECONDARY	Zinc	TR	UG/L	50	N		
TRACE	Molybdenum	TR	UG/L	100	N		

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SITE: SW2 (SPRING SW-2, SW MINING DISTRICT) Datum: 6940

			Date	5/7/2020		9/26/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detection**	**Result**	**Detection**
ANION	Alkalinity, Bicarbonate as CaCO3	N	MG/L				
ANION	Alkalinity, Carbonate as CaCO3	N	MG/L				
ANION	Bicarbonate as HCO3	N	MG/L				
ANION	Carbonate as CO3	N	MG/L	DRY		DRY	
ANION	Sulfates	N	MG/L				
CATION	Calcium	D	MG/L				
CATION	Magnesium	D	MG/L				
CATION	Sodium	D	MG/L				
FIELD	Flow	N	CFS				
FIELD	pH, Field	N	S.U.				
FIELD	Specific Conductivity, Field	N	UMHOS/CM				
FIELD	Temperature, Field	N	DEG-C				
NUTRIENT	Ammonia Nitrogen	N	MG/L				
NUTRIENT	NO3-NO2 Nitrogen	N	MG/L				
NUTRIENT	Phosphorus, Orthophosphorus	N	MG/L				
PHYSICAL	pH, Lab	N	S.U.				
PHYSICAL	Solids, Total Suspended	N	MG/L				
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L				
PRIMARY	Cadmium	TR	MG/L				
PRIMARY	Selenium	TR	UG/L				
SECONDARY	Iron	TR	UG/L				
SECONDARY	Manganese	TR	UG/L				
SECONDARY	Silver	TR	UG/L				
SECONDARY	Zinc	TR	UG/L				
TRACE	Molybdenum	TR	UG/L				

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Twentymile Coal, LLC
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SITE: NPDES Site 80, Pond T

Site 80 did not discharge in 2020

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Twentymile Coal, LLC
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SITE: NPDES Site 63, Pond B

			Date	10/9/2019		10/16/2019		10/23/2019		10/30/2019		11/7/2019		11/13/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.028	Y	0.0008	Y	0.028	Y	0.028	Y	0.0096	Y	0.0043	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.5	Y	8.5	Y	8.1	Y	7.7	Y	8.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5220	Y	5130	Y	5040	Y	5160	Y	4650	Y	4340	Y
FIELD	Temperature, Field	N	DEG-C	13.6	Y	14.4	Y	8.3	Y	4.7	Y	11.4	Y	13.4	Y
PHYSICAL	pH, Lab	N	S.U.	8.4	Y	8.4	Y	8.4	Y	8.3	Y	8.4	Y	8.3	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	26	Y	13	Y	15	Y	7	Y	7	Y	7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM									4580	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L									4360	Y		
SECONDARY	Iron	T	UG/L	520	Y	230	Y	270	Y	80	Y	400	N	360	Y
SECONDARY	Iron	TR	UG/L									400	N		

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Twentymile Coal, LLC
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SITE: NPDES Site 63, Pond B

			Date	11/19/2019		11/25/2019		12/5/2019		12/11/2019		12/18/2019		12/23/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.028	Y	0.028	Y					0.028	Y	0.028	Y
FIELD	pH, Field	N	S.U.	7.9	Y	8.1	Y	7.4	Y	8.1	Y	8	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4650	Y	5030	Y	5050	Y	5040	Y	4730	Y	5110	Y
FIELD	Temperature, Field	N	DEG-C	8.5	Y	4.2	Y	8.5	Y	3	Y	1.1	Y	2.4	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y	8.4	Y	8.2	Y	8.3	Y	8.4	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N		
PHYSICAL	Solids, Total Suspended	N	MG/L	14	Y	13	Y	14	Y	21	Y	8	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
SECONDARY	Iron	T	UG/L	90	Y	100	Y	90	Y	280	Y	70	Y		
SECONDARY	Iron	TR	UG/L												

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Twentymile Coal, LLC
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SITE: NPDES Site 63, Pond B

			Date	1/2/2020		1/8/2020		1/15/2020		1/23/2020		1/27/2020		2/6/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS			0.0818	Y	0.028	Y	0.0818	Y	0.0818	Y	0.0818	Y
FIELD	pH, Field	N	S.U.	8.5	Y	8	Y	7.1	Y	7.3	Y	8	Y	8.4	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4810	Y	4790	Y	5120	Y	5000	Y	4560	Y	5060	Y
FIELD	Temperature, Field	N	DEG-C	2.5	Y	10.5	Y	2.3	Y	3	Y	2	Y	1	Y
PHYSICAL	pH, Lab	N	S.U.			8.3	Y			8.2	Y	8.2	Y	8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L			0.1	Y			0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			37	Y			9	Y	19	Y	13	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			4400	Y								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			3760	Y								
SECONDARY	Iron	T	UG/L			870	Y			120	Y	540	Y	270	Y
SECONDARY	Iron	TR	UG/L												

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Twentymile Coal, LLC
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SITE: NPDES Site 63, Pond B

			Date	2/13/2020		2/20/2020		2/26/2020		3/6/2020		3/11/2020		3/18/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0818	Y	0.0818	Y	0.0818	Y	0.0524	Y	0.153	Y	0.2396	Y
FIELD	pH, Field	N	S.U.	7.7	Y	7.7	Y	7.6	Y	7.9	Y	8	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4590	Y	4060	Y	3990	Y	2380	Y	1710	Y	1260	Y
FIELD	Temperature, Field	N	DEG-C	4	Y	4.2	Y	3	Y	4.7	Y	4	Y	4.8	Y
PHYSICAL	pH, Lab	N	S.U.			8.1	Y	8.2	Y	8.3	Y	8.2	Y	8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L			0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			7	Y	7	Y	54	Y	56	Y	21	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
SECONDARY	Iron	T	UG/L			150	Y	170	Y	1220	Y	1360	Y	850	Y
SECONDARY	Iron	TR	UG/L												

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SITE: NPDES Site 63, Pond B

			Date	3/25/2020		4/1/2020		4/8/2020		4/14/2020		4/22/2020		4/29/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.028	Y	0.0818	Y	0.0818	Y	0.028	Y	0.028	Y	0.028	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y	8.3	Y	8.2	Y	8.3	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1740	Y	1600	Y	1660	Y	1310	Y	1770	Y	1980	Y
FIELD	Temperature, Field	N	DEG-C	13.5	Y	12.5	Y	13.2	Y	6.8	Y	12.3	Y	16.5	Y
PHYSICAL	pH, Lab	N	S.U.	8.4	Y	8.5	Y	8.6	Y	8.5	Y	8.5	Y	8.5	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	23	Y	27	Y	21	Y	18	Y	18	Y	19	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM					1830	Y						
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L					1300	Y						
SECONDARY	Iron	T	UG/L	1050	Y	1350	Y	1220	Y	1630	Y	740	Y	650	Y
SECONDARY	Iron	TR	UG/L												

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SITE: NPDES Site 63, Pond B

			Date	5/6/2020		5/13/2020		5/20/2020		5/27/2020		6/3/2020		6/10/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0818	Y	0.0524	Y	0.0096	Y	0.0096	Y	0.0096	Y	0.0292	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.3	Y	8.4	Y	8.3	Y	8.3	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2290	Y	2680	Y	2510	Y	2760	Y	3050	Y	3220	Y
FIELD	Temperature, Field	N	DEG-C	14.3	Y	17.7	Y	17.9	Y	21	Y	22	Y	15	Y
PHYSICAL	pH, Lab	N	S.U.	8.5	Y	8.5	Y	8.5	Y	8.5	Y	8.5	Y	8.5	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	Y	34	Y	37	Y	16	Y	22	Y	31	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
SECONDARY	Iron	T	UG/L	550	Y	840	Y	590	Y	380	Y	490	Y	910	Y
SECONDARY	Iron	TR	UG/L												

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SITE: NPDES Site 63, Pond B

			Date	6/17/2020		6/24/2020		7/1/2020		7/8/2020		7/15/2020		7/23/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0023	Y	0.0008	Y	0.0023	Y	0.0026	Y	0.0096	Y	0.0043	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.2	Y	8.2	Y	8.3	Y	8.3	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3580	Y	3750	Y	4110	Y	3750	Y	4610	Y	4750	Y
FIELD	Temperature, Field	N	DEG-C	20	Y	24.9	Y	21.4	Y	24.9	Y	18.9	Y	22.6	Y
PHYSICAL	pH, Lab	N	S.U.	8.6	Y	8.6	Y	8.6	Y	8.5	Y	8.6	Y	8.5	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	39	Y	30	Y	42	Y	36	Y	37	Y	46	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM							4860	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							4230	Y				
SECONDARY	Iron	T	UG/L	760	Y	1200	Y	1090	Y	1200	Y	918	Y	830	Y
SECONDARY	Iron	TR	UG/L												

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SITE: NPDES Site 63, Pond B

			Date	7/29/2020		9/16/2020		9/23/2020		9/30/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0039	Y	0.0073	Y	0.0073	Y	0.0198	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.3	Y	8.3	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4730	Y	6350	Y	6560	Y	5680	Y
FIELD	Temperature, Field	N	DEG-C	24.7	Y	17	Y	19.4	Y	8.7	Y
PHYSICAL	pH, Lab	N	S.U.	8.6	Y	8.7	Y	8.6	Y	8.3	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	41	Y	20	Y	18	Y	13	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L								
SECONDARY	Iron	T	UG/L	990	Y	760	Y	324	Y	157	Y
SECONDARY	Iron	TR	UG/L								

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SITE: NPDES Site 82, Pond C

Site 82 did not discharge in 2020

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Water Year Monitoring Data

SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	10/3/2019		10/9/2019		10/16/2019		10/23/2019		10/30/2019		11/7/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.065	Y	0.0071	Y	0.2328	Y	0.065	Y	0.0181	Y	0.0034	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.5	Y	8.3	Y	8.6	Y	7.9	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4920	Y	5480	Y	4560	Y	5490	Y	5460	Y	4880	Y
FIELD	Temperature, Field	N	DEG-C	17	Y	12.3	Y	16.9	Y	6.8	Y	2.4	Y	6.4	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y			8.5	Y					8.3	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	11	Y	13	Y	10	Y	12	Y	11	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM							5320	Y				
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							4820	Y				
PRIMARY	Chromium	PD	MG/L			0.002	N								
PRIMARY	Chromium-6	D	MG/L			0.02	N								
PRIMARY	Lead	PD	MG/L			0.0002	Y								
PRIMARY	Mercury	T	UG/L							1	N				
PRIMARY	Selenium	PD	UG/L			1.9	Y								
SECONDARY	Arsenic	T	MG/L			0.0006	Y								
SECONDARY	Copper	PD	UG/L							50	N				
SECONDARY	Iron	T	UG/L							400	N				
SECONDARY	Iron	TR	UG/L	60	Y			60	Y					180	Y
SECONDARY	Nickel	PD	UG/L			28	Y								
SECONDARY	Zinc	PD	UG/L			50	N								

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	11/13/2019		11/19/2019		11/25/2019		12/5/2019		12/11/2019		12/18/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.105	Y	0.065	Y	0.065	Y	0.065	Y	0.2328	Y		
FIELD	pH, Field	N	S.U.	8.3	Y	8.1	Y	8.4	Y	8	Y	8.5	Y	8.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5210	Y	5240	Y	5290	Y	5100	Y	5310	Y	5520	Y
FIELD	Temperature, Field	N	DEG-C	10.6	Y	5.6	Y	3.7	Y	9.6	Y	2.9	Y	0.6	Y
PHYSICAL	pH, Lab	N	S.U.			8.4	Y			8.4	Y			8.5	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	8	Y	20	N	14	Y	13	Y	13	Y	9	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
PRIMARY	Chromium	PD	MG/L	0.002	N							0.002	N		
PRIMARY	Chromium-6	D	MG/L	0.02	N							0.02	N		
PRIMARY	Lead	PD	MG/L	0.0002	Y							0.0007	Y		
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L	2.3	Y							2.3	Y		
SECONDARY	Arsenic	T	MG/L	0.0009	Y							0.0011	Y		
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	T	UG/L												
SECONDARY	Iron	TR	UG/L			50	Y			170	Y			50	Y
SECONDARY	Nickel	PD	UG/L	30	Y							47	Y		
SECONDARY	Zinc	PD	UG/L	50	N							50	N		

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	12/23/2019		1/2/2020		1/8/2020		1/15/2020		1/23/2020		1/27/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.137	Y	0.6182	Y	0.6182	Y	0.8335	Y	0.0461	Y	0.0461	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.5	Y	8.6	Y	7	Y	7.9	Y	7.3	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5490	Y	5310	Y	5220	Y	5120	Y	5050	Y	5060	Y
FIELD	Temperature, Field	N	DEG-C	2.4	Y	3.6	Y	1.7	Y	3.7	Y	1.2	Y	2.5	Y
PHYSICAL	pH, Lab	N	S.U.												
PHYSICAL	Solids, Settleable	N	ML/L					0.5	N			0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L					10	Y			10	Y	34	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
PRIMARY	Chromium	PD	MG/L					0.002	N						
PRIMARY	Chromium-6	D	MG/L					0.02	N						
PRIMARY	Lead	PD	MG/L					0.0003	Y						
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L					2	Y						
SECONDARY	Arsenic	T	MG/L					0.0008	Y						
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	T	UG/L												
SECONDARY	Iron	TR	UG/L												
SECONDARY	Nickel	PD	UG/L					58	Y						
SECONDARY	Zinc	PD	UG/L					10	Y						

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	2/6/2020		2/13/2020		2/20/2020		2/26/2020		3/5/2020		3/11/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0461	Y	0.065	Y	0.2328	Y	0.8335	Y	0.065	Y	0.065	Y
FIELD	pH, Field	N	S.U.	8.4	Y	8.5	Y	8.2	Y	8.1	Y	7.9	Y	7.9	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4590	Y	5000	Y	3950	Y	4180	Y	3320	Y	2940	Y
FIELD	Temperature, Field	N	DEG-C	3.5	Y	2	Y	2.3	Y	5.4	Y	3.7	Y	5.9	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y			8.3	Y			8.3	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N			0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	15	Y			10	Y	15	Y	14	Y	10	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
PRIMARY	Chromium	PD	MG/L											0.002	N
PRIMARY	Chromium-6	D	MG/L											0.02	N
PRIMARY	Lead	PD	MG/L											0.0003	Y
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L											7.3	Y
SECONDARY	Arsenic	T	MG/L											0.0006	Y
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	T	UG/L												
SECONDARY	Iron	TR	UG/L	220	Y			80	Y			280	Y		
SECONDARY	Nickel	PD	UG/L											14	Y
SECONDARY	Zinc	PD	UG/L											30	Y

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	3/18/2020		3/25/2020		4/1/2020		4/8/2020		4/14/2020		4/22/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.2328	Y	0.2328	Y	0.491	Y	0.8335	Y	1.257	Y	0.491	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8.2	Y	8.2	Y	8.3	Y	8.2	Y	8.1	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3050	Y	3840	Y	3710	Y	3650	Y	3830	Y	3630	Y
FIELD	Temperature, Field	N	DEG-C	4.3	Y	13.7	Y	13.3	Y	13.7	Y	6	Y	12.5	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y			8.5	Y			8.4	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	11	Y	17	Y	15	Y	20	N	20	N	5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM									4270	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L									6900	Y		
PRIMARY	Chromium	PD	MG/L							0.002	N				
PRIMARY	Chromium-6	D	MG/L							0.02	N				
PRIMARY	Lead	PD	MG/L							0.0002	Y				
PRIMARY	Mercury	T	UG/L									1	N		
PRIMARY	Selenium	PD	UG/L							4.5	Y				
SECONDARY	Arsenic	T	MG/L							0.0004	Y				
SECONDARY	Copper	PD	UG/L									50	N		
SECONDARY	Iron	T	UG/L									180	Y		
SECONDARY	Iron	TR	UG/L	510	Y			480	Y			170	Y		
SECONDARY	Nickel	PD	UG/L							32	Y				
SECONDARY	Zinc	PD	UG/L							50	N				

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	4/29/2020		5/6/2020		5/13/2020		5/20/2020		5/27/2020		6/3/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.8335	Y	0.8335	Y	0.491	Y	0.065	Y	0.351	Y	0.0034	Y
FIELD	pH, Field	N	S.U.	8.1	Y	8	Y	8	Y	8.1	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3580	Y	3740	Y	3760	Y	3720	Y	3840	Y	4000	Y
FIELD	Temperature, Field	N	DEG-C	15.4	Y	14.5	Y	14.5	Y	17.5	Y	20.4	Y	23	Y
PHYSICAL	pH, Lab	N	S.U.			8.3	Y			8.4	Y			8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	7	Y	20	N	7	Y	8	Y	7	Y	6	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
PRIMARY	Chromium	PD	MG/L					0.002	N						
PRIMARY	Chromium-6	D	MG/L					0.02	N						
PRIMARY	Lead	PD	MG/L					0.0005	N						
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L					5.8	Y						
SECONDARY	Arsenic	T	MG/L					0.0002	Y						
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	T	UG/L												
SECONDARY	Iron	TR	UG/L			200	N			200	N			60	Y
SECONDARY	Nickel	PD	UG/L					22	Y						
SECONDARY	Zinc	PD	UG/L					50	N						

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	6/10/2020		6/17/2020		6/24/2020		7/1/2020		7/8/2020		7/15/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.065	Y	0.2328	Y	0.491	Y	0.351	Y	0.0461	Y	0.0009	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.1	Y	8.1	Y	8.1	Y	7.9	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3830	Y	4190	Y	3940	Y	4010	Y	4200	Y	4120	Y
FIELD	Temperature, Field	N	DEG-C	16.8	Y	19.3	Y	24.8	Y	22	Y	24.5	Y	19.2	Y
PHYSICAL	pH, Lab	N	S.U.			8.5	Y			8.5	Y			8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	8	Y	6	Y	23	Y	8	Y	6	Y	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM											4840	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L											4020	Y
PRIMARY	Chromium	PD	MG/L	0.002	N							0.002	N		
PRIMARY	Chromium-6	D	MG/L	0.02	N							0.02	N		
PRIMARY	Lead	PD	MG/L	0.0005	N							0.0005	N		
PRIMARY	Mercury	T	UG/L											1	N
PRIMARY	Selenium	PD	UG/L	4.5	Y							2.6	Y		
SECONDARY	Arsenic	T	MG/L	0.0005	Y							0.0005	Y		
SECONDARY	Copper	PD	UG/L											100	N
SECONDARY	Iron	T	UG/L											800	N
SECONDARY	Iron	TR	UG/L			200	N			300	N			200	N
SECONDARY	Nickel	PD	UG/L	17	Y							34	Y		
SECONDARY	Zinc	PD	UG/L	50	N							50	N		

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	7/23/2020		7/29/2020		8/5/2020		8/19/2020		8/26/2020		9/2/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0009	Y	0.0009	Y	0.0051	Y	0.0181	Y	0.0009	Y	0.0009	Y
FIELD	pH, Field	N	S.U.	7.9	Y	8.1	Y	8.3	Y	8.7	Y	8.5	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4340	Y	4380	Y	4610	Y	5050	Y	5070	Y	4670	Y
FIELD	Temperature, Field	N	DEG-C	19.3	Y	19.3	Y	19.4	Y	18.7	Y	18	Y	18	Y
PHYSICAL	pH, Lab	N	S.U.					8.5	Y	8.8	Y			8.5	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	22	Y	14	Y	10	Y	6	Y	20	N	13	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
PRIMARY	Chromium	PD	MG/L												
PRIMARY	Chromium-6	D	MG/L												
PRIMARY	Lead	PD	MG/L												
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L												
SECONDARY	Arsenic	T	MG/L												
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	T	UG/L												
SECONDARY	Iron	TR	UG/L					150	Y	300	N			130	Y
SECONDARY	Nickel	PD	UG/L												
SECONDARY	Zinc	PD	UG/L												

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SITE: NPDES Site 84, Mine Discharge, Pond D

			Date	9/9/2020		9/16/2020		9/23/2020		9/30/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0009	Y	0.0006	Y	0.0009	Y	0.0432	Y
FIELD	pH, Field	N	S.U.	8.4	Y	7.5	Y	8.4	Y	8.4	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	5670	Y	5730	Y	5810	Y	5690	Y
FIELD	Temperature, Field	N	DEG-C	10.8	Y	11.8	Y	19.5	Y	12.3	Y
PHYSICAL	pH, Lab	N	S.U.			8.5	Y				
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	8	Y	7	Y	20	N	7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L								
PRIMARY	Chromium	PD	MG/L	0.002	N						
PRIMARY	Chromium-6	D	MG/L	0.02	N						
PRIMARY	Lead	PD	MG/L	0.0005	N						
PRIMARY	Mercury	T	UG/L								
PRIMARY	Selenium	PD	UG/L	1.2	Y						
SECONDARY	Arsenic	T	MG/L	0.0008	Y						
SECONDARY	Copper	PD	UG/L								
SECONDARY	Iron	T	UG/L								
SECONDARY	Iron	TR	UG/L			110	Y				
SECONDARY	Nickel	PD	UG/L	34	Y						
SECONDARY	Zinc	PD	UG/L	50	N						

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SITE: NPDES Site 85, Pond E

			Date	10/23/2019		10/30/2019		11/7/2019		11/13/2019		11/19/2019		11/25/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.112	Y	0.131	Y	0.3145	Y	0.0023	Y	0.0085	Y	0.008	Y
FIELD	pH, Field	N	S.U.	8.4	Y	8.2	Y	8.1	Y	8.5	Y	7.8	Y	7.4	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4720	Y	5100	Y	4680	Y	4770	Y	4790	Y	4770	Y
FIELD	Temperature, Field	N	DEG-C	7.3	Y	3.8	Y	10.7	Y	9.5	Y	6	Y	5.6	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y	8.3	Y	8.3	Y	8.4	Y	8.4	Y	8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	6	Y	8	Y	20	N	20	N	10	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
SECONDARY	Iron	T	UG/L	80	N	40	Y	140	Y	130	Y	40	Y	320	Y

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SITE: NPDES Site 85, Pond E

			Date	12/5/2019		12/11/2019		12/18/2019		12/23/2019		1/2/2020		1/8/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.008	Y	0.0438	Y	0.0002	Y	0.0085	Y	0.008	Y	0.0438	Y
FIELD	pH, Field	N	S.U.	7.7	Y	8.2	Y	8.3	Y	8.1	Y	8.2	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4500	Y	4810	Y	4780	Y	5010	Y	5060	Y	4780	Y
FIELD	Temperature, Field	N	DEG-C	9	Y	2.3	Y	1	Y	1.4	Y	1.8	Y	2.2	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y	8.3	Y	8.4	Y					8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N					0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	11	Y	6	Y					11	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM											4470	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L											3810	Y
SECONDARY	Iron	T	UG/L	110	Y	130	Y	340	Y					1370	Y

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SITE: NPDES Site 85, Pond E

			Date	1/15/2020		1/23/2020		1/27/2020		2/6/2020		3/18/2020		3/25/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0438	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y
FIELD	pH, Field	N	S.U.	7	Y	6.5	Y	6.7	Y	8.1	Y	7.9	Y	7.7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4870	Y	4480	Y	3700	Y	4250	Y	1130	Y	1700	Y
FIELD	Temperature, Field	N	DEG-C	2	Y	0.1	Y	1.5	Y	1	Y	4.4	Y	12.7	Y
PHYSICAL	pH, Lab	N	S.U.			7.8	Y	7.9	Y	7.9	Y	8.2	Y	8.1	Y
PHYSICAL	Solids, Settleable	N	ML/L			0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			28	Y	26	Y	27	Y	58	Y	31	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM												
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L												
SECONDARY	Iron	T	UG/L			8060	Y	5460	Y	7000	Y	1890	Y	1450	Y

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SITE: NPDES Site 85, Pond E

			Date	4/1/2020		4/8/2020		4/14/2020		4/22/2020		4/29/2020		5/6/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.001	Y	0.008	Y
FIELD	pH, Field	N	S.U.	7.9	Y	8	Y	8	Y	7.8	Y	7.8	Y	8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2620	Y	2920	Y	3000	Y	2720	Y	2820	Y	2820	Y
FIELD	Temperature, Field	N	DEG-C	14.2	Y	17.6	Y	6.3	Y	15.3	Y	15.5	Y	14.4	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y	8.3	Y	8.2	Y	8.3	Y	8.4	Y	8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	36	Y	12	Y	13	Y	12	Y	10	Y	11	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			3340	Y								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			2710	Y								
SECONDARY	Iron	T	UG/L	1420	Y	1230	Y	980	Y	1000	Y	1370	Y	620	Y

Table: 60
Twentymile Coal, LLC
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SITE: NPDES Site 85, Pond E

			Date	5/13/2020		5/20/2020		6/10/2020		9/30/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.001	Y	0.001	Y	0.008	Y	0.0009	Y
FIELD	pH, Field	N	S.U.	7.9	Y	7.9	Y	8	Y	7.7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2910	Y	2810	Y	3520	Y	5210	Y
FIELD	Temperature, Field	N	DEG-C	18	Y	15	Y	16.7	Y	11.9	Y
PHYSICAL	pH, Lab	N	S.U.	8.2	Y	8.2	Y	8.3	Y	8.3	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	6	Y	8	Y	15	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM							5440	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L							5300	Y
SECONDARY	Iron	T	UG/L	760	Y	820	Y	170	Y	300	N

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Twentymile Coal, LLC
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Site: NPDES Site 87, Pond F

			Date	4/8/2020		4/14/2020		4/22/2020		4/29/2020		5/6/2020		5/13/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.015	Y	0.011	Y	0.011	Y	0.011	Y	0.6751	Y	0.3798	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.1	Y	8	Y	8	Y	7.8	Y	7.9	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	1670	Y	1910	Y	1980	Y	1930	Y	3580	Y	3620	Y
FIELD	Temperature, Field	N	DEG-C	15.5	Y	9	Y	14.9	Y	18	Y	15	Y	16.2	Y
PHYSICAL	pH, Lab	N	S.U.			8.2	Y	8.3	Y			8.1	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	20	N	5	Y	5	Y	6	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			2140	Y								
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			1800	Y								
PRIMARY	Chromium	PD	MG/L	0.002	N									0.002	N
PRIMARY	Chromium-6	D	MG/L	0.02	N									0.02	N
PRIMARY	Lead	PD	MG/L	0.0005	N									0.0002	Y
PRIMARY	Mercury	T	UG/L			1	N								
PRIMARY	Selenium	PD	UG/L	1	Y									5.3	Y
SECONDARY	Arsenic	T	MG/L	0.0004	Y									0.001	N
SECONDARY	Copper	PD	UG/L			50	N								
SECONDARY	Iron	T	UG/L			130	Y								
SECONDARY	Iron	TR	UG/L			110	Y	130	Y			90	Y		
SECONDARY	Nickel	PD	UG/L	40	N									40	N
SECONDARY	Zinc	PD	UG/L	50	N									50	N

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Twentymile Coal, LLC
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Site: NPDES Site 87, Pond F

			Date	5/20/2020		5/27/2020		6/3/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS			0.0291	Y	0.0017	Y
FIELD	pH, Field	N	S.U.			8	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM			3740	Y	3850	Y
FIELD	Temperature, Field	N	DEG-C			19.5	Y	25	Y
PHYSICAL	pH, Lab	N	S.U.	8.2	Y			8.1	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	7	Y	5	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM						
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L						
PRIMARY	Chromium	PD	MG/L						
PRIMARY	Chromium-6	D	MG/L						
PRIMARY	Lead	PD	MG/L						
PRIMARY	Mercury	T	UG/L						
PRIMARY	Selenium	PD	UG/L						
SECONDARY	Arsenic	T	MG/L						
SECONDARY	Copper	PD	UG/L						
SECONDARY	Iron	T	UG/L						
SECONDARY	Iron	TR	UG/L	170	Y			590	Y
SECONDARY	Nickel	PD	UG/L						
SECONDARY	Zinc	PD	UG/L						

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Site: NPDES Site 55, Pond G

			Date	4/8/2020		4/14/2020		4/22/2020		4/29/2020		5/6/2020		5/13/2020	
Type	**Parameter**	**n**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.02	Y	0.01	Y	0.0292	Y	0.007	Y	0.007	Y	0.004	Y
FIELD	pH, Field	N	S.U.	8.3	Y	8.1	Y	8.1	Y	8.3	Y	8.2	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	530	Y	690	Y	630	Y	610	Y	770	Y	870	Y
FIELD	Temperature, Field	N	DEG-C	14.1	Y	7.6	Y	13.3	Y	17.9	Y	16.1	Y	12.9	Y
PHYSICAL	pH, Lab	N	S.U.	8.3	Y	8.2	Y	8.4	Y	8.5	Y	8.4	Y	8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	20	N	20	N	20	N	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	670	Y										
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	460	Y										
SECONDARY	Iron	T	UG/L	530	Y	330	Y	160	Y	70	Y	60	Y	70	Y

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Twentymile Coal, LLC
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Site: NPDES Site 55, Pond G

				Date	5/20/2020		5/27/2020		6/3/2020	
Type	**Parameter**	**n**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.002	Y	0.0033	Y	0.002	Y
FIELD	pH, Field	N	S.U.	8.2	Y	8.3	Y	8.2	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	890	Y	890	Y	920	Y
FIELD	Temperature, Field	N	DEG-C	15.8	Y	15.9	Y	16.8	Y
PHYSICAL	pH, Lab	N	S.U.	8.4	Y	8.3	Y	8.4	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	20	N
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM						
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L						
SECONDARY	Iron	T	UG/L	150	Y	130	Y	100	Y

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SITE: NPDES Site 115, Mine Discharge Datum: 6777.58

Site 115 did not discharge in 2020

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Twentymile Coal, LLC
2020 Annual Hydrology Report
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SITE: NPDES Site 62, Fish Creek Tipple

			Date	10/3/2019		10/9/2019		10/16/2019		10/23/2019		10/31/2019		11/7/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.013	Y	0.008	Y	0.013	Y	0.013	Y	0.013	Y	0.013	Y
FIELD	pH, Field	N	S.U.	7.7	Y	8.1	Y	7.5	Y	7.9	Y	7.6	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3960	Y	4200	Y	4160	Y	3860	Y	3610	Y	4280	Y
FIELD	Temperature, Field	N	DEG-C	12.2	Y	14.3	Y	11	Y	8.6	Y	12.2	Y	6.4	Y
PHYSICAL	pH, Lab	N	S.U.	8.2	Y			8.2	Y					8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N					0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	20	N					5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4030	Y	4010	Y	3940	Y					4020	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3980	Y	4040	Y	4020	Y					3860	Y
PRIMARY	Chromium	PD	MG/L			0.01	N								
PRIMARY	Lead	PD	MG/L			0.003	N								
PRIMARY	Mercury	T	UG/L			1	N								
PRIMARY	Selenium	PD	UG/L			1	N								
SECONDARY	Arsenic	T	MG/L			0.005	N								
SECONDARY	Copper	PD	UG/L			10	N								
SECONDARY	Iron	TR	UG/L	90	Y	200	N	100	Y					170	Y
SECONDARY	Manganese	PD	UG/L			300	N								
SECONDARY	Nickel	PD	UG/L			200	N								
SECONDARY	Silver	PD	UG/L			3	N								
SECONDARY	Zinc	PD	UG/L			300	N								

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	11/13/2019		11/14/2019		11/19/2019		11/25/2019		12/5/2019		12/11/2019	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0277	Y	0.0196	Y	0.013	Y	0.028	Y	0.161	Y	0.013	Y
FIELD	pH, Field	N	S.U.	7.5	Y	8	Y	7.7	Y	7.1	Y	7.6	Y	7.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4560	Y	4220	Y	4280	Y	4400	Y	4210	Y	4390	Y
FIELD	Temperature, Field	N	DEG-C	5.2	Y	10.5	Y	6.1	Y	3.6	Y	6	Y	1.9	Y
PHYSICAL	pH, Lab	N	S.U.					8.2	Y			8.1	Y		
PHYSICAL	Solids, Settleable	N	ML/L			0.5	N	0.5	N			0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			20	N	20	N			20	N	5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			4030	Y	3950	Y			3940	Y	3970	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			3910	Y	3990	Y			3970	Y	3890	Y
PRIMARY	Chromium	PD	MG/L			0.004	N							0.004	N
PRIMARY	Lead	PD	MG/L			0.001	N							0.001	N
PRIMARY	Mercury	T	UG/L			1	N							1	N
PRIMARY	Selenium	PD	UG/L			0.3	Y							2.3	Y
SECONDARY	Arsenic	T	MG/L			0.002	N							0.002	N
SECONDARY	Copper	PD	UG/L			4	N							4	N
SECONDARY	Iron	TR	UG/L			110	Y	120	Y			140	Y	270	Y
SECONDARY	Manganese	PD	UG/L			210	Y							160	Y
SECONDARY	Nickel	PD	UG/L			80	N							80	N
SECONDARY	Silver	PD	UG/L			1	N							1	N
SECONDARY	Zinc	PD	UG/L			100	N							100	N

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	12/18/2019		12/23/2019		1/3/2020		1/8/2020		1/15/2020		1/23/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0085	Y	0.0085	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y
FIELD	pH, Field	N	S.U.	7.4	Y	7.6	Y	7.8	Y	7.5	Y	7	Y	7.6	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4450	Y	4210	Y	4280	Y	4450	Y	4240	Y	3950	Y
FIELD	Temperature, Field	N	DEG-C	1.3	Y	2.4	Y	2.4	Y	1.6	Y	2	Y	5	Y
PHYSICAL	pH, Lab	N	S.U.	8.2	Y									8.1	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N					0.5	N			0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	5	Y					20	N			5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4060	Y					3960	Y			3840	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3960	Y					3880	Y			3830	Y
PRIMARY	Chromium	PD	MG/L							0.004	N				
PRIMARY	Lead	PD	MG/L							0.001	N				
PRIMARY	Mercury	T	UG/L							1	N				
PRIMARY	Selenium	PD	UG/L							3.5	Y				
SECONDARY	Arsenic	T	MG/L							0.0007	Y				
SECONDARY	Copper	PD	UG/L							4	N				
SECONDARY	Iron	TR	UG/L	430	Y					440	Y			750	Y
SECONDARY	Manganese	PD	UG/L							330	Y				
SECONDARY	Nickel	PD	UG/L							40	N				
SECONDARY	Silver	PD	UG/L							1	N				
SECONDARY	Zinc	PD	UG/L							50	N				

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	1/30/2020		2/6/2020		2/13/2020		2/20/2020		2/26/2020		3/5/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y
FIELD	pH, Field	N	S.U.	8	Y	8.5	Y	8.2	Y	7.8	Y	8	Y	7.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4140	Y	3850	Y			3240	Y	3760	Y	3560	Y
FIELD	Temperature, Field	N	DEG-C	3.7	Y	4	Y			2.1	Y	2.9	Y	3.6	Y
PHYSICAL	pH, Lab	N	S.U.			8.1	Y			8.1	Y			8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L			0.5	N			0.5	N			0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			20	N			20	N			5	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			3840	Y			3810	Y			3900	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			3750	Y			3740	Y			3840	Y
PRIMARY	Chromium	PD	MG/L												
PRIMARY	Lead	PD	MG/L												
PRIMARY	Mercury	T	UG/L												
PRIMARY	Selenium	PD	UG/L												
SECONDARY	Arsenic	T	MG/L												
SECONDARY	Copper	PD	UG/L												
SECONDARY	Iron	TR	UG/L			450	Y			470	Y			510	Y
SECONDARY	Manganese	PD	UG/L												
SECONDARY	Nickel	PD	UG/L												
SECONDARY	Silver	PD	UG/L												
SECONDARY	Zinc	PD	UG/L												

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	3/11/2020		3/18/2020		3/23/2020		3/25/2020		4/1/2020		4/8/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.008	Y	0.1651	Y
FIELD	pH, Field	N	S.U.	7.8	Y	7.7	Y	7.8	Y	7.9	Y	7.7	Y	7.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	2970	Y	2930	Y	2620	Y	2540	Y	2390	Y	1660	Y
FIELD	Temperature, Field	N	DEG-C	6.9	Y	5.6	Y	8	Y	8.7	Y	10	Y	15.2	Y
PHYSICAL	pH, Lab	N	S.U.			8.2	Y					8.2	Y	8.2	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N					0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N					20	N	7	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3620	Y	3380	Y					3030	Y	2060	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3480	Y	3160	Y					2800	Y	1780	Y
PRIMARY	Chromium	PD	MG/L	0.002	N										
PRIMARY	Lead	PD	MG/L	0.0005	N										
PRIMARY	Mercury	T	UG/L	1	N										
PRIMARY	Selenium	PD	UG/L	0.3	Y										
SECONDARY	Arsenic	T	MG/L	0.001	N										
SECONDARY	Copper	PD	UG/L	2	N										
SECONDARY	Iron	TR	UG/L	440	Y	350	Y					500	Y	560	Y
SECONDARY	Manganese	PD	UG/L	180	Y										
SECONDARY	Nickel	PD	UG/L	10	Y										
SECONDARY	Silver	PD	UG/L	0.5	N										
SECONDARY	Zinc	PD	UG/L	50	N										

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	4/14/2020		4/22/2020		4/28/2020		5/6/2020		5/13/2020		5/20/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0766	Y	0.153	Y	0.121	Y	0.1776	Y	0.0766	Y	0.0292	Y
FIELD	pH, Field	N	S.U.	7.6	Y	7.6	Y	7.5	Y	7.7	Y	7.5	Y	7.5	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3320	Y	3300	Y	3250	Y	3420	Y	3510	Y	3480	Y
FIELD	Temperature, Field	N	DEG-C	6.7	Y	13.4	Y	14.3	Y	13	Y	11.8	Y	16.8	Y
PHYSICAL	pH, Lab	N	S.U.							8.1	Y			8.1	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N					0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N					20	N	7	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	3640	Y					3820	Y	3900	Y	3870	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	3550	Y					3910	Y	3950	Y	4000	Y
PRIMARY	Chromium	PD	MG/L	0.002	N							0.002	N		
PRIMARY	Lead	PD	MG/L	0.0005	N							0.0005	N		
PRIMARY	Mercury	T	UG/L	1	N							1	N		
PRIMARY	Selenium	PD	UG/L	0.4	Y							0.1	Y		
SECONDARY	Arsenic	T	MG/L	0.0003	Y							0.002	N		
SECONDARY	Copper	PD	UG/L	2	N							2	N		
SECONDARY	Iron	TR	UG/L	390	Y					300	Y	300	Y	300	Y
SECONDARY	Manganese	PD	UG/L	380	Y							170	Y		
SECONDARY	Nickel	PD	UG/L	40	N							40	N		
SECONDARY	Silver	PD	UG/L	0.5	N							0.5	N		
SECONDARY	Zinc	PD	UG/L	50	N							50	N		

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	5/27/2020		6/3/2020		6/10/2020		6/17/2020		6/24/2020		7/1/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.11	Y	0.0292	Y	0.0292	Y	0.0292	Y	0.0292	Y	0.0292	Y
FIELD	pH, Field	N	S.U.	7.4	Y	7.4	Y	7.5	Y	7.7	Y	7.4	Y	7.7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3370	Y	3500	Y	3450	Y	3580	Y	3380	Y	3350	Y
FIELD	Temperature, Field	N	DEG-C	14.4	Y	15.6	Y	12.9	Y	16.4	Y	19.8	Y	24.2	Y
PHYSICAL	pH, Lab	N	S.U.			8.1	Y			8.2	Y			8.1	Y
PHYSICAL	Solids, Settleable	N	ML/L			0.5	N	0.5	N	0.5	N			0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L			5	Y	7	Y	8	Y			8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM			3910	Y	4010	Y	3960	Y			3980	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L			4020	Y	4020	Y	4070	Y			4140	Y
PRIMARY	Chromium	PD	MG/L					0.002	N						
PRIMARY	Lead	PD	MG/L					0.0005	N						
PRIMARY	Mercury	T	UG/L					1	N						
PRIMARY	Selenium	PD	UG/L					0.3	N						
SECONDARY	Arsenic	T	MG/L					0.005	N						
SECONDARY	Copper	PD	UG/L					2	N						
SECONDARY	Iron	TR	UG/L			500	Y	300	Y	800	N			800	N
SECONDARY	Manganese	PD	UG/L					150	Y						
SECONDARY	Nickel	PD	UG/L					40	N						
SECONDARY	Silver	PD	UG/L					0.5	N						
SECONDARY	Zinc	PD	UG/L					100	N						

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Water Year Monitoring Data

SITE: NPDES Site 62, Fish Creek Tipple

			Date	7/8/2020		7/15/2020		7/22/2020		7/27/2020		8/5/2020		8/12/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0292	Y	0.0292	Y	0.0292	Y	0.013	Y	0.0292	Y	0.0292	Y
FIELD	pH, Field	N	S.U.	7.7	Y	7.7	Y	7.5	Y	7.6	Y	7.5	Y	7.6	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3740	Y	3280	Y	3570	Y	3370	Y	3580	Y	3700	Y
FIELD	Temperature, Field	N	DEG-C	21.8	Y	20.1	Y	20.3	Y	26.5	Y	17.7	Y	14.3	Y
PHYSICAL	pH, Lab	N	S.U.			8.2	Y					8.2	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N					0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	7	Y	6	Y					9	Y	8	Y
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4070	Y	4010	Y					4080	Y	4090	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4310	Y	4170	Y					4180	Y	4160	Y
PRIMARY	Chromium	PD	MG/L	0.01	N									0.002	N
PRIMARY	Lead	PD	MG/L	0.003	N									0.0005	N
PRIMARY	Mercury	T	UG/L	1	N									1	N
PRIMARY	Selenium	PD	UG/L	1	N									0.3	Y
SECONDARY	Arsenic	T	MG/L	0.005	N									0.0003	Y
SECONDARY	Copper	PD	UG/L	10	N									2	N
SECONDARY	Iron	TR	UG/L	800	N	318	Y					400	Y	360	Y
SECONDARY	Manganese	PD	UG/L	120	Y									180	Y
SECONDARY	Nickel	PD	UG/L	200	N									40	N
SECONDARY	Silver	PD	UG/L	3	N									0.5	N
SECONDARY	Zinc	PD	UG/L	300	N									50	N

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Water Year Monitoring Data

SITE: NPDES Site 62, Fish Creek Tipple

			Date	8/19/2020		8/26/2020		9/2/2020		9/9/2020		9/16/2020		9/23/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0292	Y	0.0292	Y	0.0292	Y	0.0292	Y	0.0292	Y	0.0292	Y
FIELD	pH, Field	N	S.U.	7.5	Y	7.2	Y	7.6	Y	7.7	Y	7.5	Y	7.6	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	3530	Y	3510	Y	3630	Y	3990	Y	4080	Y	3630	Y
FIELD	Temperature, Field	N	DEG-C	17	Y	17.3	Y	19	Y	15.3	Y	14.5	Y	21.9	Y
PHYSICAL	pH, Lab	N	S.U.	8.2	Y			8.1	Y			8.1	Y		
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N			0.5	N	0.5	N	0.5	N		
PHYSICAL	Solids, Total Suspended	N	MG/L	9	Y			9	Y	10	Y	8	Y		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM	4100	Y			4090	Y	4100	Y	4090	Y		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	4270	Y			4140	Y	4110	Y	4010	Y		
PRIMARY	Chromium	PD	MG/L							0.002	N				
PRIMARY	Lead	PD	MG/L							0.0001	Y				
PRIMARY	Mercury	T	UG/L							1	N				
PRIMARY	Selenium	PD	UG/L							0.3	N				
SECONDARY	Arsenic	T	MG/L							0.0003	Y				
SECONDARY	Copper	PD	UG/L							2	N				
SECONDARY	Iron	TR	UG/L	215	Y			300	Y	340	Y	300	Y		
SECONDARY	Manganese	PD	UG/L							130	Y				
SECONDARY	Nickel	PD	UG/L							40	N				
SECONDARY	Silver	PD	UG/L							0.5	N				
SECONDARY	Zinc	PD	UG/L							50	N				

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SITE: NPDES Site 62, Fish Creek Tipple

			Date	9/30/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.0292	Y
FIELD	pH, Field	N	S.U.	7.7	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	4800	Y
FIELD	Temperature, Field	N	DEG-C	10.7	Y
PHYSICAL	pH, Lab	N	S.U.		
PHYSICAL	Solids, Settleable	N	ML/L		
PHYSICAL	Solids, Total Suspended	N	MG/L		
PHYSICAL	Specific Conductivity, Lab	N	UMHOS/CM		
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L		
PRIMARY	Chromium	PD	MG/L		
PRIMARY	Lead	PD	MG/L		
PRIMARY	Mercury	T	UG/L		
PRIMARY	Selenium	PD	UG/L		
SECONDARY	Arsenic	T	MG/L		
SECONDARY	Copper	PD	UG/L		
SECONDARY	Iron	TR	UG/L		
SECONDARY	Manganese	PD	UG/L		
SECONDARY	Nickel	PD	UG/L		
SECONDARY	Silver	PD	UG/L		
SECONDARY	Zinc	PD	UG/L		

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Site: 6MN

			Date	4/14/2020		4/22/2020		4/29/2020		5/6/2020	
Type	**Parameter**	**Fraction**	**Units**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**	**Result**	**Detect**
FIELD	Flow	N	CFS	0.01	Y	0.01	Y	0.004	Y	0.004	Y
FIELD	pH, Field	N	S.U.	8.7	Y	8.8	Y	8.8	Y	8.8	Y
FIELD	Specific Conductivity, Field	N	UMHOS/CM	730	Y	1060	Y	1180	Y	1470	Y
FIELD	Temperature, Field	N	DEG-C	4.6	Y	15	Y	20.2	Y	19.2	Y
PHYSICAL	pH, Lab	N	S.U.	8.7	Y	8.8	Y	8.9	Y	8.9	Y
PHYSICAL	Solids, Settleable	N	ML/L	0.5	N	0.5	N	0.5	N	0.5	N
PHYSICAL	Solids, Total Suspended	N	MG/L	20	N	20	N	20	N	7	Y
PHYSICAL	Total Dissolved Solids, Lab	N	MG/L	574	Y	796	Y	1010	Y	1190	Y

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SITE: NPDES 18LT

Site 18LT did not discharge in 2020

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37. Well 008-AV-2, Foidel Creek Alluvium, Period of Record Water Level Data
38. Well 008-AV-2, Foidel Creek Alluvium, Period of Record Field Conductivity Data
39. Well 008-AV-1, Foidel Creek Alluvium, Period of Record Water Level Data
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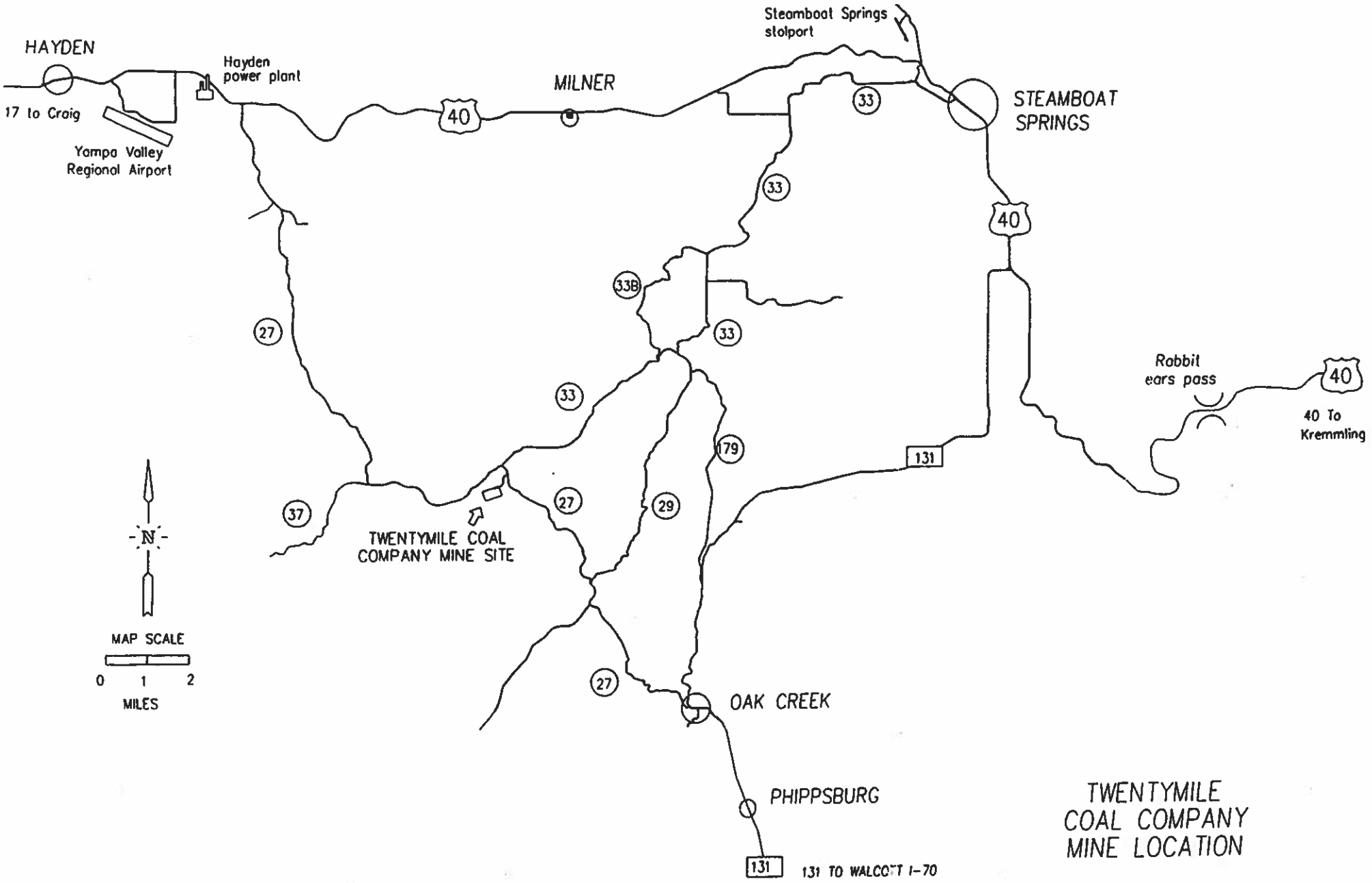
HAYDEN
17 to Craig
Yampa Valley
Regional Airport
Hayden
power plant
MILNER
40
Steamboat Springs
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79
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37
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TWENTYMILE COAL
COMPANY MINE SITE
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27
OAK CREEK
PHIPPSBURG
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131 TO WALCOTT I-70
TWENTYMILE
COAL COMPANY
MINE LOCATION
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Well 009-79-4, Wadge Overburden

Period of Record Water Level Data

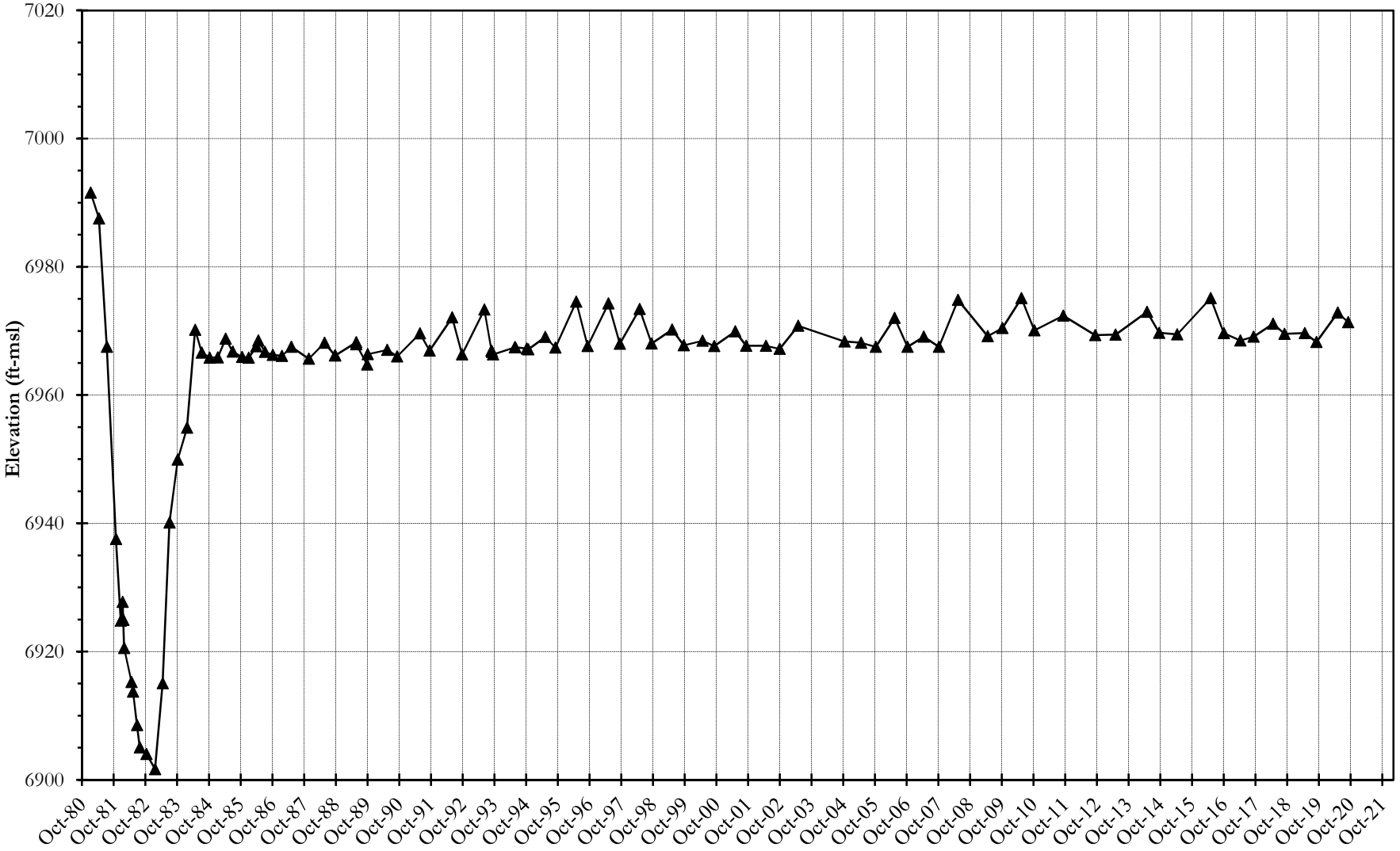

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FIGURE 3

Well 009-79-4, Wadge Overburden

Period of Record TDS Data

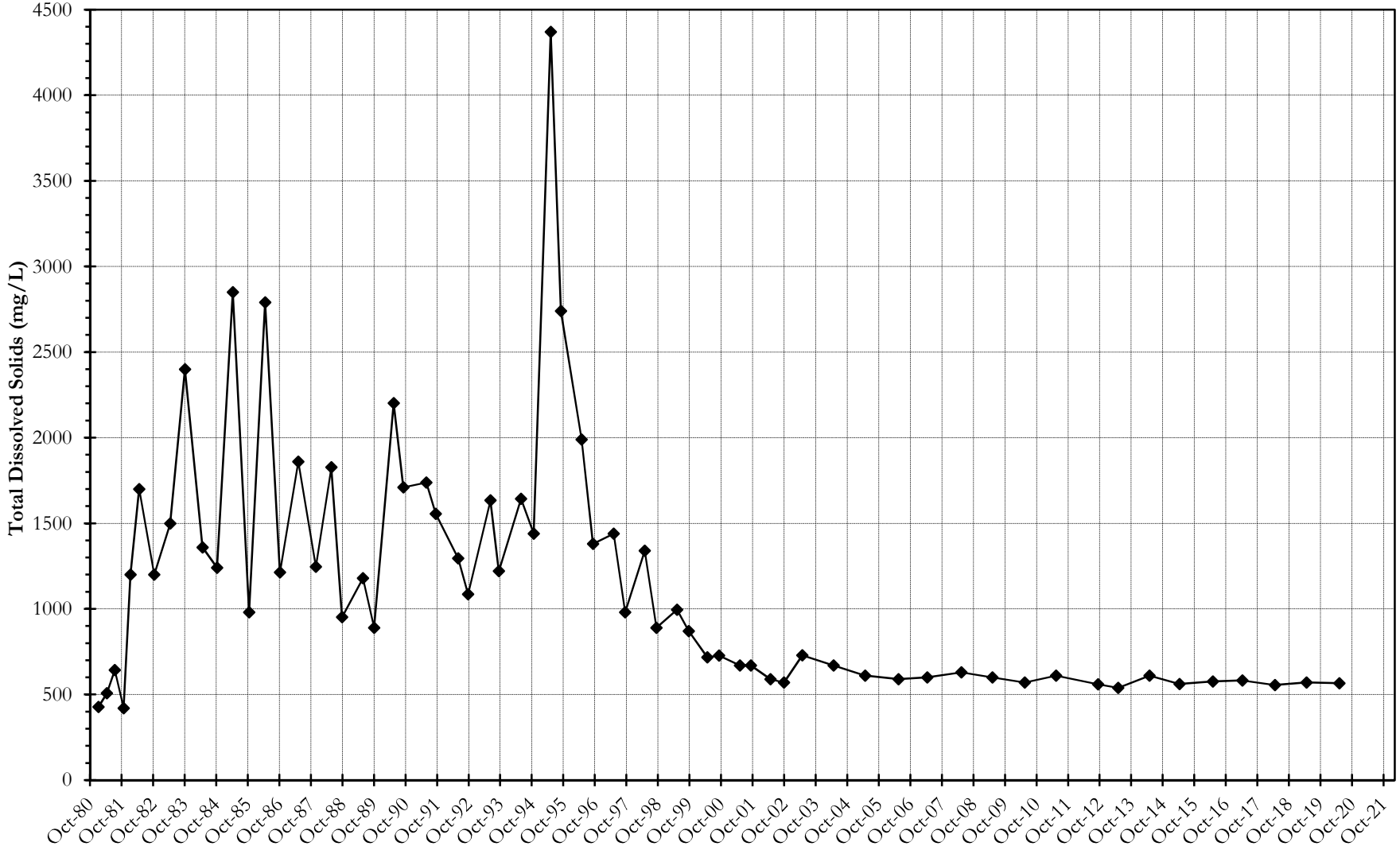

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FIGURE 4

Well 006-82-74C, Wadge Overburden

Period of Record Water Level Data

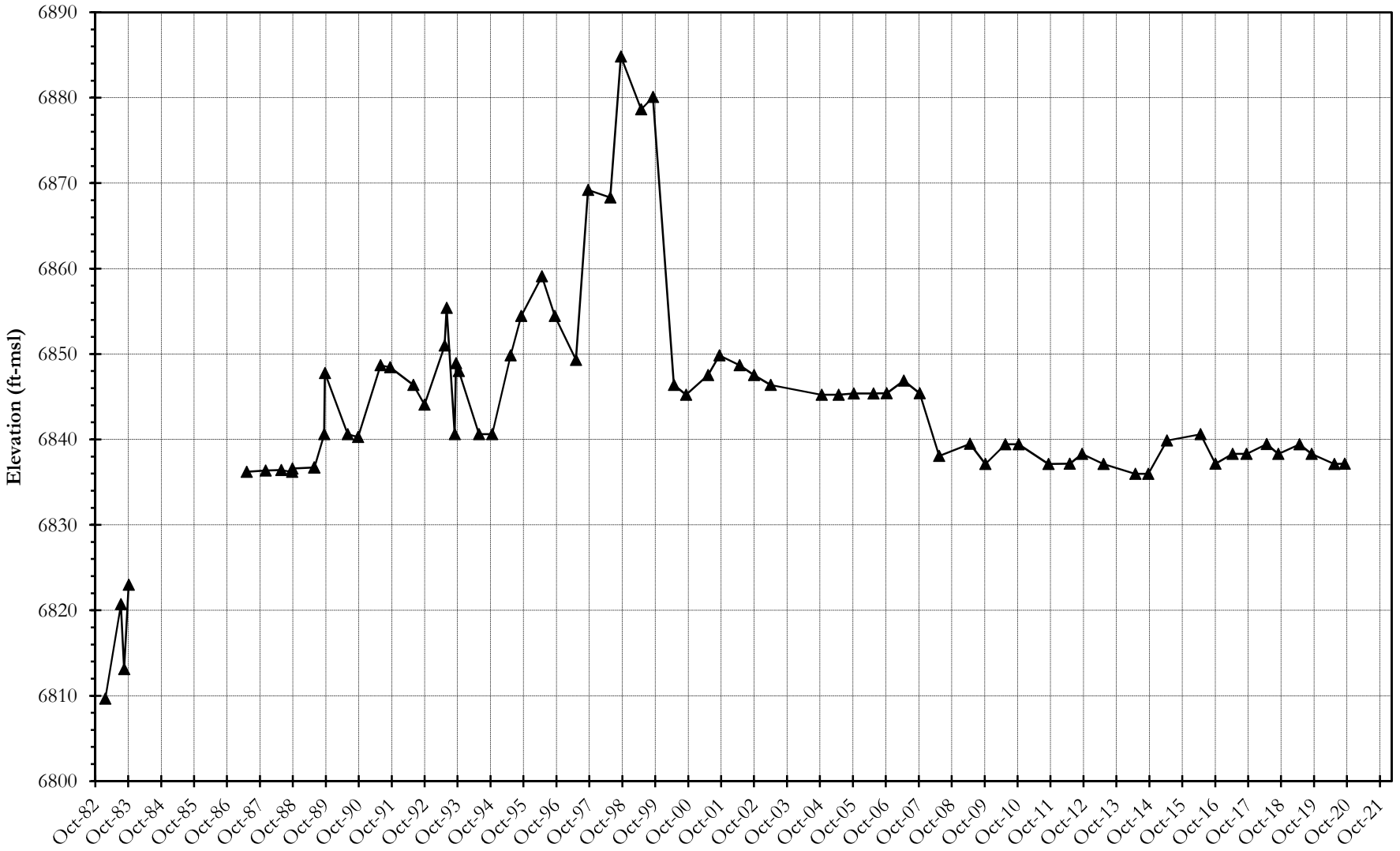

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FIGURE 5

Well 006-82-74C, Wadge Overburden

Period of Record TDS Data

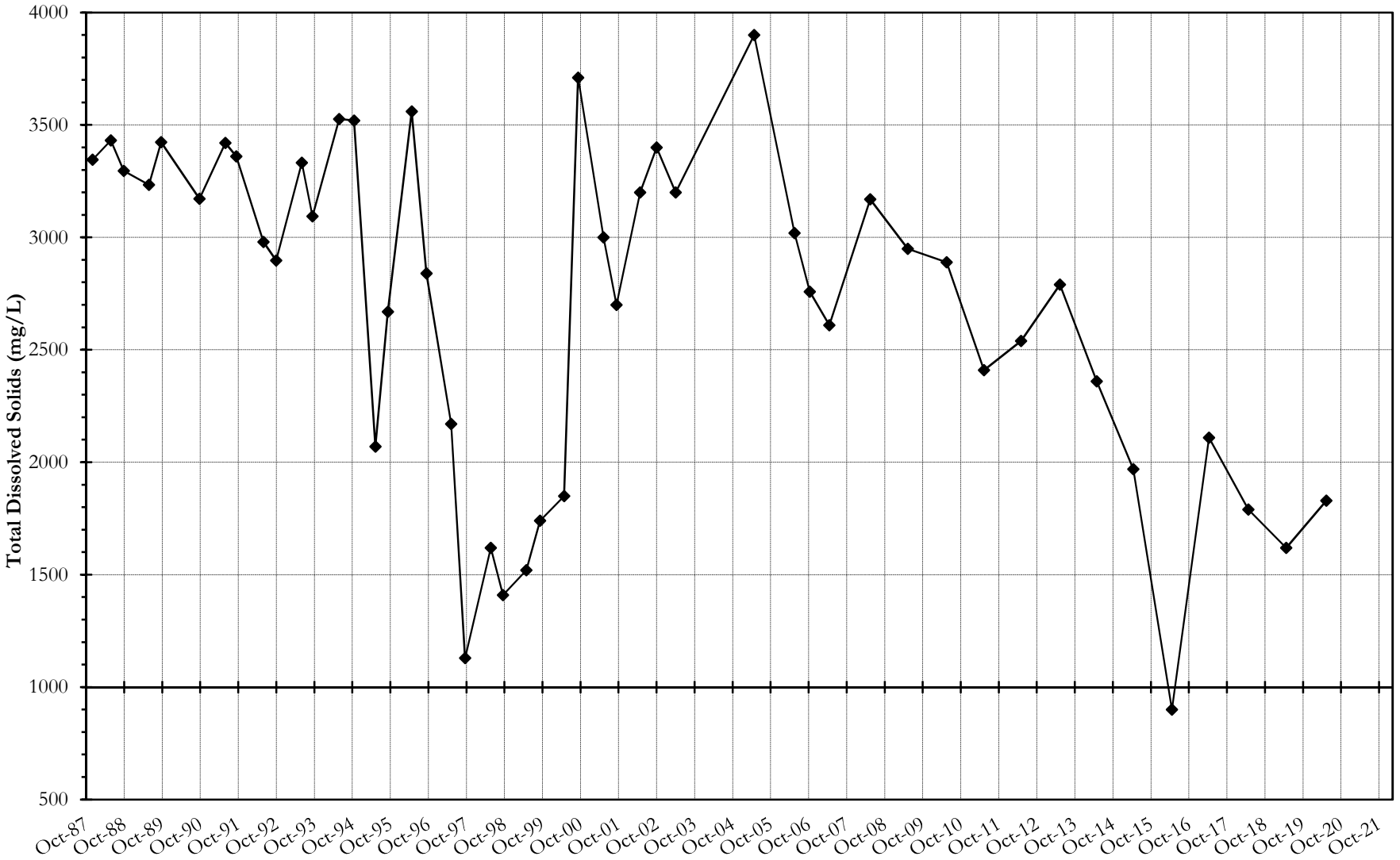

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FIGURE 6

Well 006-87-01 and Well 91M006, Wadge Overburden

Period of Record Water Level Data

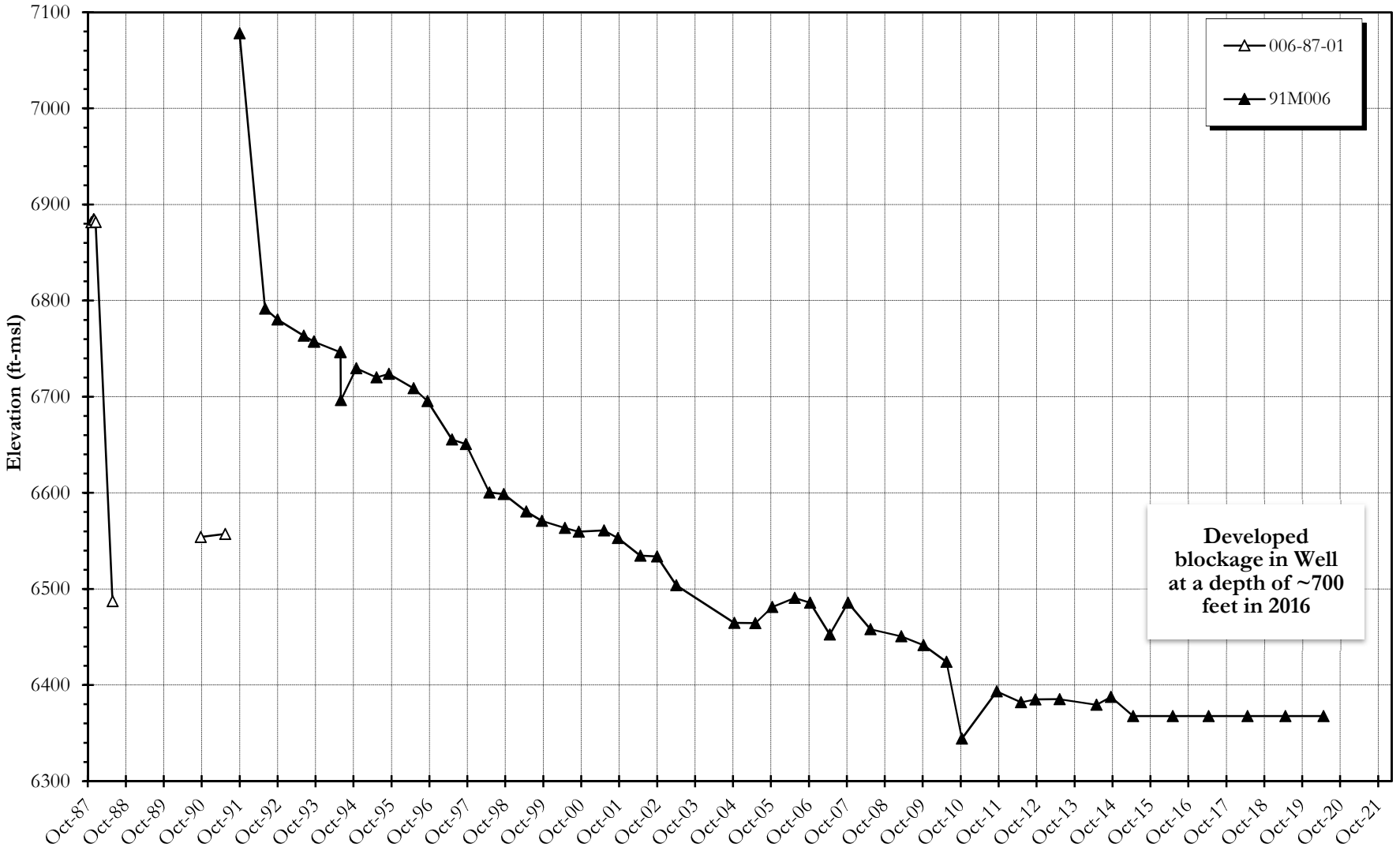

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FIGURE 7

Well 008-77-58, Wadge Overburden

Period of Record Water Level Data

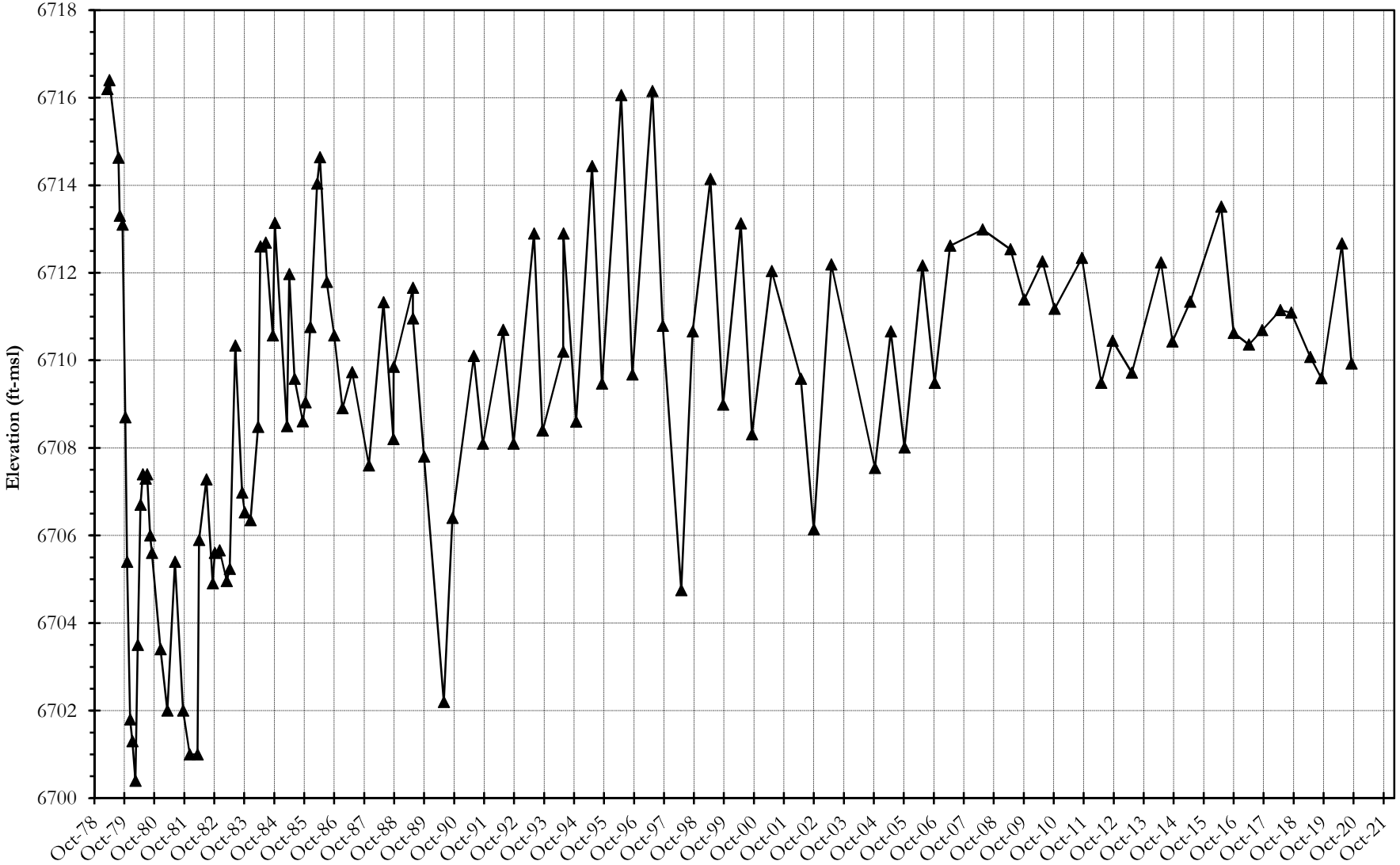

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FIGURE 8

Well 008-77-58, Wadge Overburden
Period of Record TDS Data

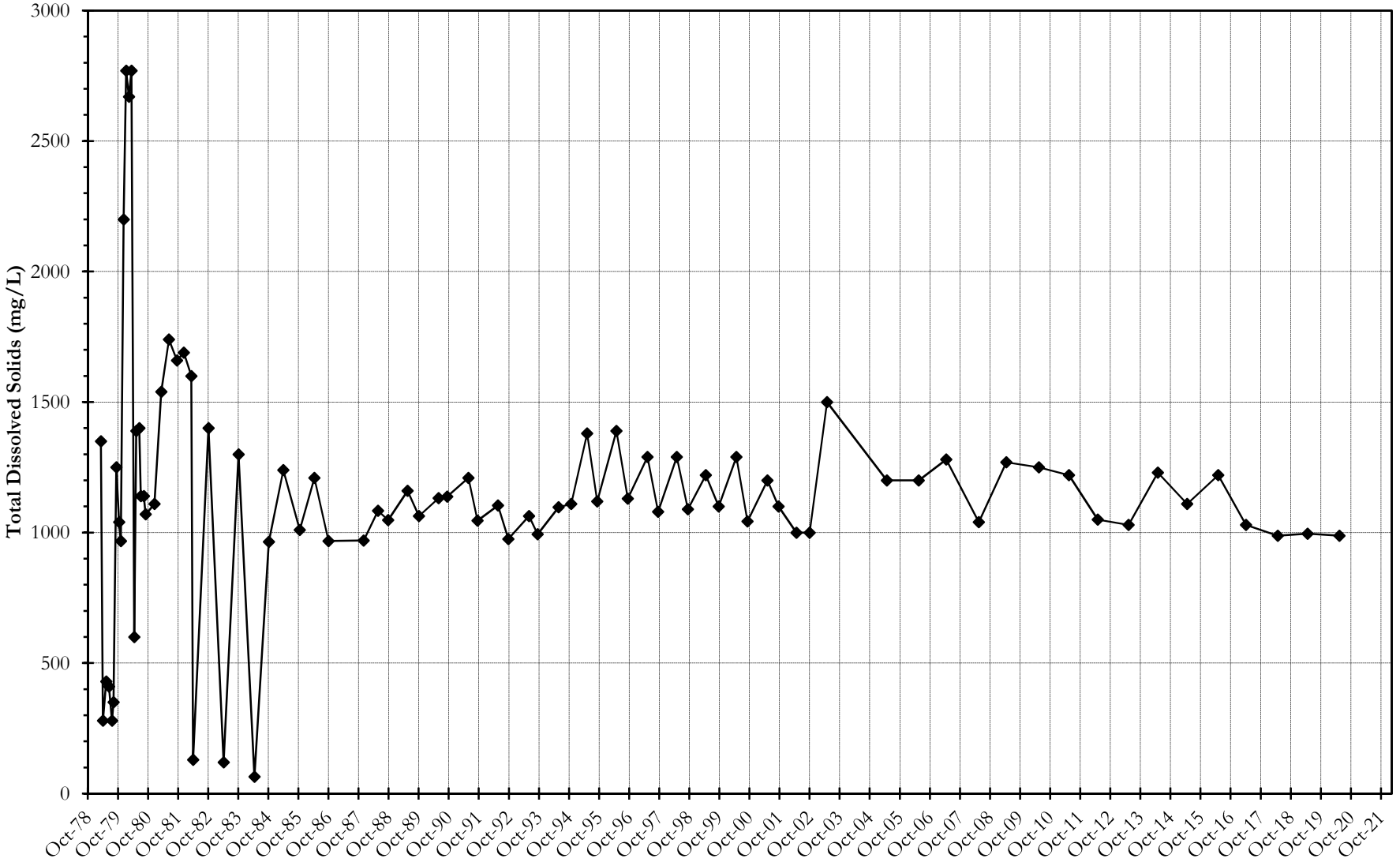

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FIGURE 9

Well 93M001, Wadge Overburden

Period of Record Water Level Data

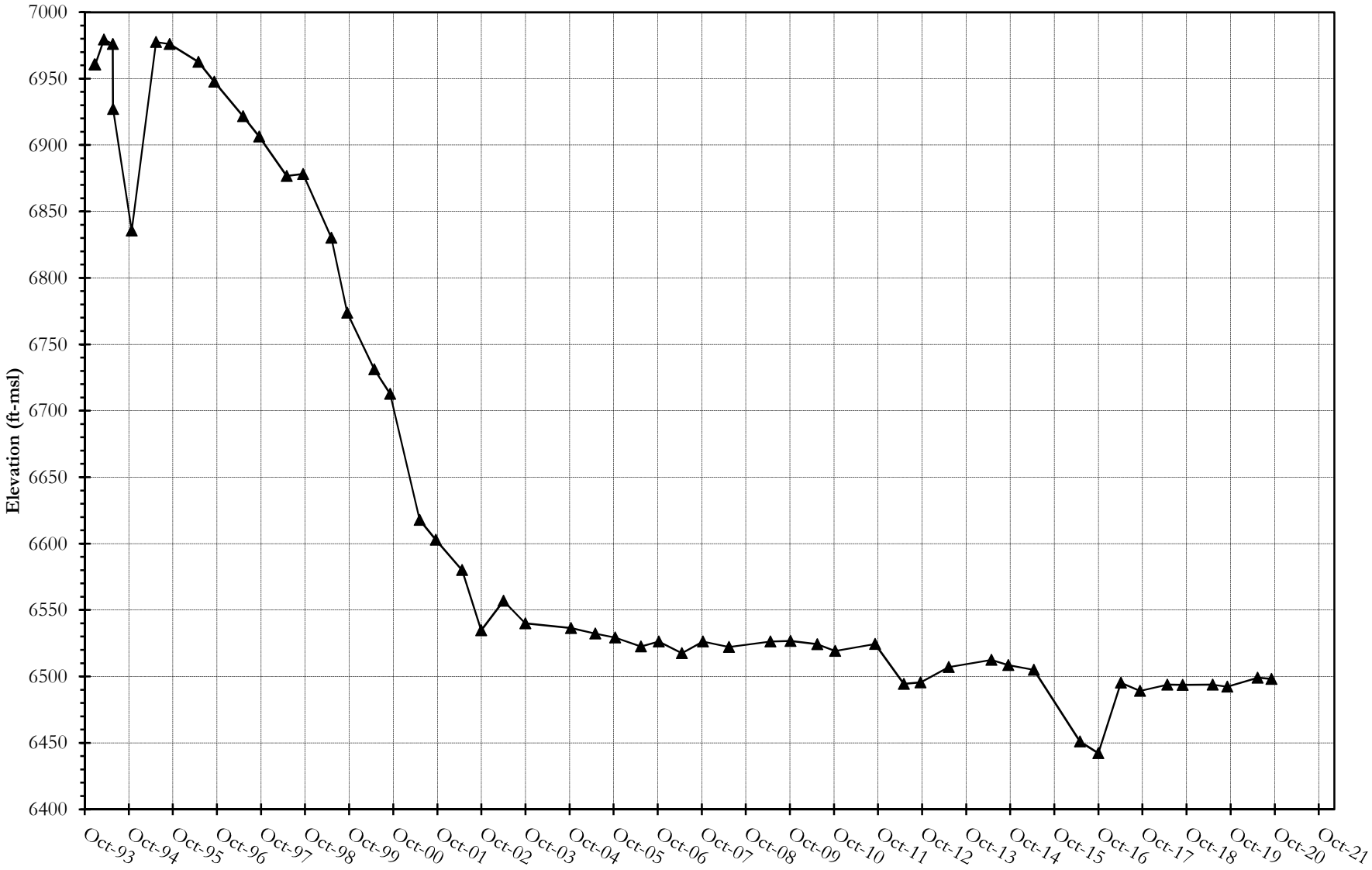

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FIGURE 10

Well 93M001, Wadge Overburden

Period of Record TDS Data

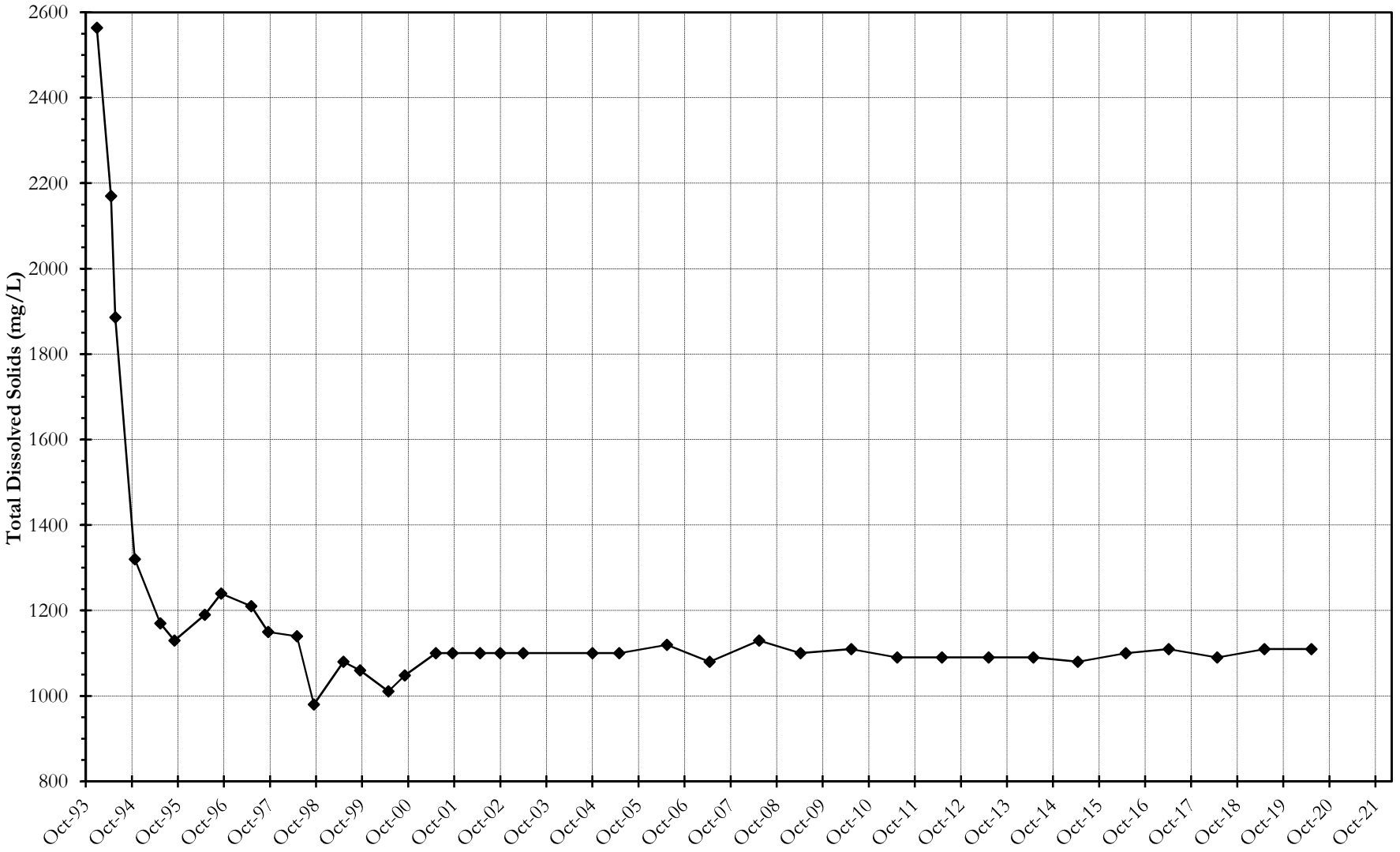

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FIGURE 11

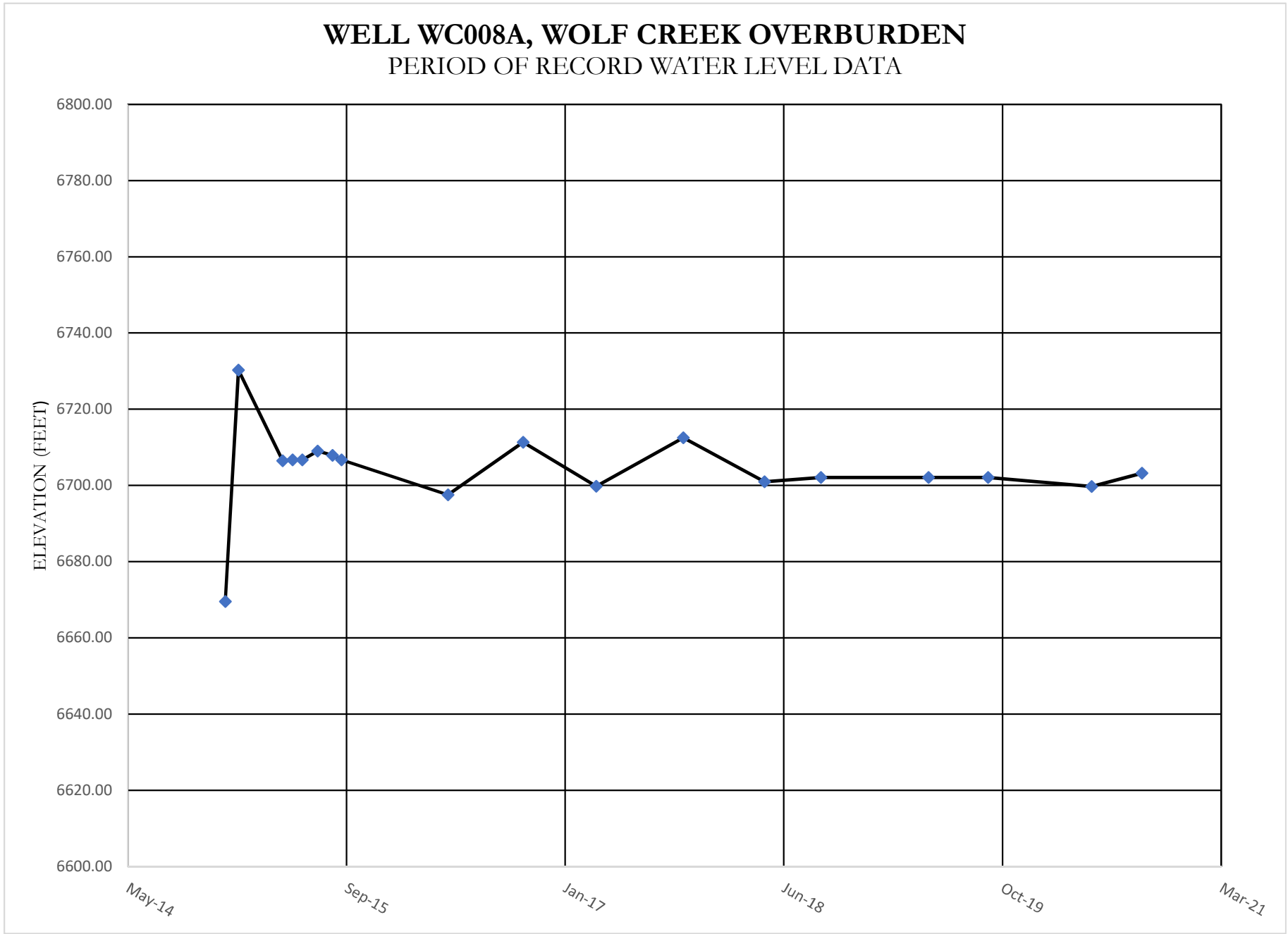

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FIGURE 12

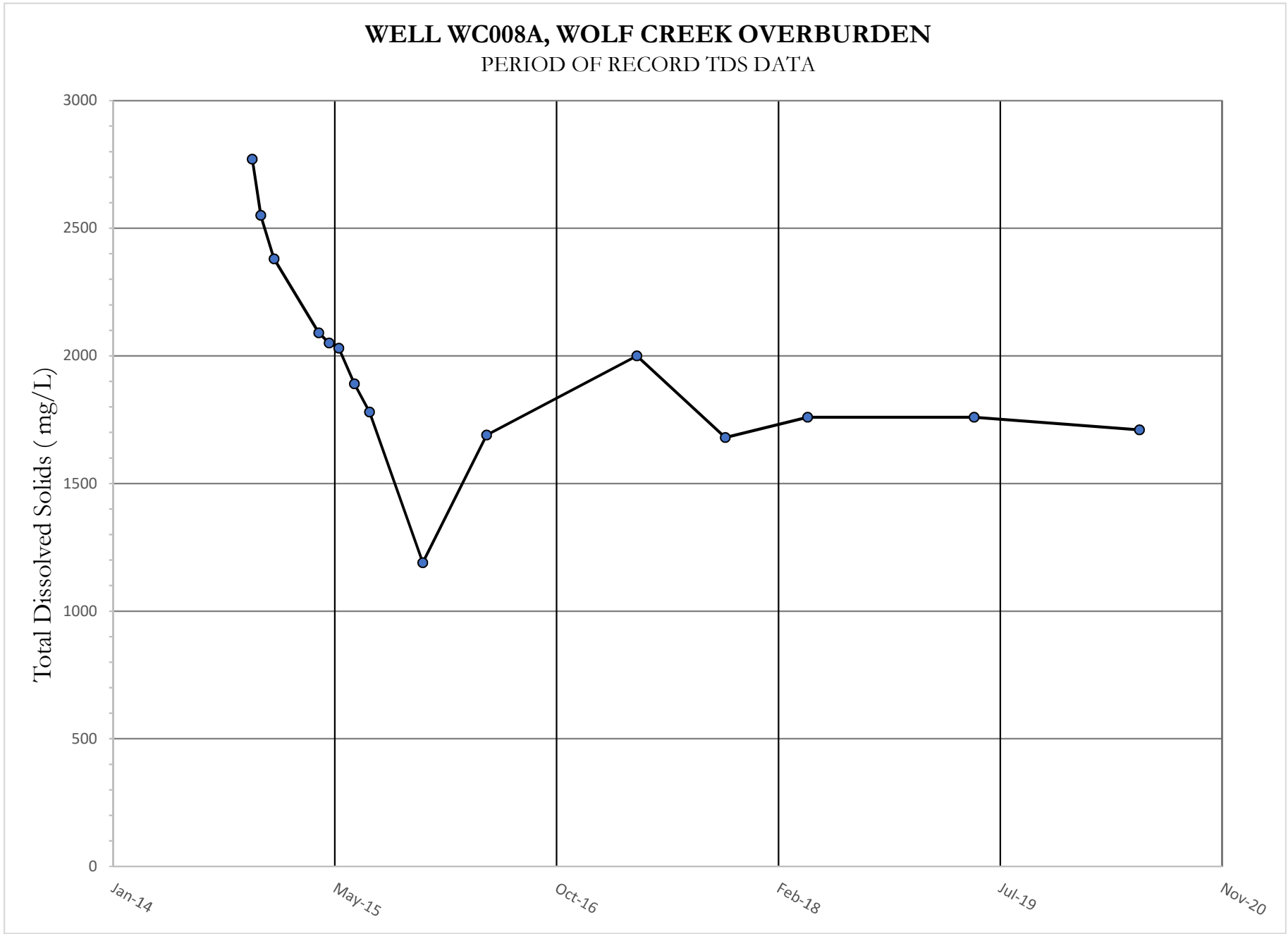

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FIGURE 13

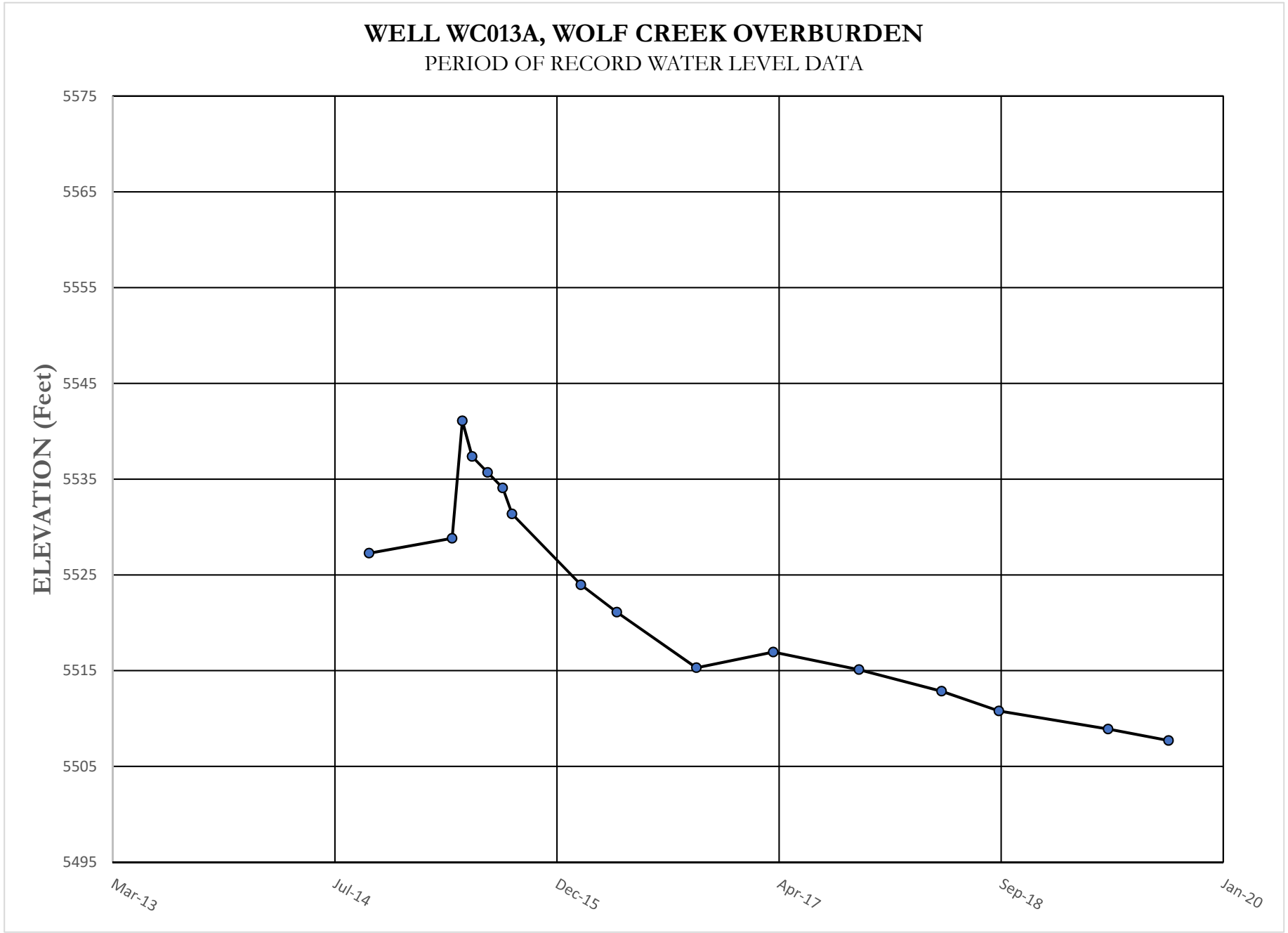

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FIGURE 14

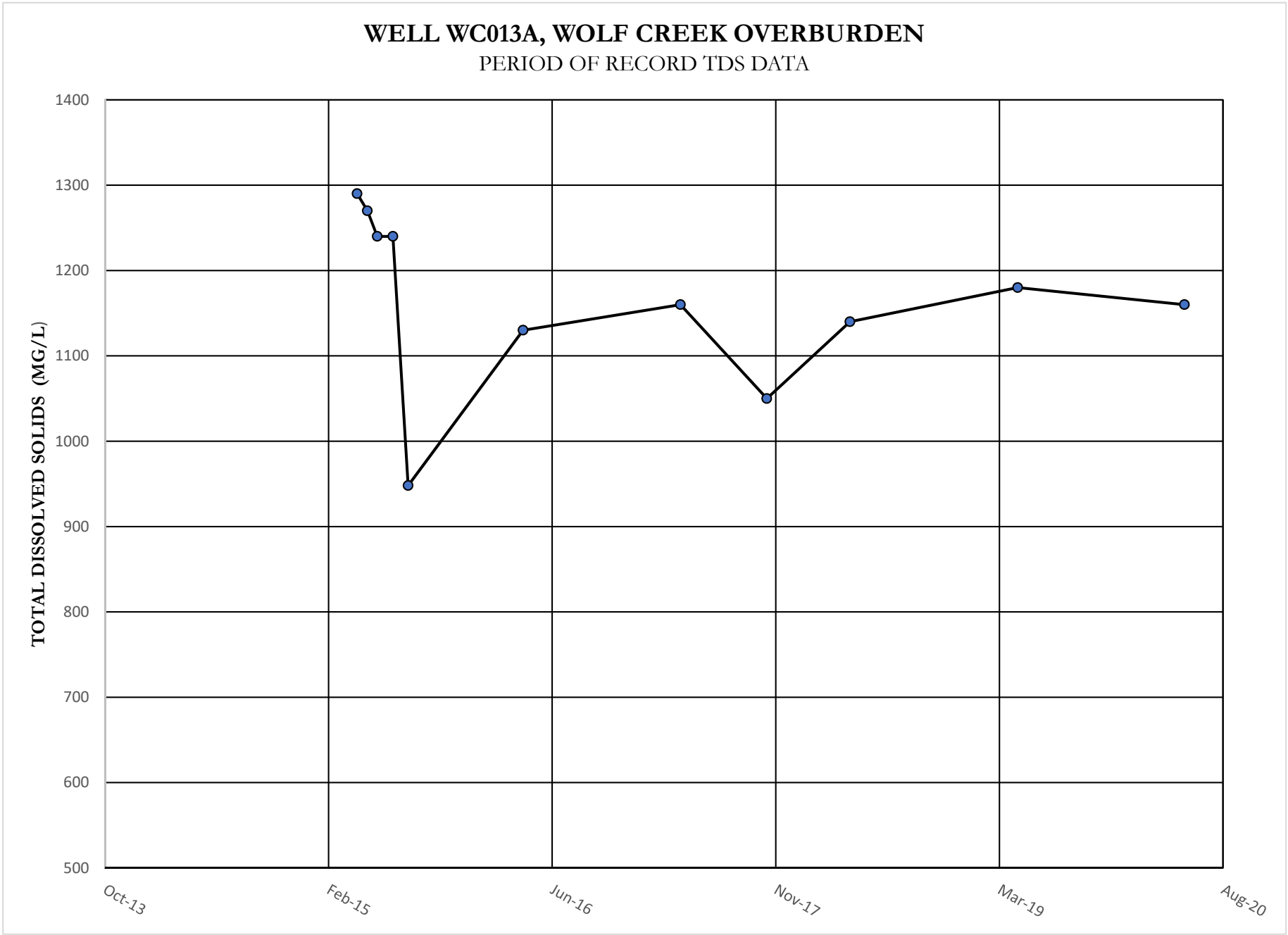

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FIGURE 15

Well 006-BRDH-7, Twentymile Sandstone

Period of Record Water Level Data

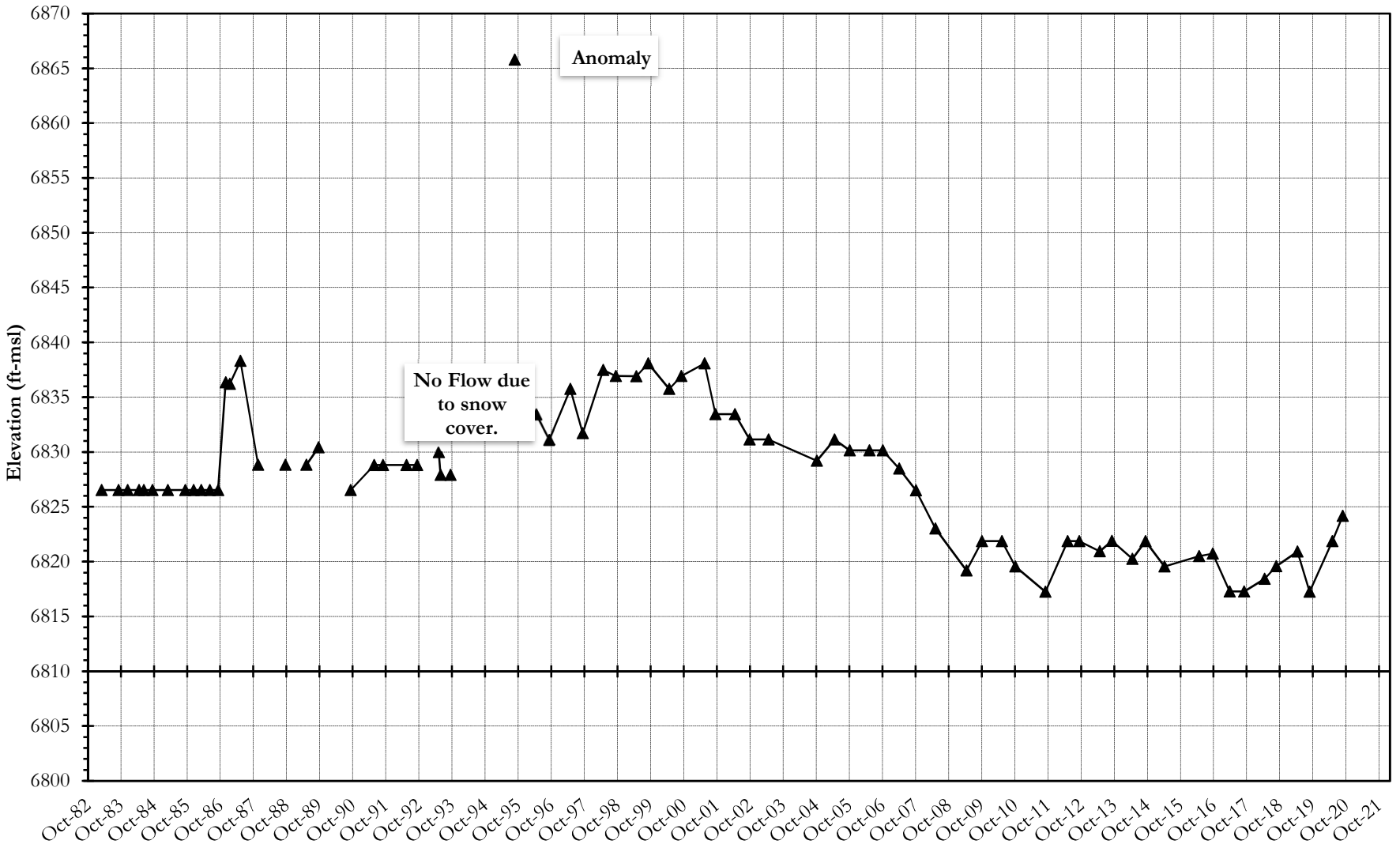

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FIGURE 16

Well 006-BRDH-7, Twentymile Sandstone

Period of Record Field Conductivity Data

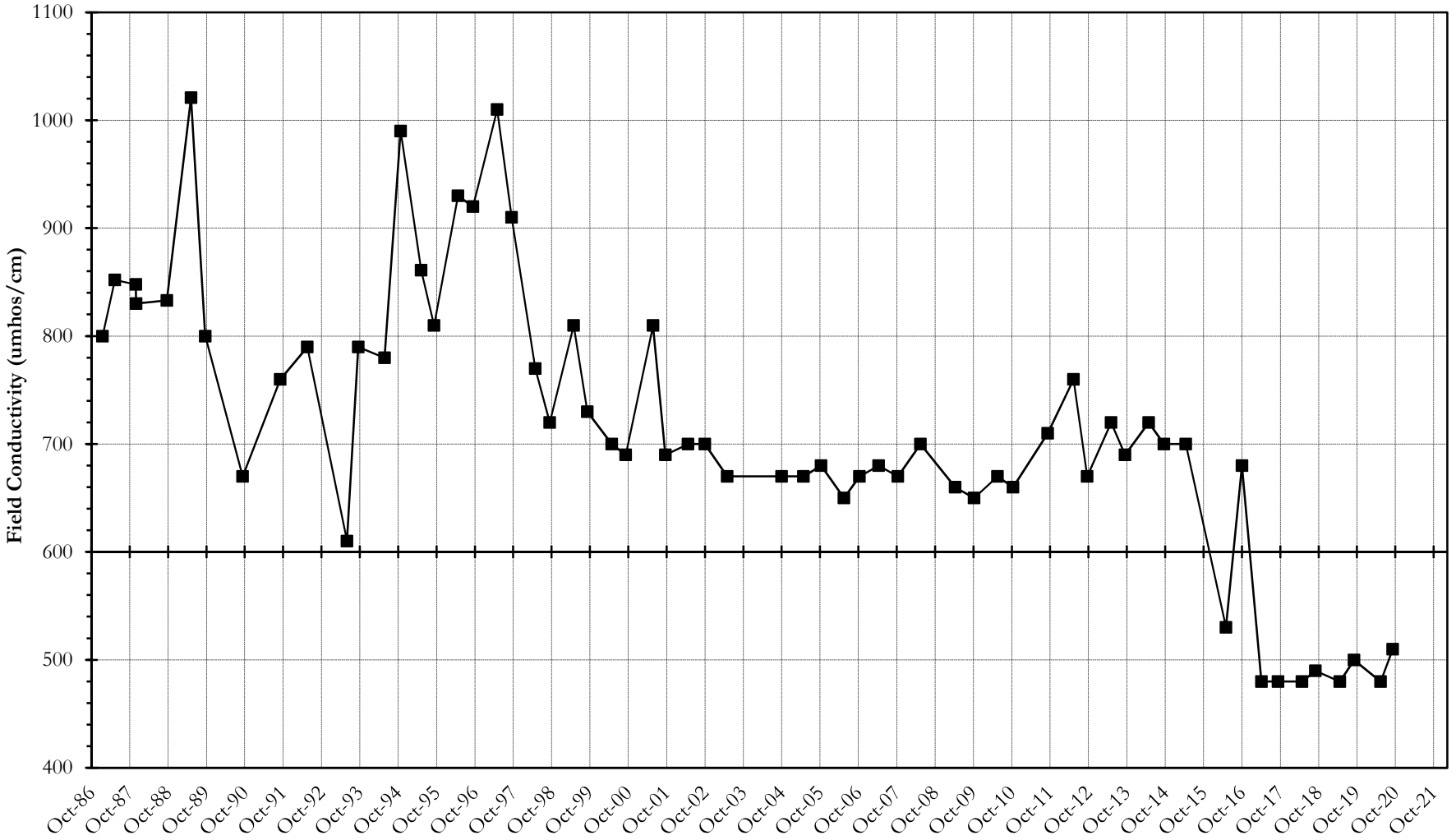

FIGURE 17

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Wells\006-BRDH-7

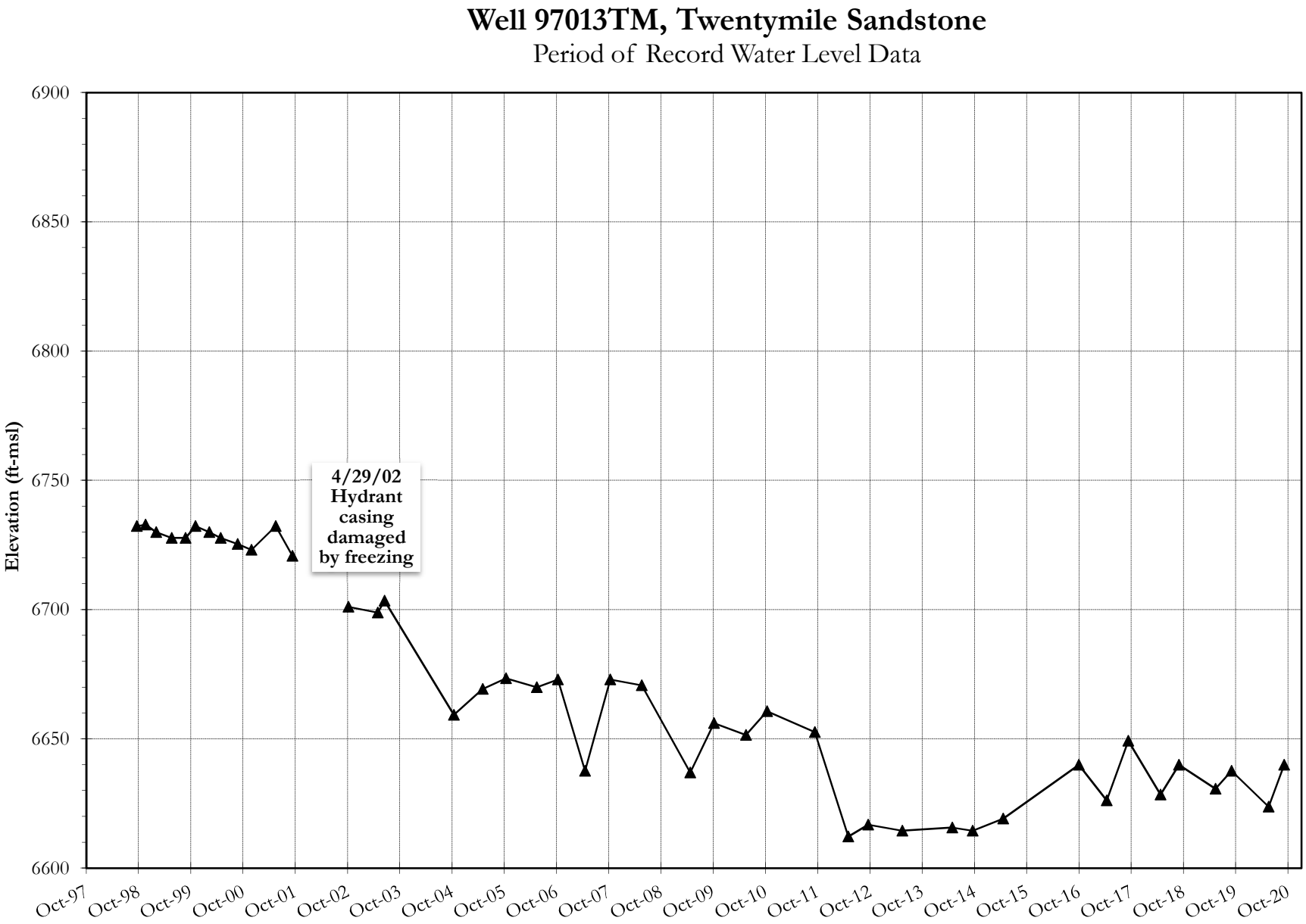

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FIGURE 18

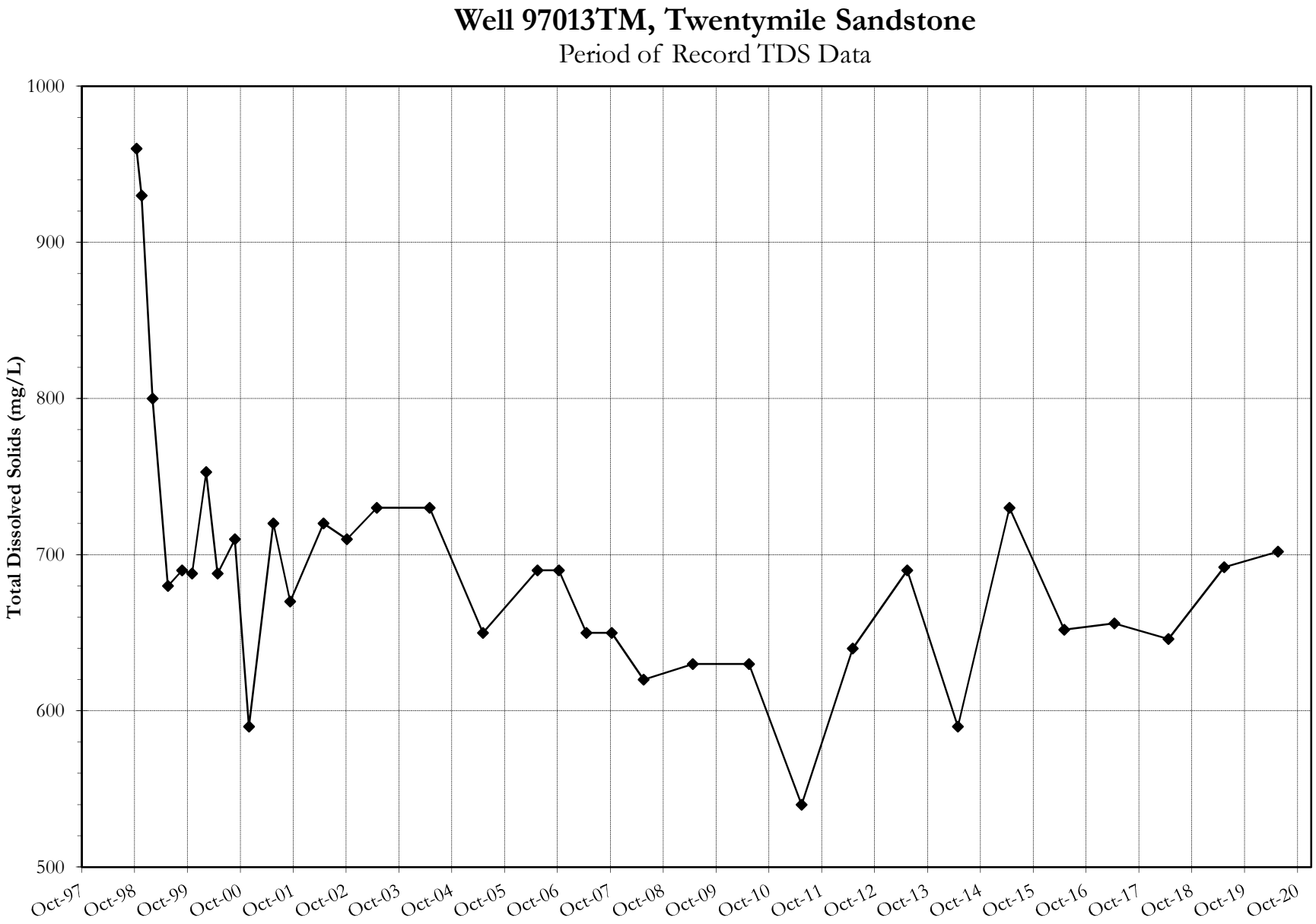

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FIGURE 19

Well FBR-2, Twentymile Sandstone

Period of Record Water Level Data

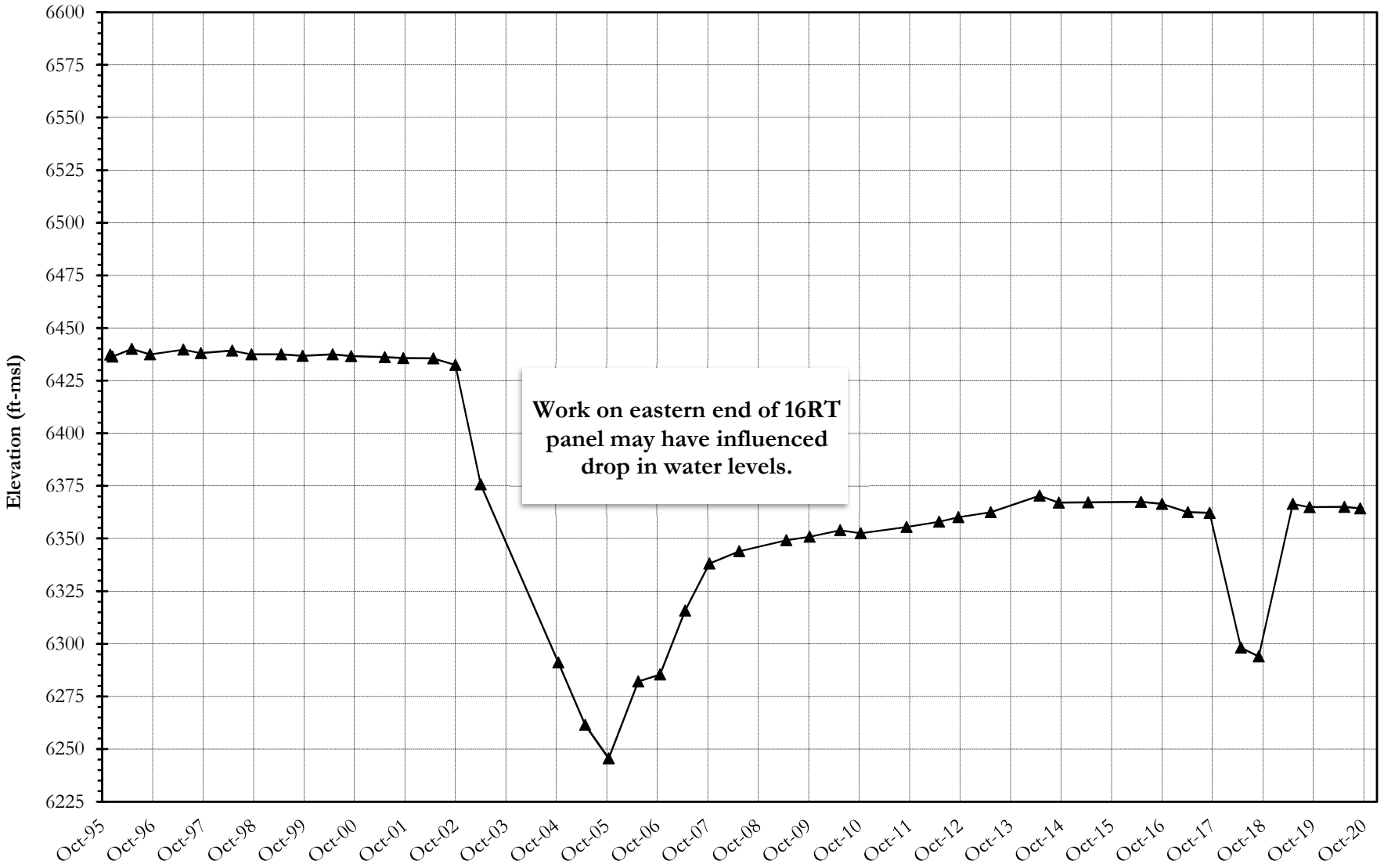

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FIGURE 20

Well FBR-2, Twentymile Sandstone

Period of Record TDS Data

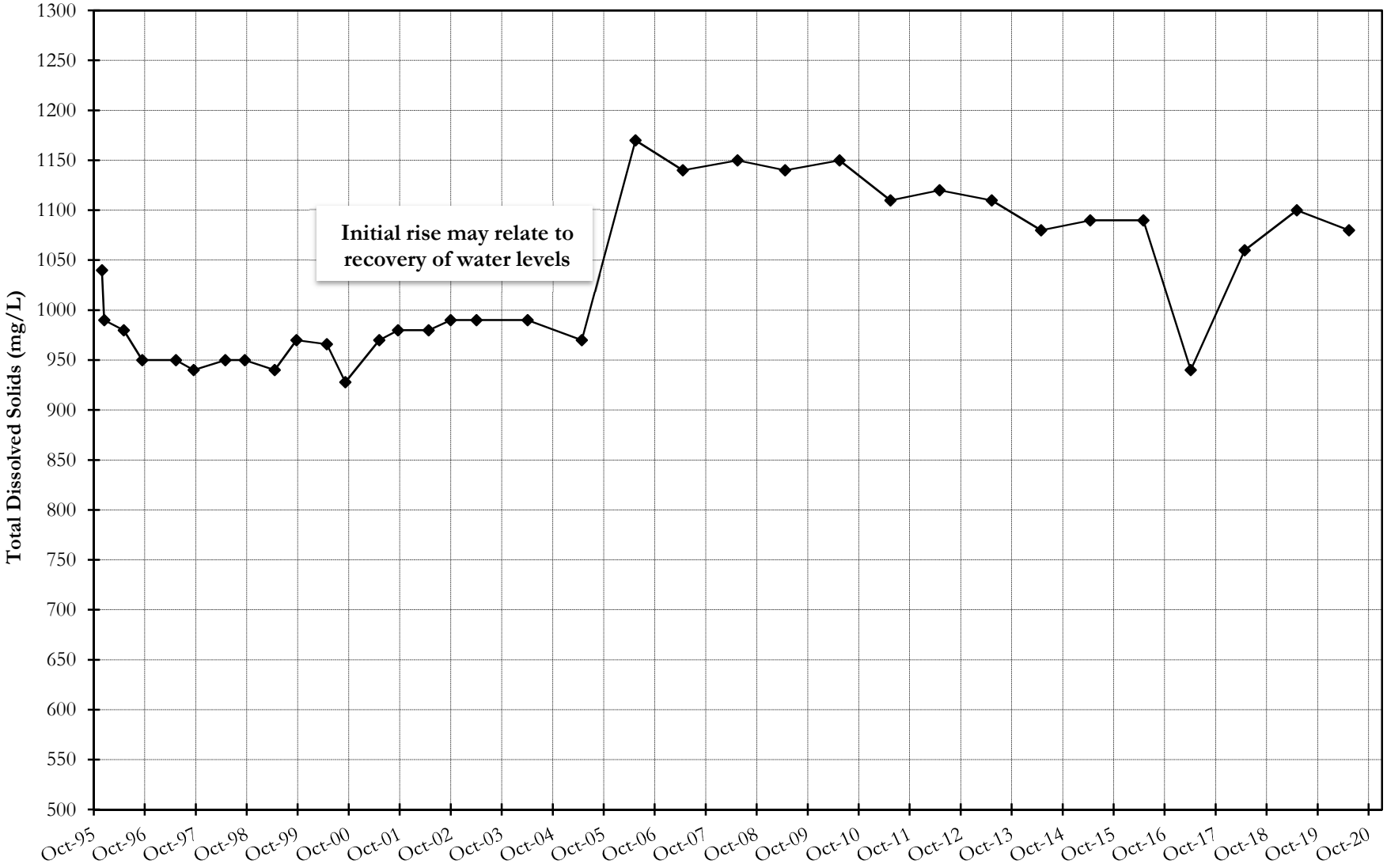

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FIGURE 21

Well 001-83-106, Trout Creek Sandstone

Period of Record Water Level Data

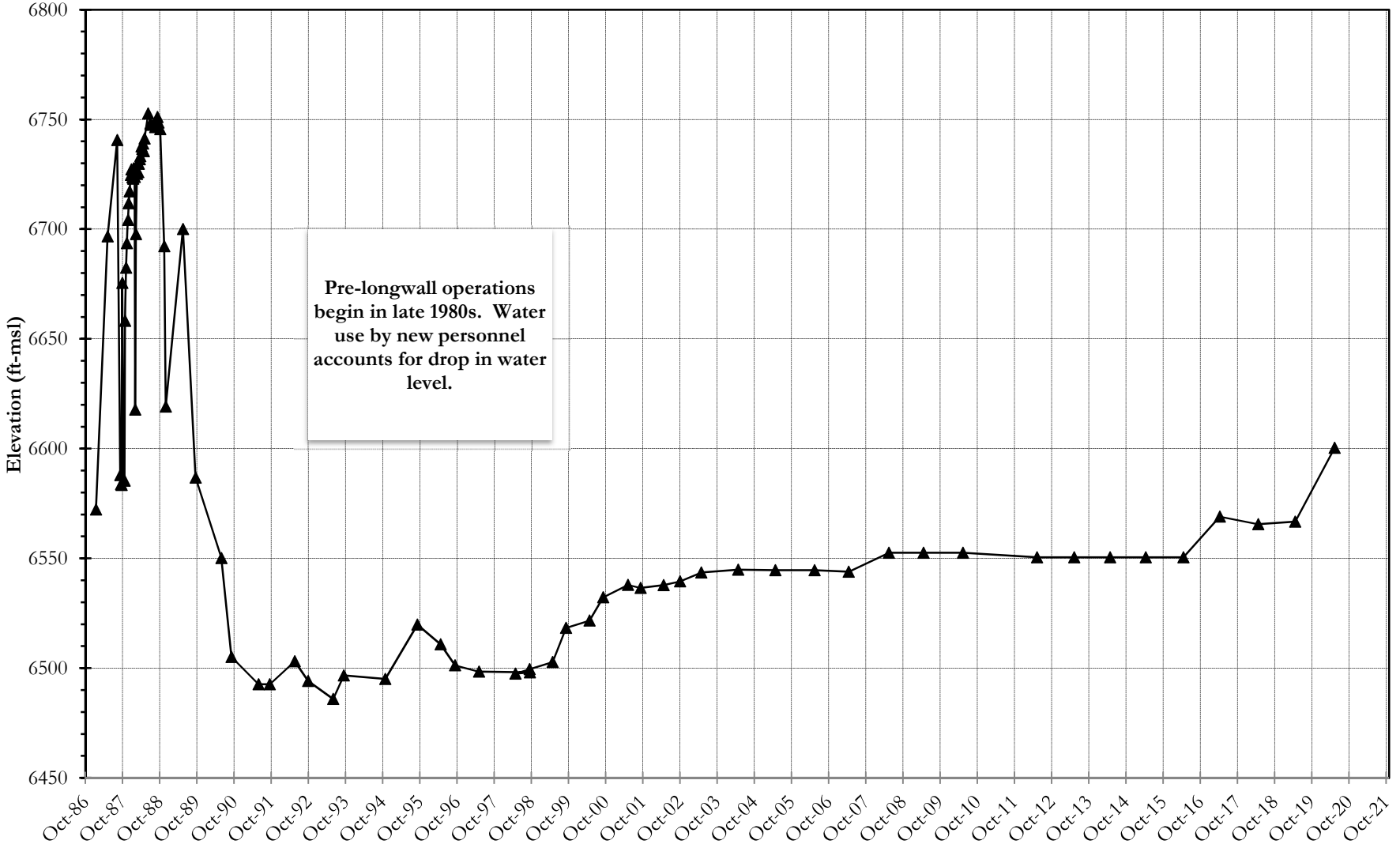

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FIGURE 22

Well 001-83-107, Trout Creek Sandstone

Period of Record Water Level Data

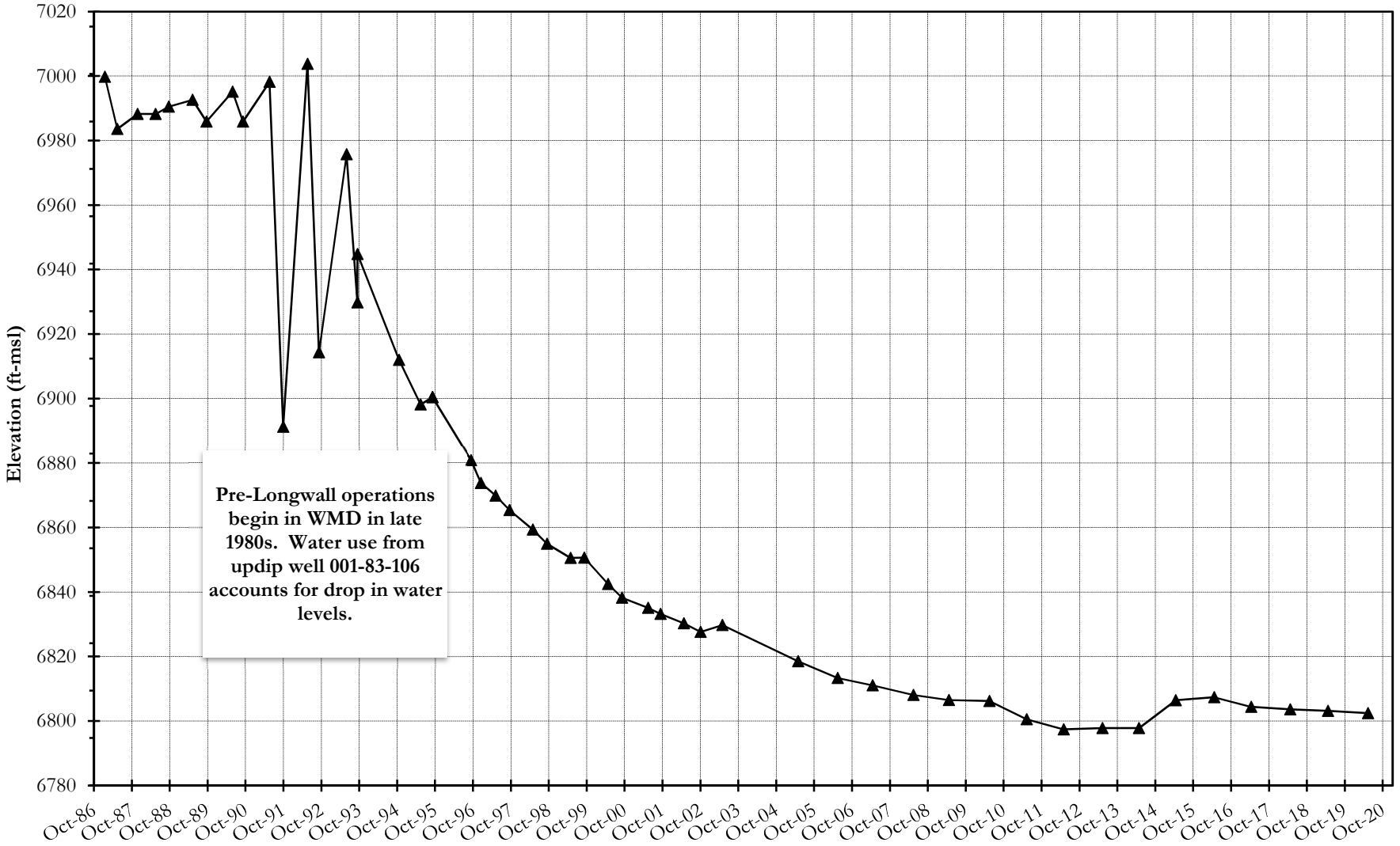

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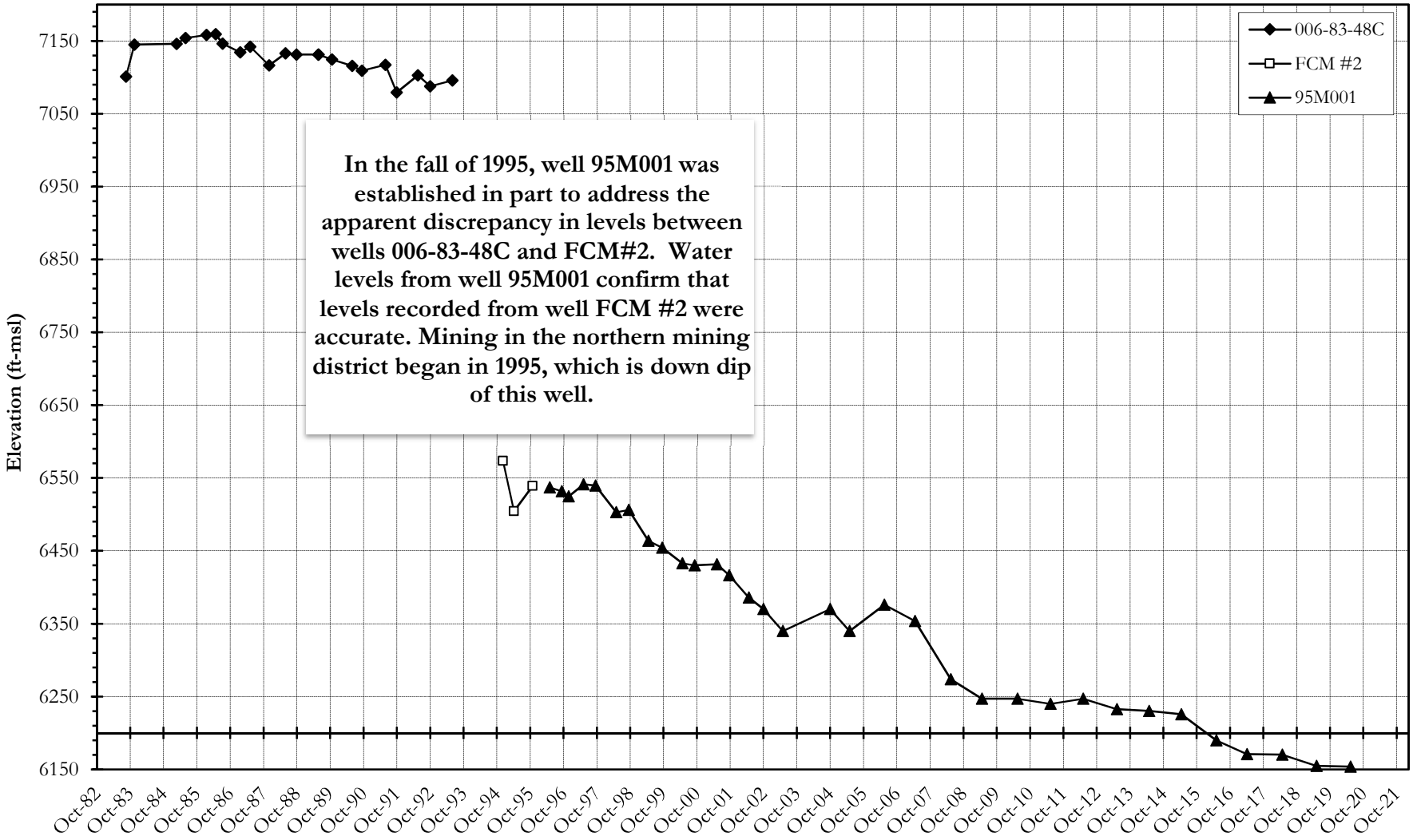
FIGURE 23

Well 006-83-48C, Well FCM#2, and Well 95M001 - Trout Creek Sandstone

Period of Record Water Level



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Wells\006-83-48C, FCM#2, 95M001 fig

FIGURE 24

Well 001-83-106, Well 001-83-107, and Well 006-83-48C - Trout Creek Sandstone

Period of Record Field Conductivity Data

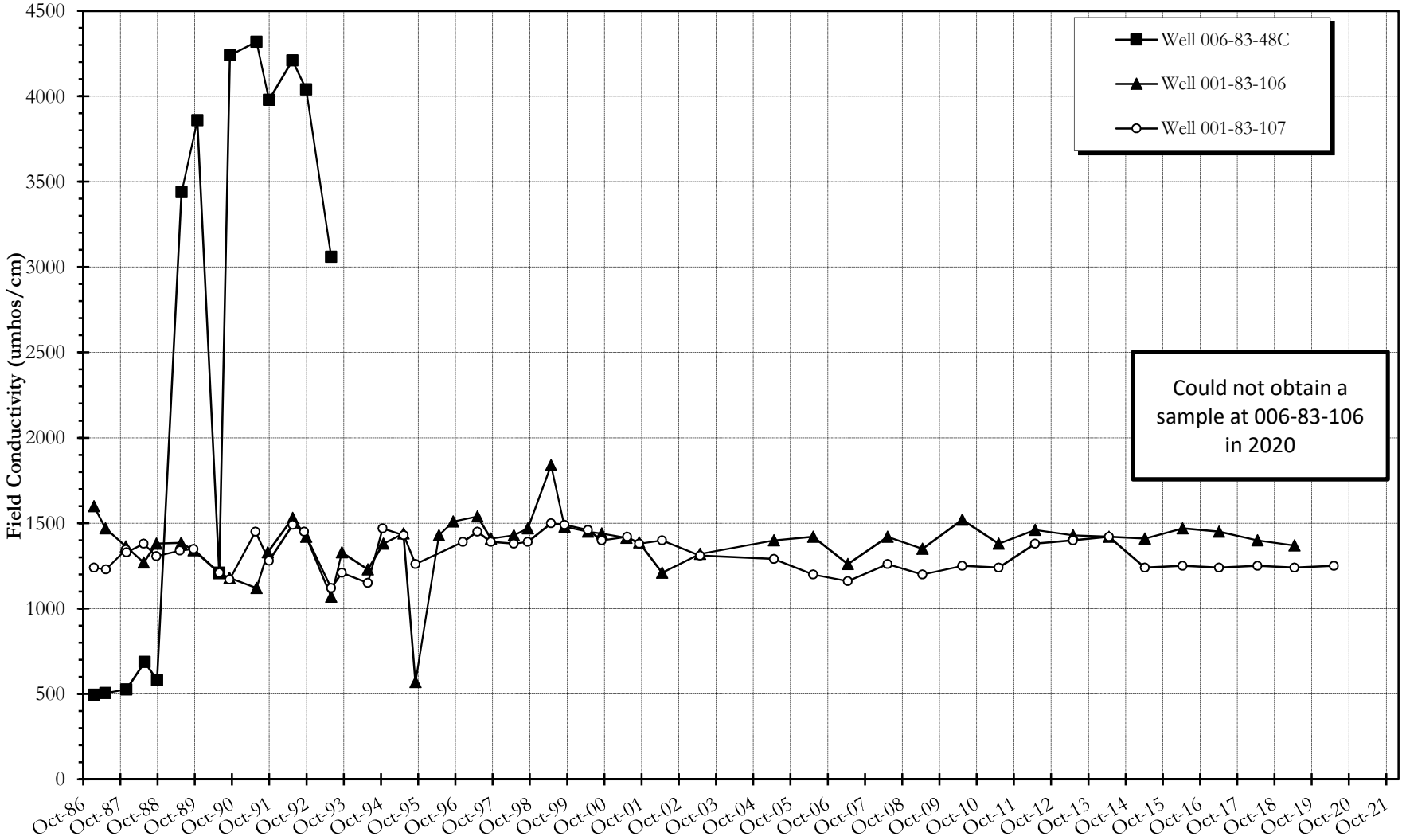


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FIGURE 25

Well 97013TC, Trout Creek Sandstone

Period of Record Water Level Data

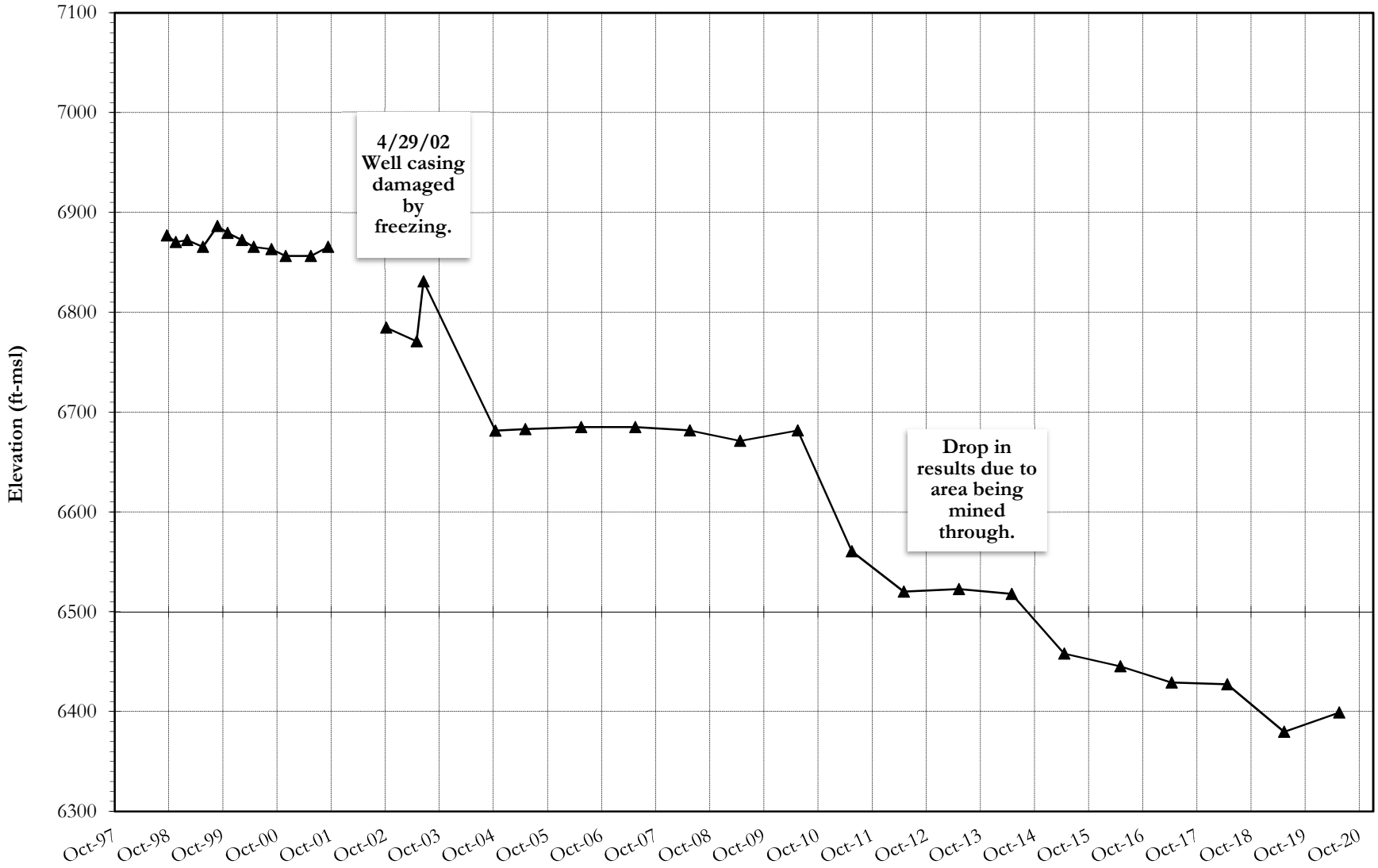

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FIGURE 26

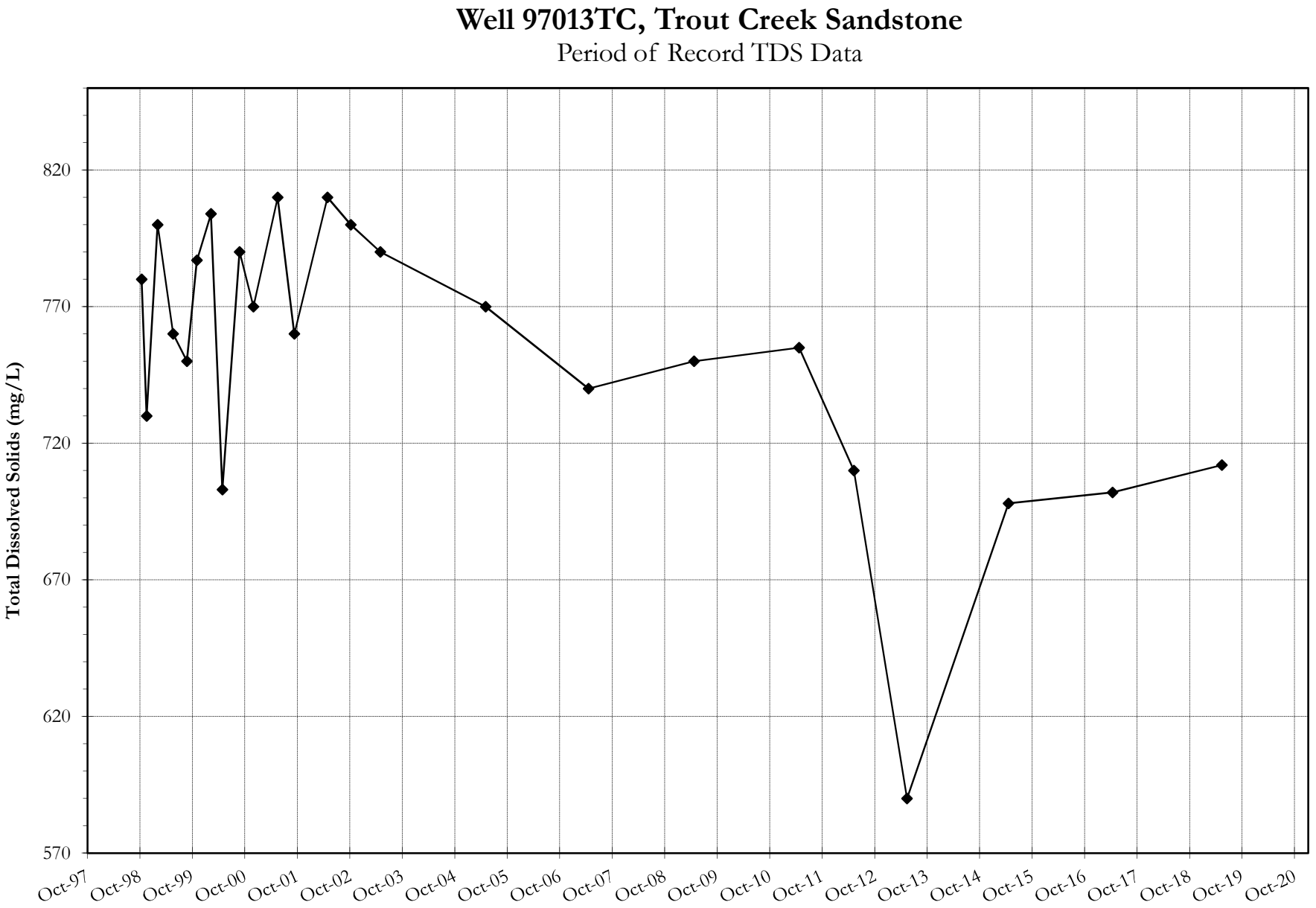

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FIGURE 27

Well FBR-2-E, Trout Creek Sandstone

Period of Record Water Level Data

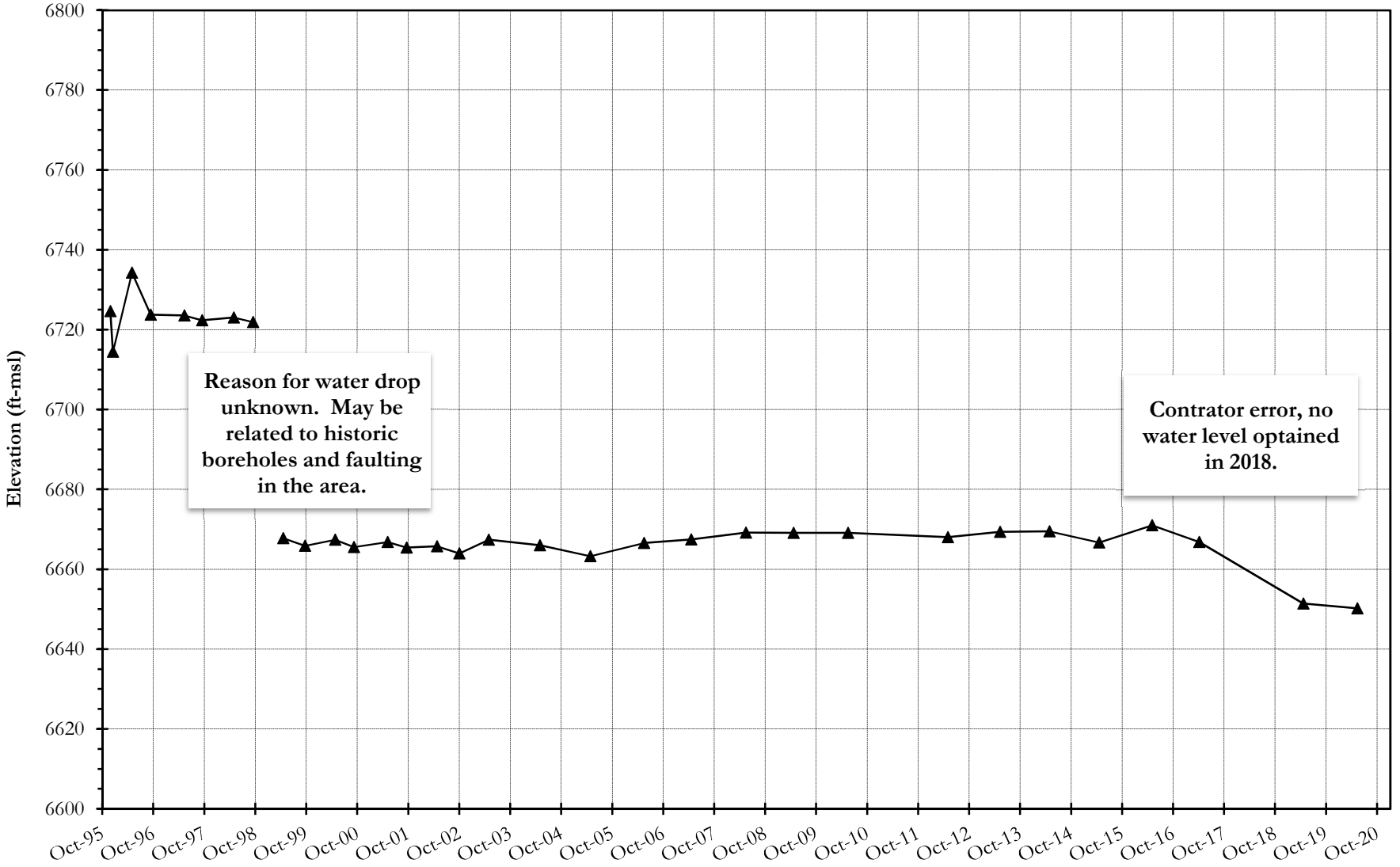

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FIGURE 28

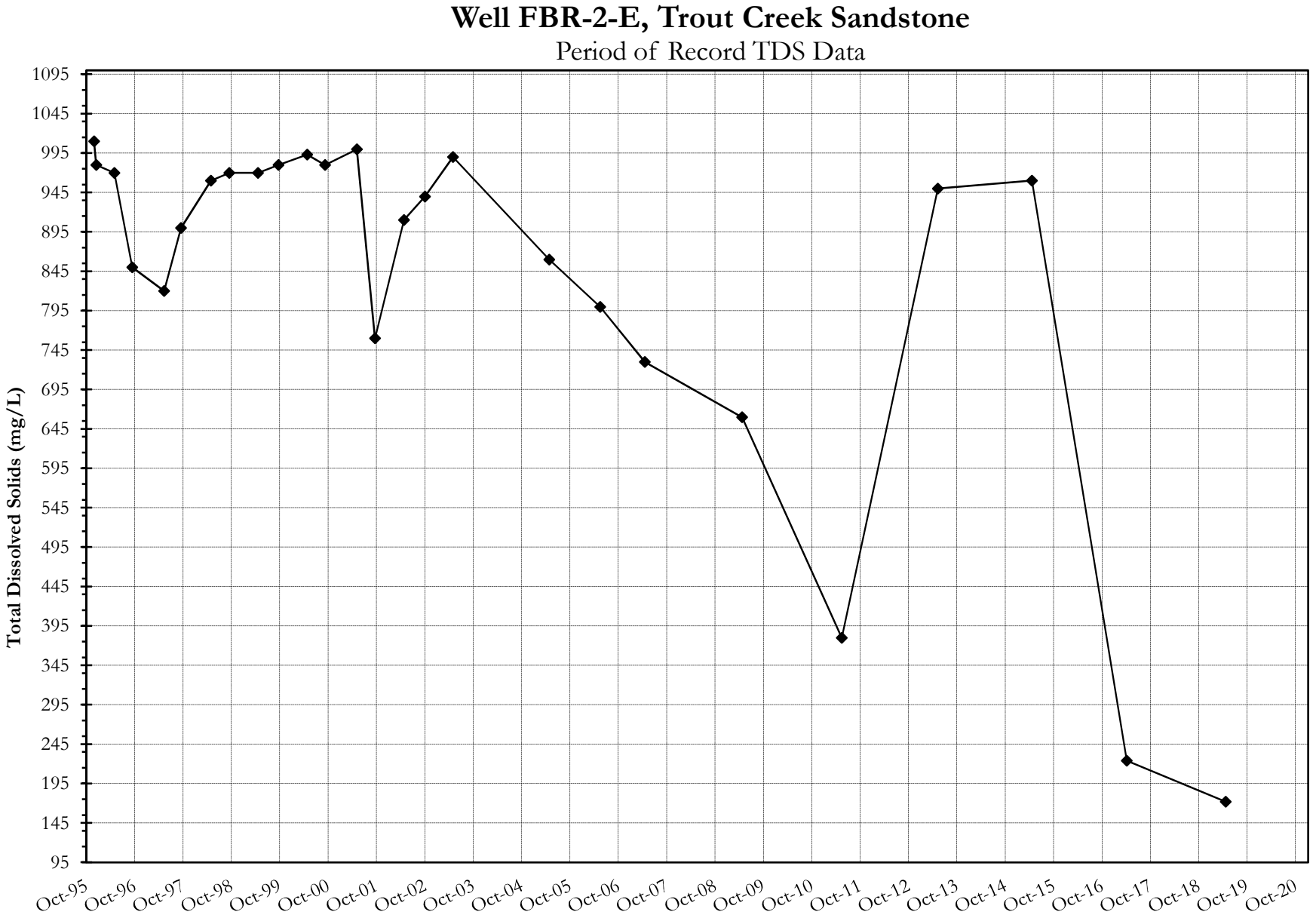

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FIGURE 29

Well 91M001 & Well 91M004, Fish Creek Sandstone

Period of Record Water Level Data

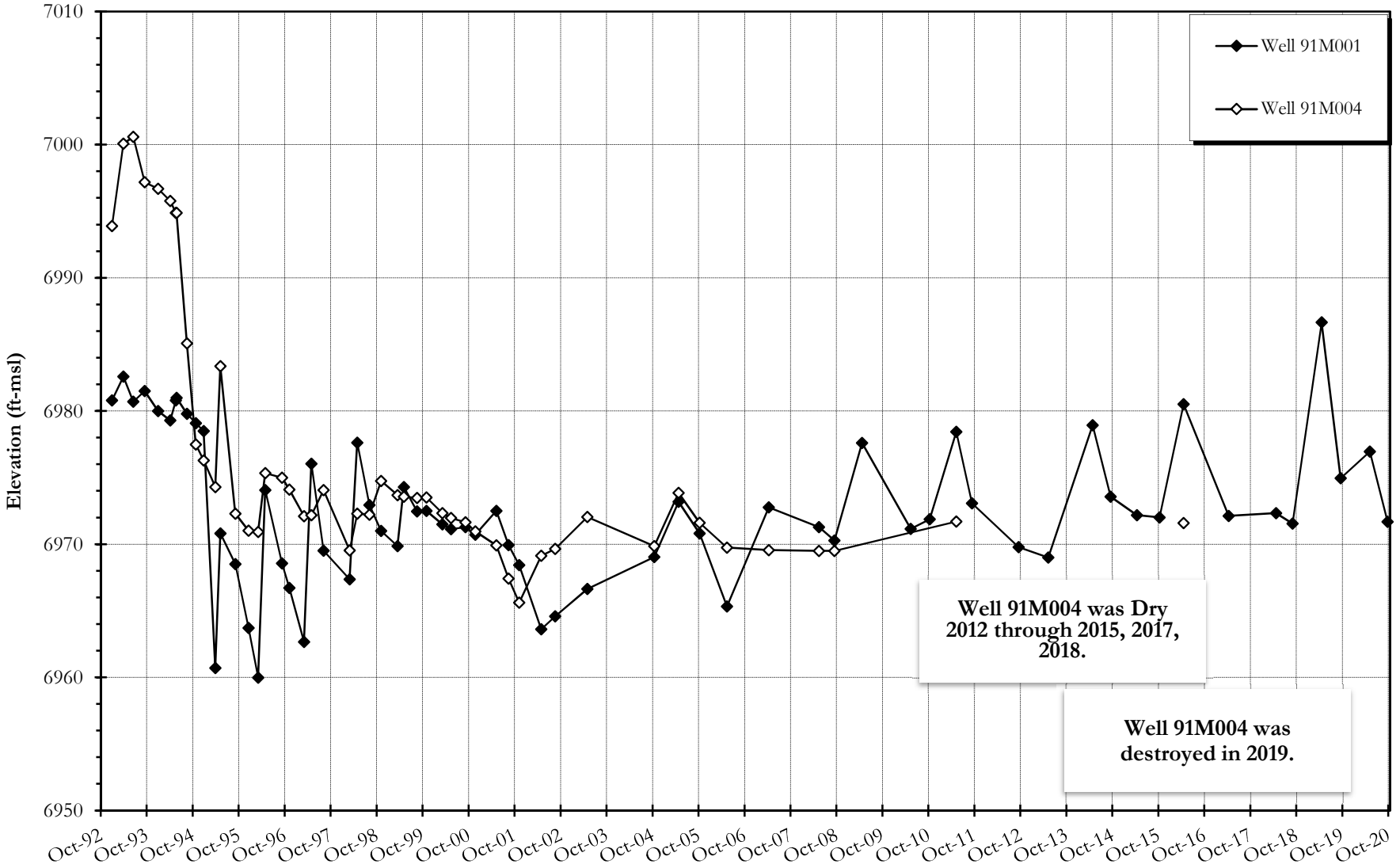

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FIGURE 30

Ashley Well, Fish Creek Sandstone

Period of Record Water Level Data

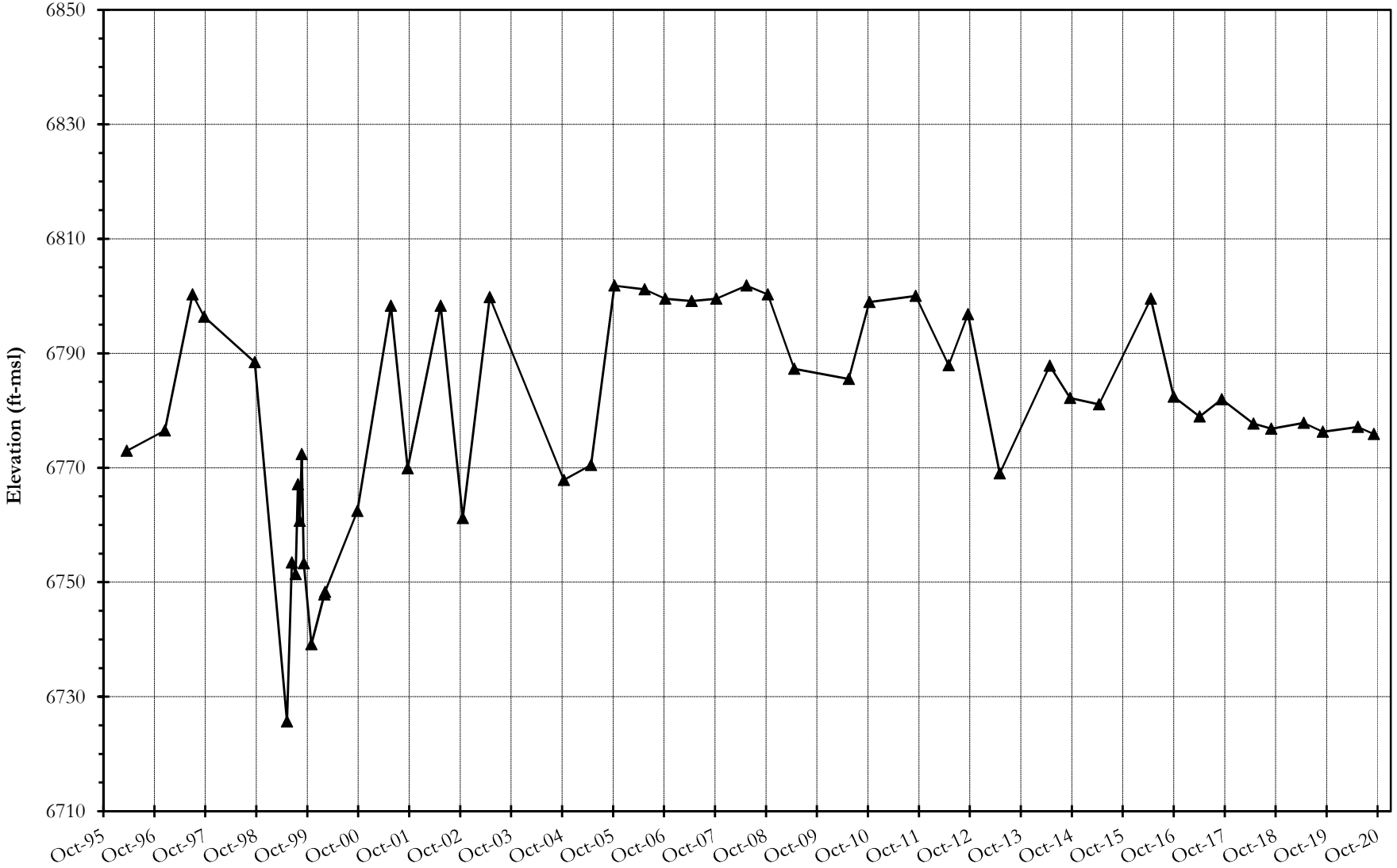

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FIGURE 31

Ashley Well, Fish Creek Sandstone

Period of Record TDS Data

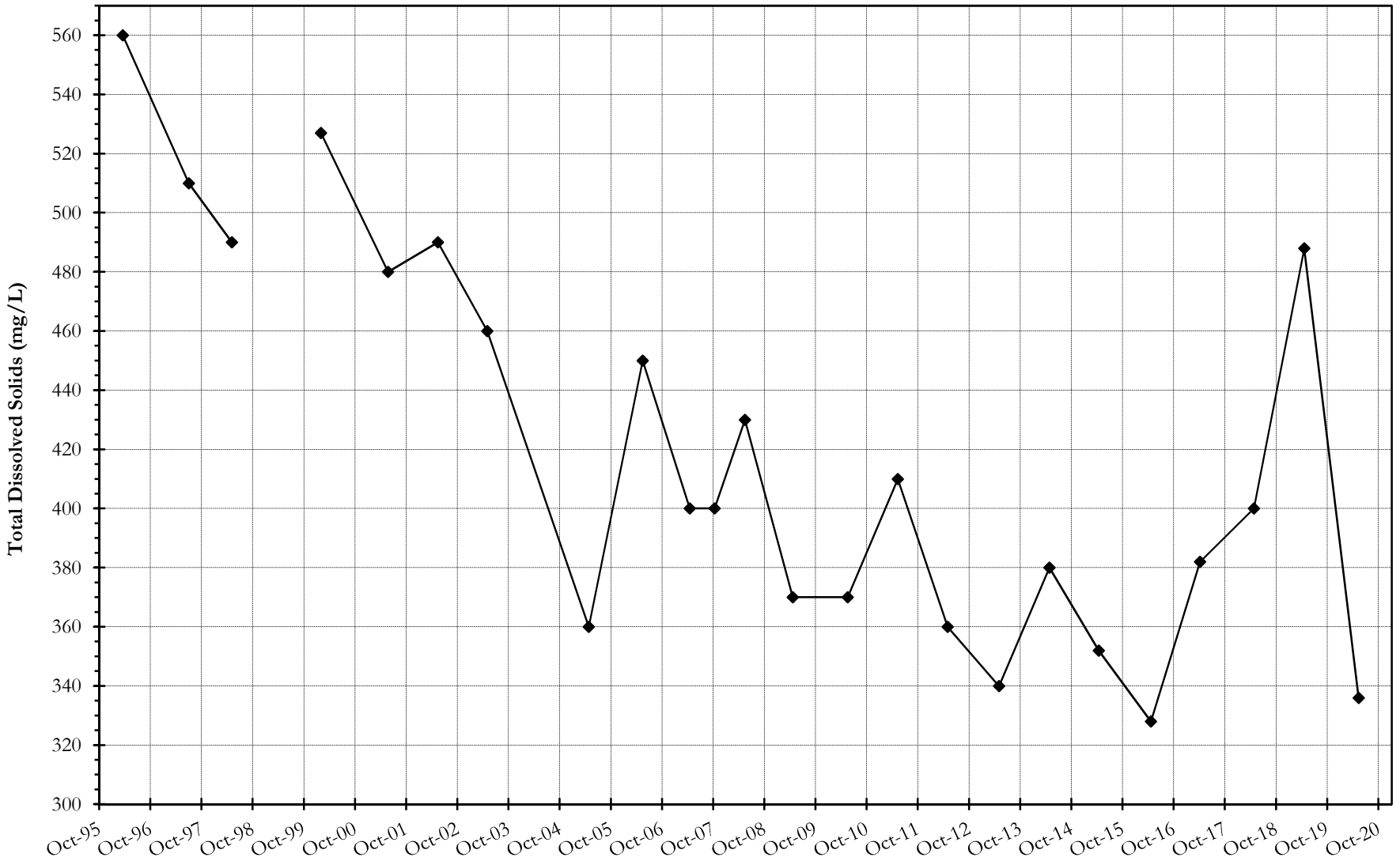

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FIGURE 32

Well 009-S-10, Foidel Creek Alluvium

Period of Record Water Level Data

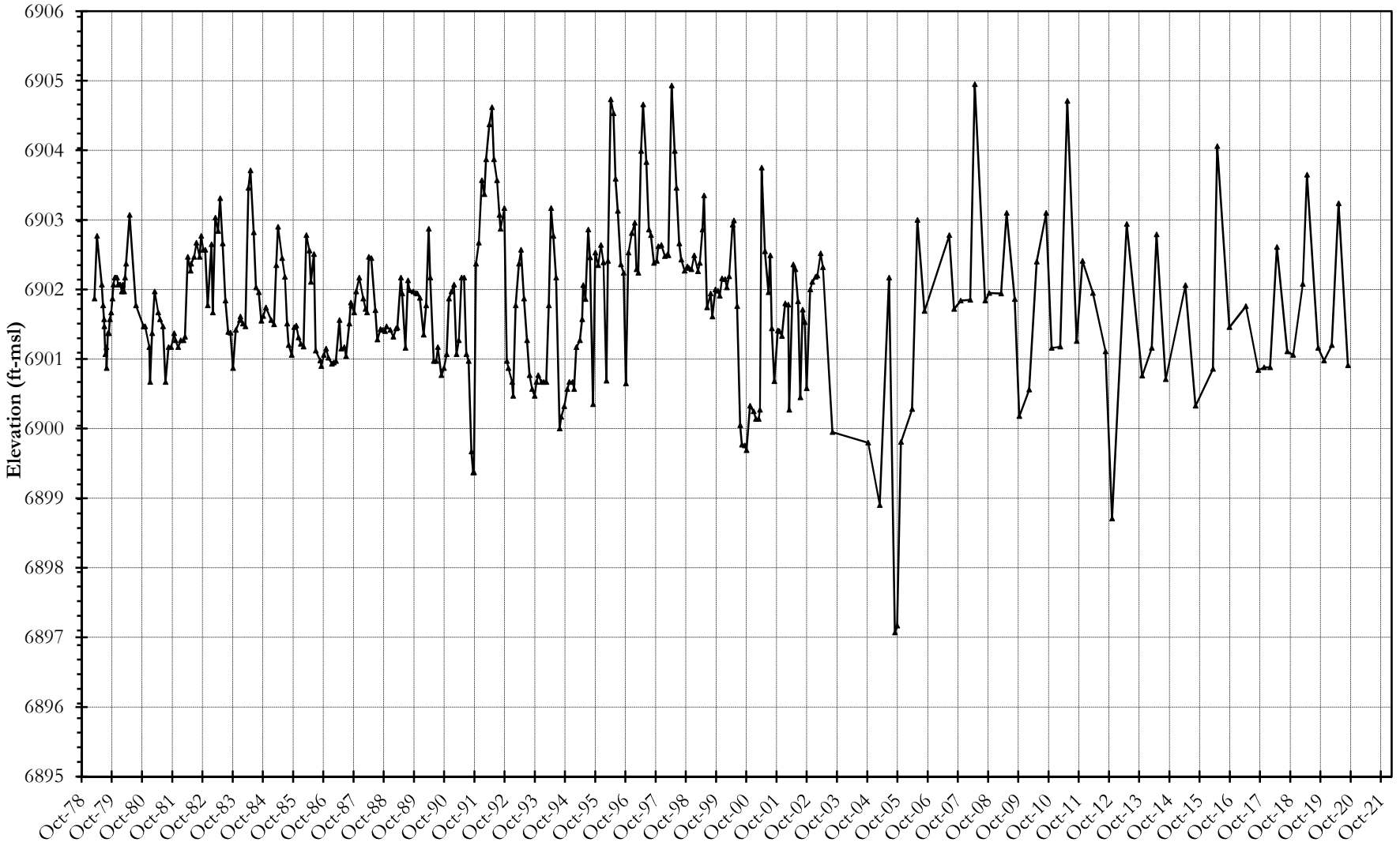

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FIGURE 33

Well 009-S-10, Foidel Creek Alluvium

Period of Record Field Conductivity Data

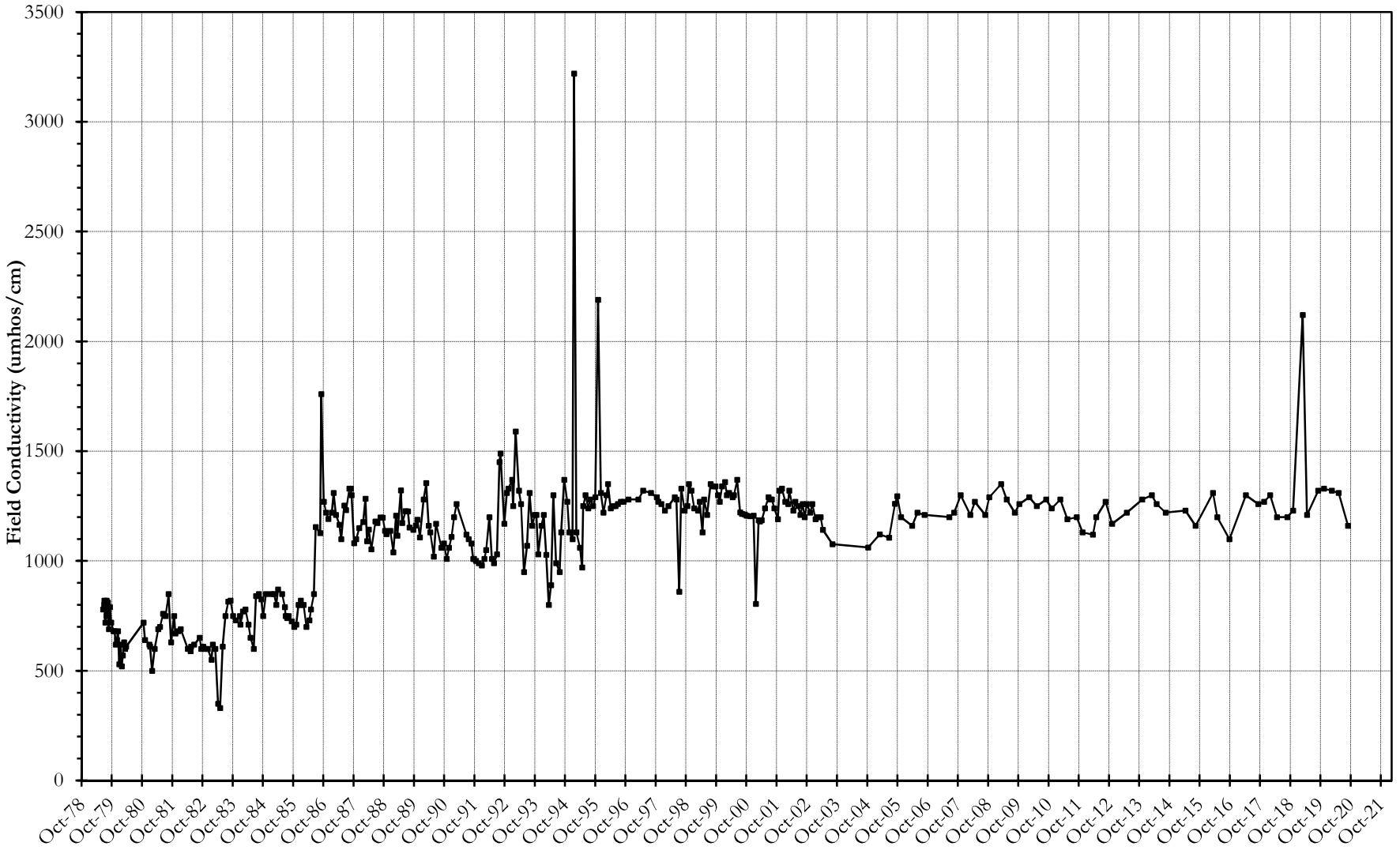

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FIGURE 34

Well 001-S-5, Foidel Creek Alluvium

Period of Record Water Level Data

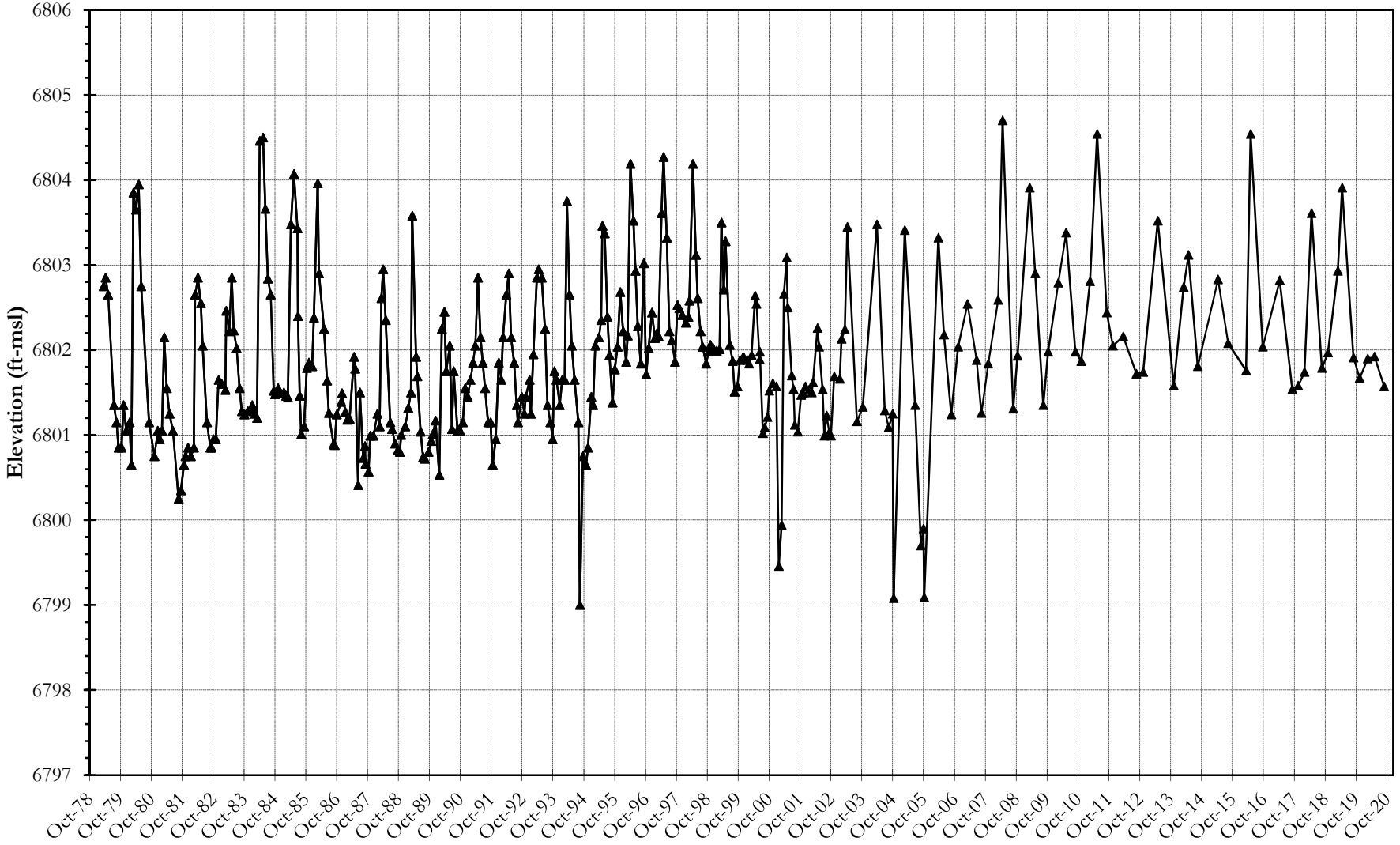

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FIGURE 35

Well 001-S-5, Foidel Creek Alluvium

Period of Record Field Conductivity Data

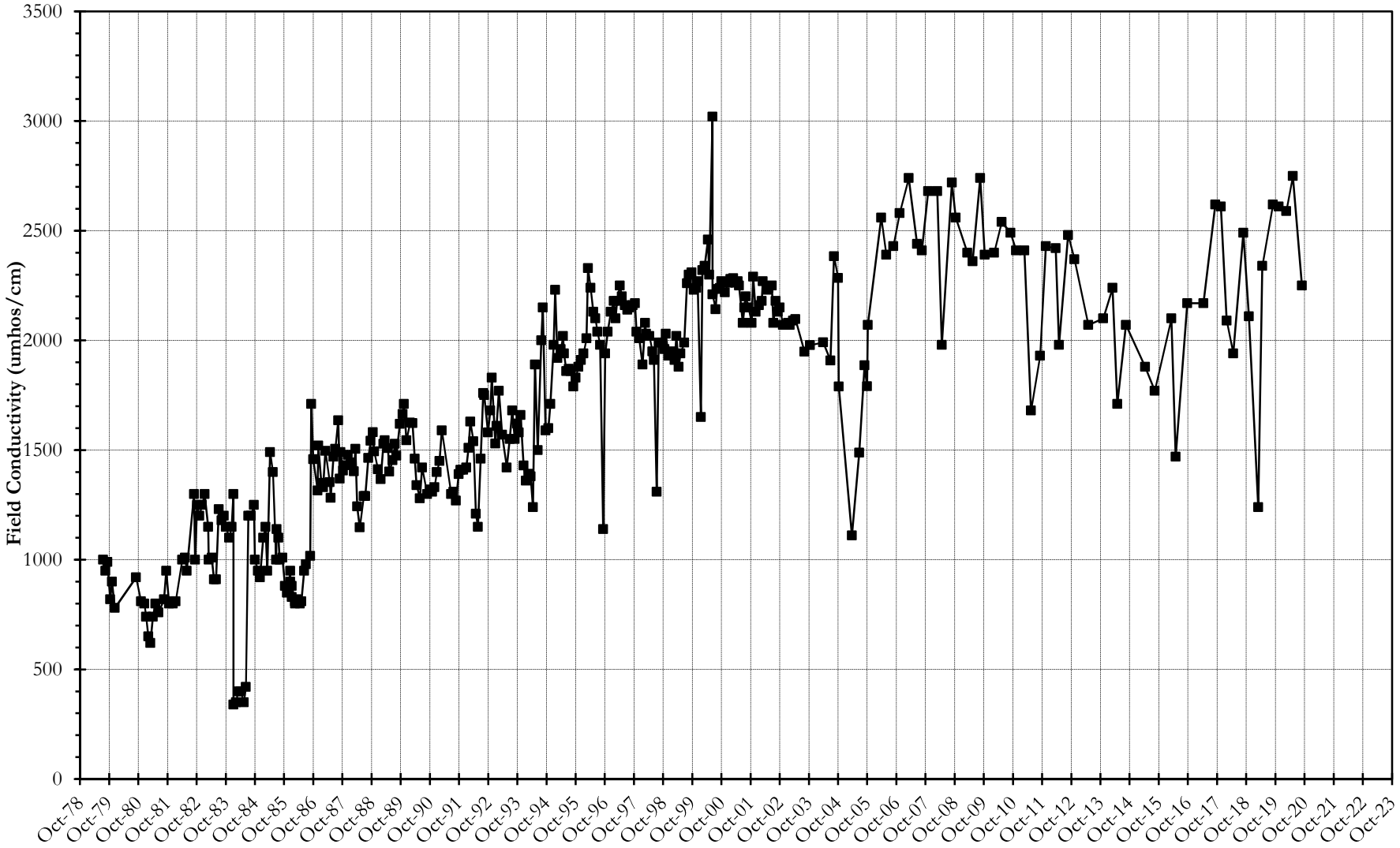

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FIGURE 36

Wells 008-AV-2 Foidel Creek Alluvium

Period of Record Water Level Data

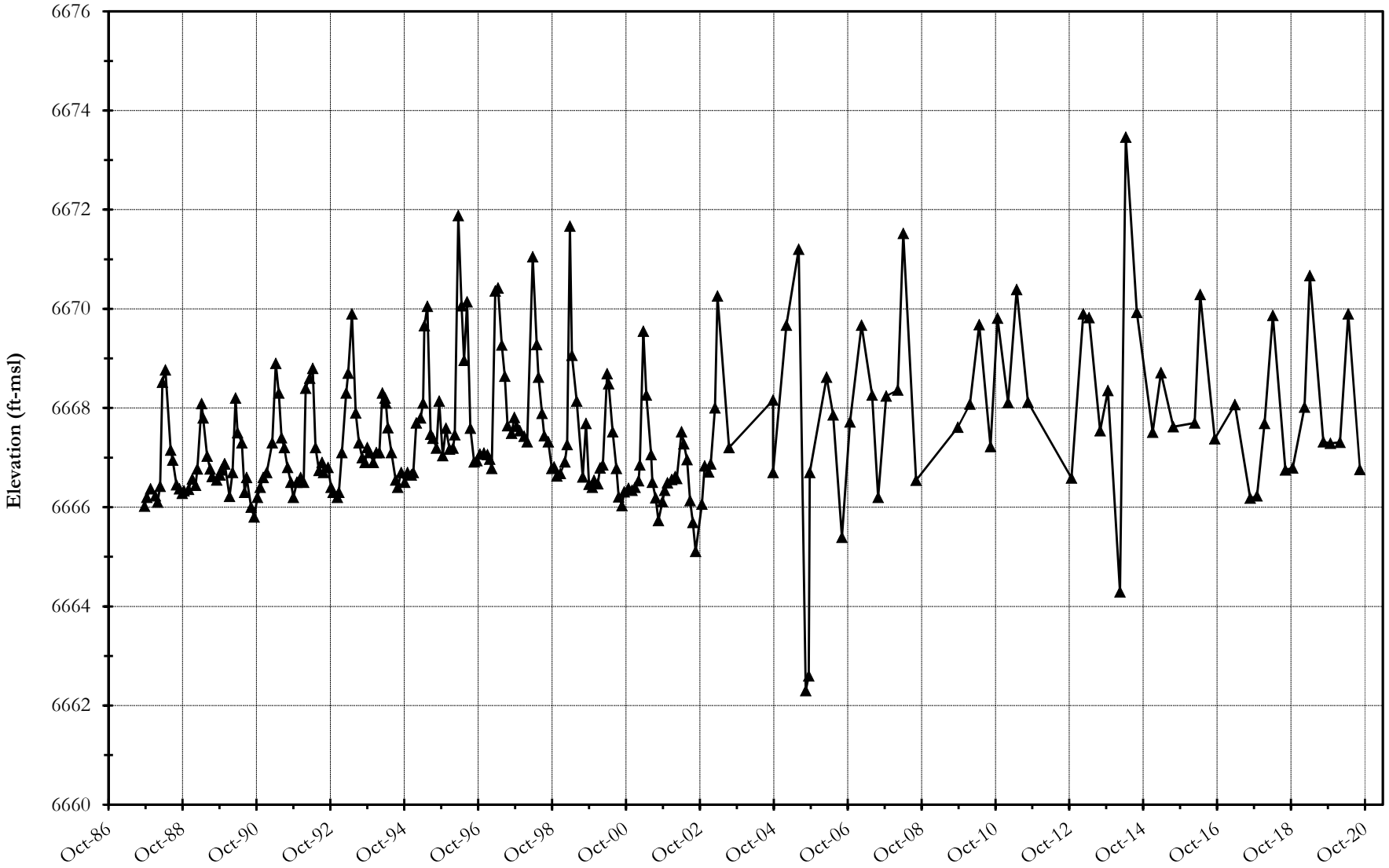

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FIGURE 37

Wells 008-AV-2 Foidel Creek Alluvium

Period of Record Field Conductivity Data

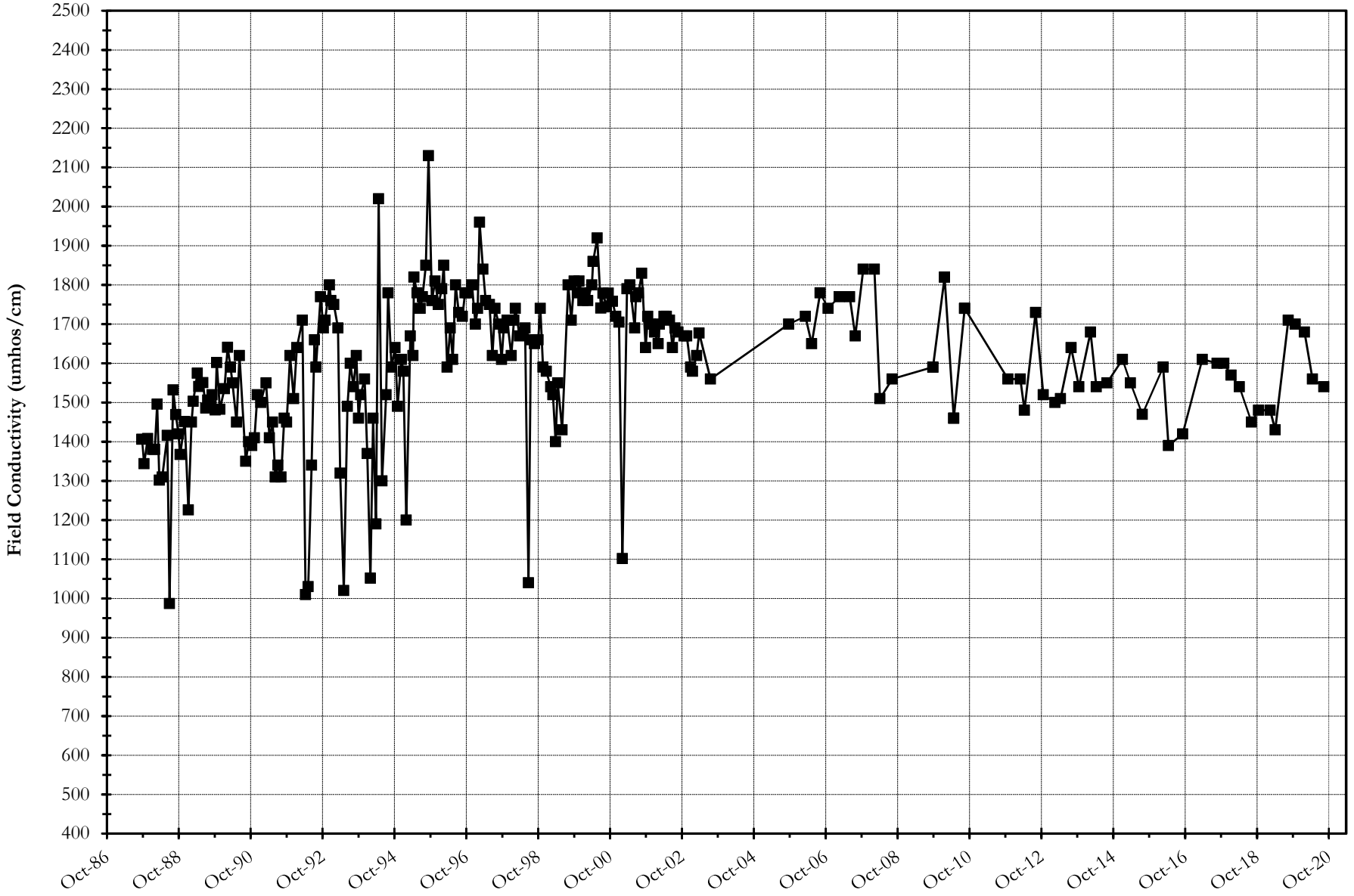

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FIGURE 38

Wells 008-AV-1 Foidel Creek Alluvium

Period of Record Water Level Data

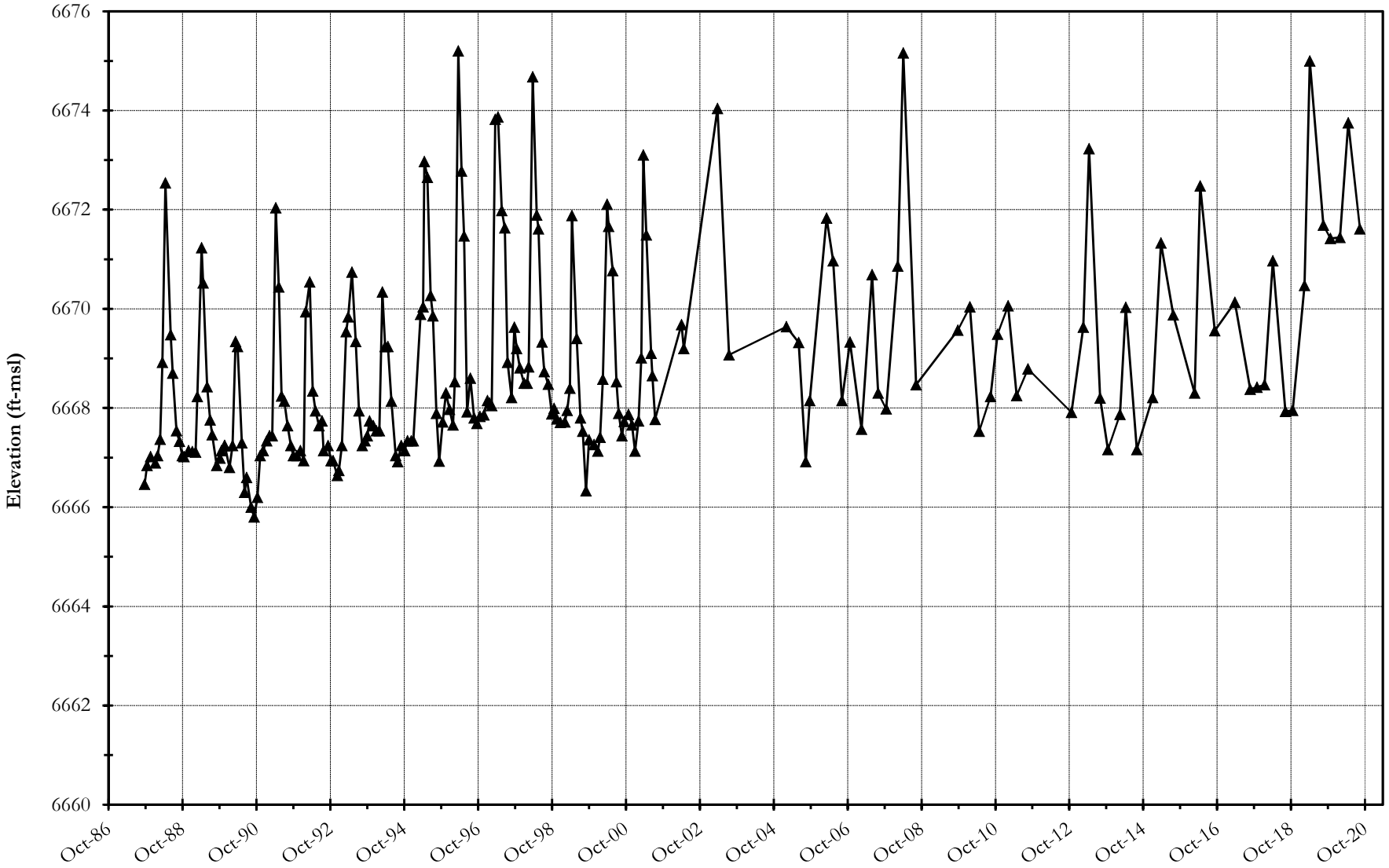

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FIGURE 39

Wells 008-AV-1 Foidel Creek Alluvium

Period of Record Field Conductivity Data

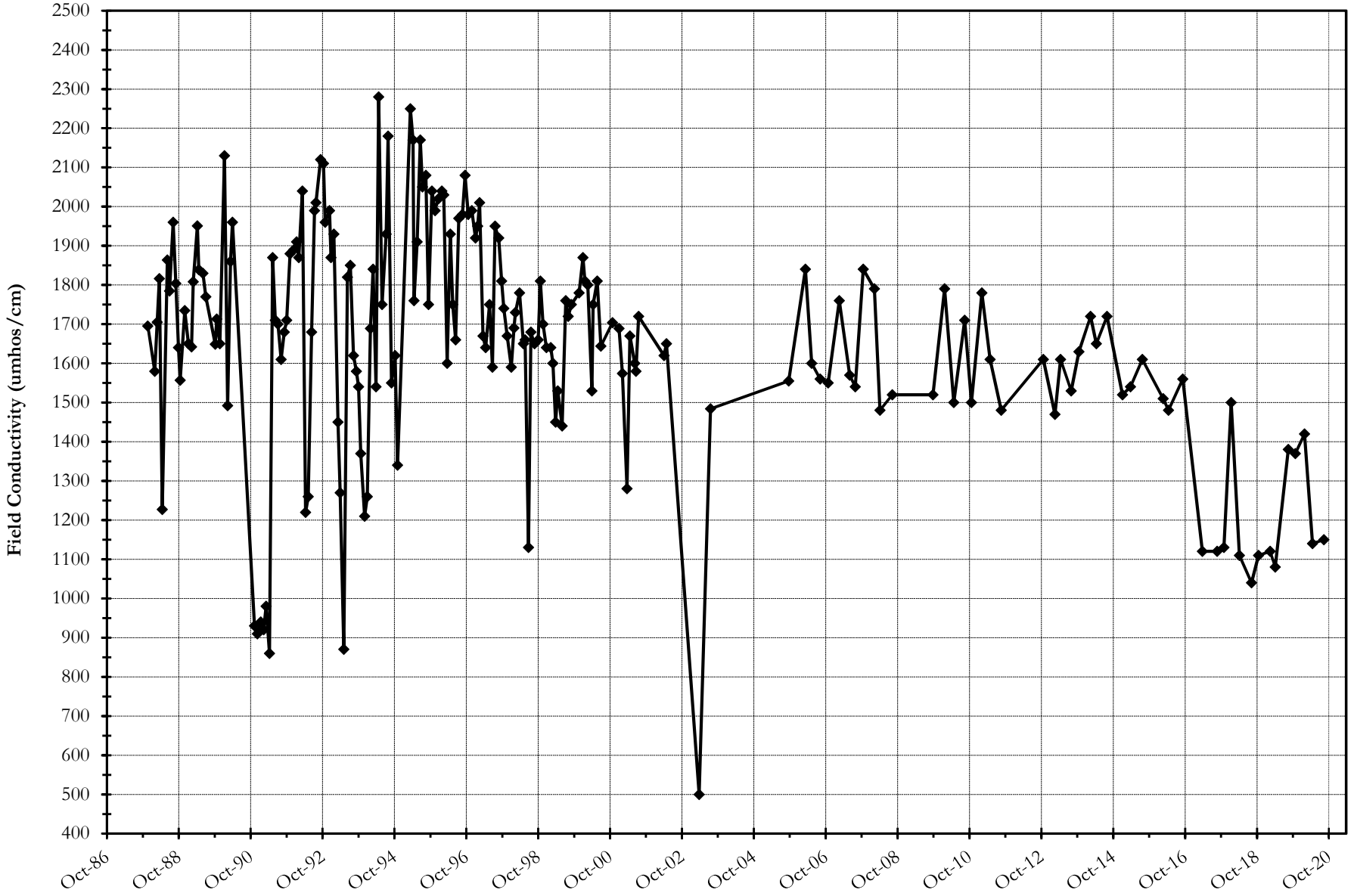

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FIGURE 40

Well 006-AY-1, Fish Creek Alluvium

Period of Record Water Level Data

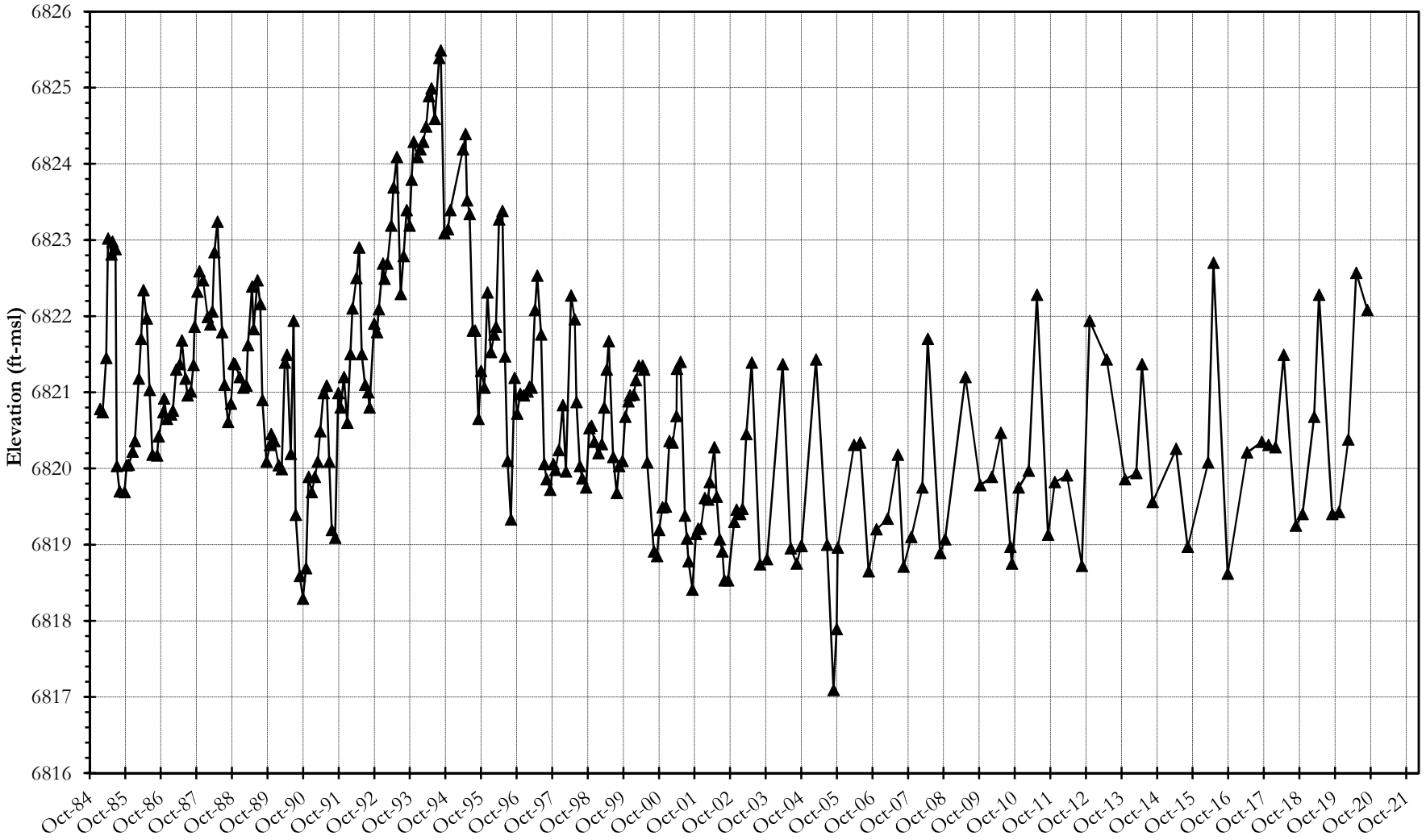

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FIGURE 41

Well 006-AY-1, Fish Creek Alluvium

Period of Record Field Conductivity Data

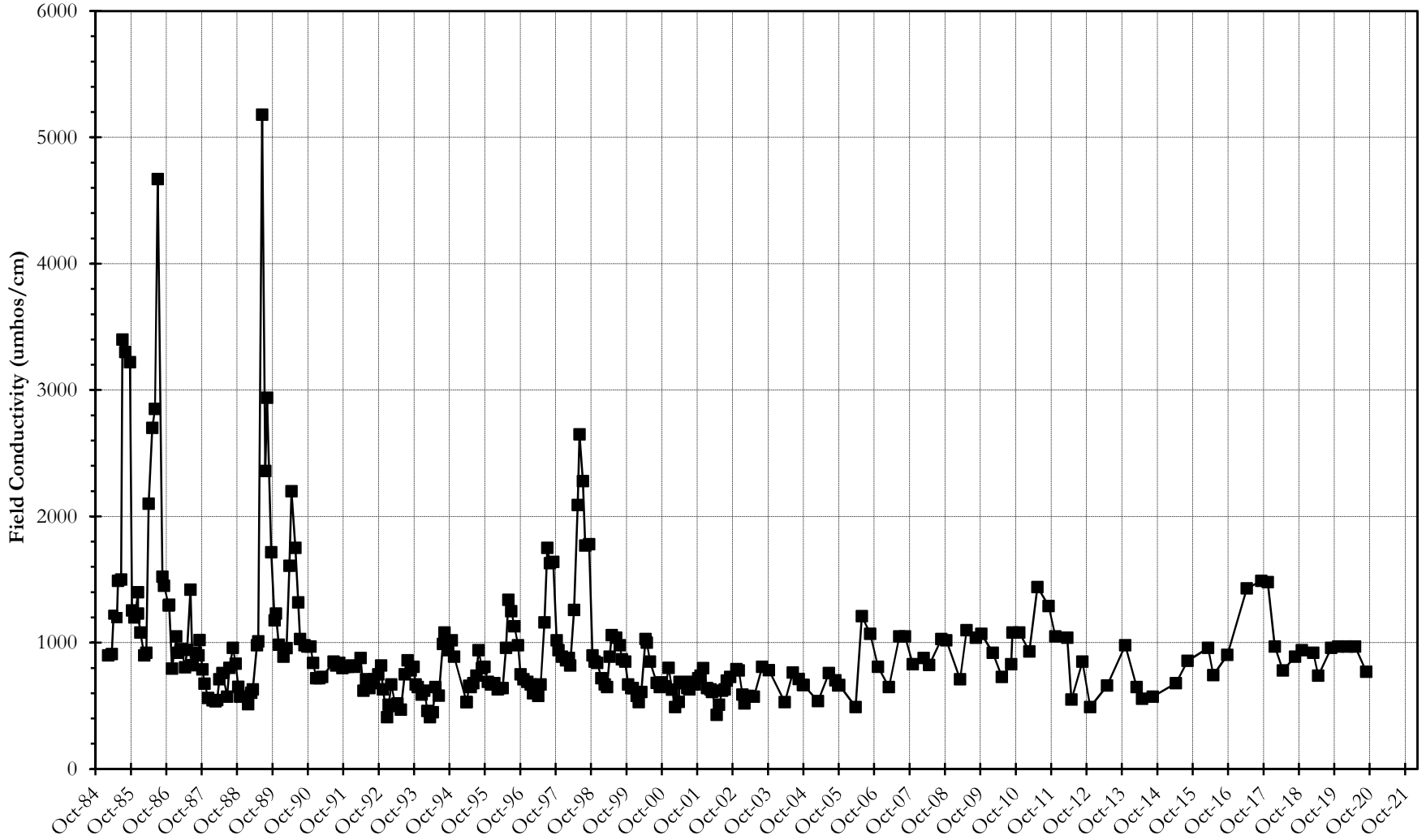

FIGURE 42

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Well 006-AZ-3 Fish Creek Alluvium

Water Level Data for Water Years 1997 - 2020

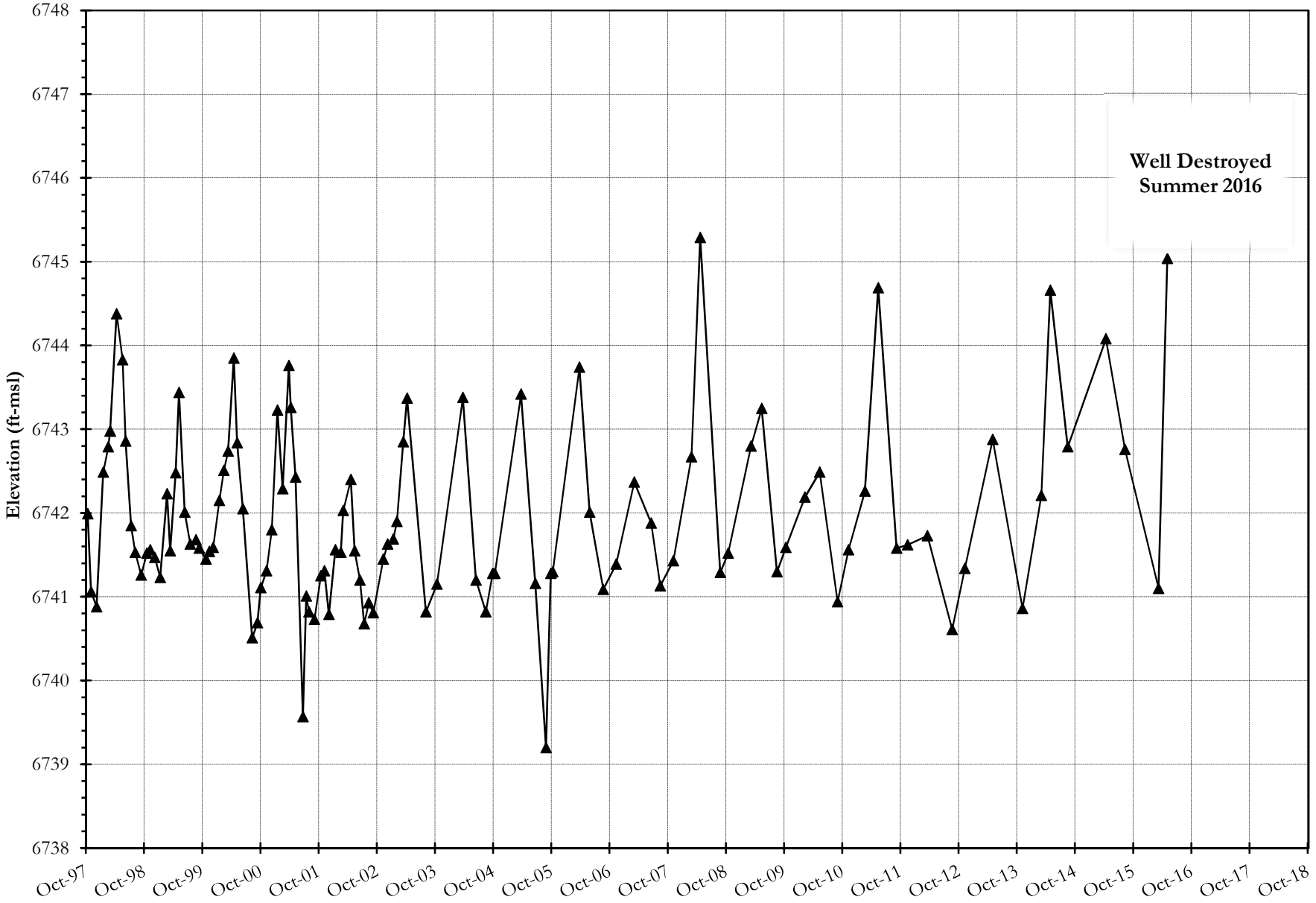

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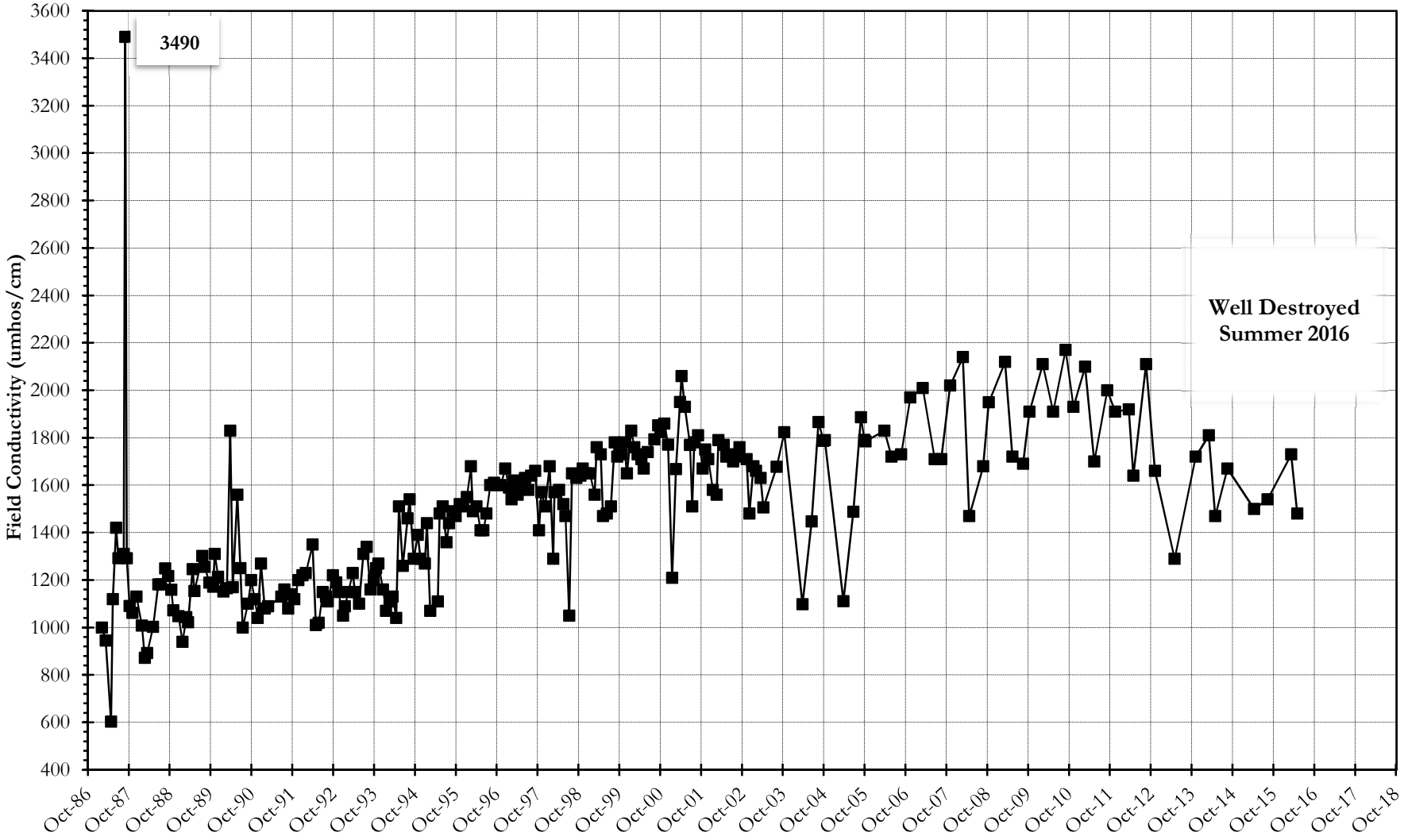
FIGURE 43

Well 006-AZ-3, Fish Creek Alluvium near Fish Creek Borehole

Period of Record Field Conductivity Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Wells\006-AZ-3 fig

FIGURE 44

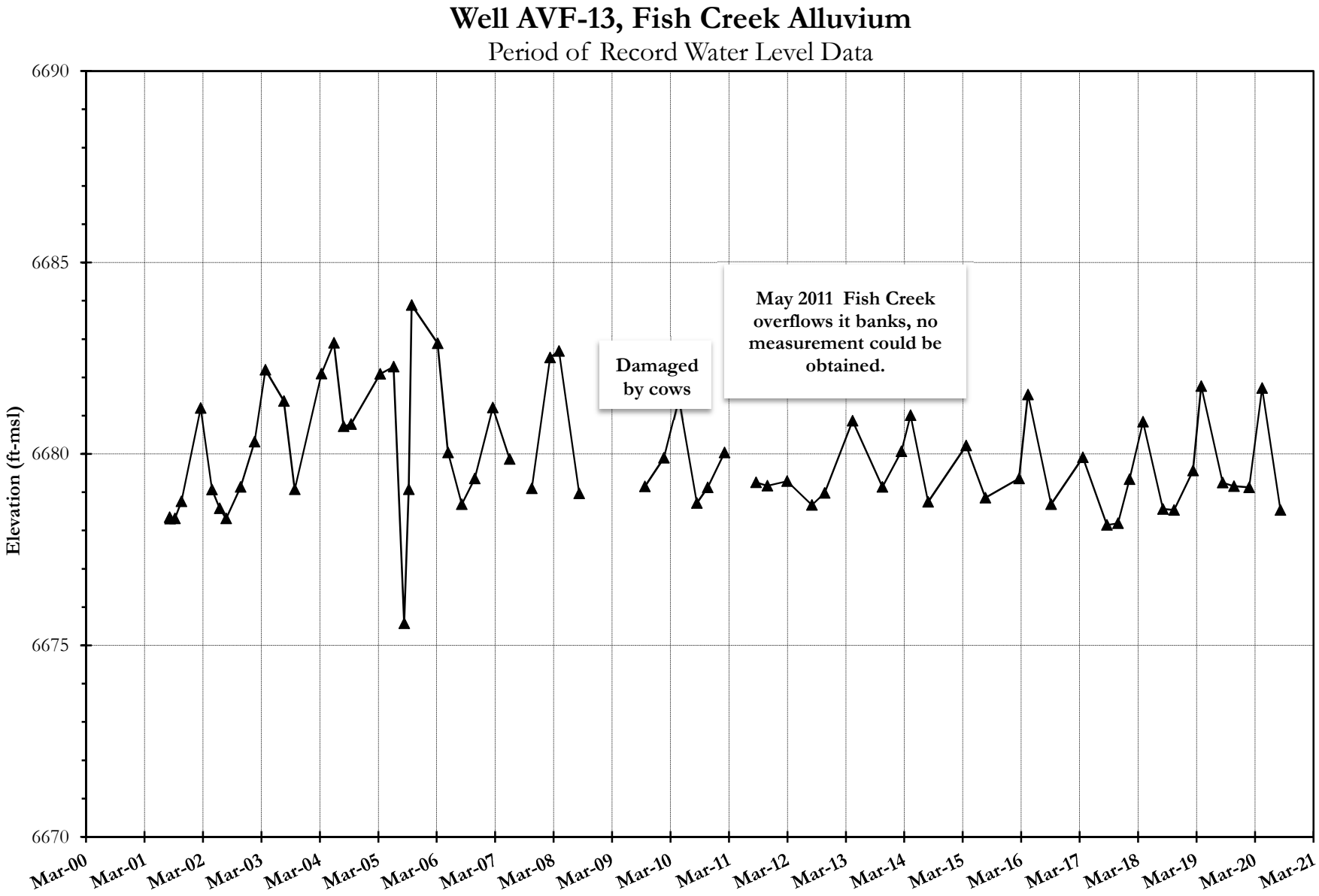


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FIGURE 45

Well AVF-13, Fish Creek Alluvium

Period of Record Field Conductivity Data

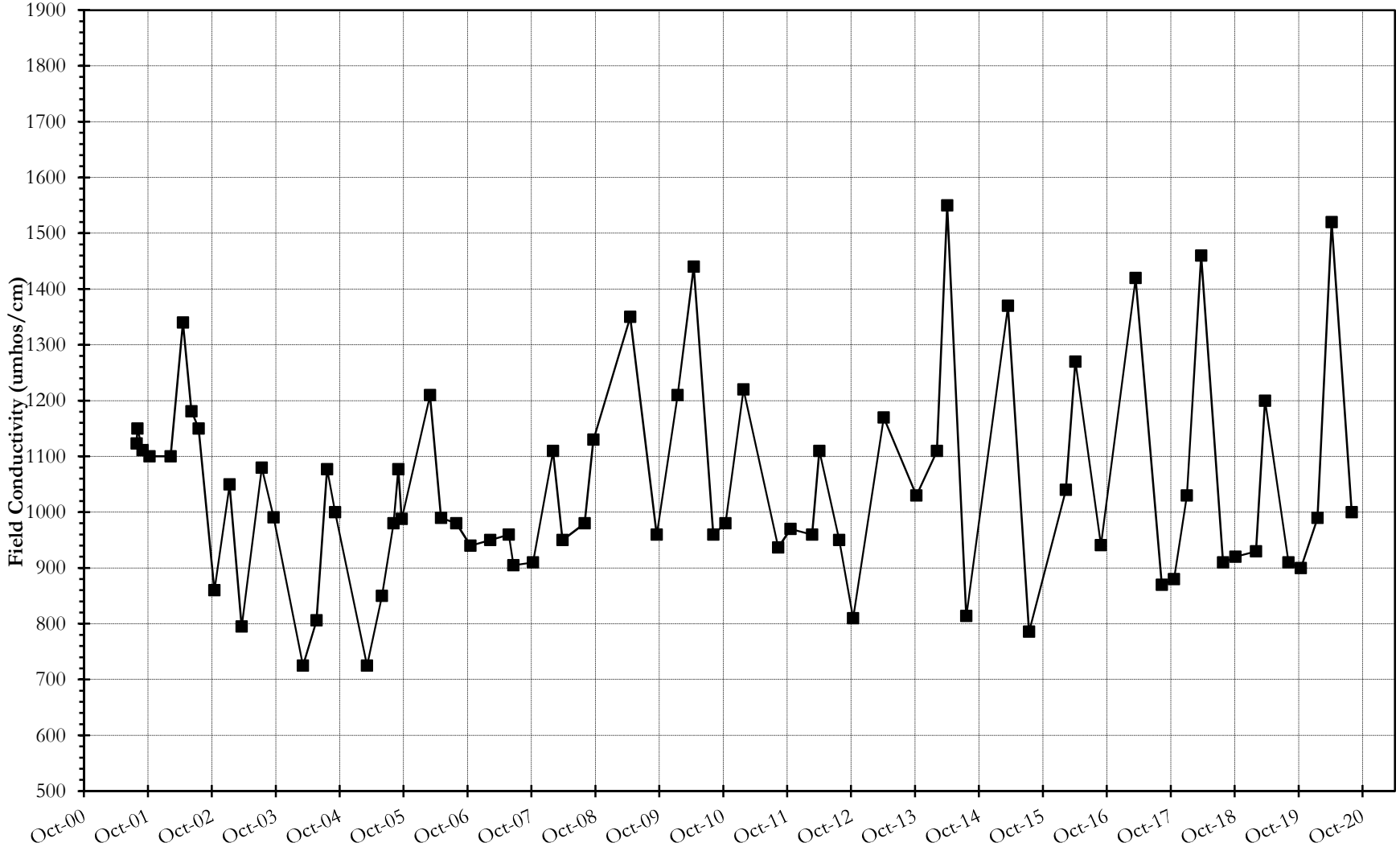

FIGURE 46

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Wells\FC Alluvial Wells\AVF13 fig

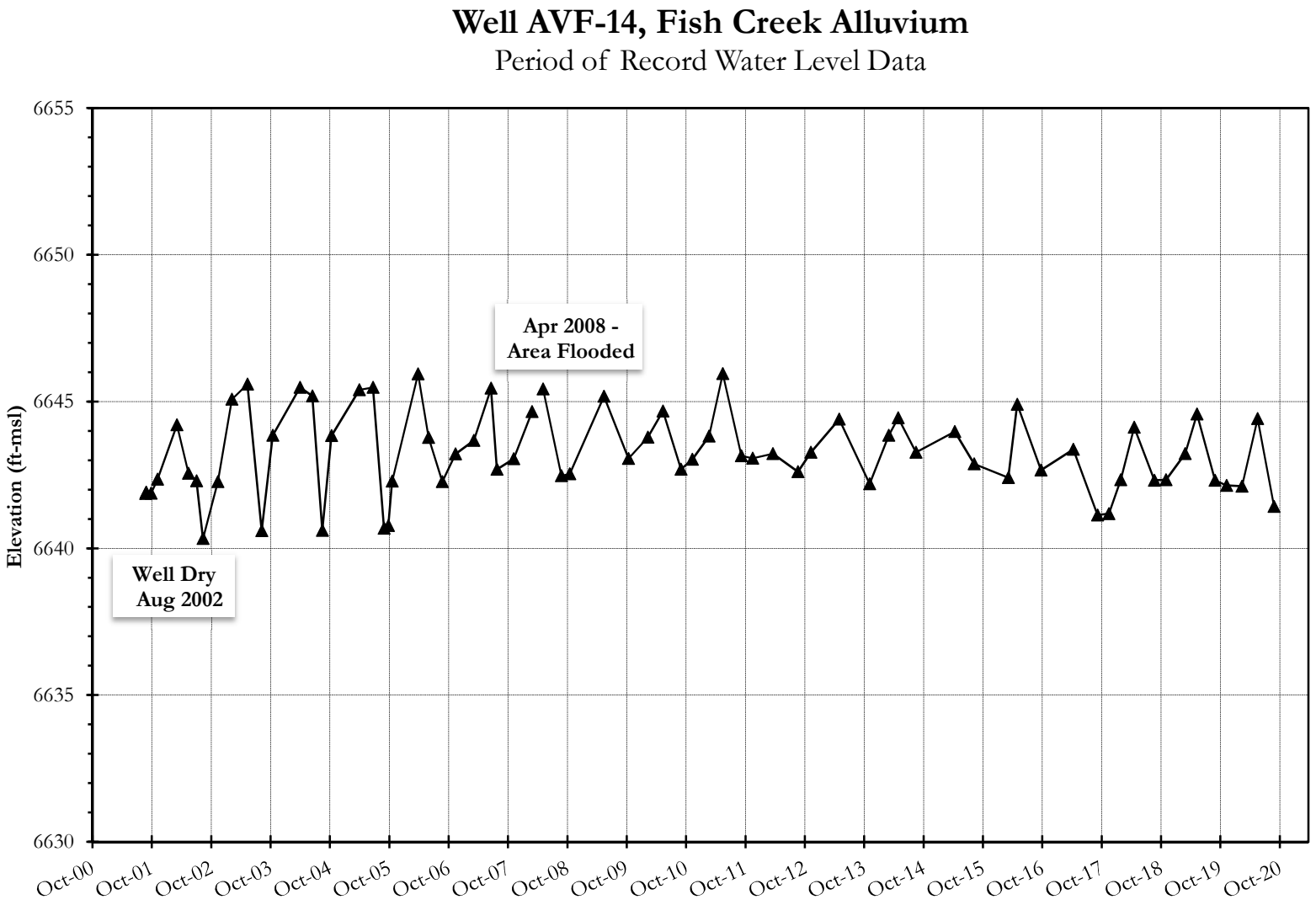

FIGURE 47

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Well AVF-14, Fish Creek Alluvium

Period of Record Field Conductivity Data

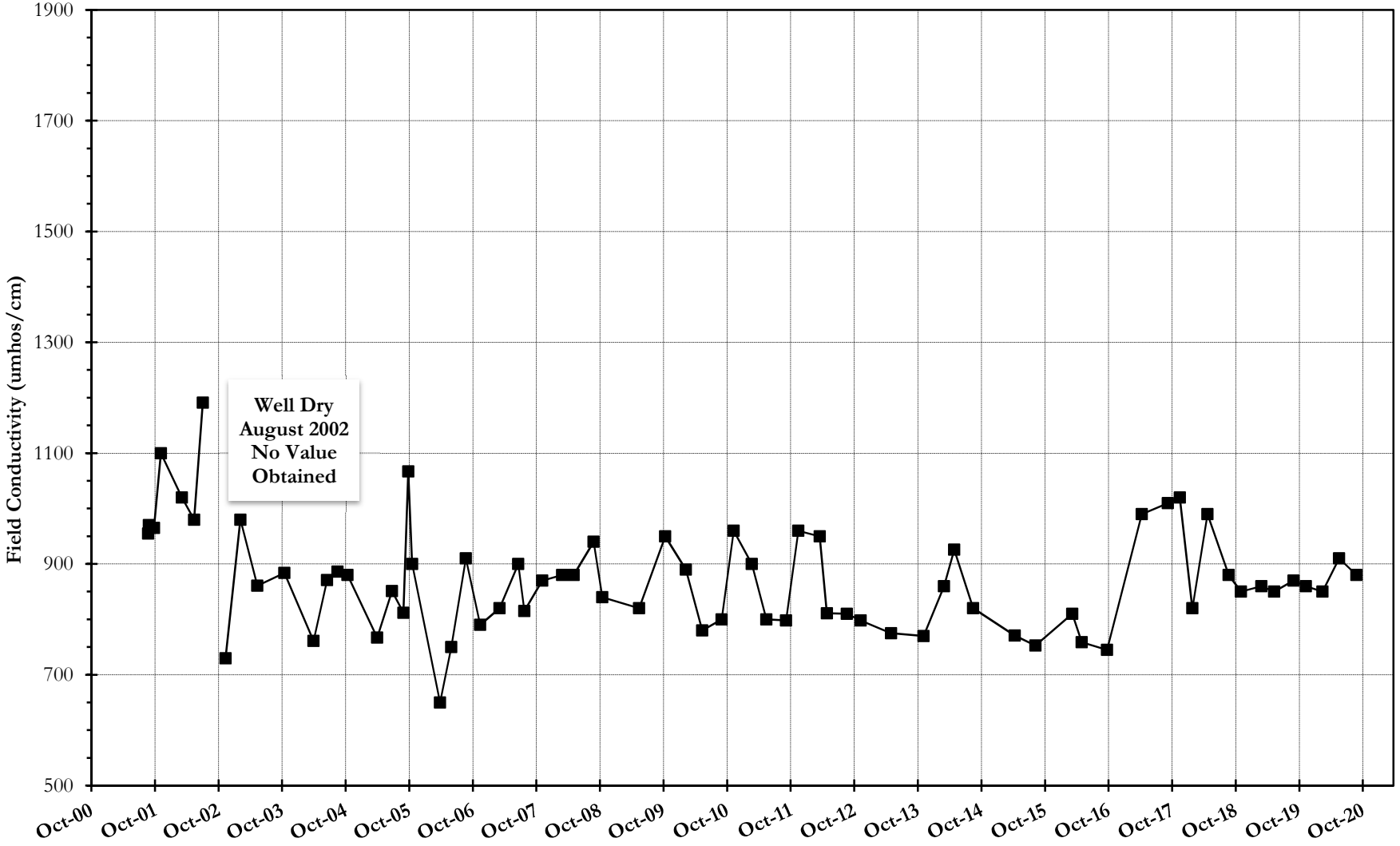

FIGURE 48

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Well AVF-15, Fish Creek Alluvium

Period of Record Water Level Data

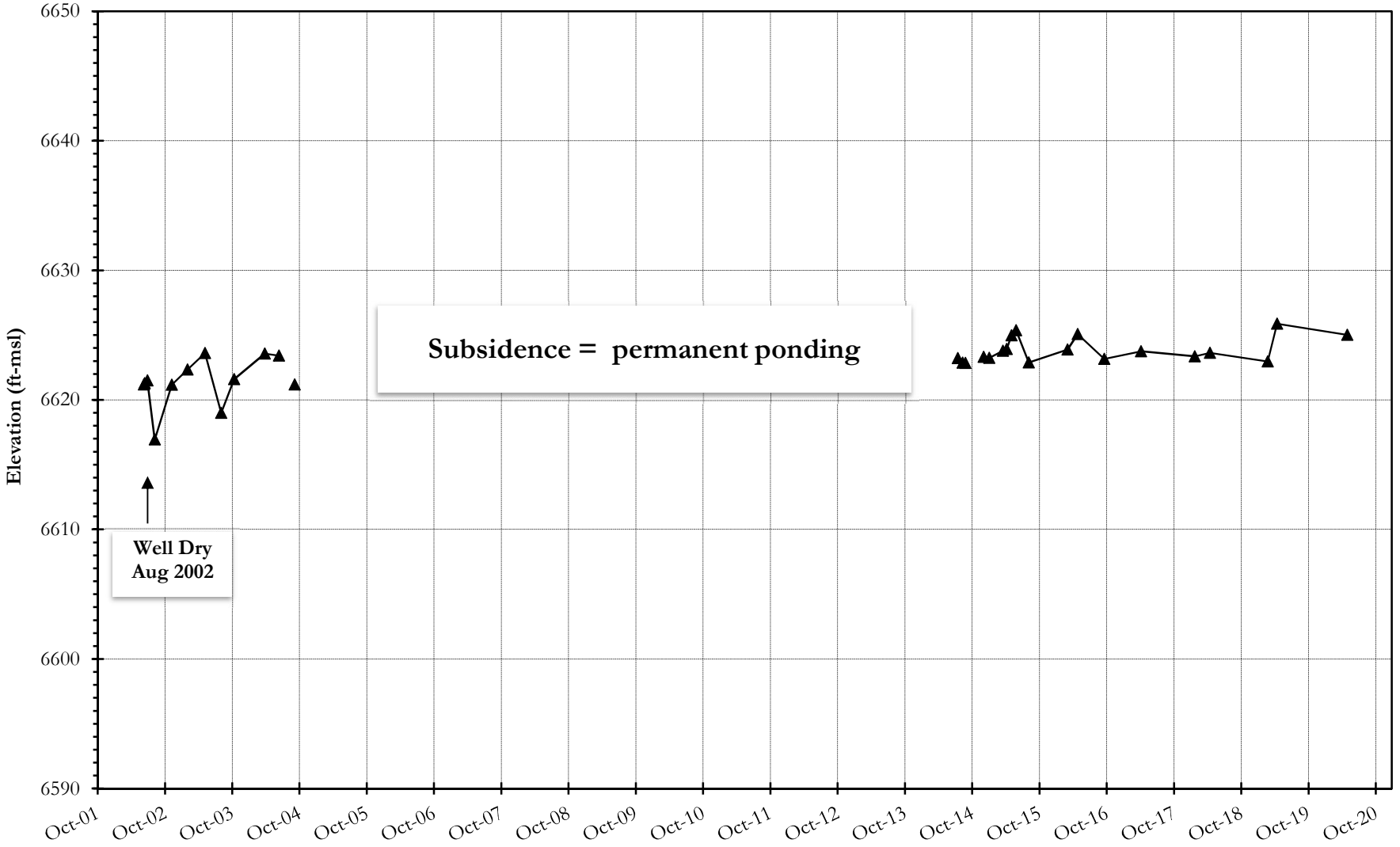

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FIGURE 49

Well AVF-15, Fish Creek Alluvium

Period of Record Field Conductivity Data

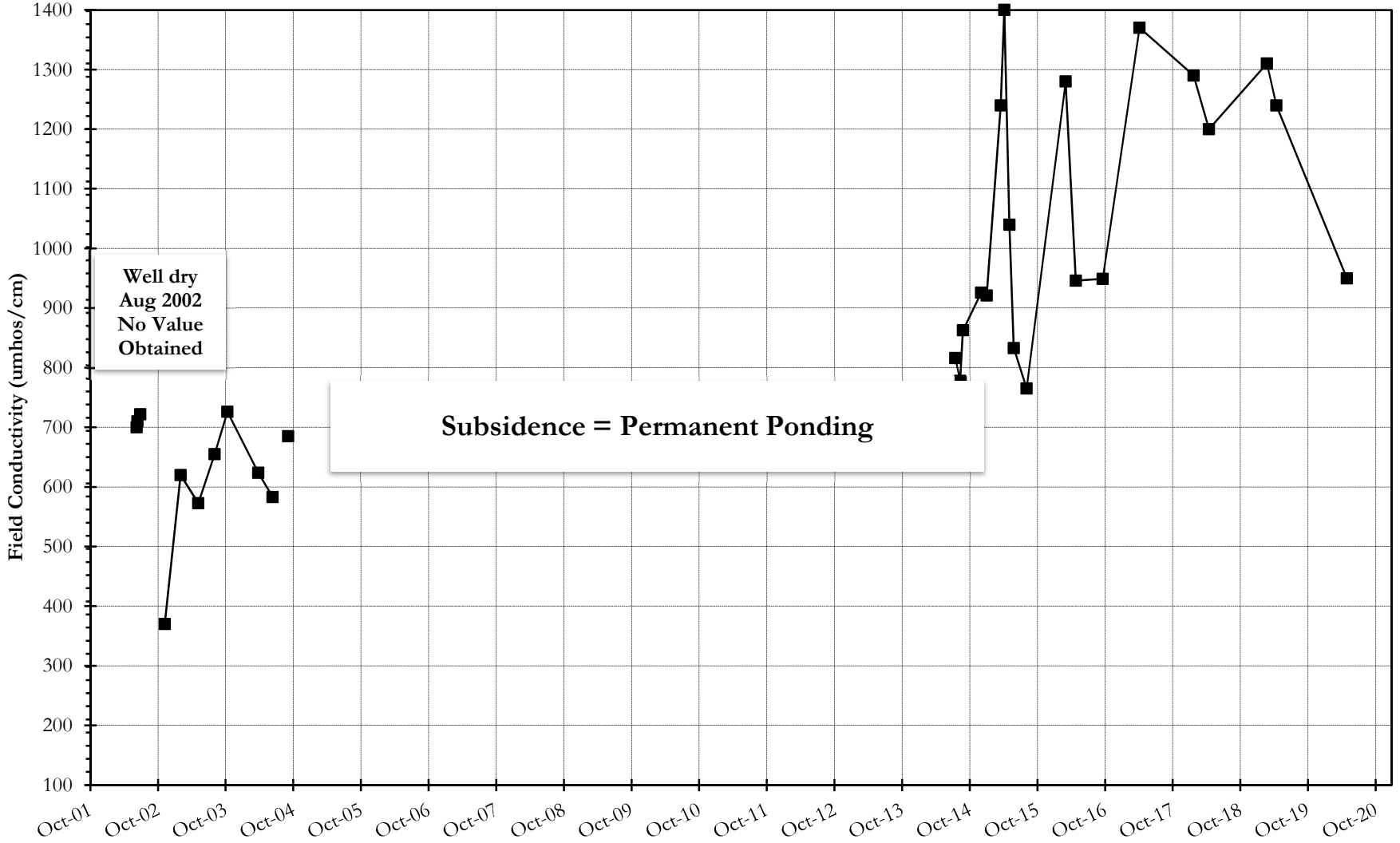

FIGURE 50

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Well 008-AU-3 Fish Creek Alluvium

Water Level Data for Water Years 1997 - 2020

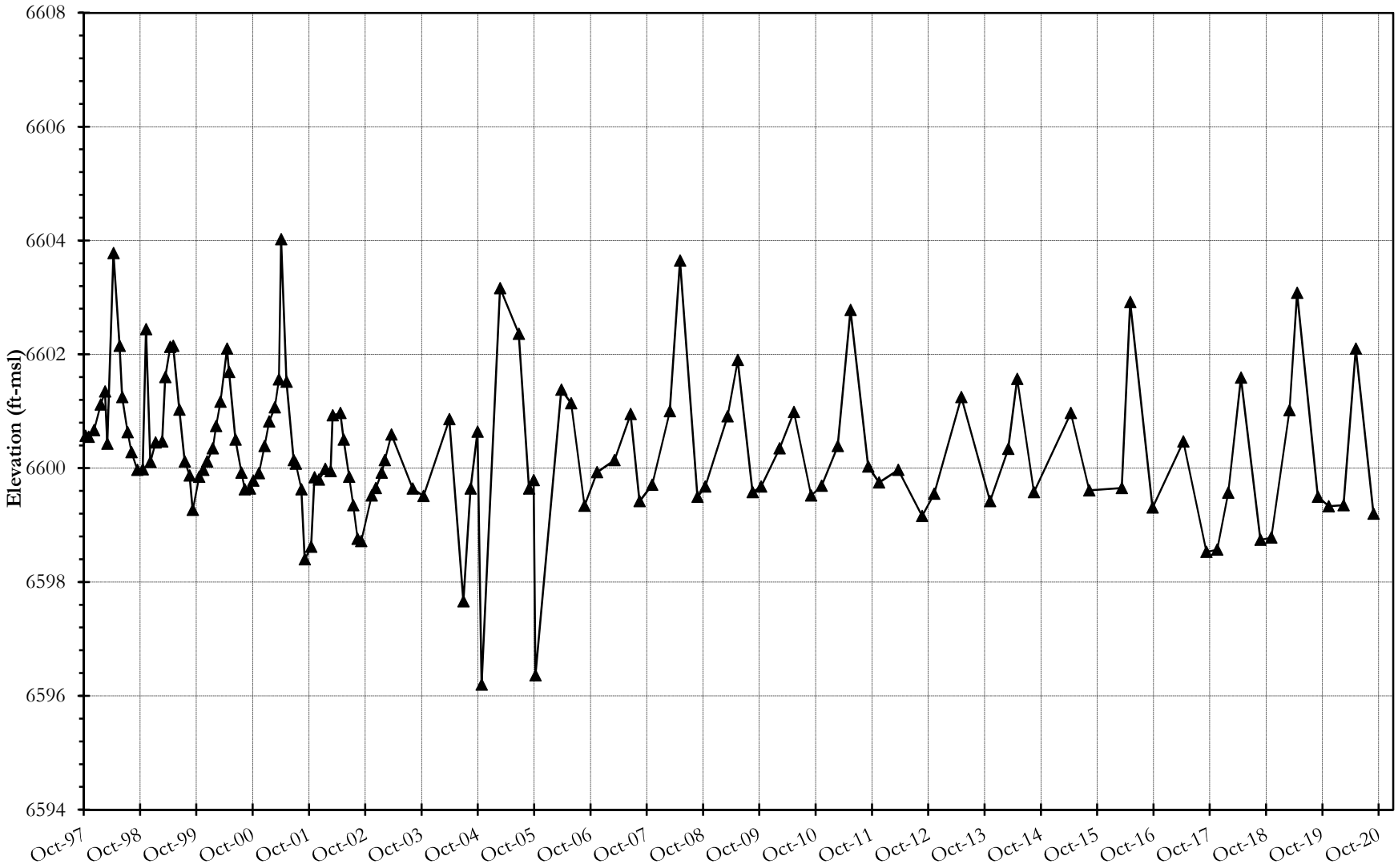

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FIGURE 51

Well 008-AU-3, Fish Creek Alluvium near Tipple

Period of Record Field Conductivity Data

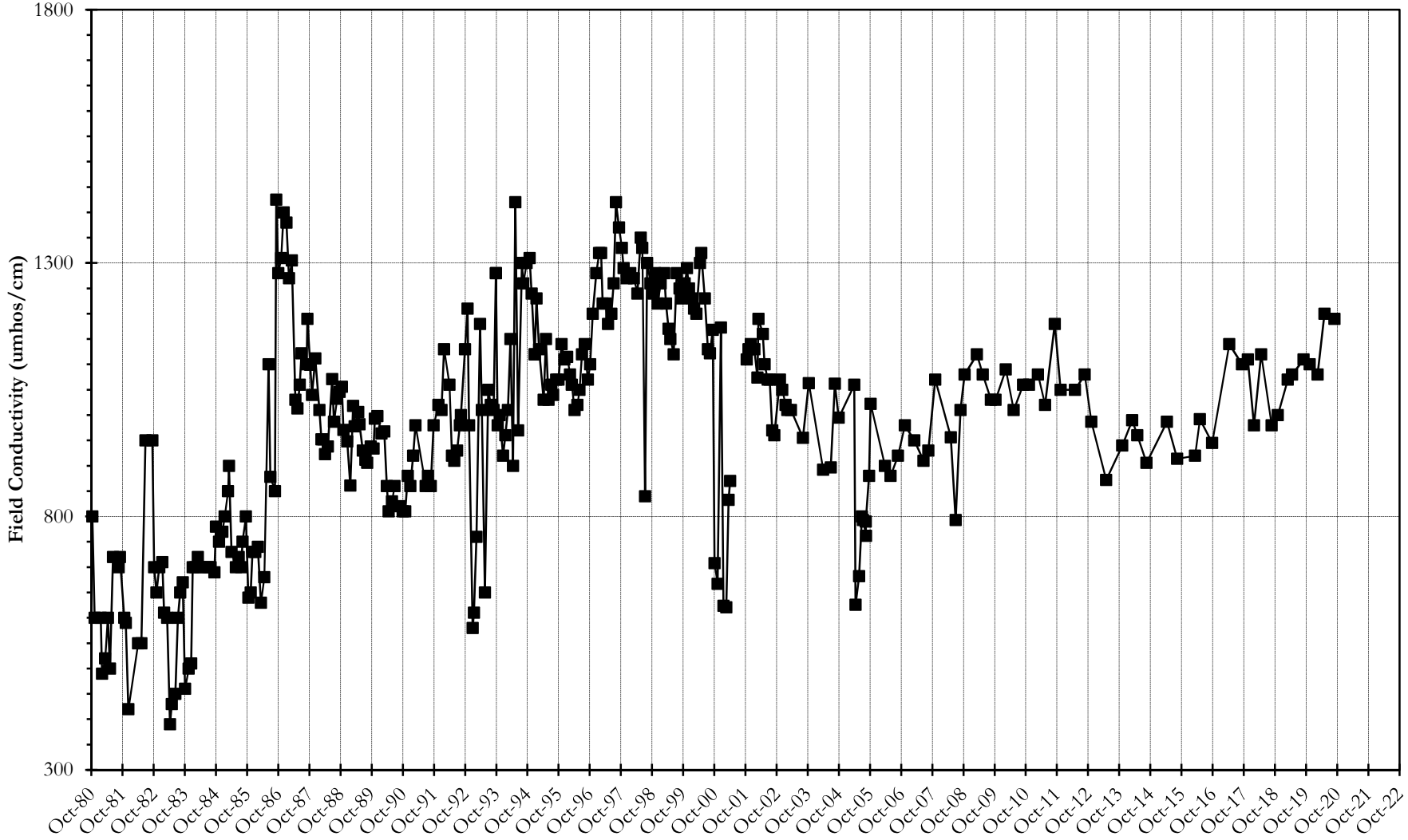

FIGURE 52

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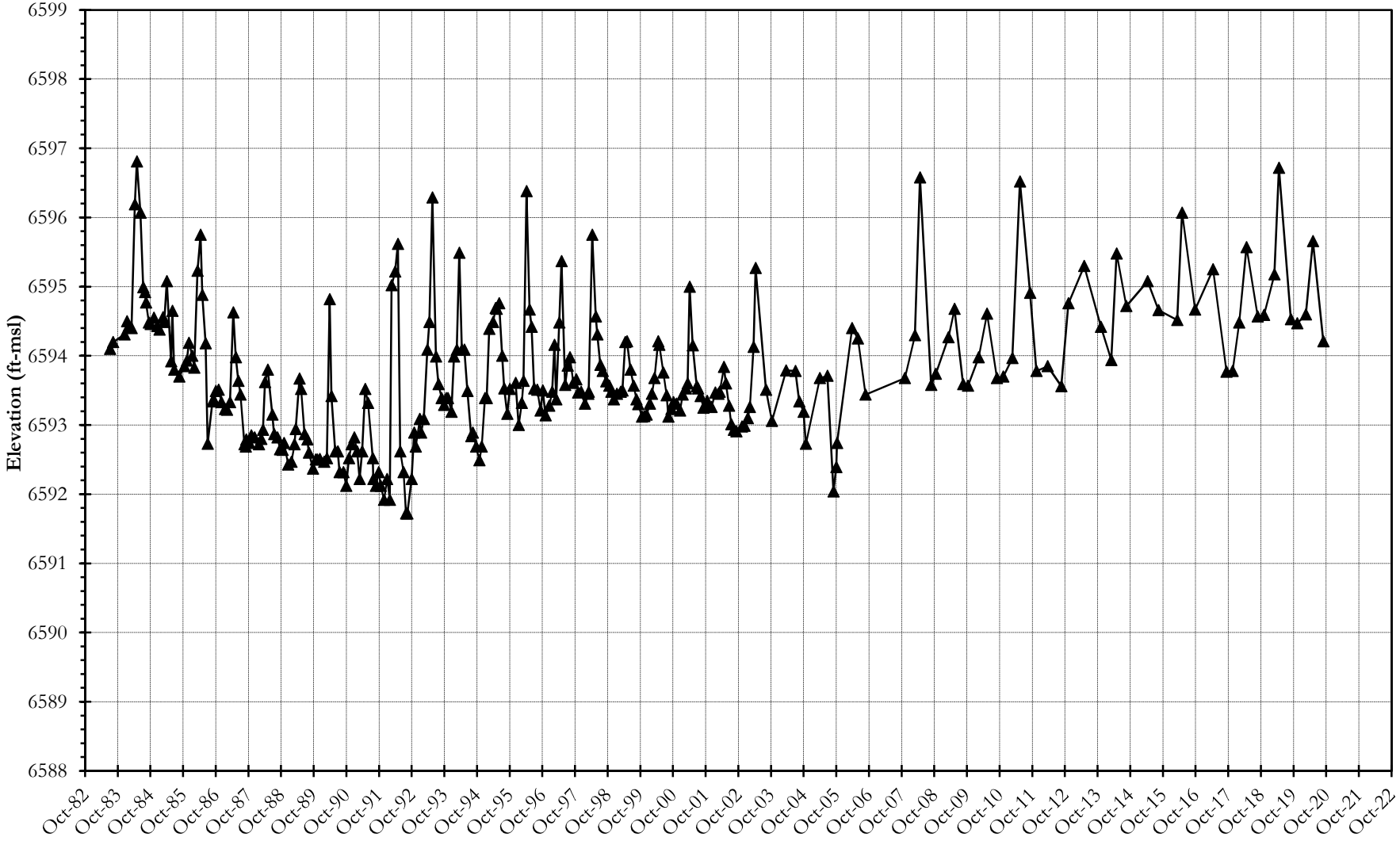
Well 008-AW-3, Fish Creek Alluvium near Tipple

Period of Record Water Level Data

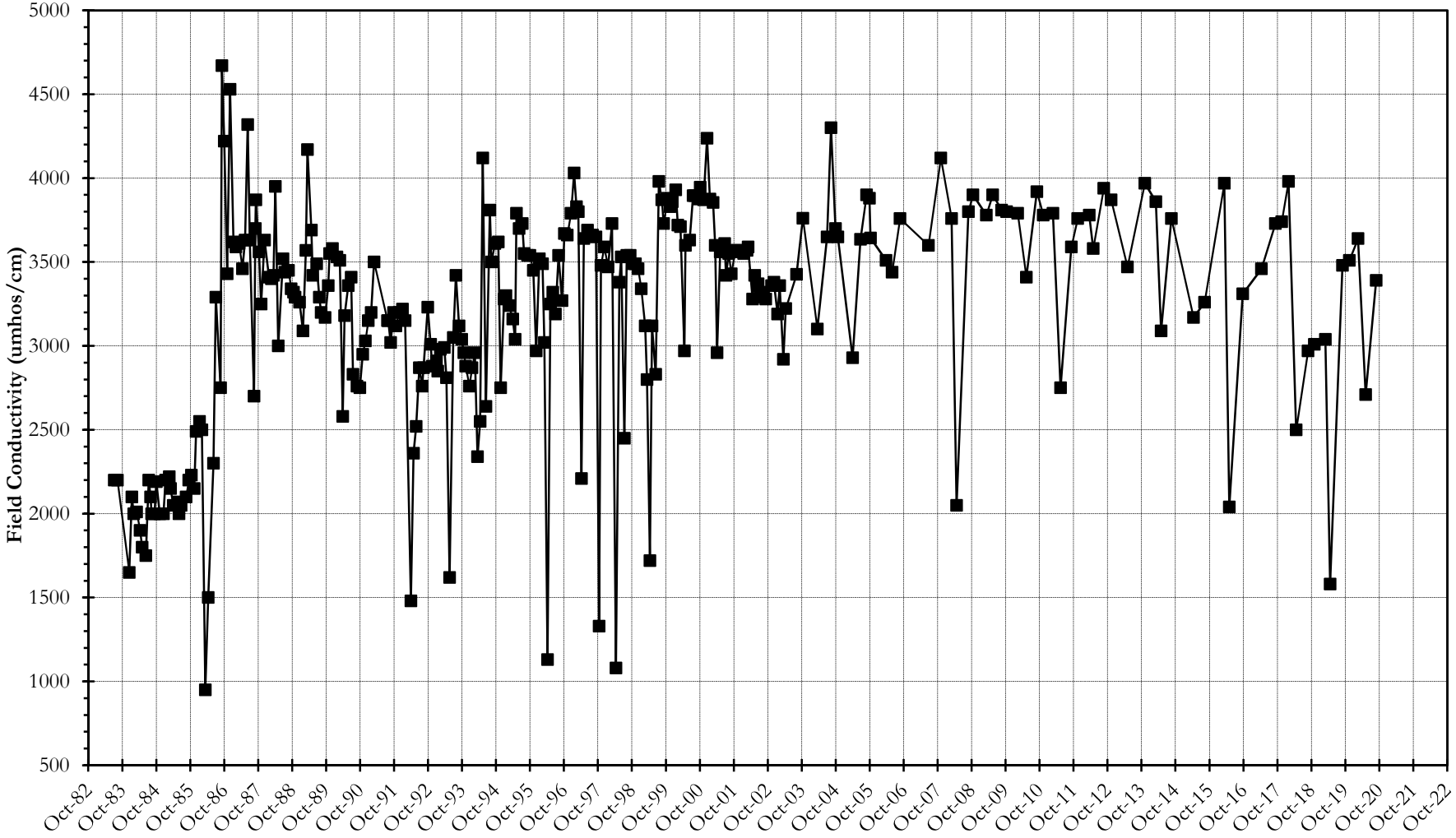


I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Wells\008-AW-3 fig

FIGURE 53

Well 008-AW-3, Fish Creek Alluvium near Tipple

Period of Record Field Conductivity Data



Well 008-AT-1 Trout Creek Alluvial Well

Period of Record Water Level Data

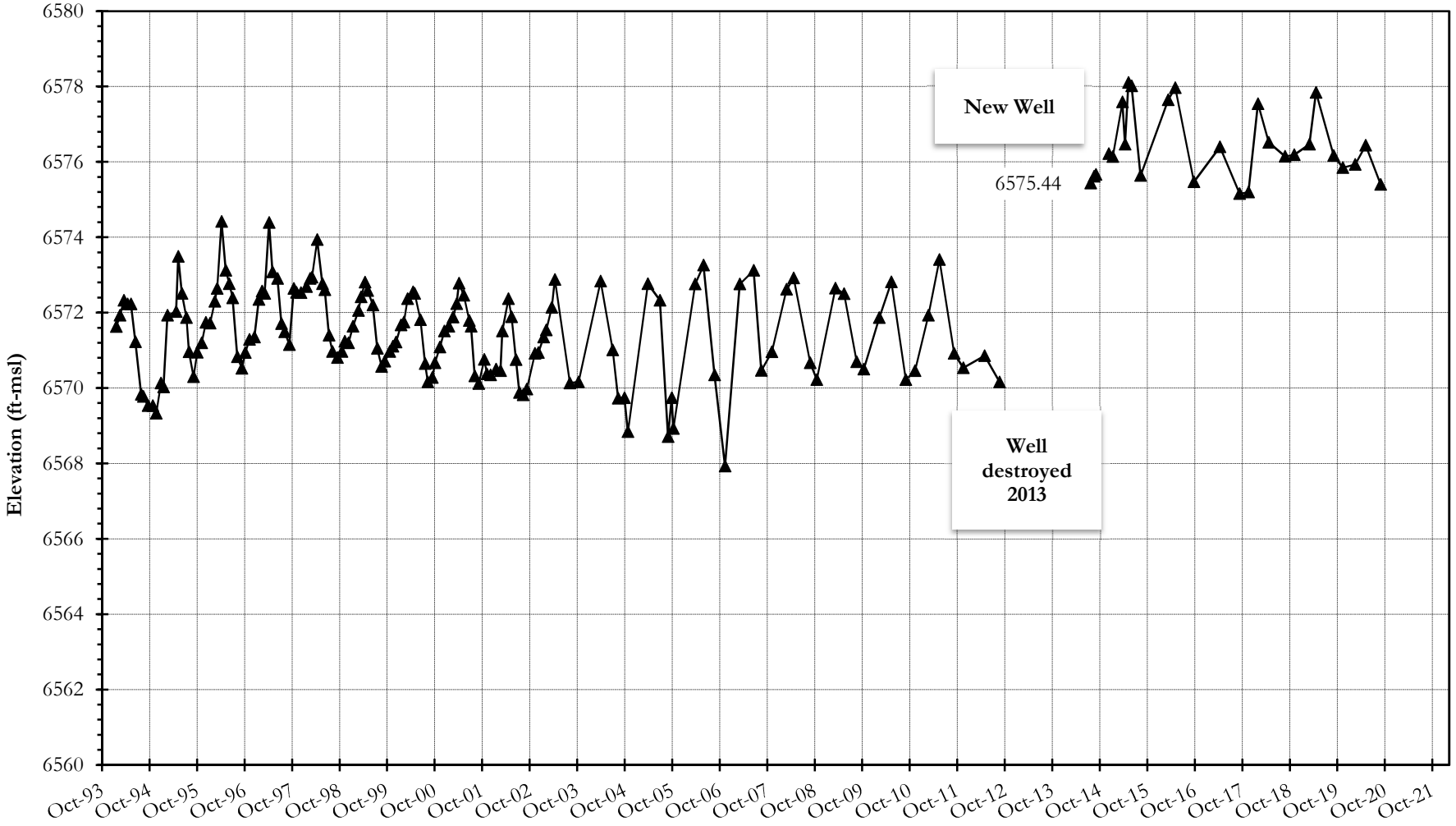


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FIGURE 55

Well 008-AT-1, Trout Creek Alluvium

Period of Record TDS Data

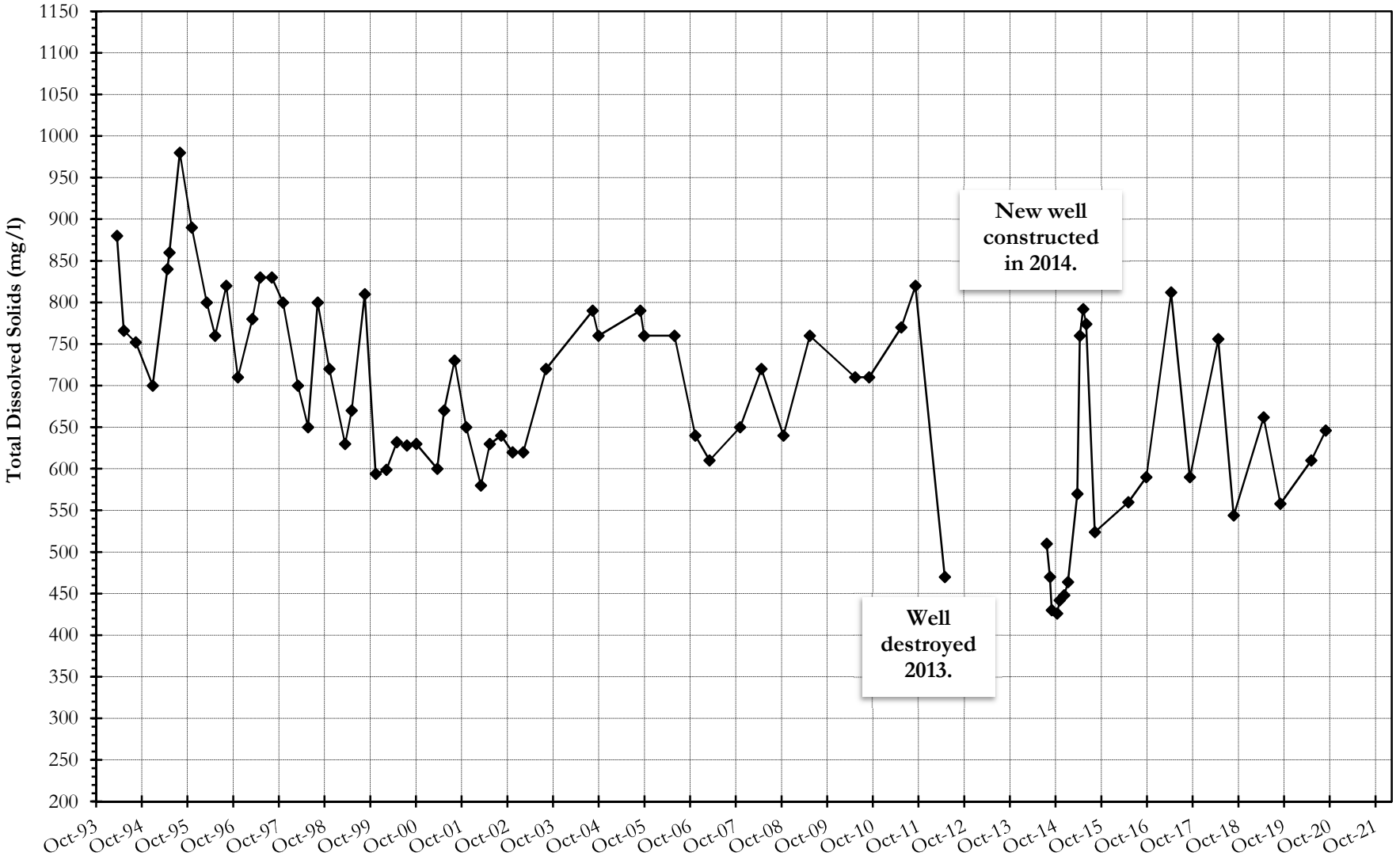

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FIGURE 56

Well Jones, Lower Trout Creek Alluvium

Period of Record Water Level Data

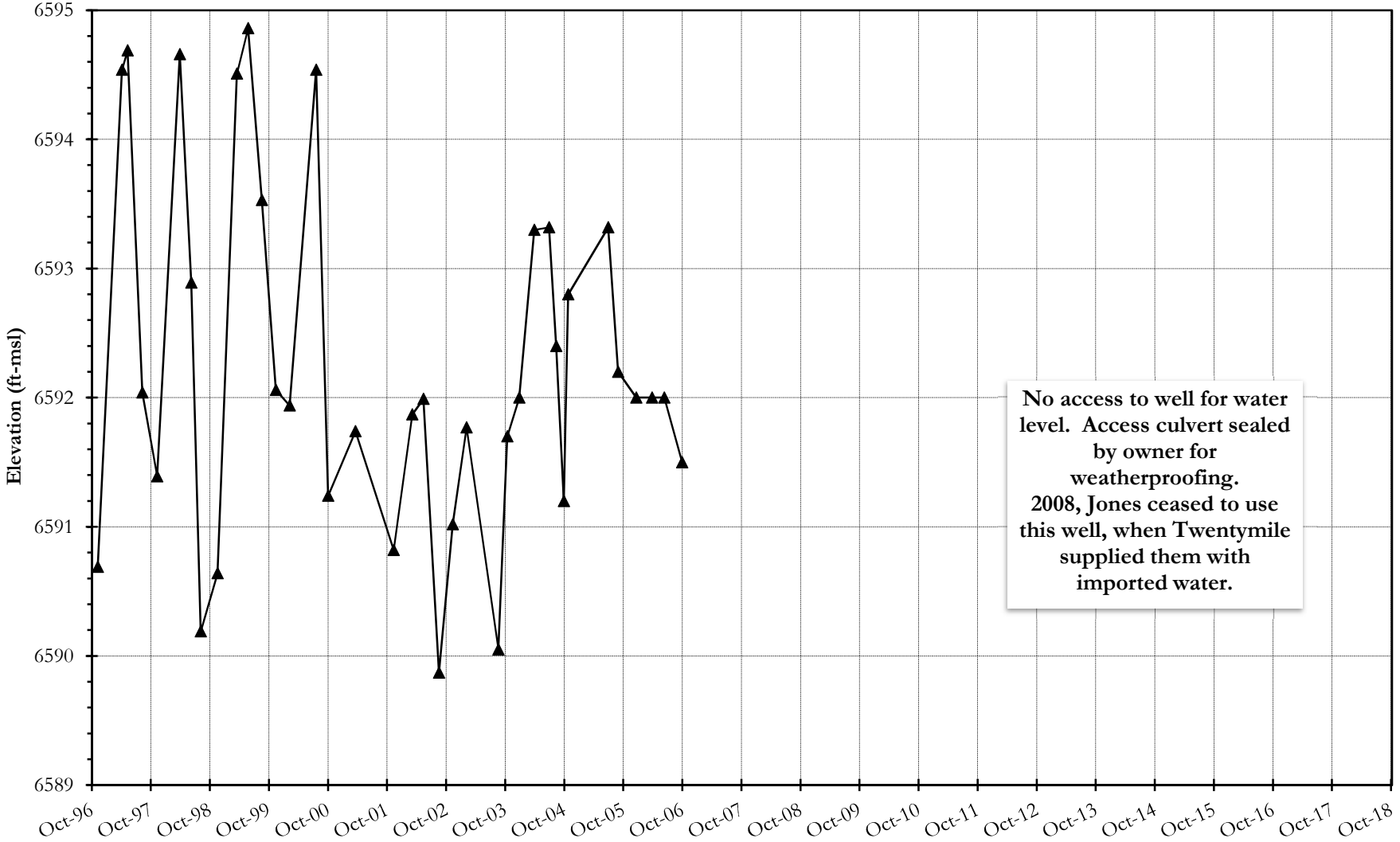

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FIGURE 57

Well Jones, Lower Trout Creek Alluvium

Period of Record TDS Data

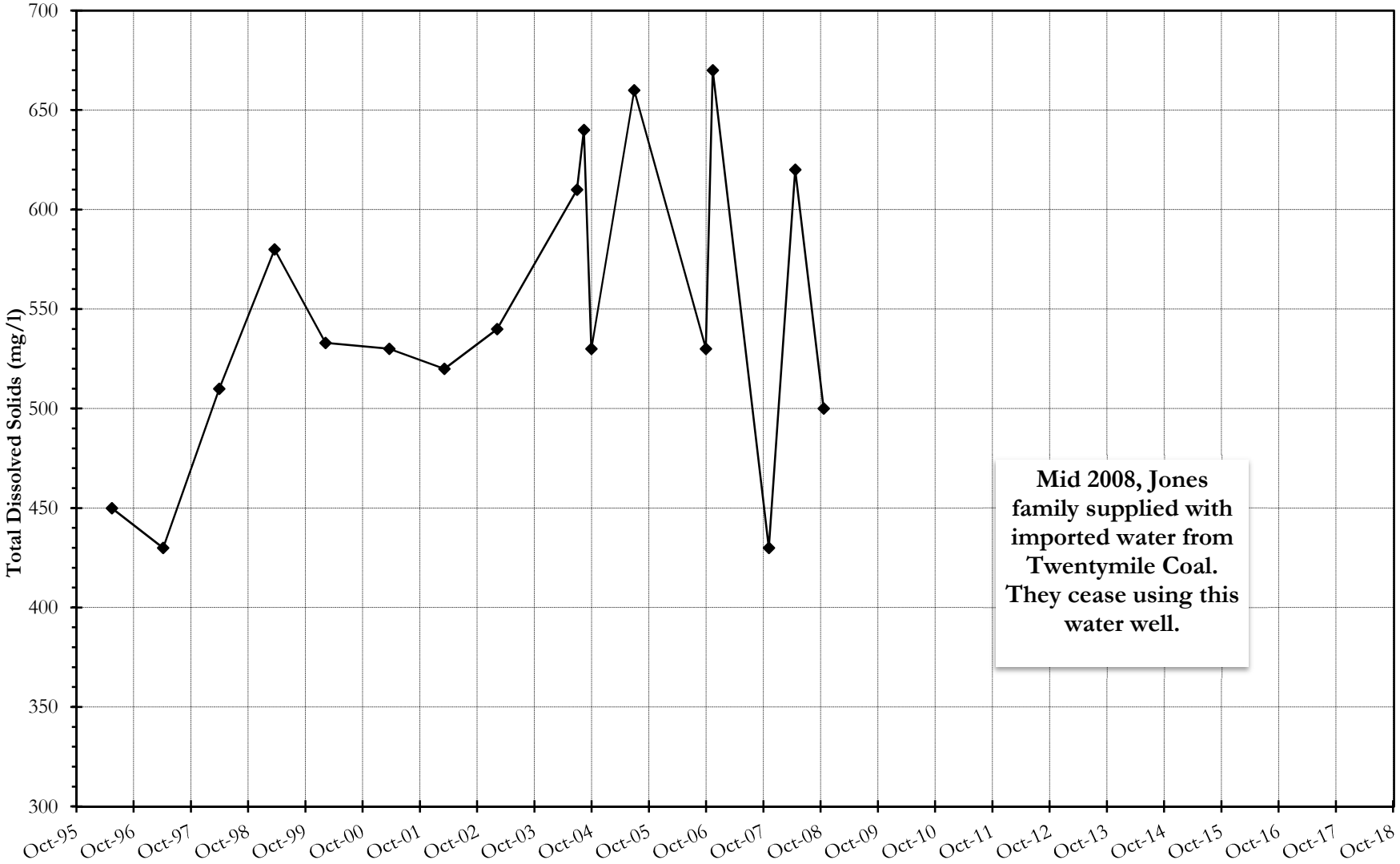

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FIGURE 58

Surface Water Site 800 (USGS 09243800), Foidel Creek at Eckman Park

2020 Water Year Flow Rate Data

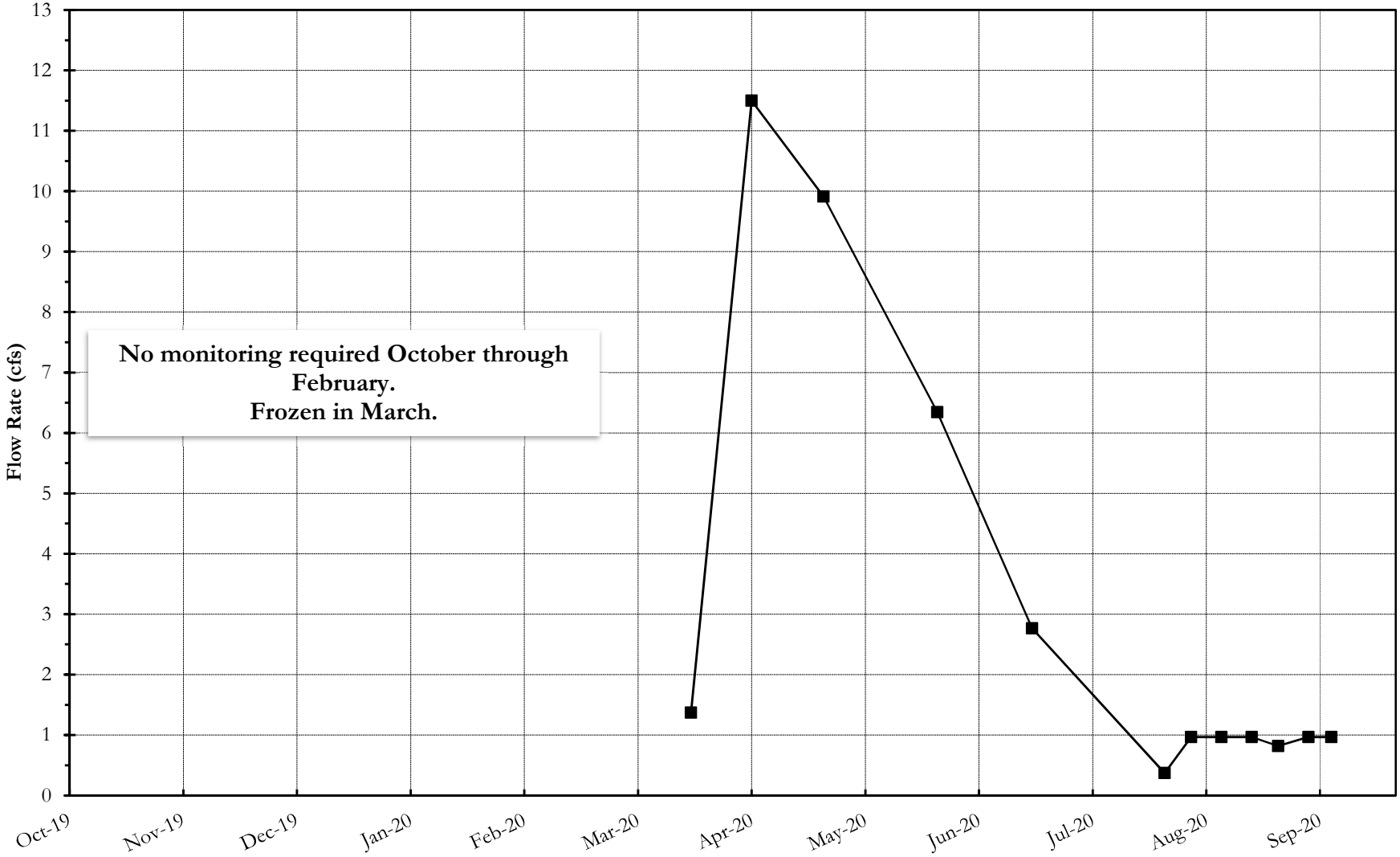

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FIGURE 59

Surface Water Site 800 (USGS 09243800), Foidel Creek at Eckman Park

2020 Water Year Field Conductivity Data

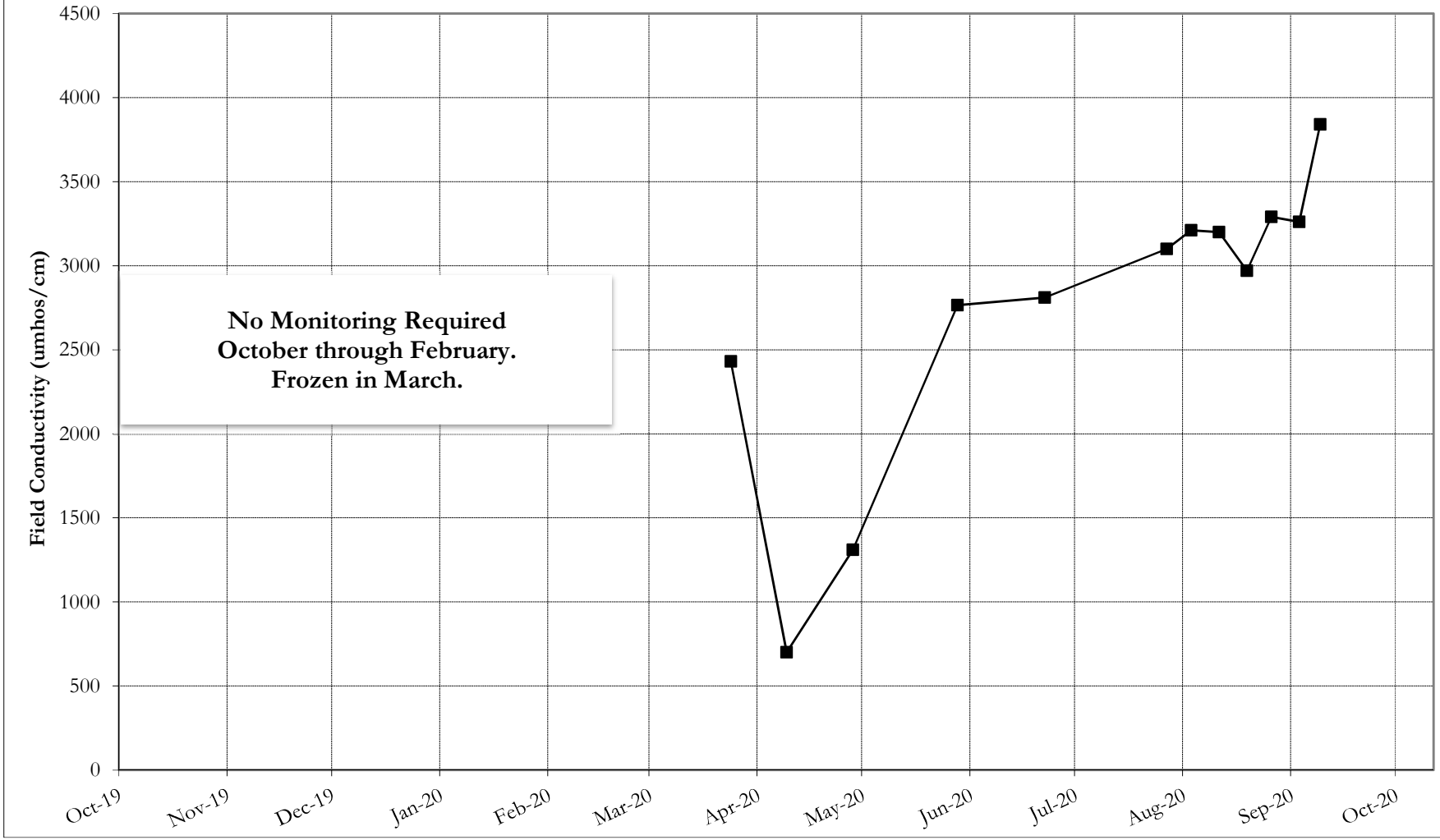

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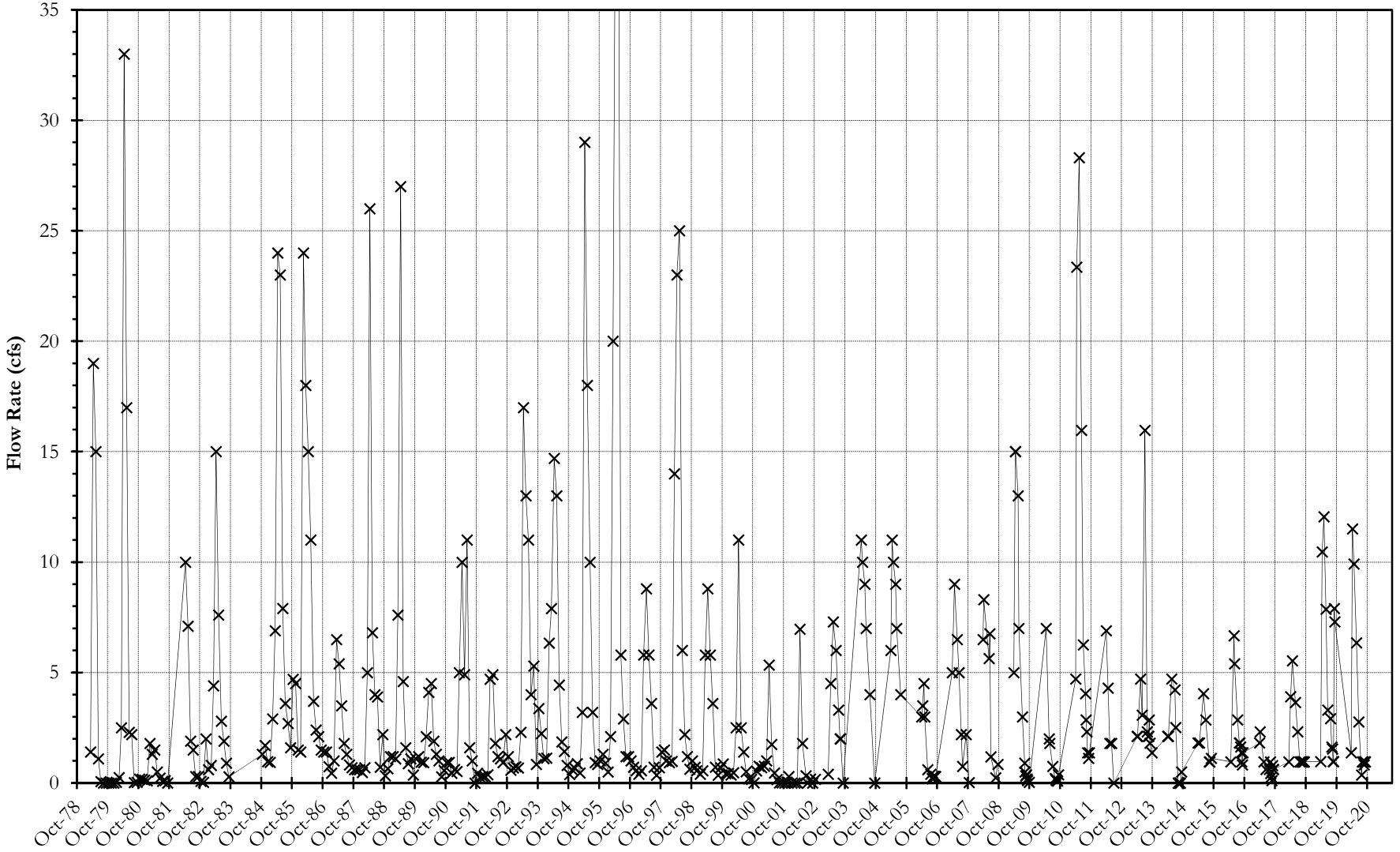
FIGURE 60

Surface Water Site 800 (USGS 09243800), Foidel Creek - Eckman Park

Period of Record Monthly Flow Rate Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\800

FIGURE 61

Surface Water Site 800 (USGS 09243800), Foidel Creek - Eckman Park

Period of Record Field Conductivity Data

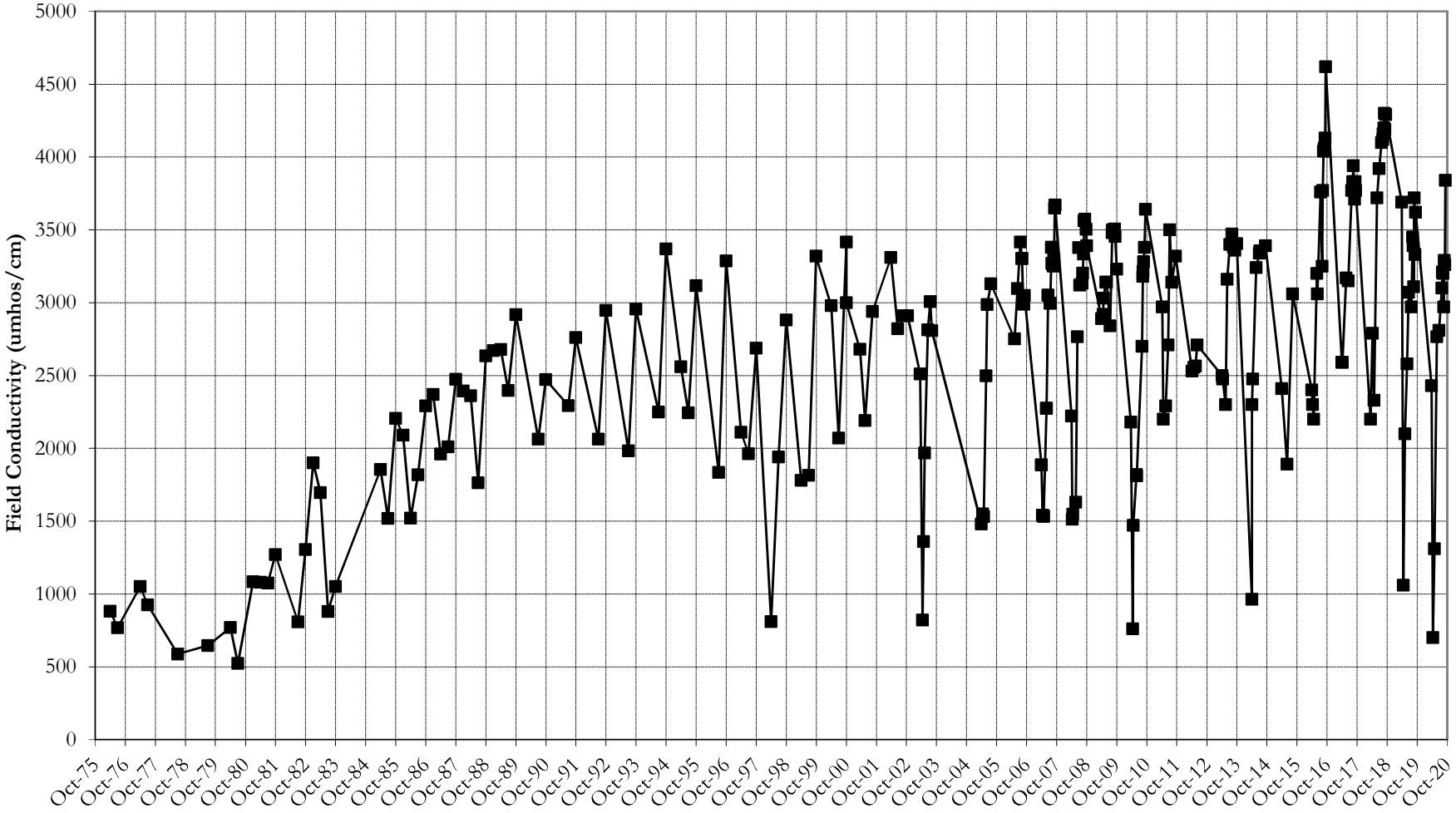


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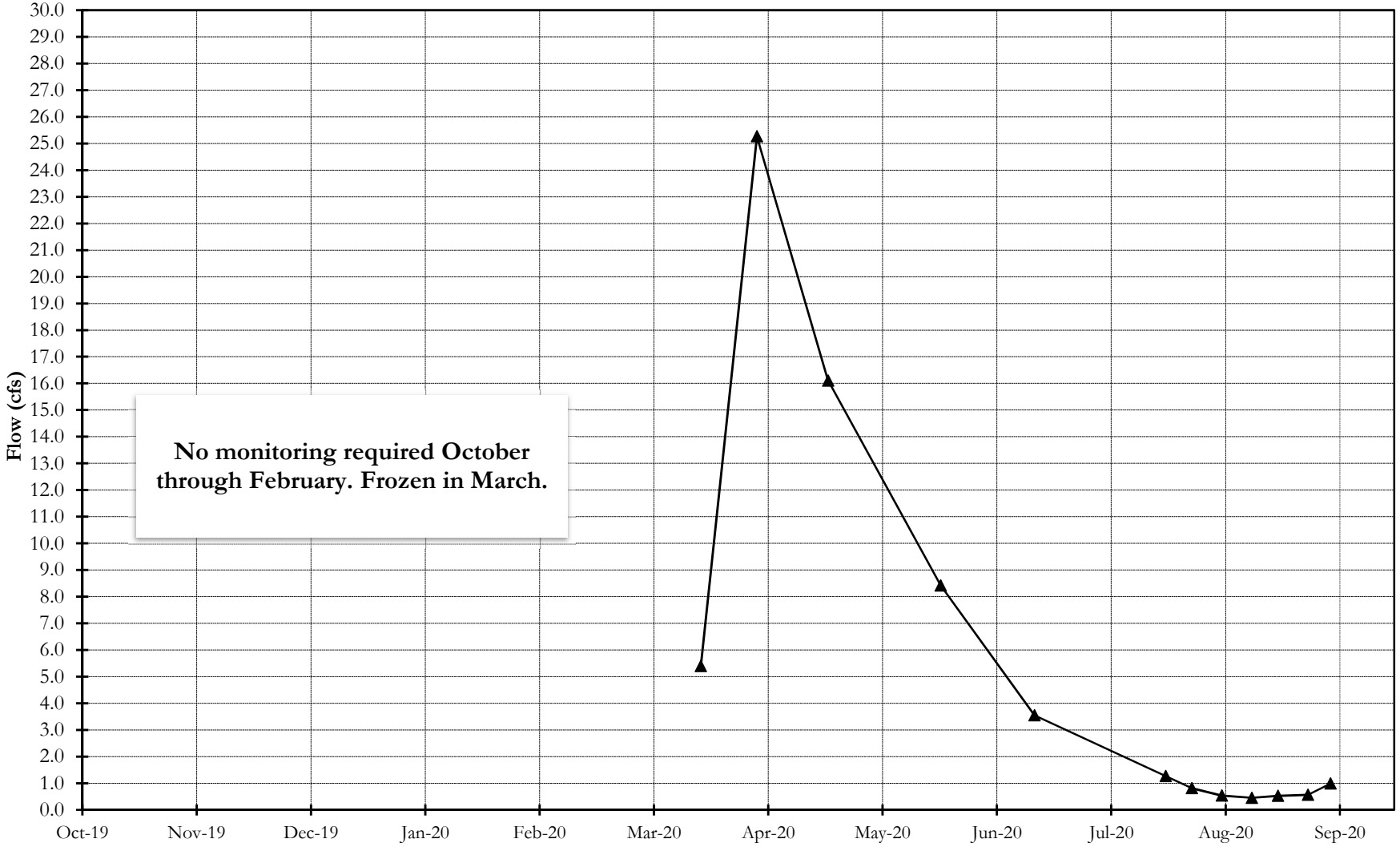
FIGURE 62

Surface Water Site 8, Foidel Creek below Foidel Creek Mine

2020 Water Year Flow Rate Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\8

FIGURE 63

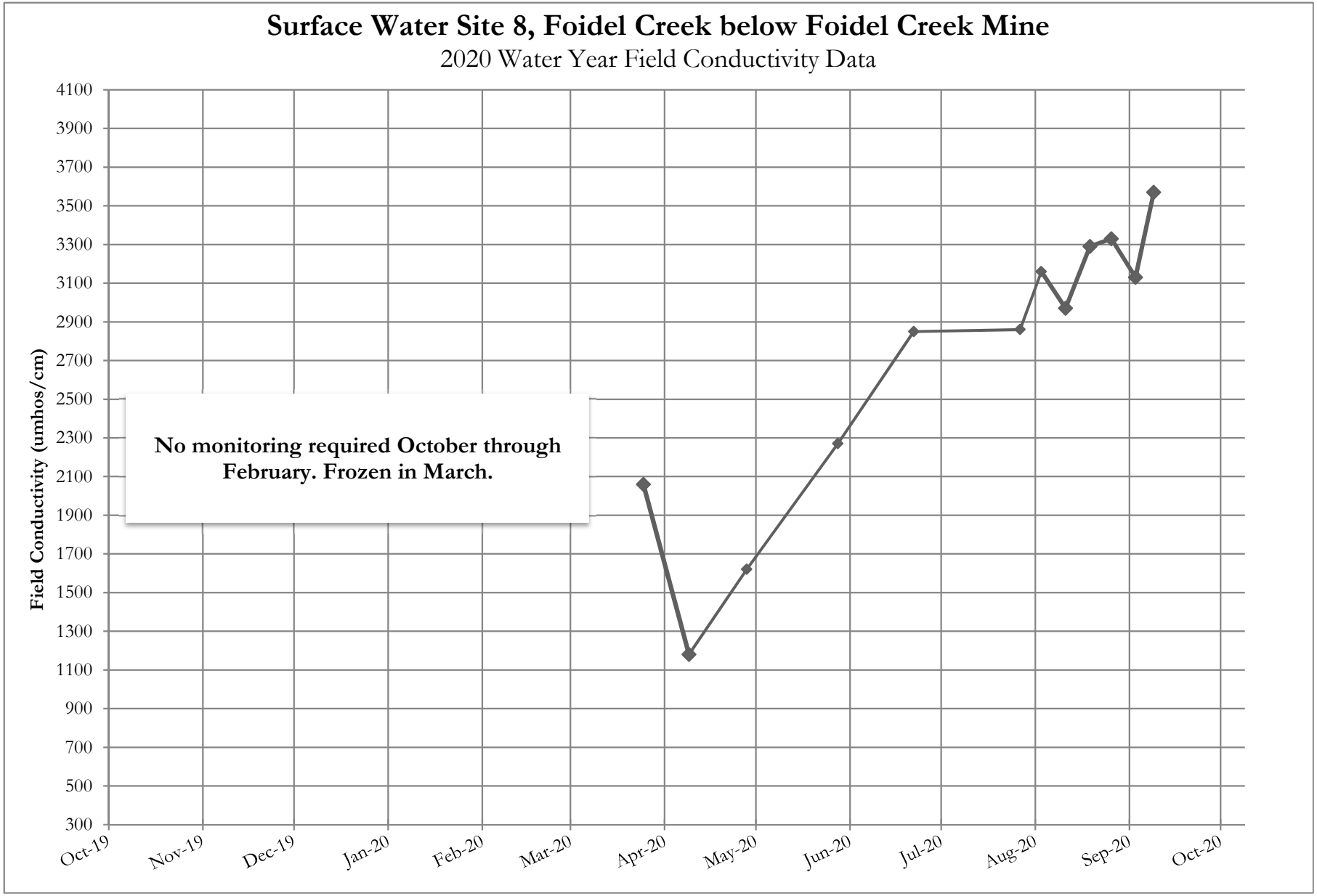


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FIGURE 64

Surface Water Site 8, Foidel Creek below Foidel Creek Mine

Mean Monthly Flow Rate Data for Water Years 1997 - 2020

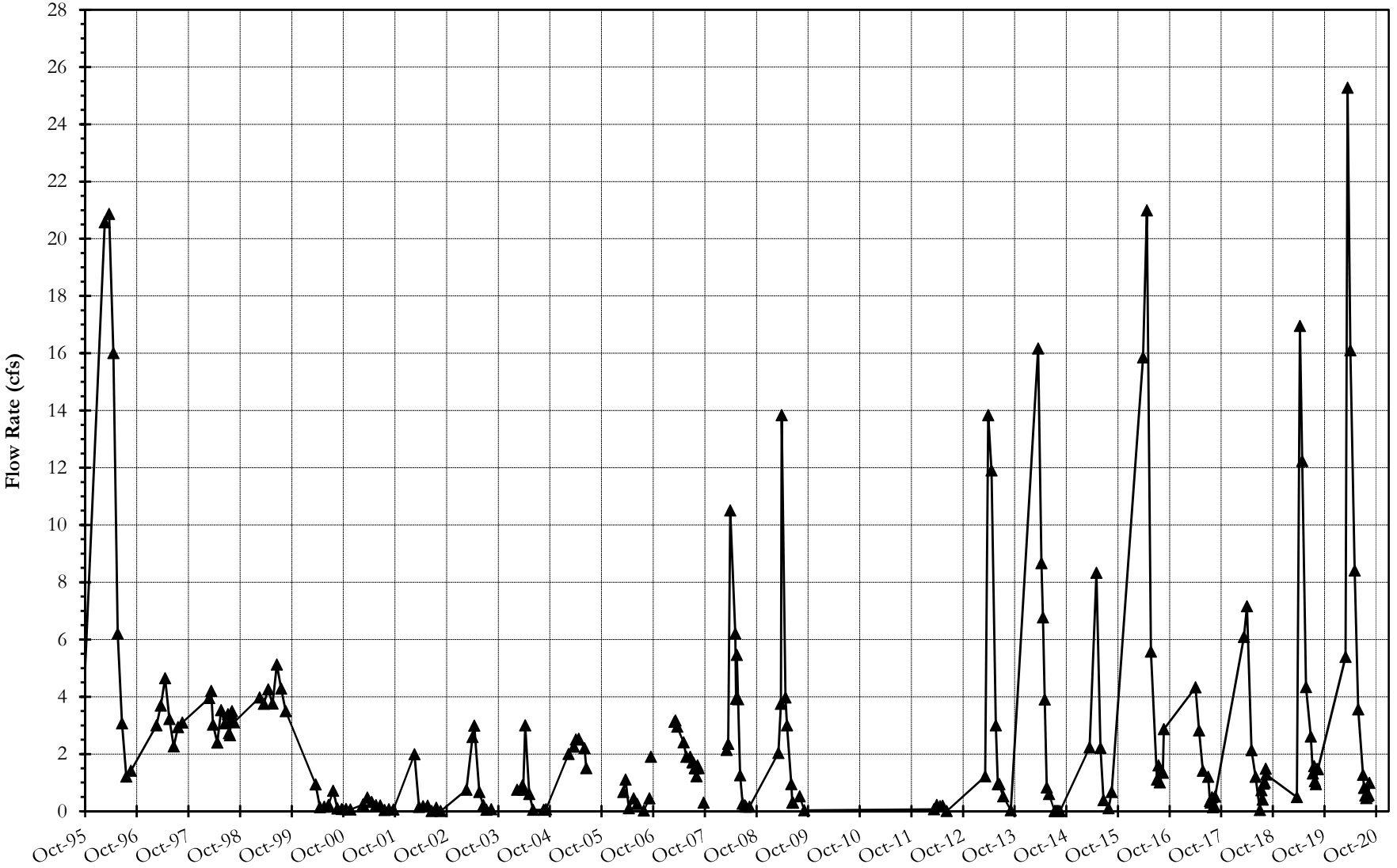

FIGURE 65

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\8

Surface Water Site 8, Foidel Creek below Foidel Creek Mine

Period of Record Quarterly Field Conductivity Data

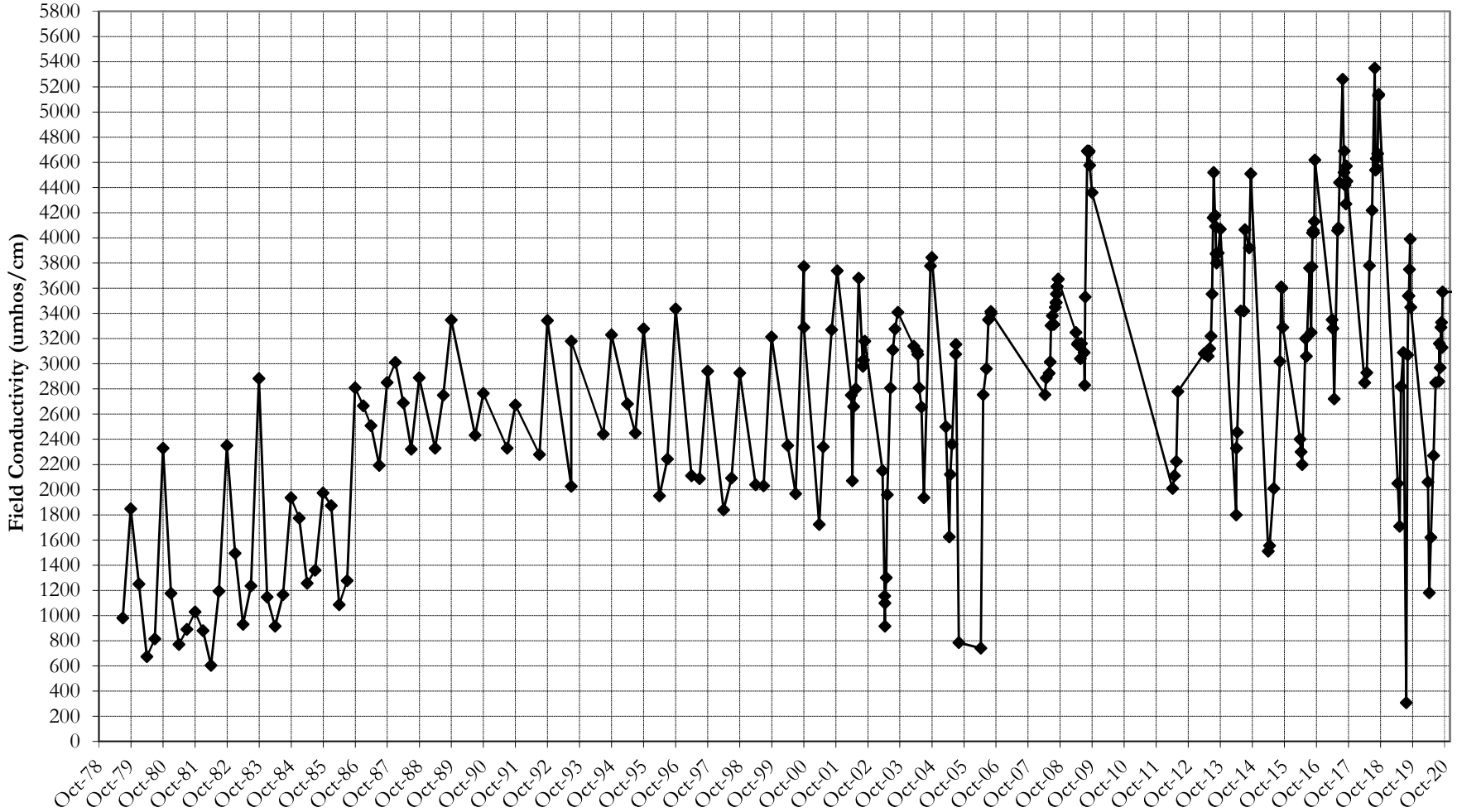

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FIGURE 66

Surface Water Site 900 (USGS 09243900), Foidel Creek

2020 Water Year Flow Rate Data

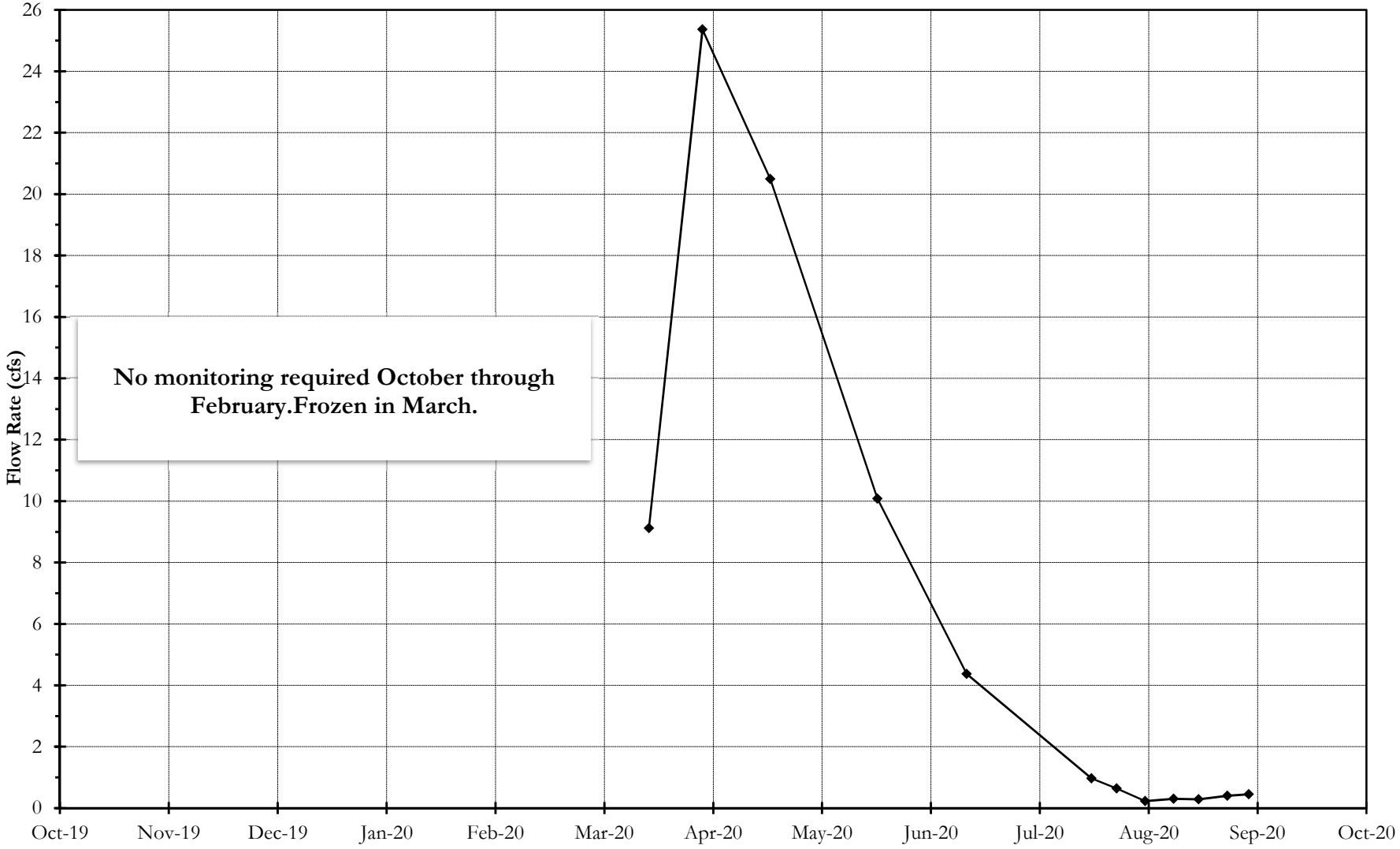

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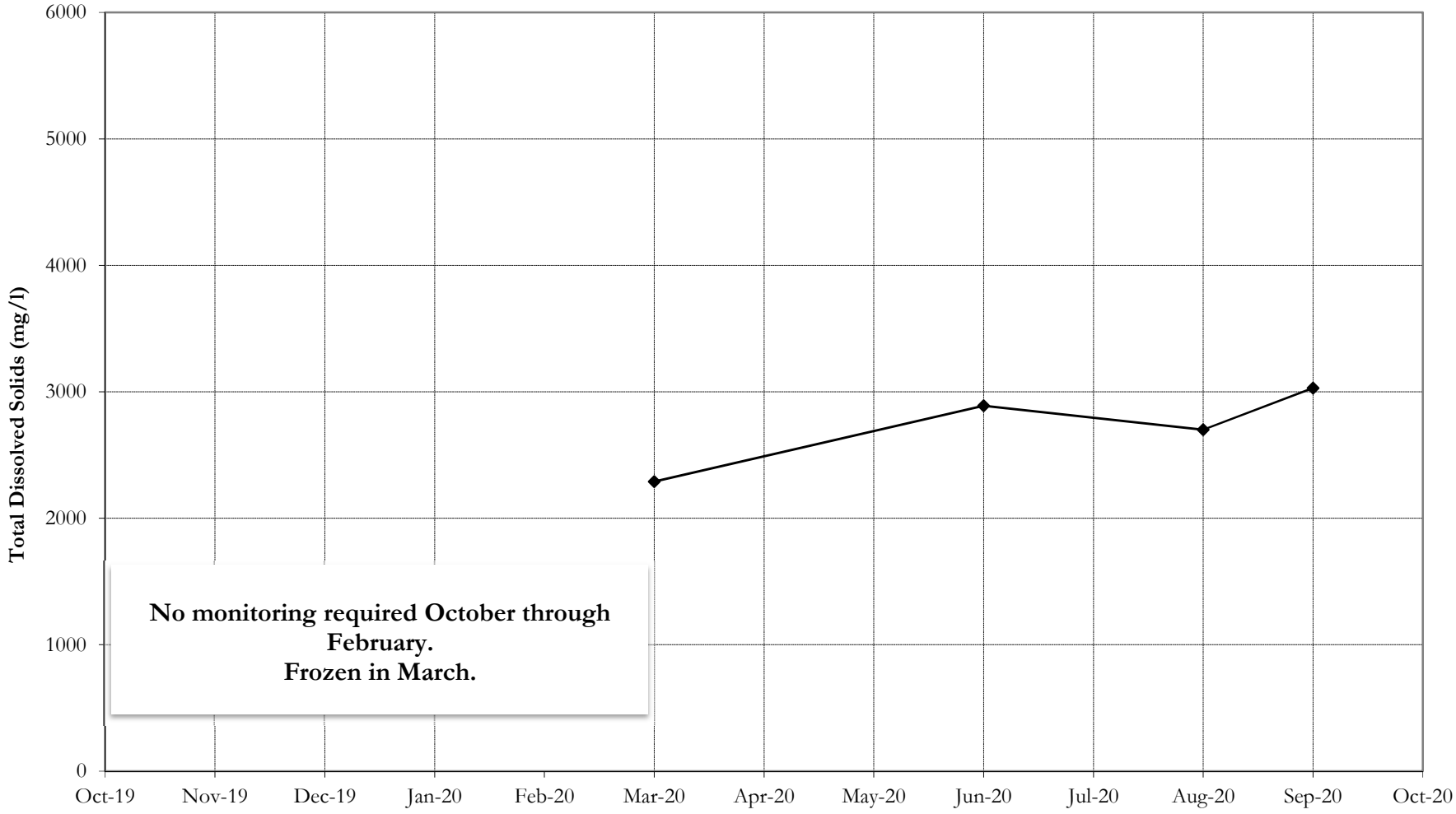
FIGURE 67

Surface Water Site 900 (USGS 09243900), Foidel Creek

2020 Water Year TDS Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\900

FIGURE 68

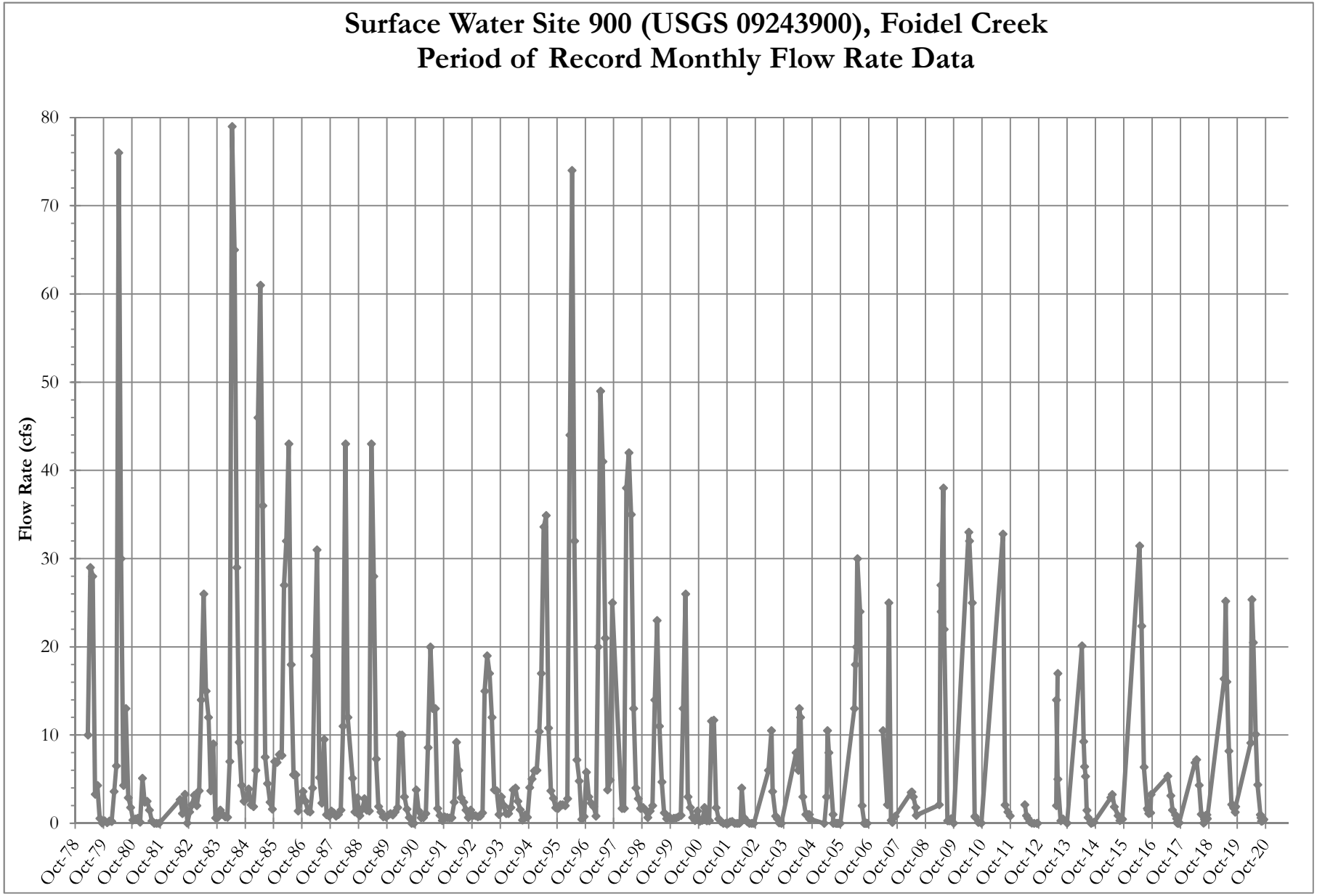


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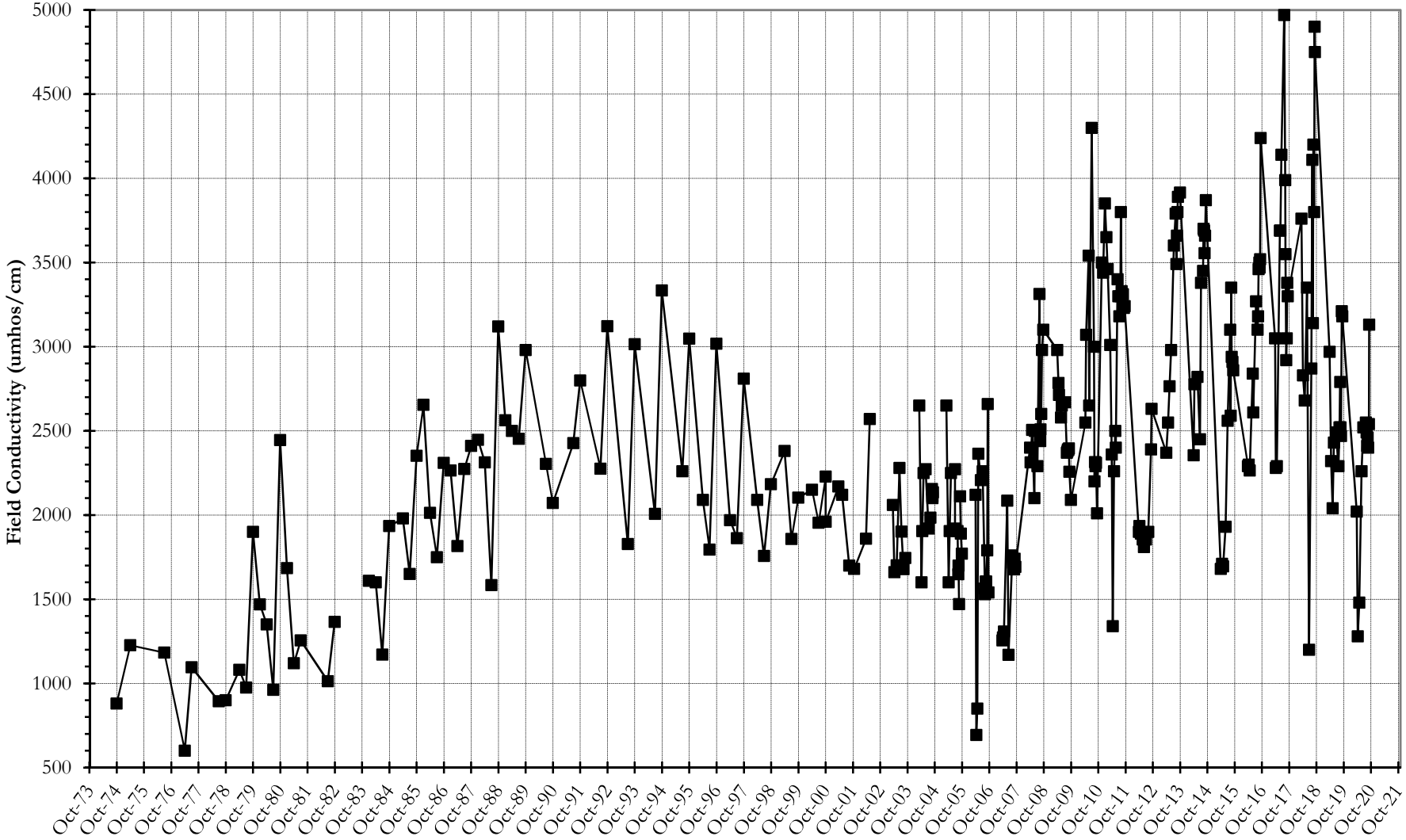
FIGURE 69

Surface Water Site 900, (USGS 09243900), Foidel Creek

Period of Record Field Conductivity Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\900

FIGURE 70

Surface Water Site 16A, Fish Creek - Upstream of Mine 2

2020 Water Year Flow Rate Data

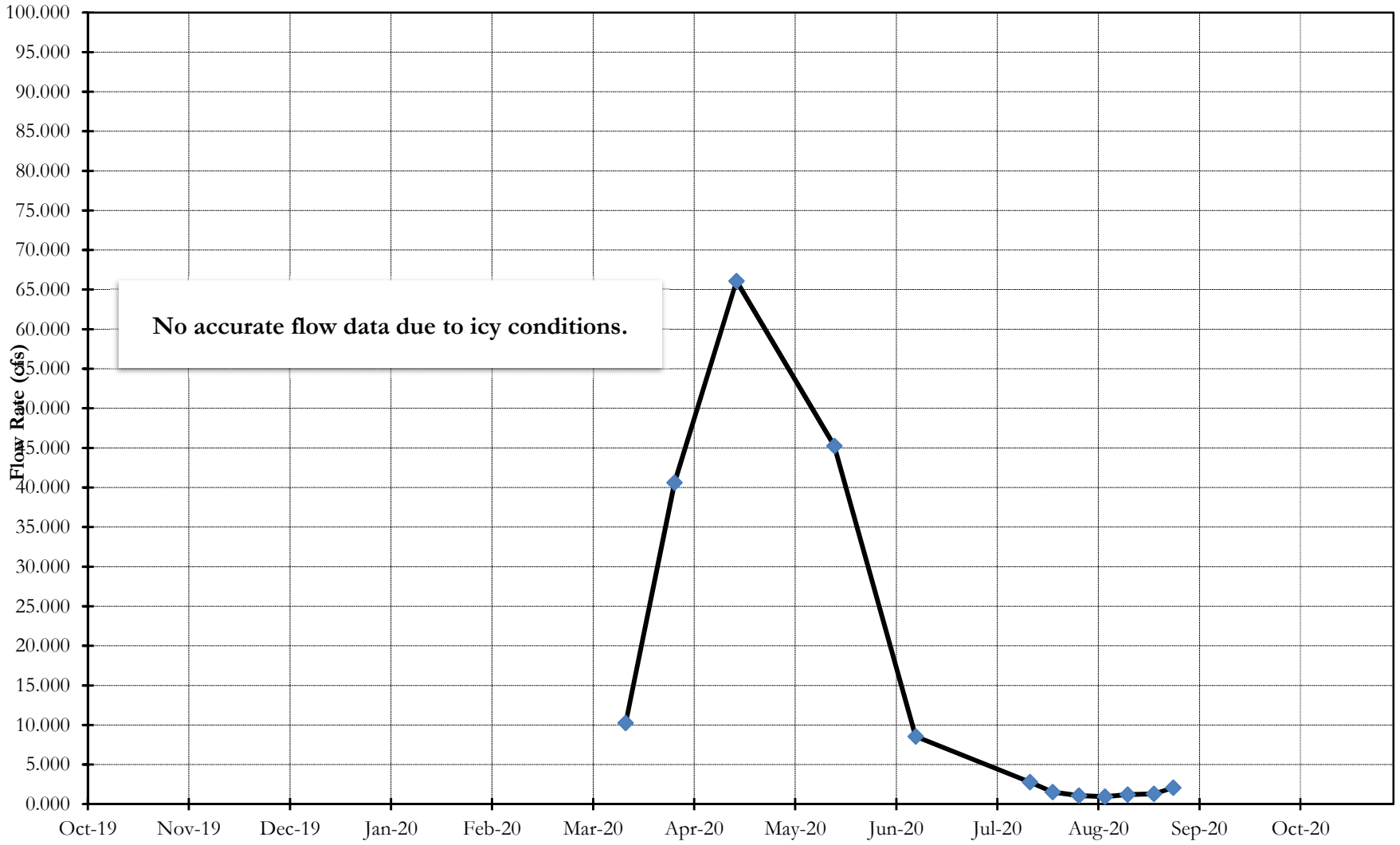


FIGURE 71

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\16A

Surface Water Site 16A, Fish Creek Upstream of Mine 2

2020 Water Year Field Conductivity Data

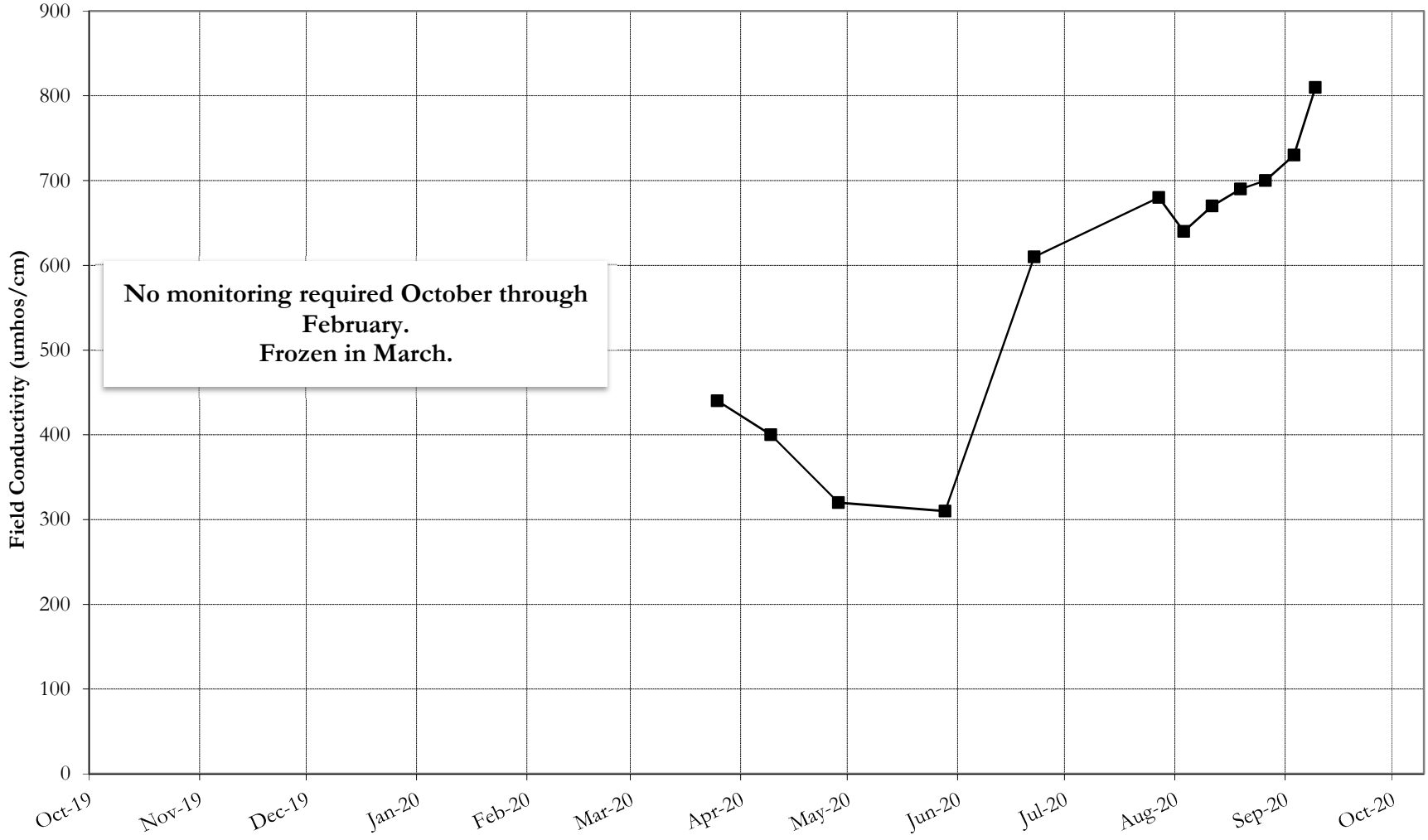


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FIGURE 72

Surface Water Site 16/16A, Fish Creek Upstream of Mine 2

Period of Record Flow Rate Readings

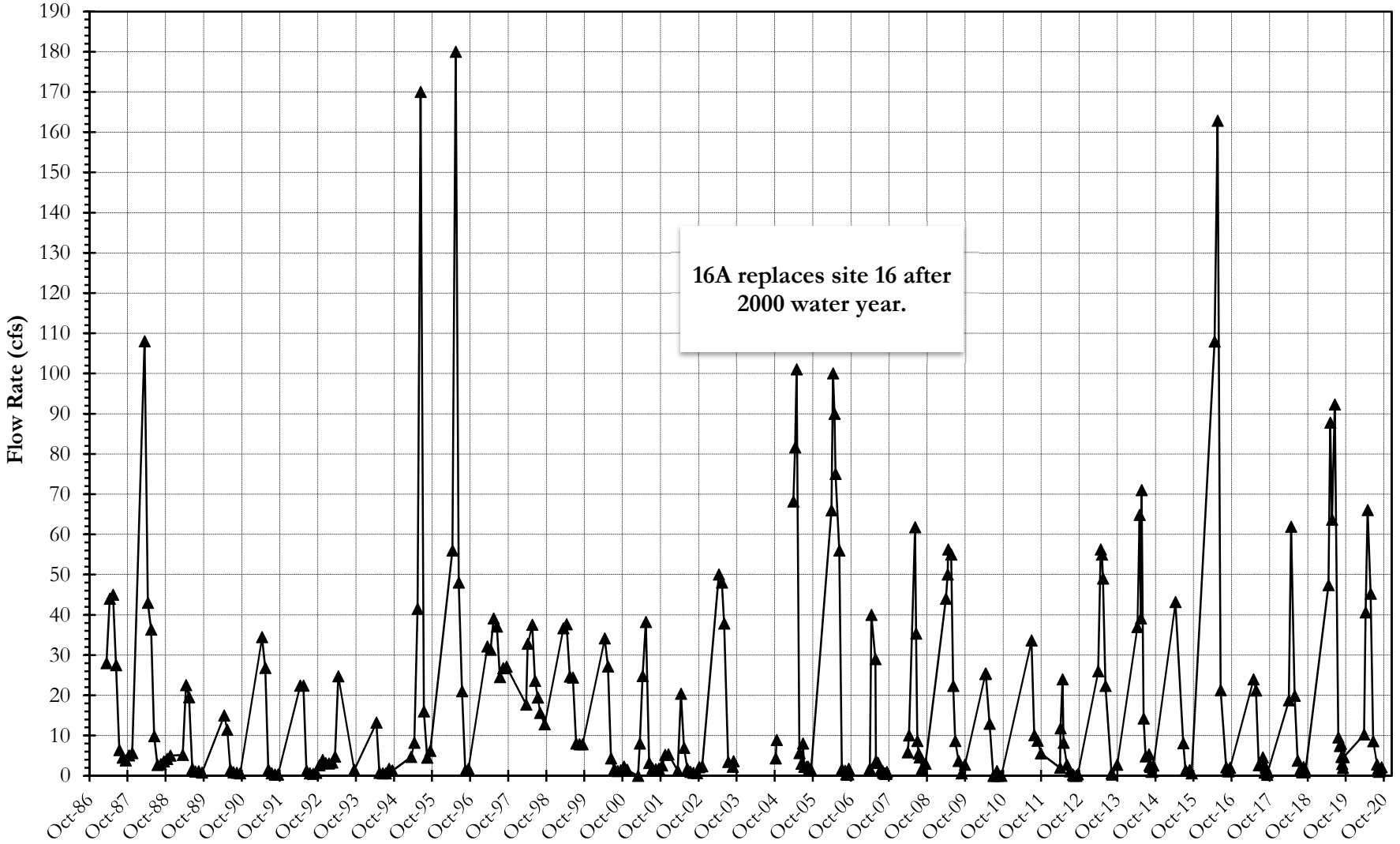

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FIGURE 73

Surface Water Site 16/16A, Fish Creek Upstream of Mine 2

Period of Record Quarterly Field Conductivity Data

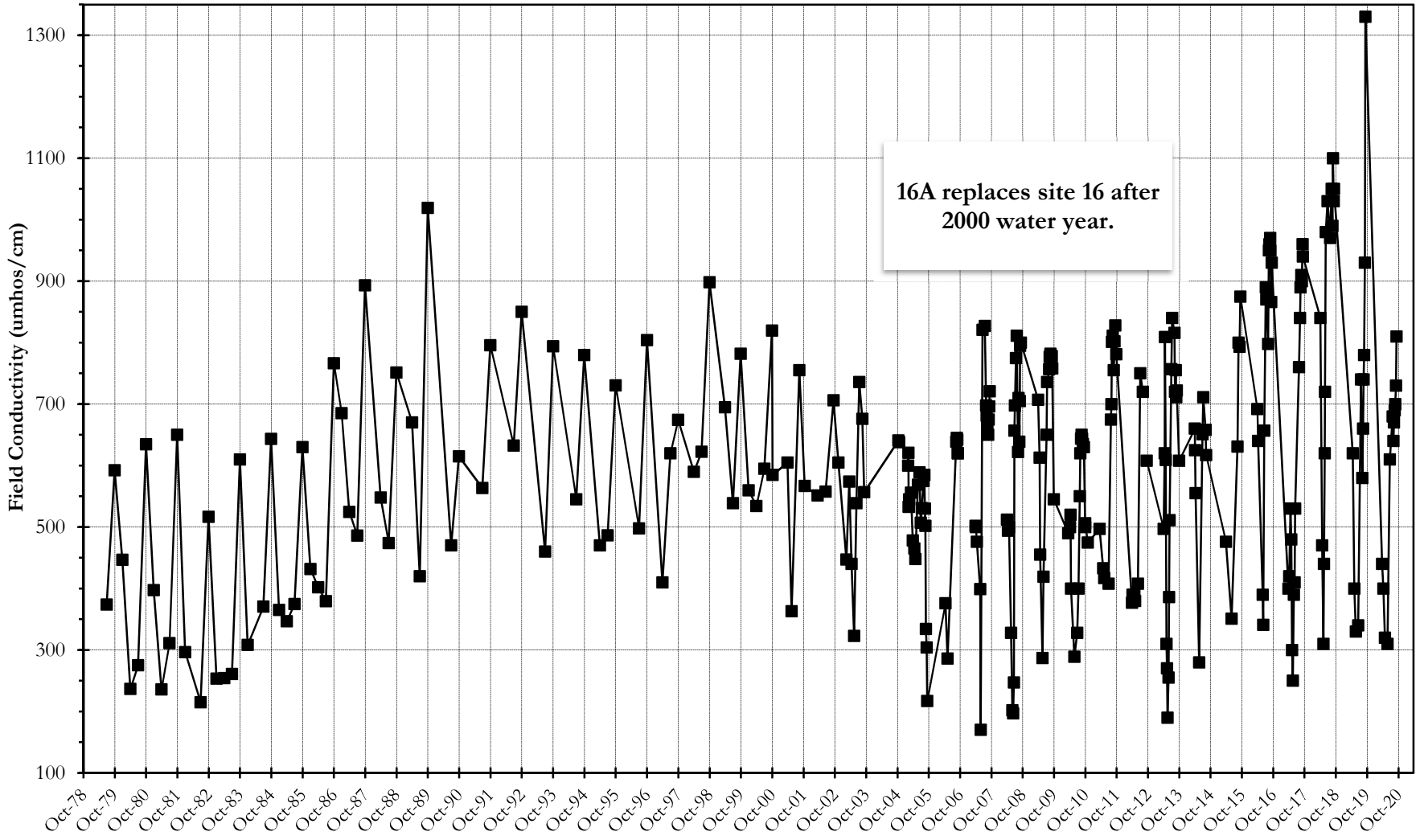

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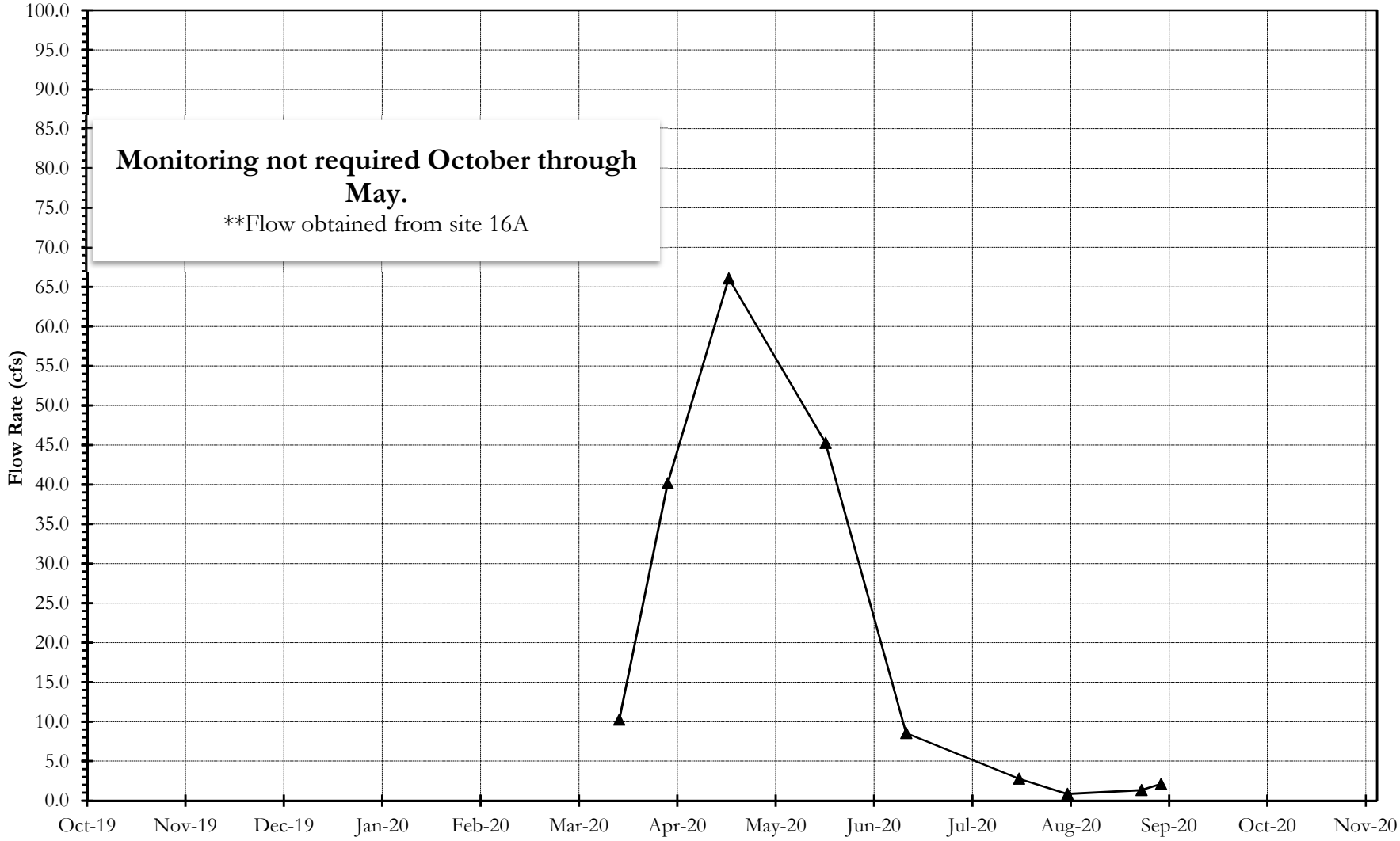
FIGURE 74

Surface Water Site 302, Fish Creek - Downstream of Mine Dewatering Site

2020 Water Year Flow Rate Data

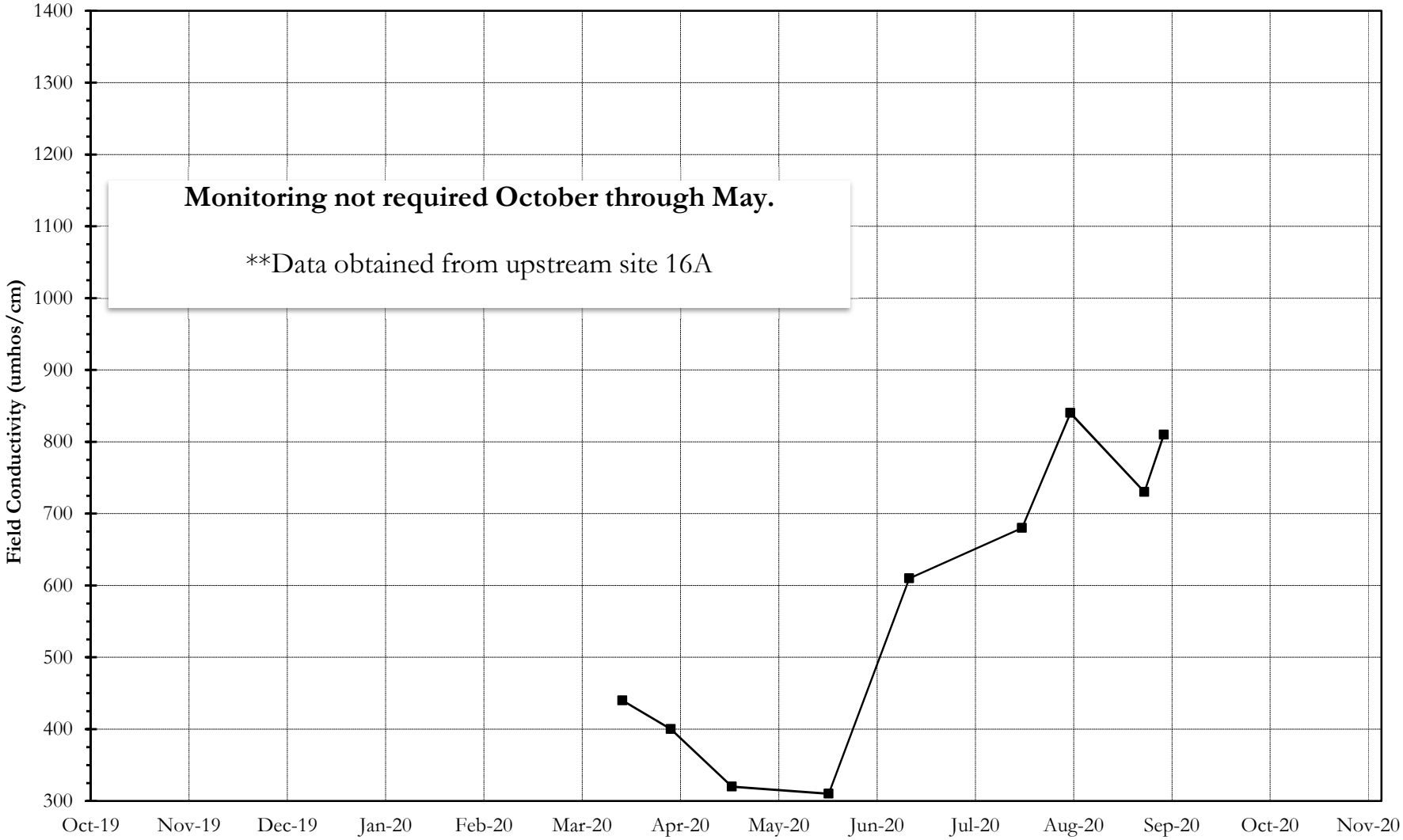


I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\302

FIGURE 75

Surface Water Site 302, Fish Creek - Downstream of Mine Dewatering Site

2020 Water Year Field Conductivity Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\302

FIGURE 76

Surface Water Site SW-13, Fish Creek - Downstream of Site 302

2020 Water Year Flow Rate Data

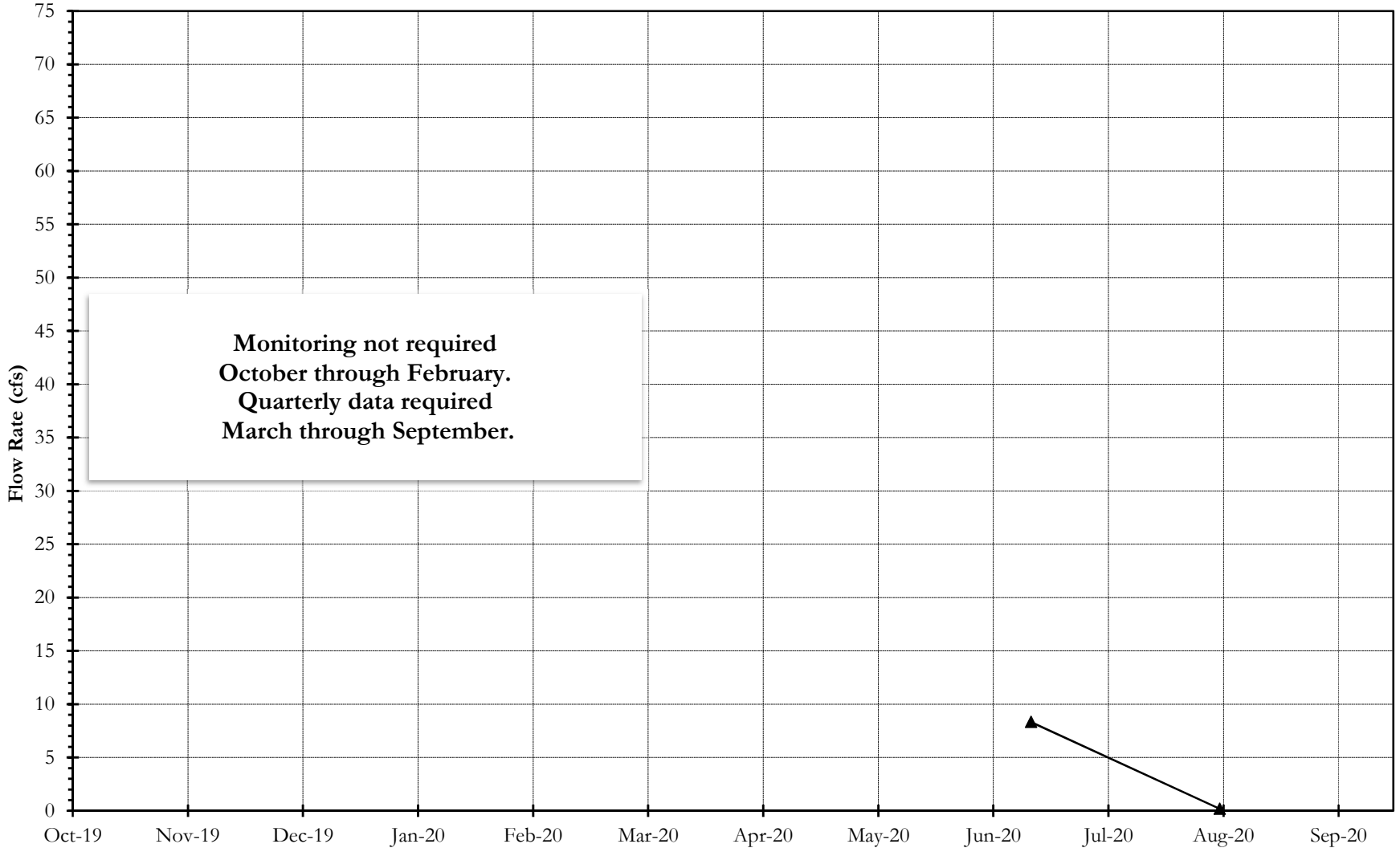
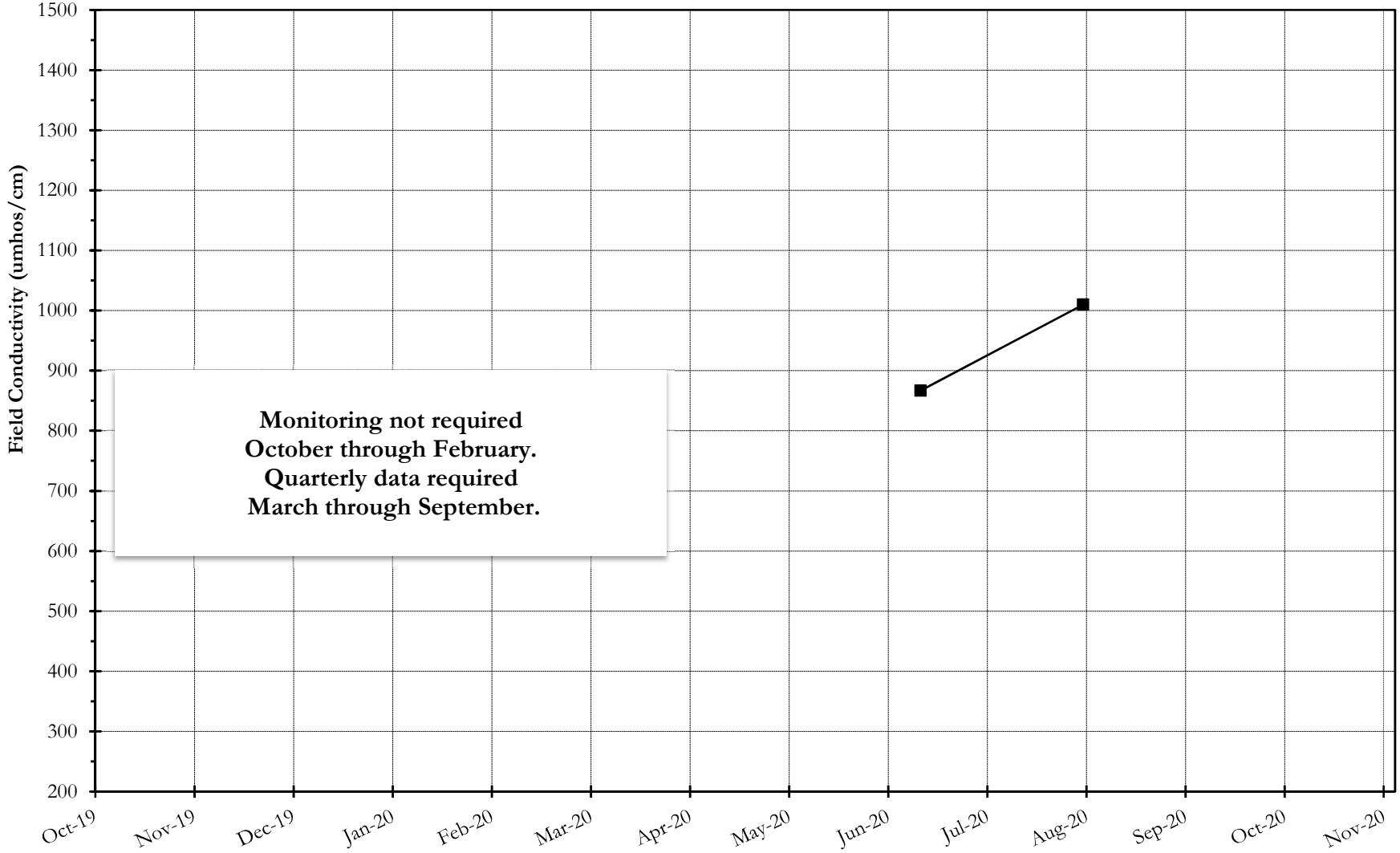


FIGURE 77

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-13

Surface Water Site SW-13, Fish Creek - Downstream of Site 302

2020 Water Year Field Conductivity Data

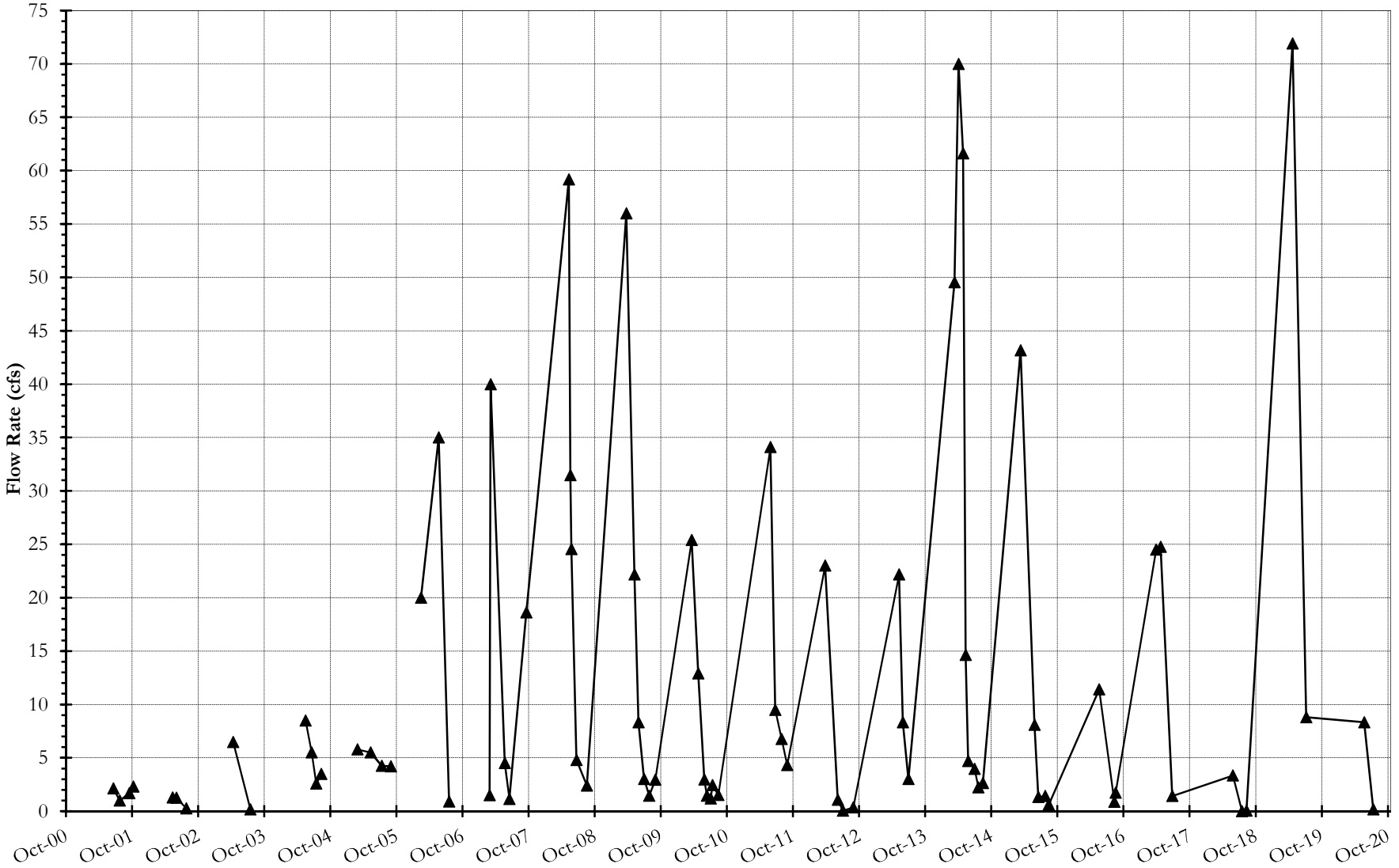


I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-13

FIGURE 78

Surface Water Site SW-13, Fish Creek - Downstream of Site 302

Period of Record Flow Rate Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-13

FIGURE 79

Surface Water Site SW-13, Fish Creek - Downstream of Site 302

Period of Record Field Conductivity Data

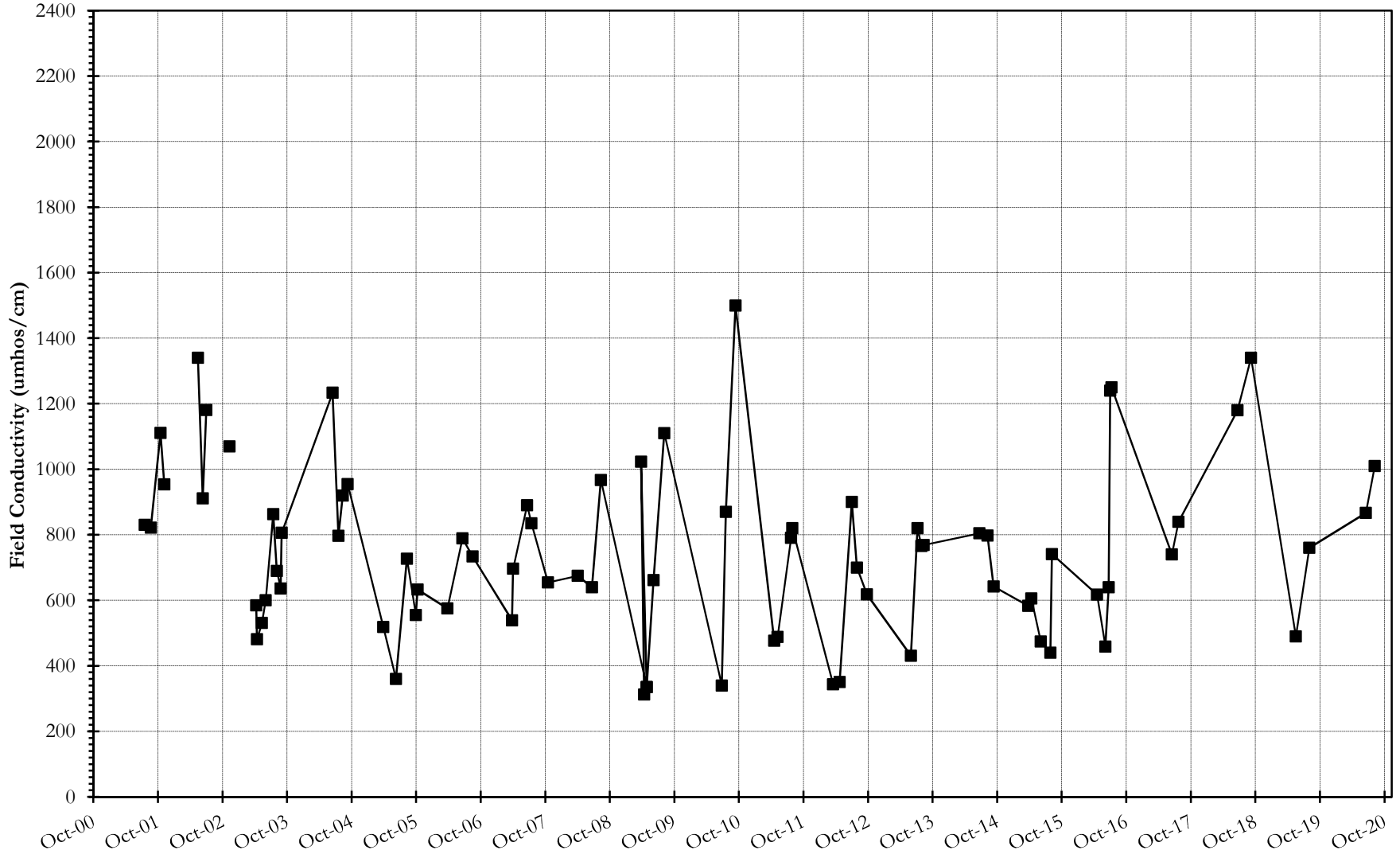


FIGURE 80

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-13

Surface Water Site SW-14, Fish Creek - Downstream of Site SW-13

2020 Water Year Flow Rate Data

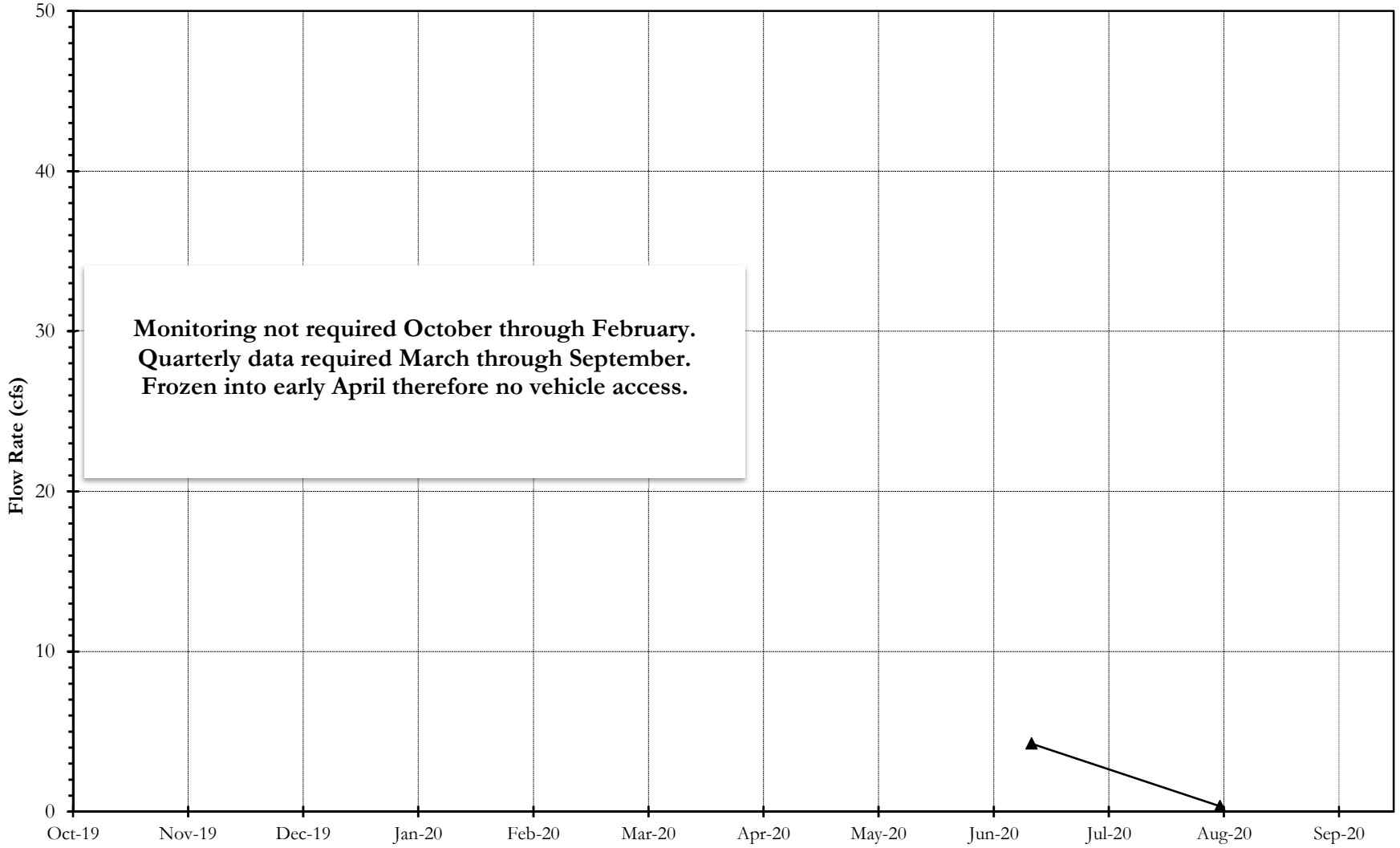
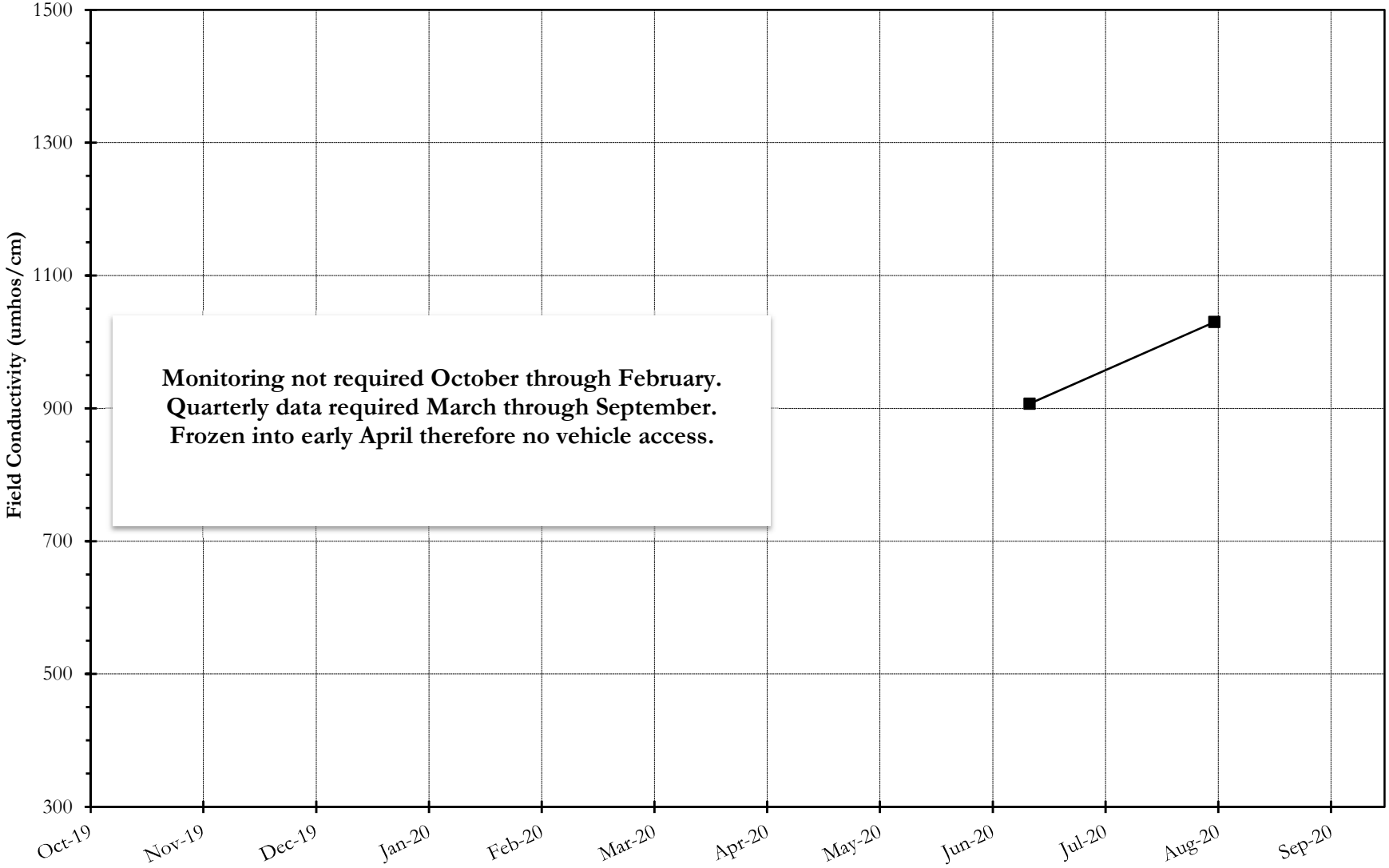


FIGURE 81

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-14

Surface Water Site SW-14, Fish Creek - Downstream of Site SW-13

2020 Water Year Field Conductivity Data

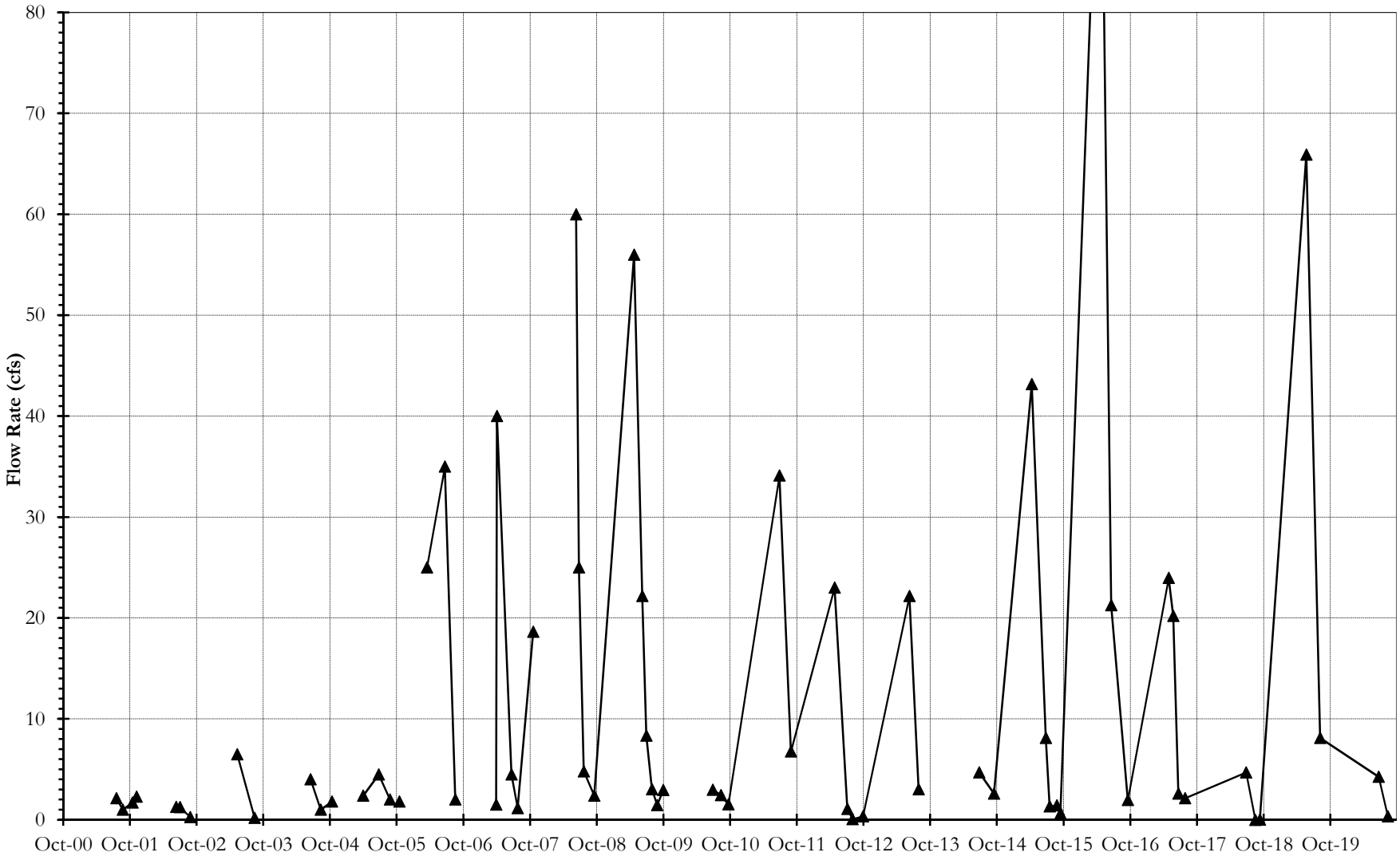


I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-14

FIGURE 82

Surface Water Site SW-14, Fish Creek - Downstream of Site SW-13

Period of Record Flow Rate Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-14

FIGURE 83

Surface Water Site SW-14, Fish Creek - Downstream of Site SW-13

Period of Record Field Conductivity Data

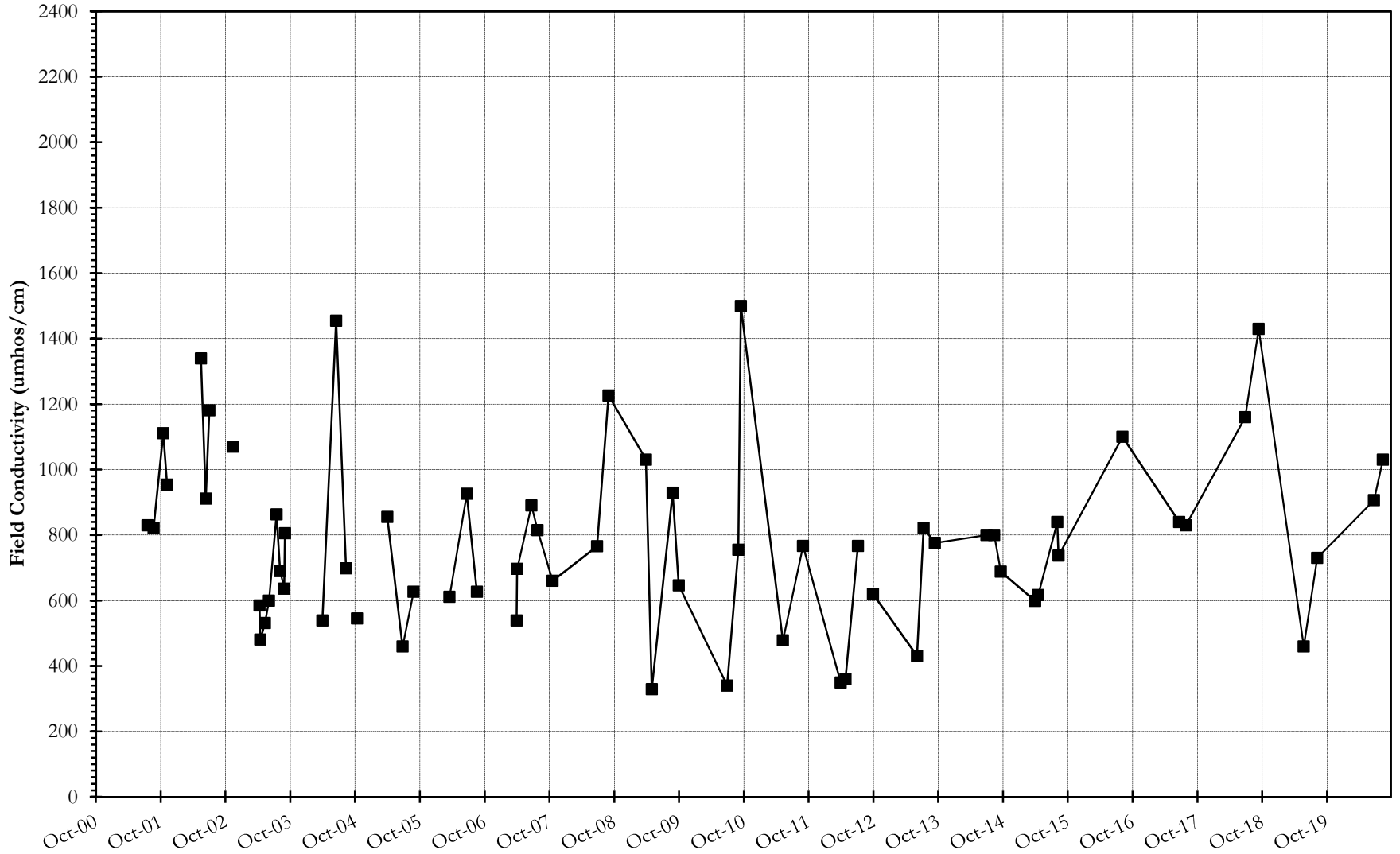


FIGURE 84

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-14

Surface Water Site SW-15, Fish Creek - Downstream of Site SW-14

2020 Water Year Flow Rate Data

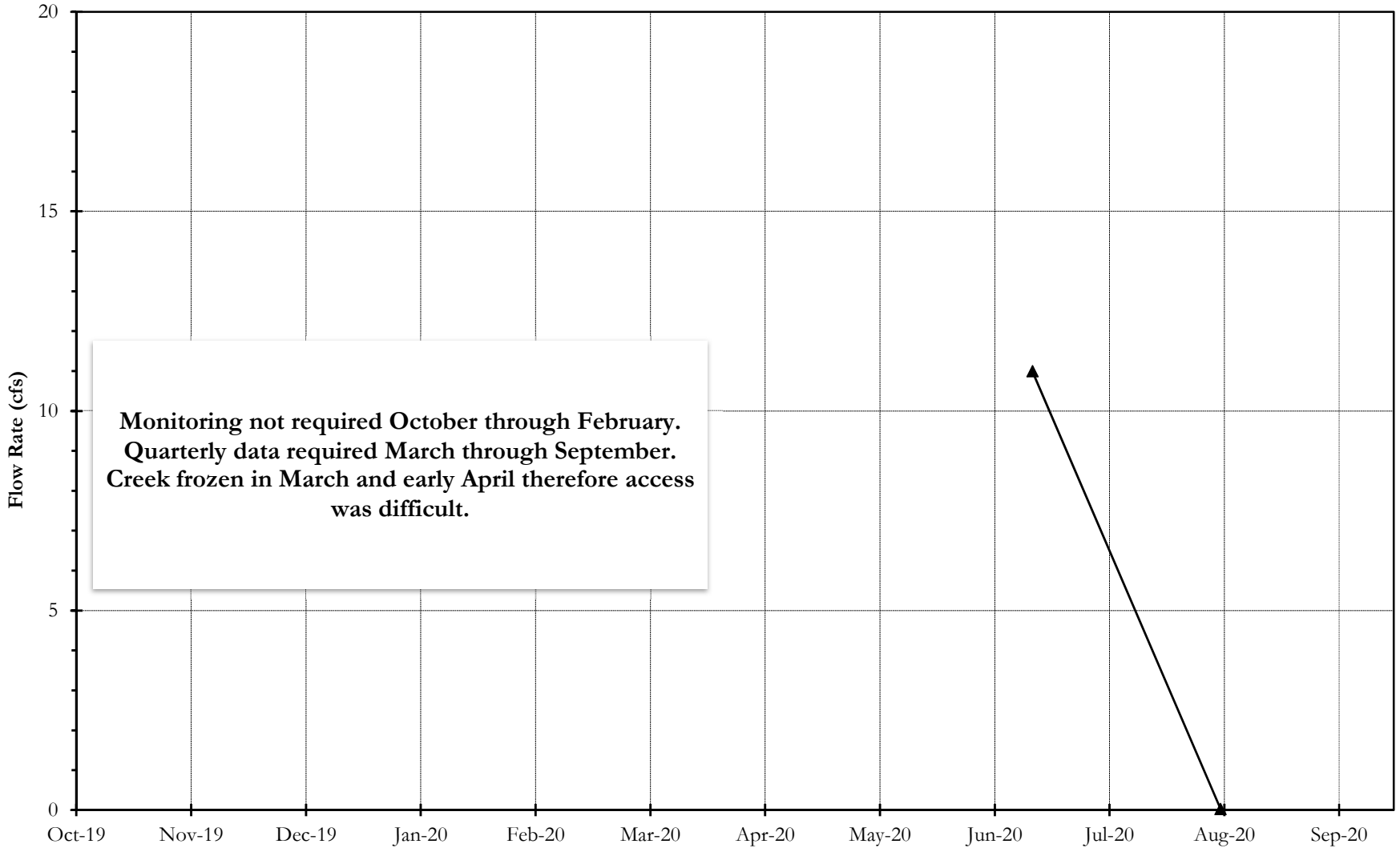
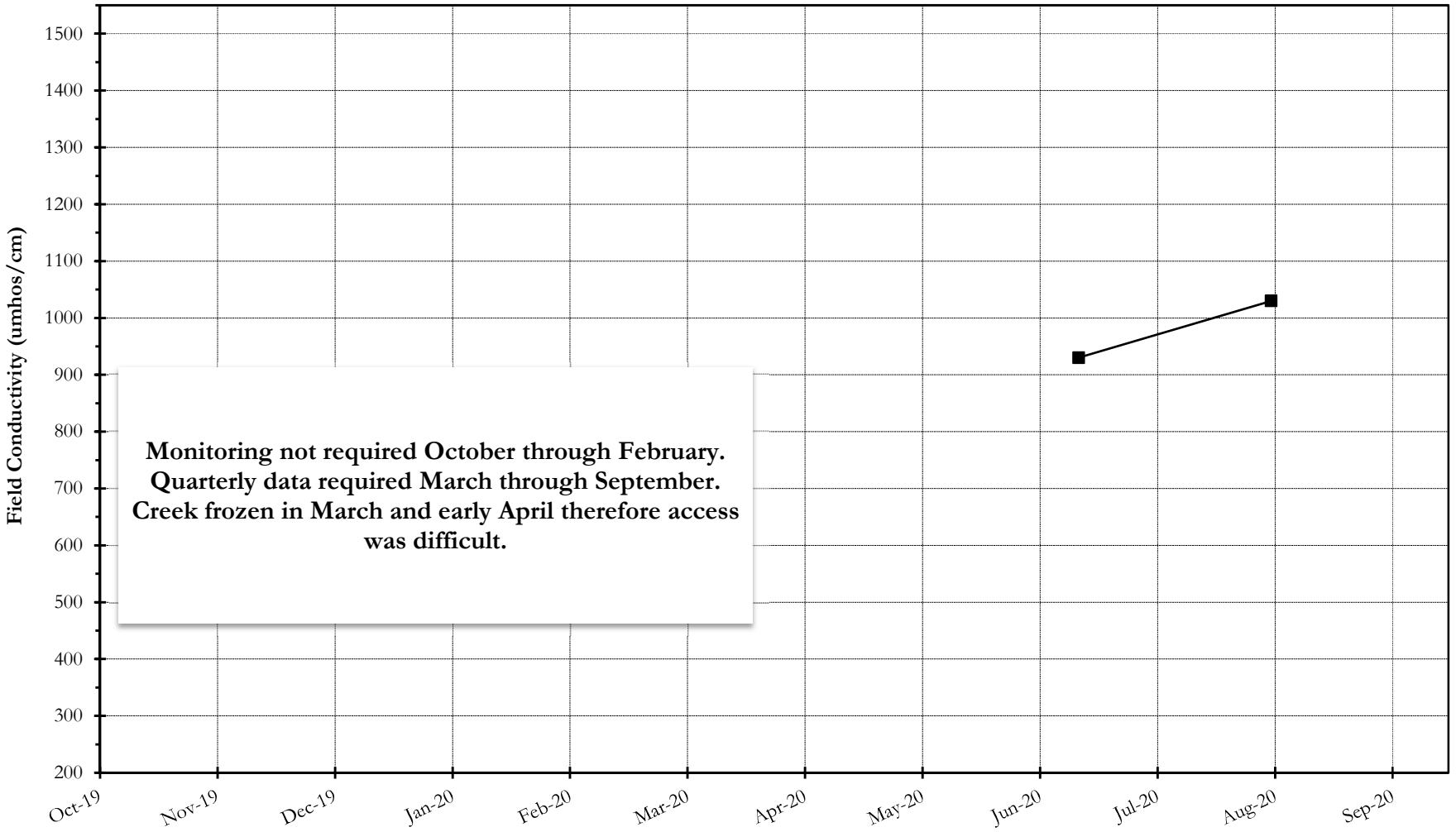


FIGURE 85

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-15

Surface Water Site SW-15, Fish Creek - Downstream of Site SW-14

2020 Water Year Field Conductivity Data

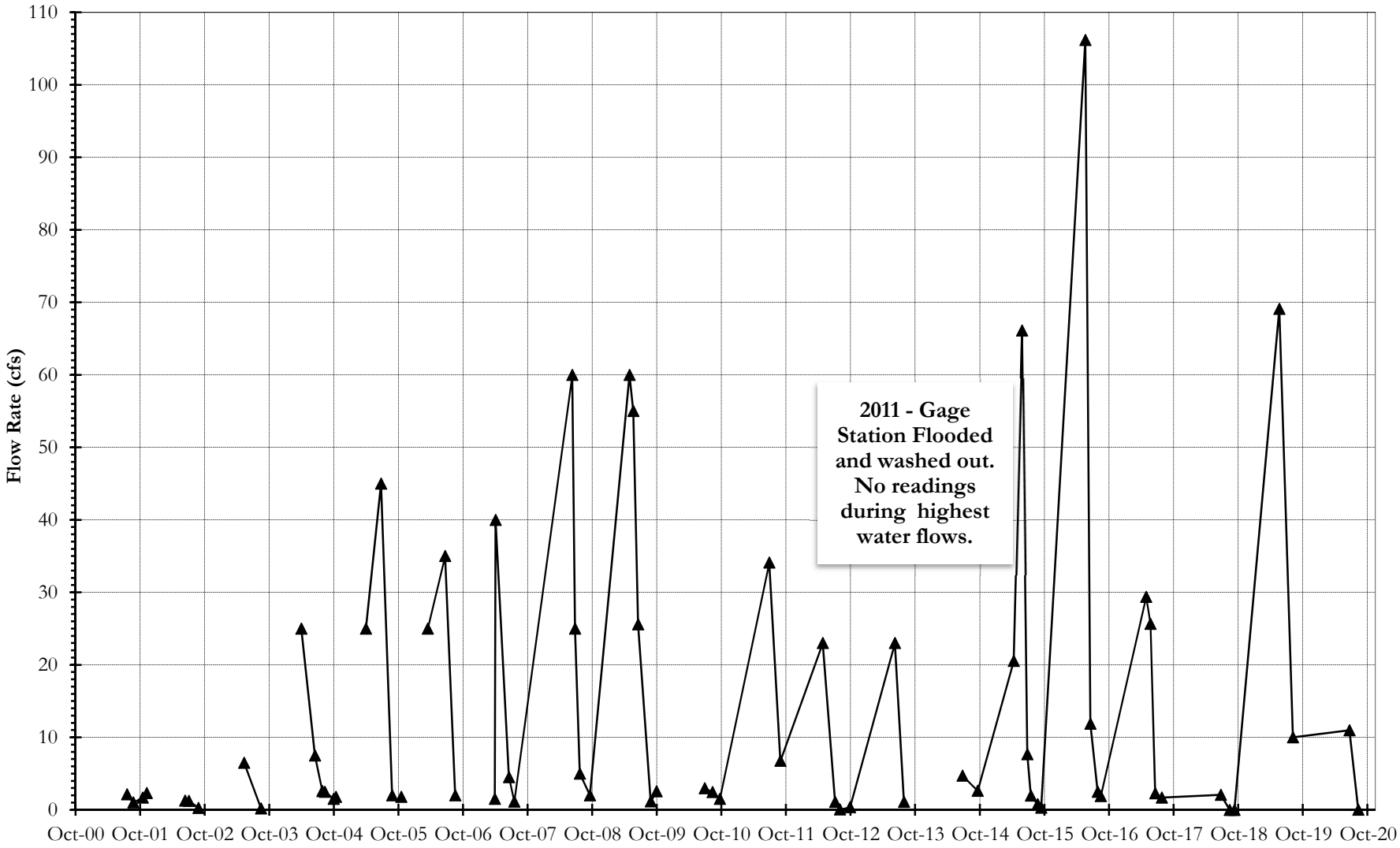


I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-15

FIGURE 86

Surface Water Site SW-15, Fish Creek - Downstream of Site SW-14

Period of Record Flow Rate Data



I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-15

FIGURE 87

Surface Water Site SW-15, Fish Creek - Downstream of Site SW-14

Period of Record Field Conductivity Data

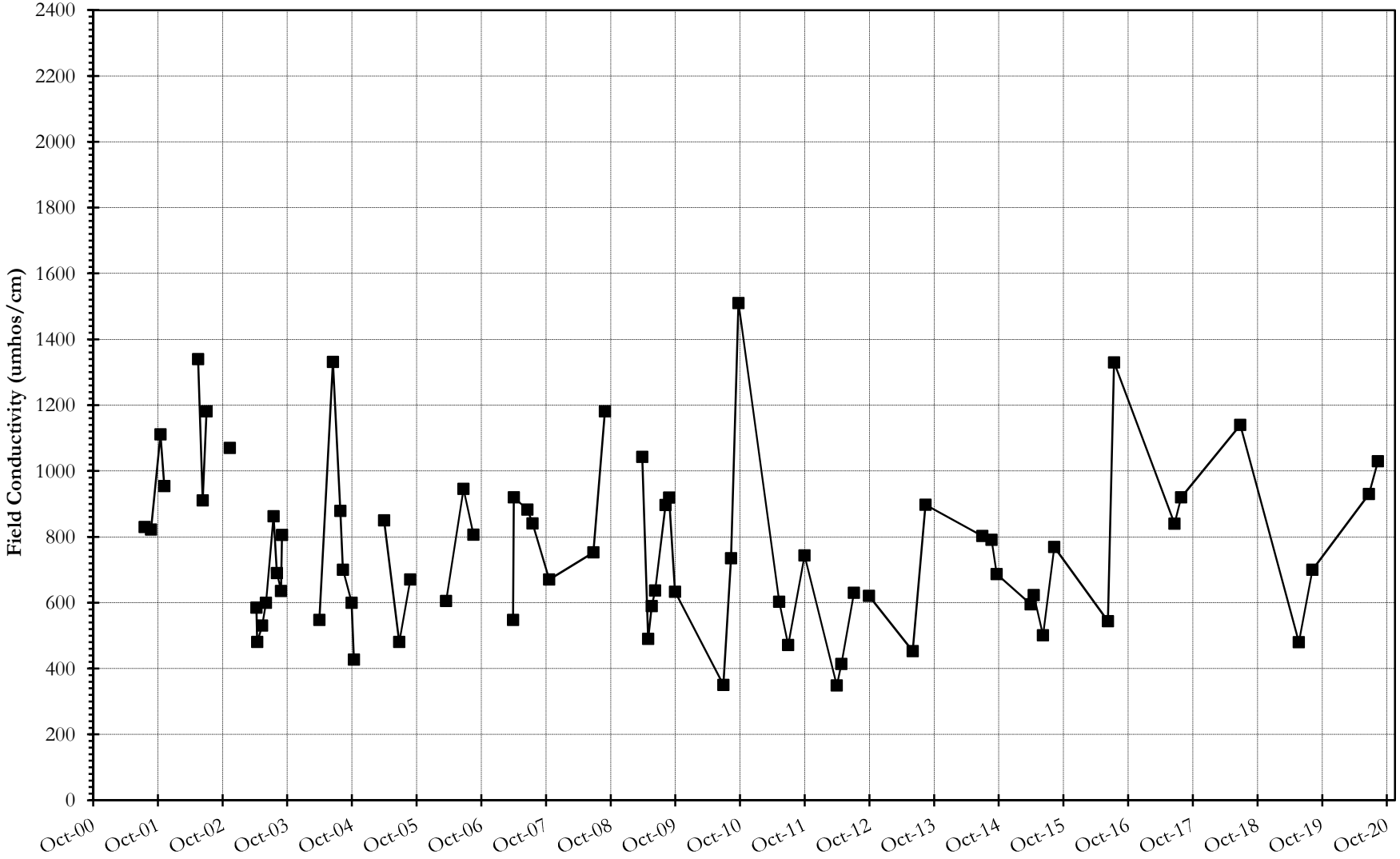


FIGURE 88

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\FC Surface Water\SW-15

Surface Water Site 305, Fish Creek - Downstream of Site SW-15

2020 Water Year Flow Rate Data

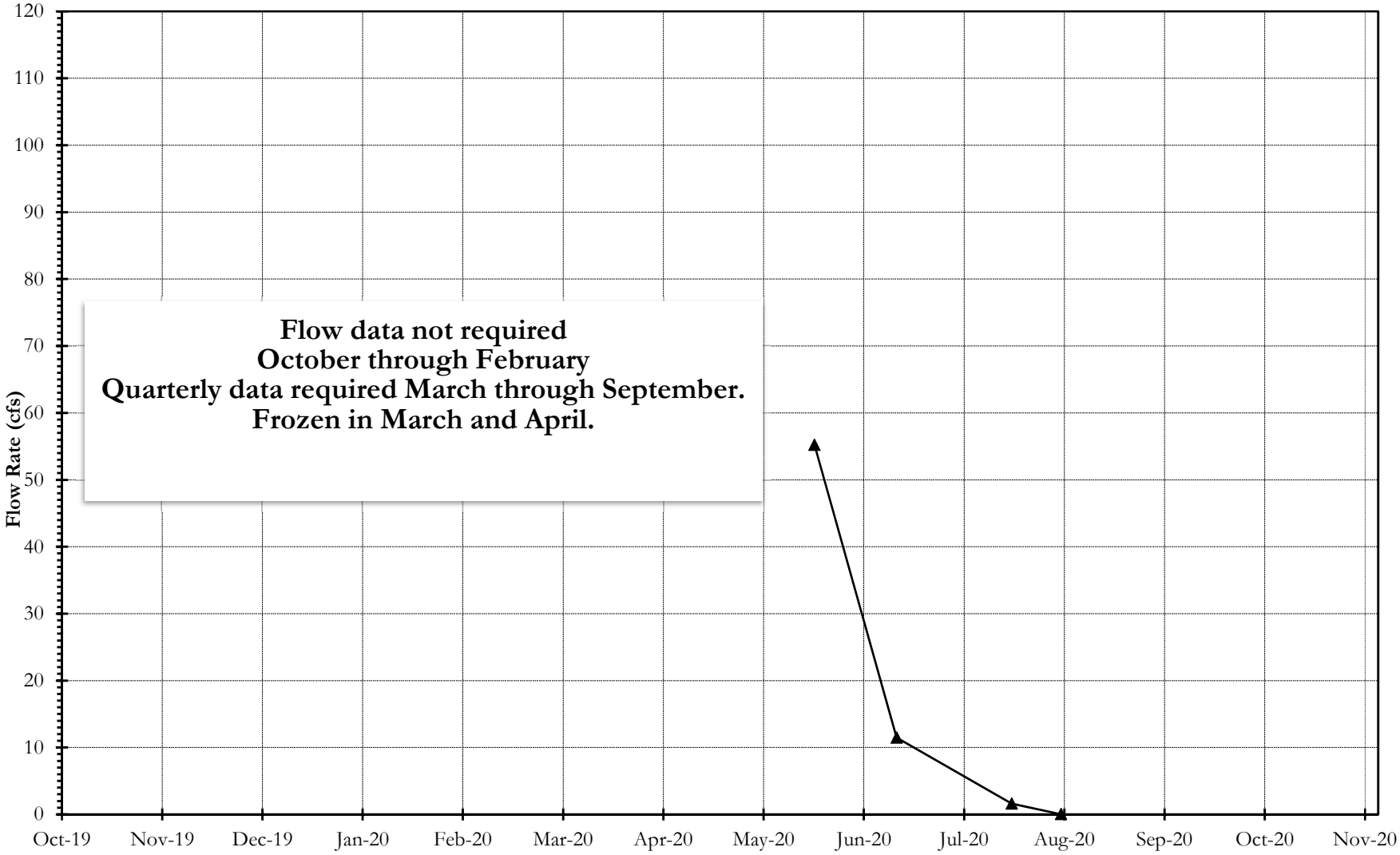


FIGURE 89

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\305

Surface Water Site 305, Fish Creek - Downstream of Site SW-15

2020 Water Year Field Conductivity Data

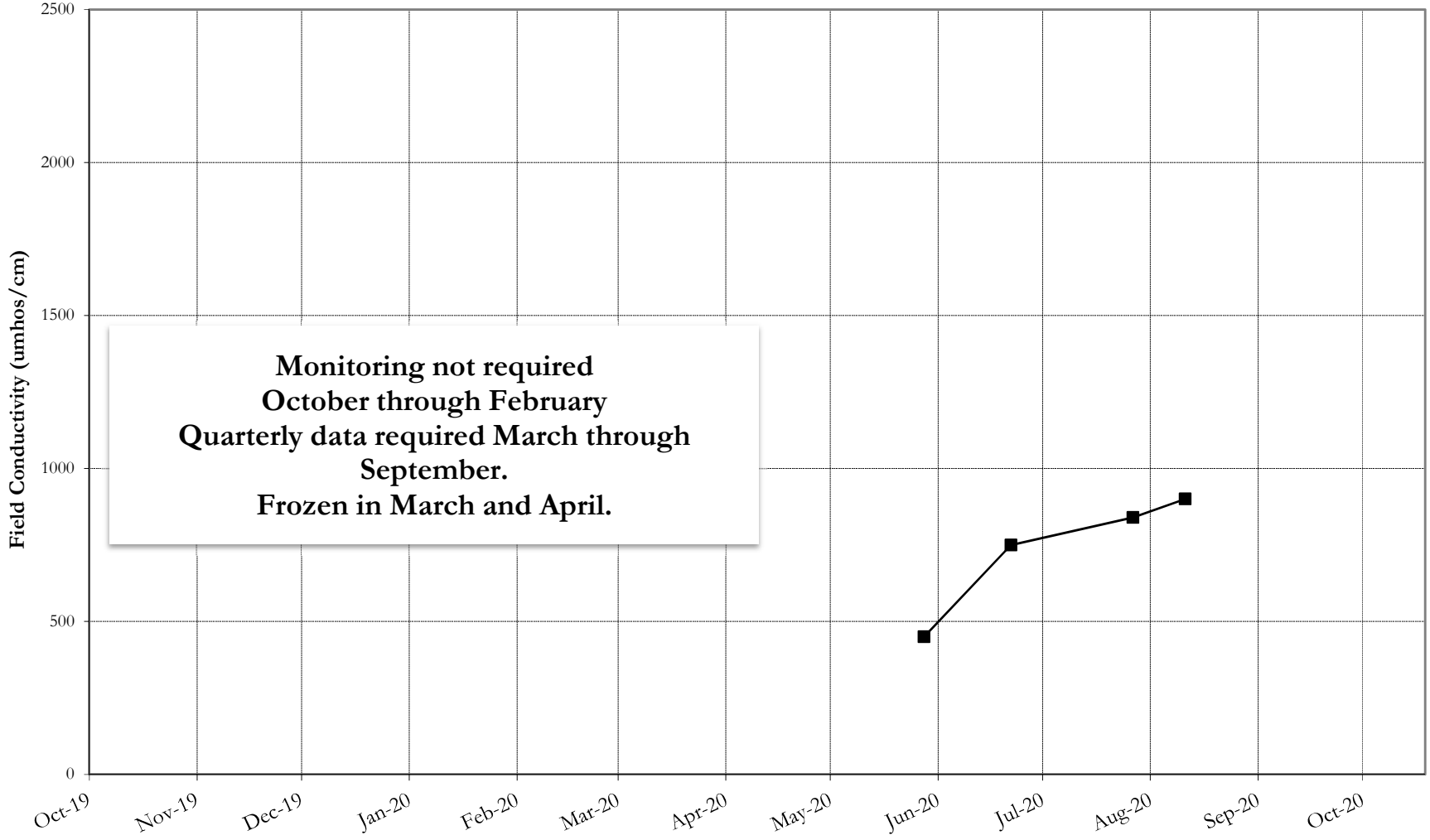


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FIGURE 90

Surface Water Site 305, Fish Creek - Downstream of Site SW-15

Period of Record Flow Rate Data

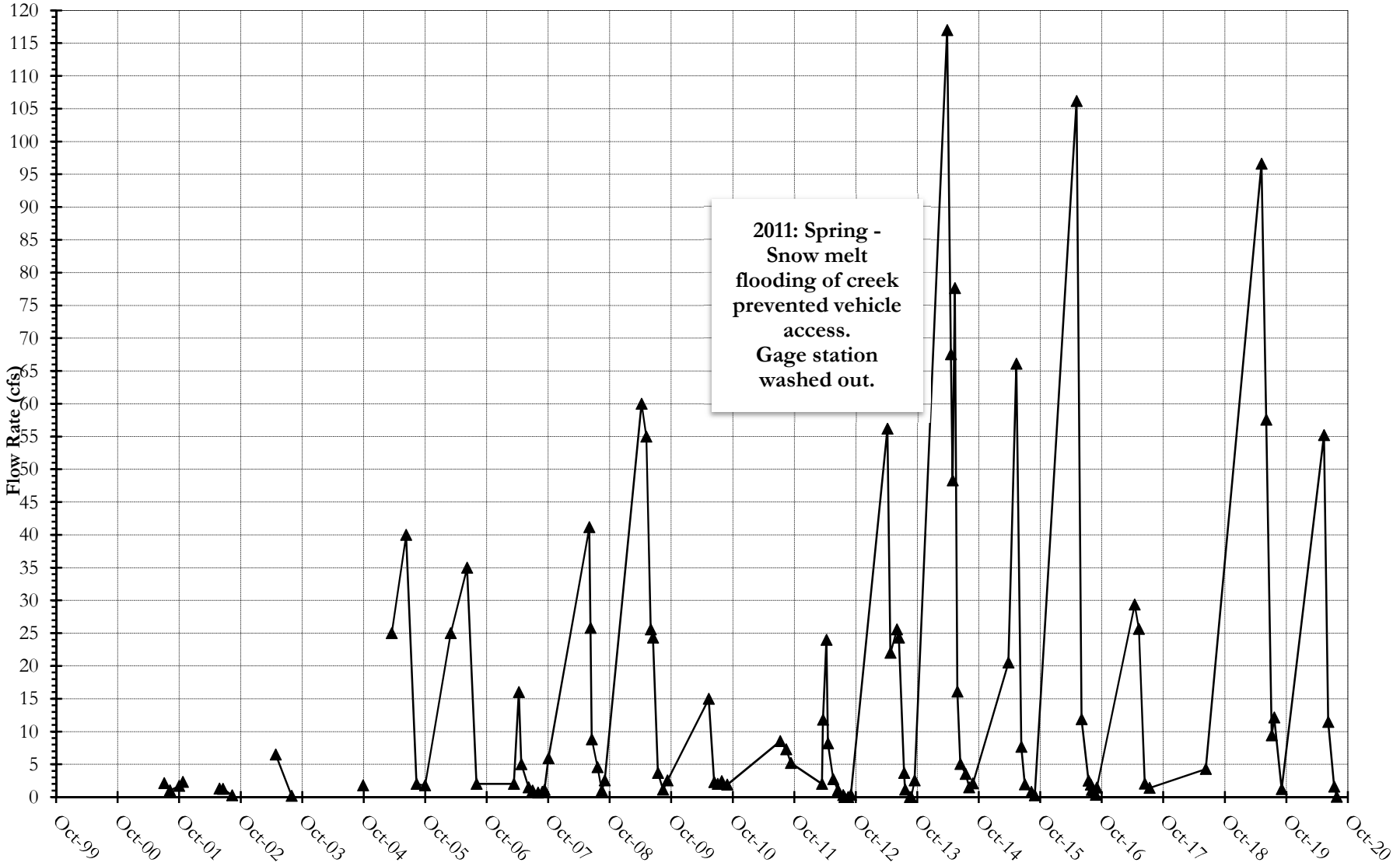

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FIGURE 91

Surface Water Site 305, Fish Creek - Downstream of Site SW-15

Period of Record Field Conductivity Data

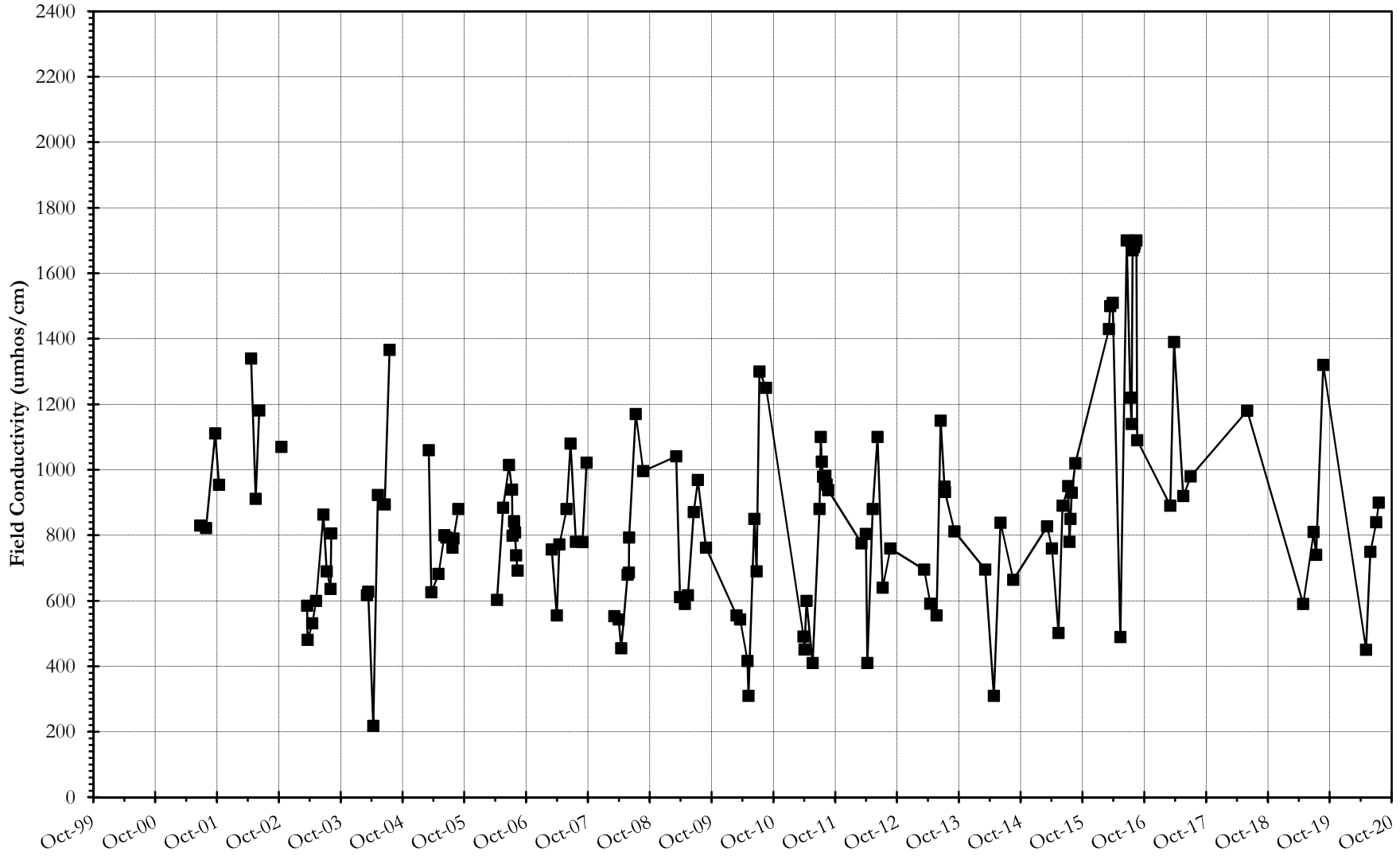

FIGURE 92

I:\Environmental\CDMG - CDRMS\AHR\2020\20 Mile\Figures\Surface Water\305

Surface Water Site 27 A, Fish Creek near Fish Creek Tipple

2020 Water Year Flow Rate Data

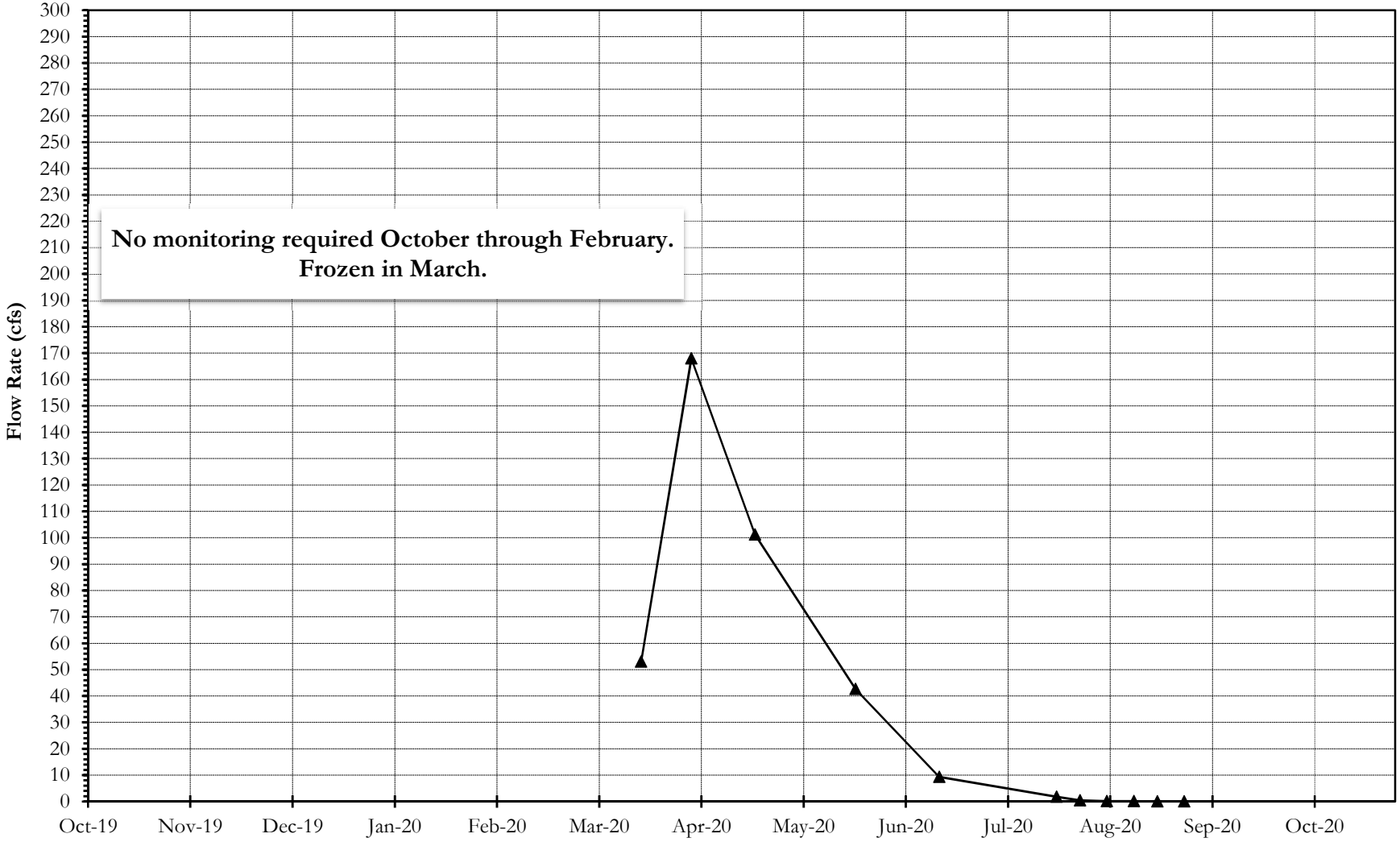

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FIGURE 93

Surface Water Site 27 A, Fish Creek near Fish Creek Tipple

2020 Water Year Field Conductivity Data

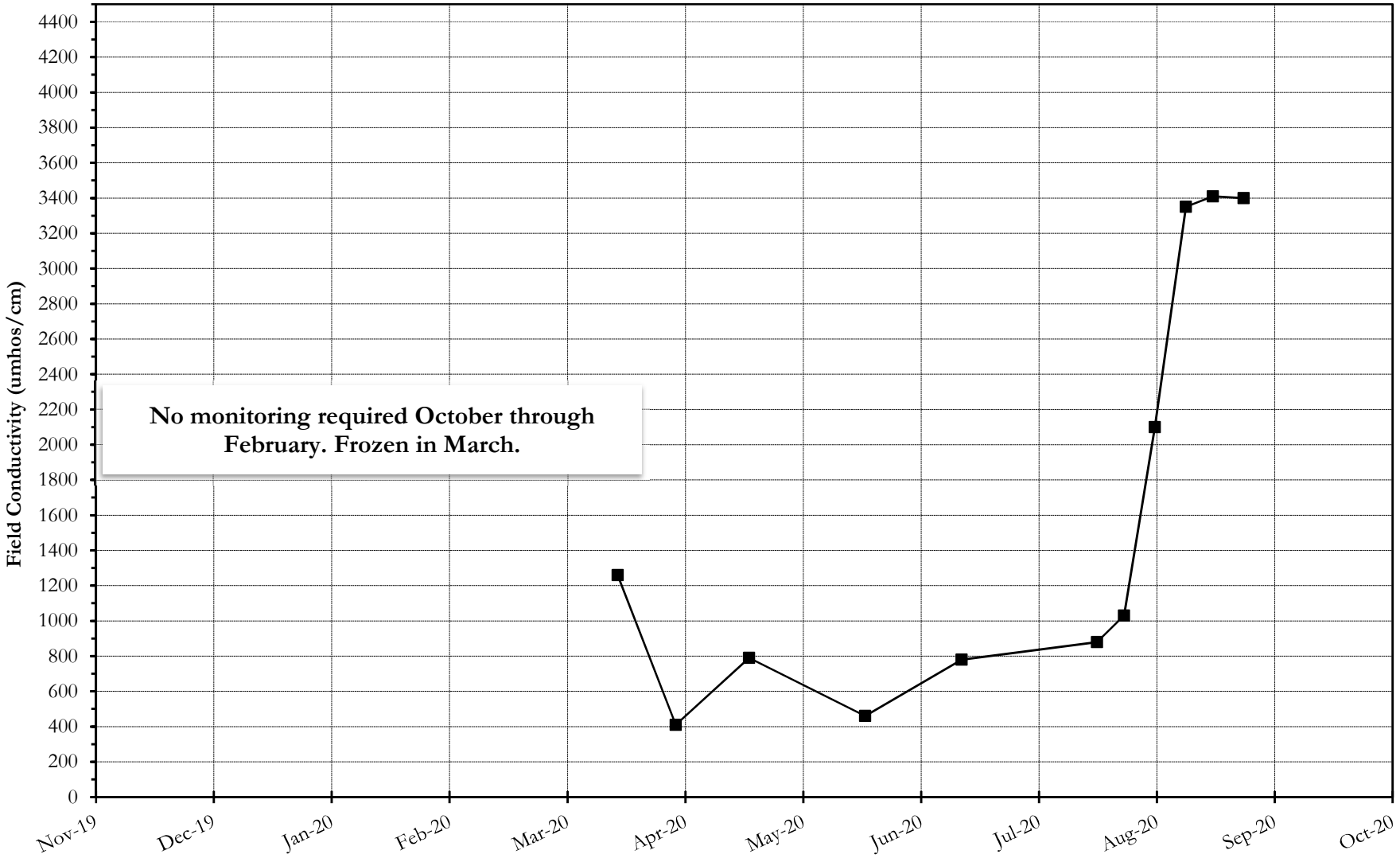

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FIGURE 94

Surface Water Site 27A, Fish Creek Near Fish Creek Tipple

Period of Record Flow Rate Data

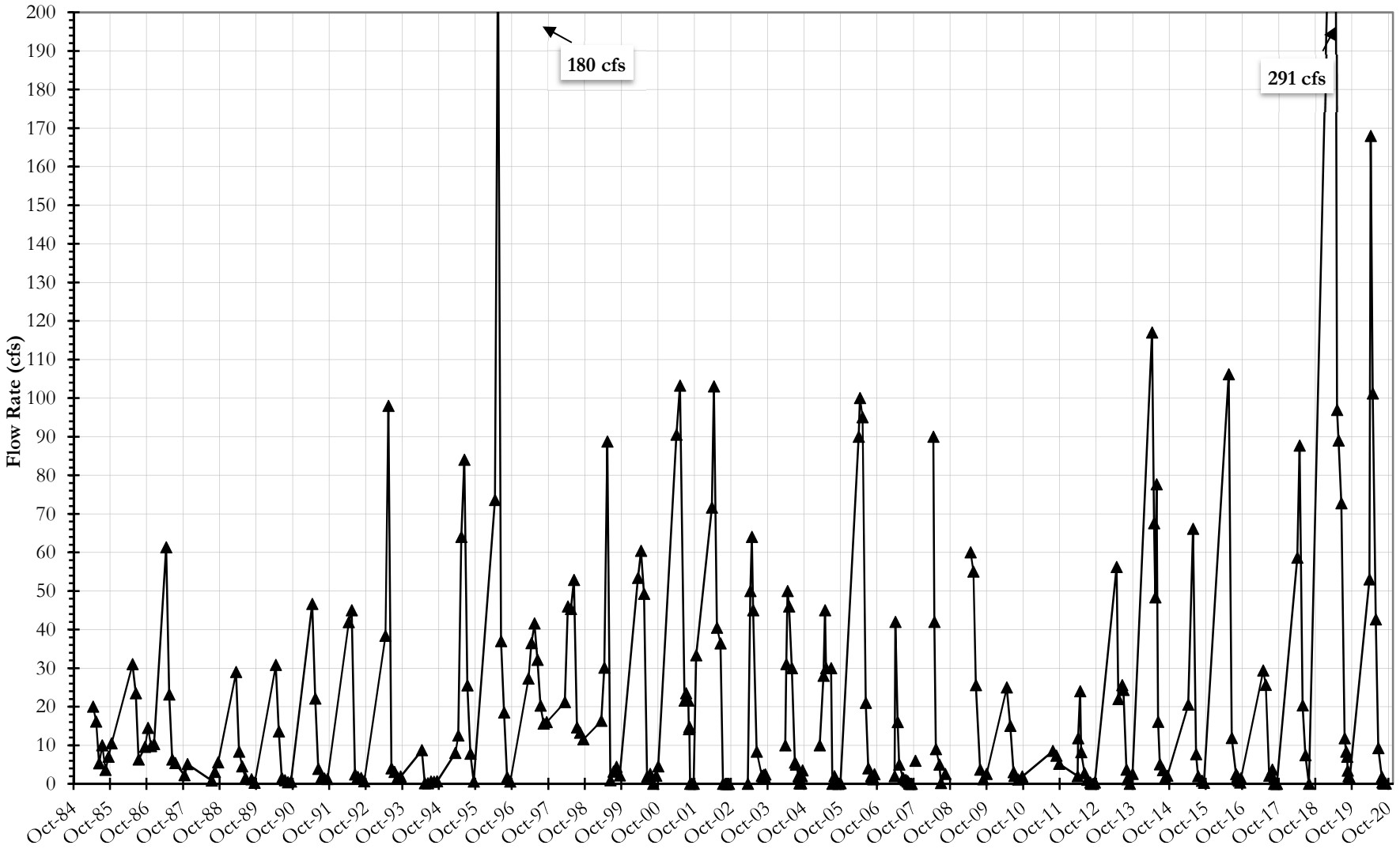

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FIGURE 95

Surface Water Site 27A, Fish Creek near Fish Creek Tipple

Period of Record Conductivity Data for Water Years 1995 - 2020

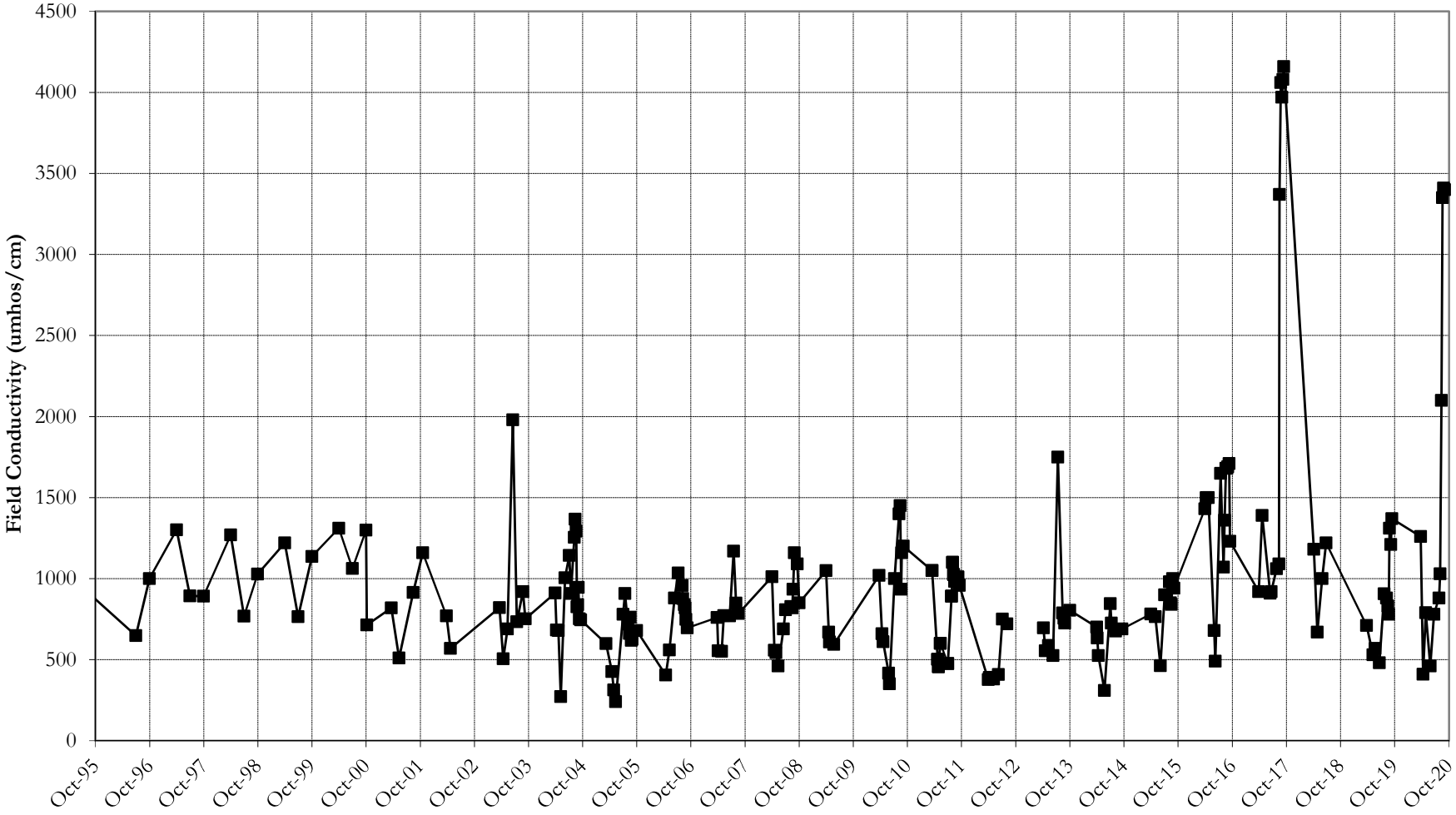

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FIGURE 96

Surface Water Site 27A, Fish Creek Near Fish Creek Tipple

Period of Record Total Recoverable Iron Data

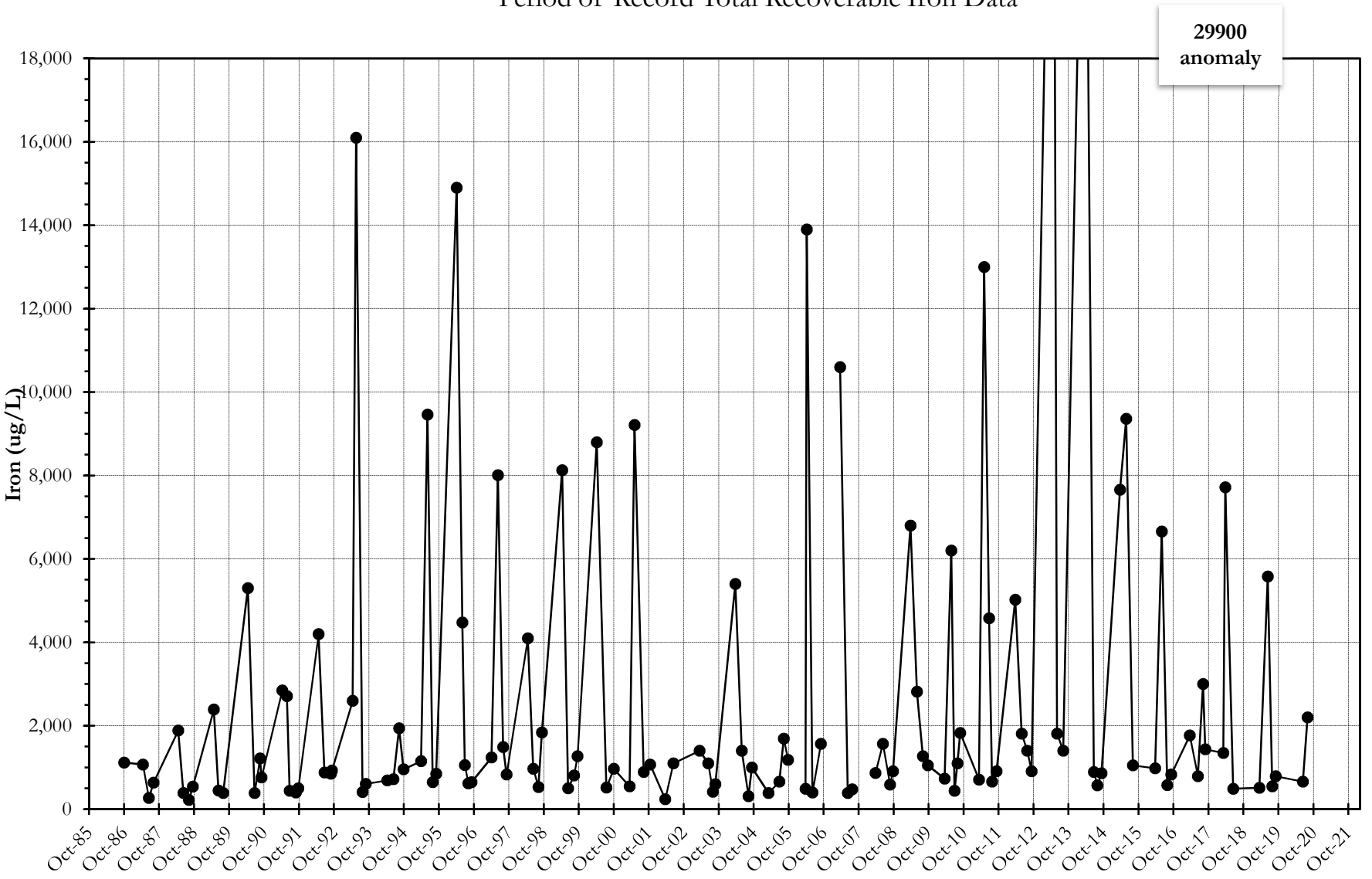

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FIGURE 97

Surface Water Site 1003, Fish Creek Downstream of Fish Creek Tipple

2020 Water Year Flow Rate Data

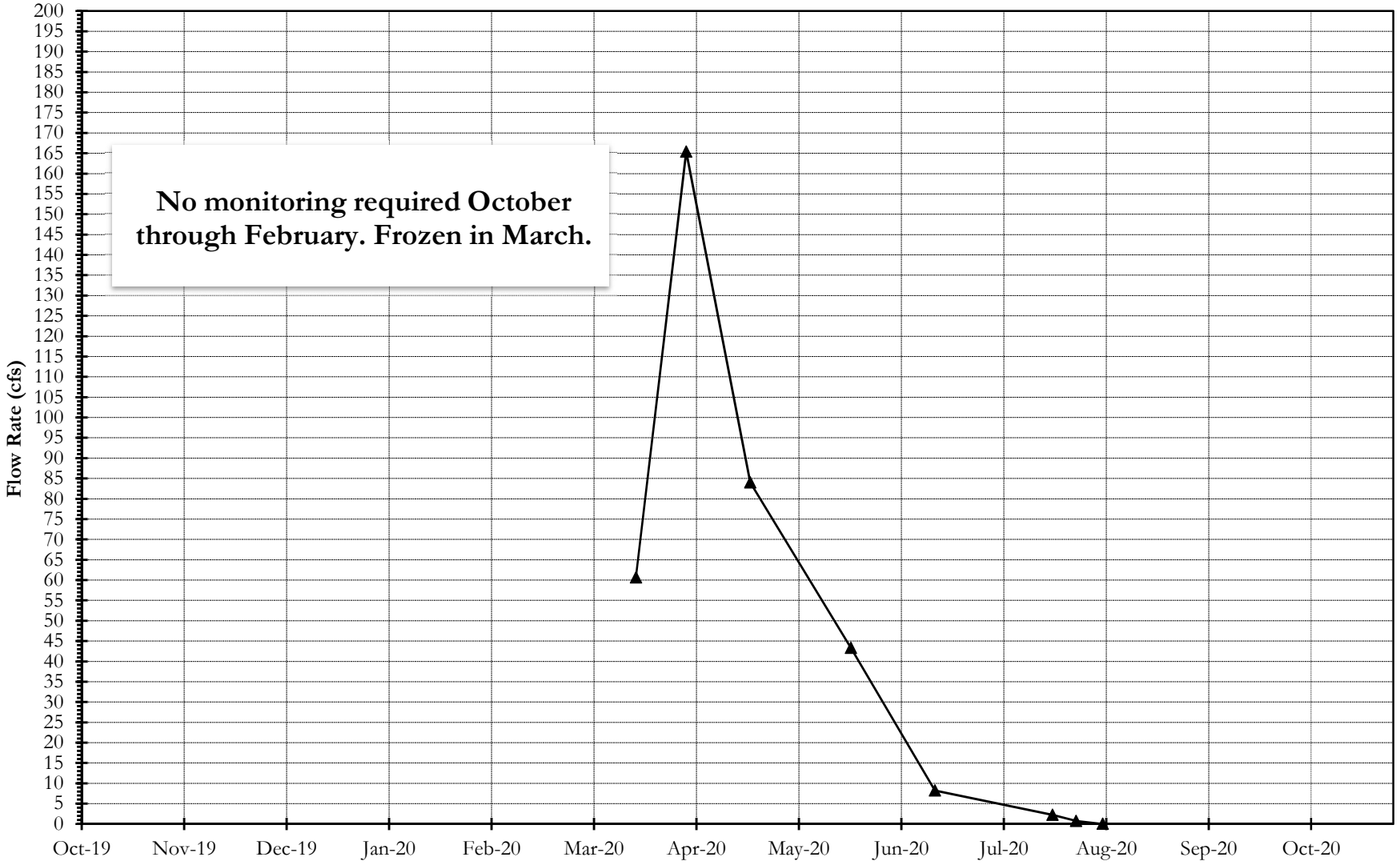

FIGURE 98

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Surface Water Site 1003, Fish Creek - Downstream of Fish Creek Tipple

2020 Water Year Field Conductivity Data

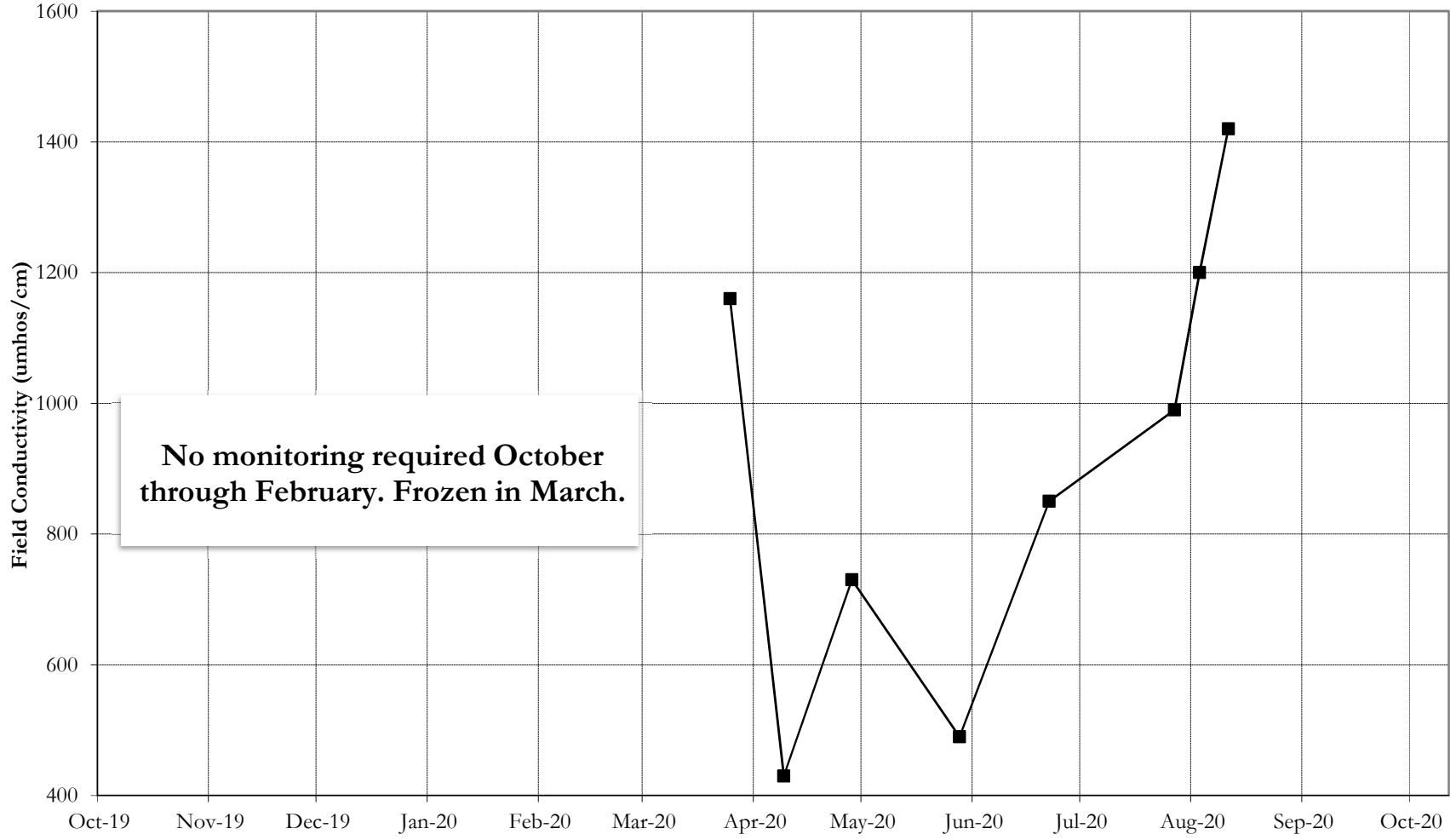

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FIGURE 99

Surface Water Site 1003, Fish Creek Downstream of Fish Creek Tipple

Period of Record Flow Rate Data

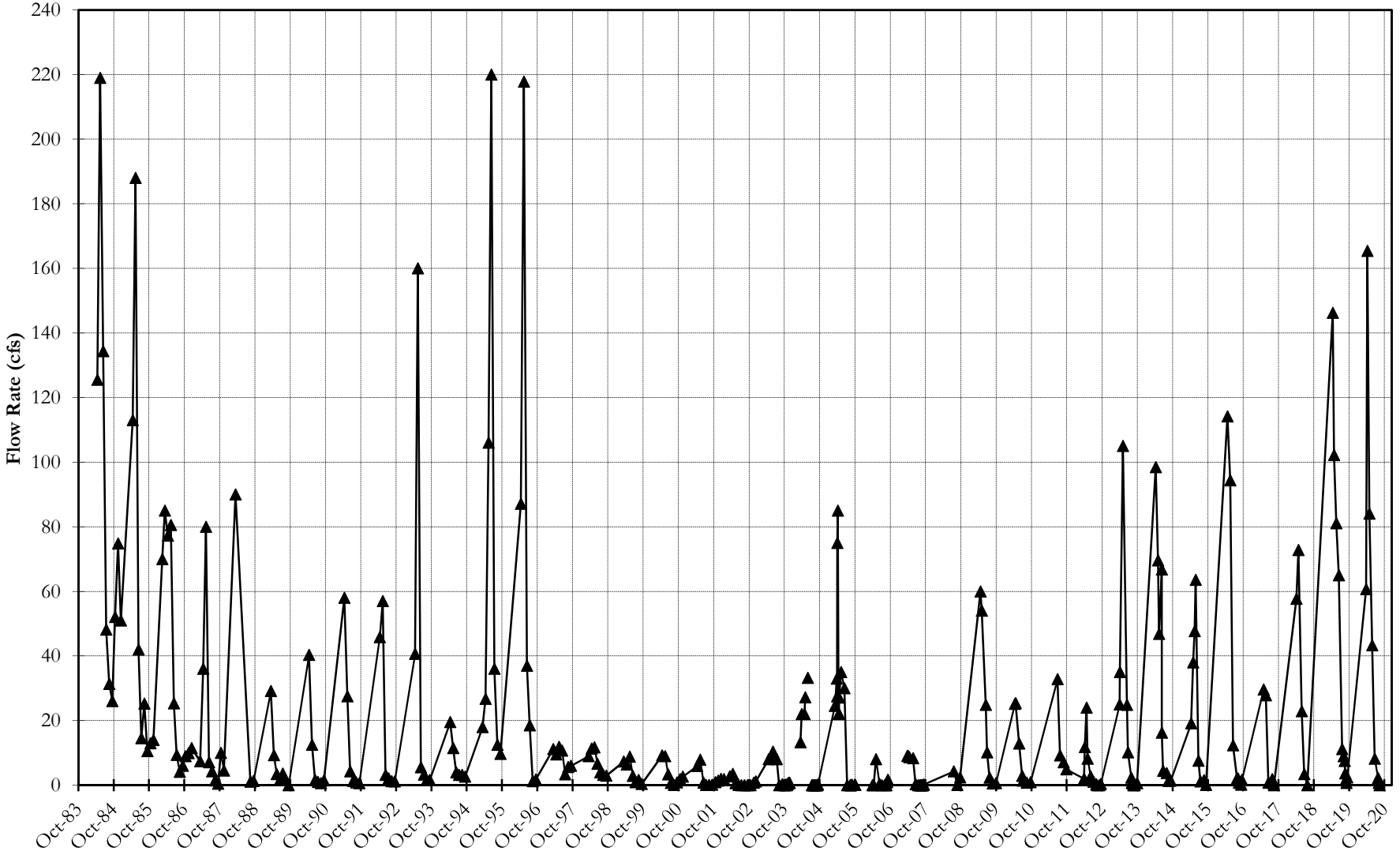

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FIGURE 100

Surface Water Site 1003, Fish Creek Downstream of Fish Creek Tipple

Period of Record Field Conductivity Data

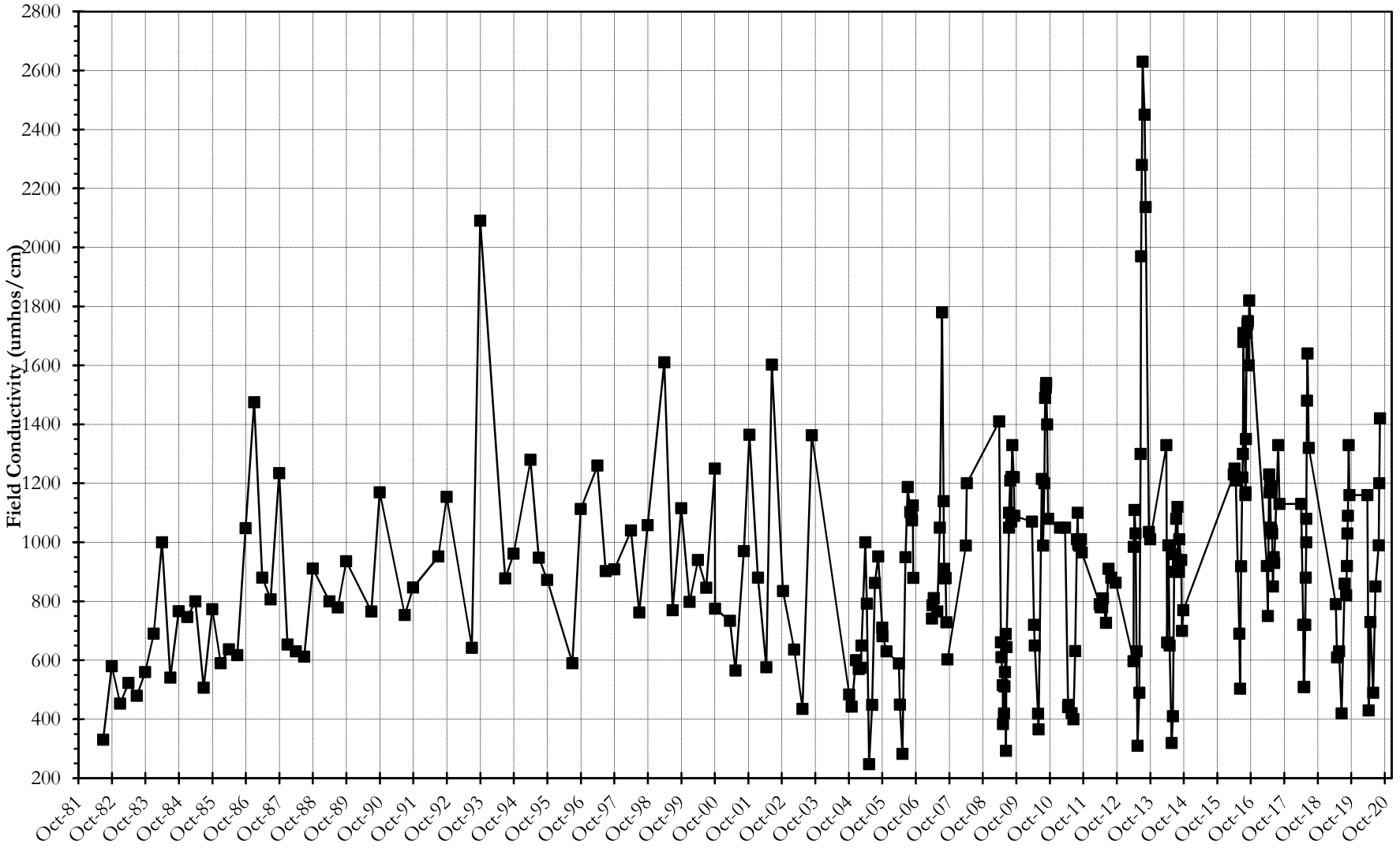

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FIGURE 101

Surface Water Site 1003, Fish Creek Downstream of Fish Creek Tipple

Period of Record Total Recoverable Iron Data

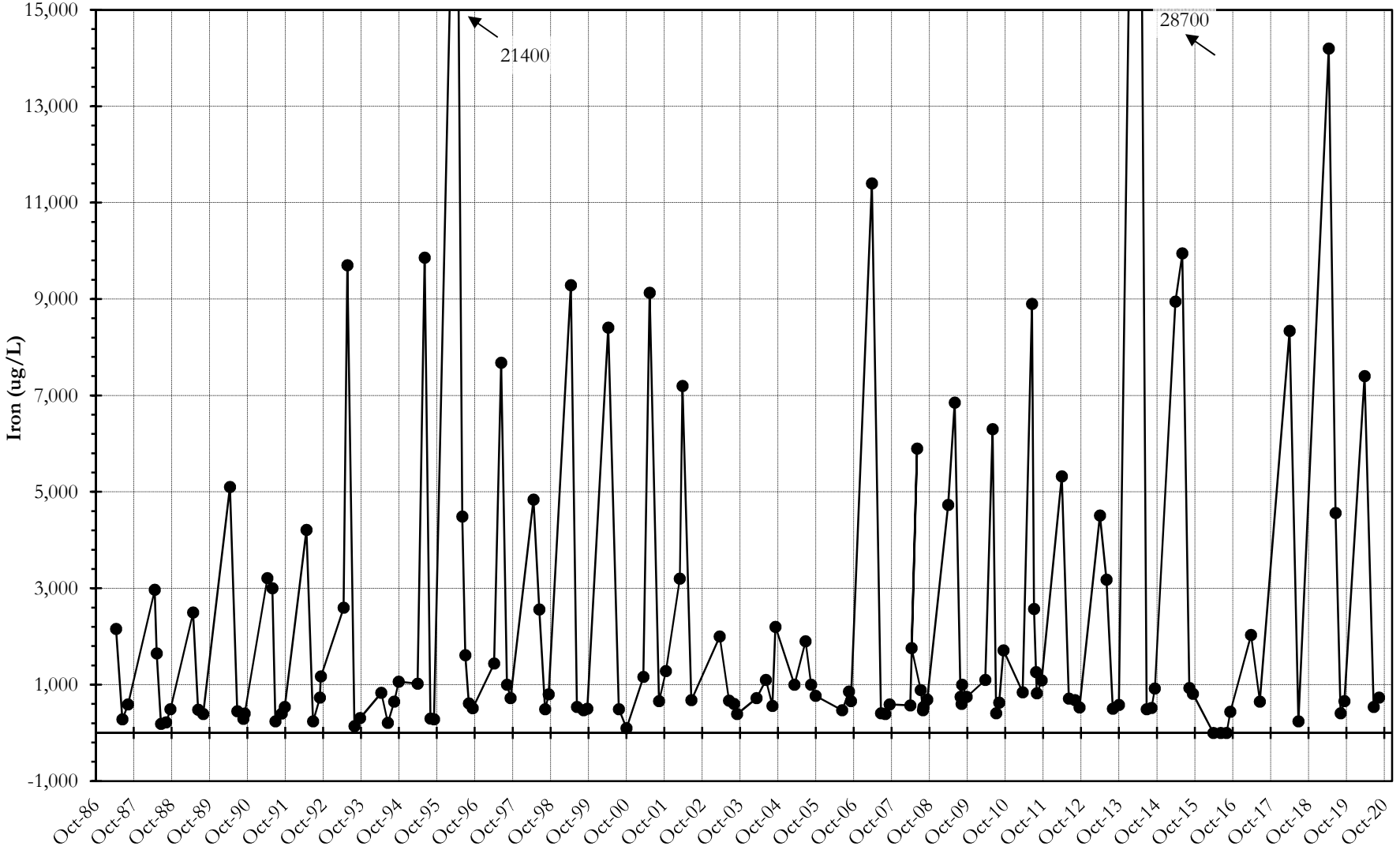

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FIGURE 102

Surface Water Site 301, Trout Creek above Confluence

2020 Water Year Flow Rate Data

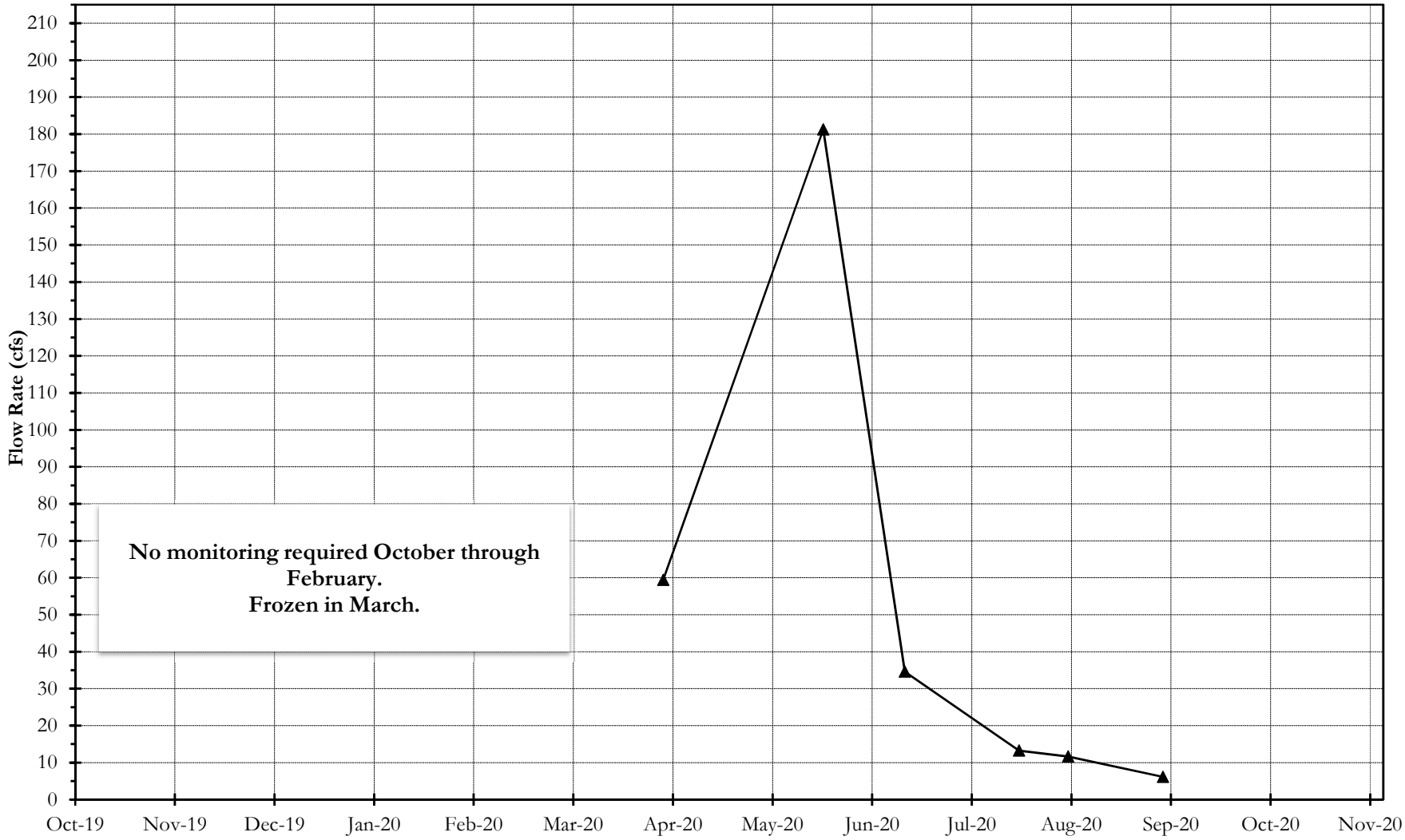

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FIGURE 103

Surface Water Site 301, Trout Creek above Confluence

2020 Water Year Field Conductivity Data

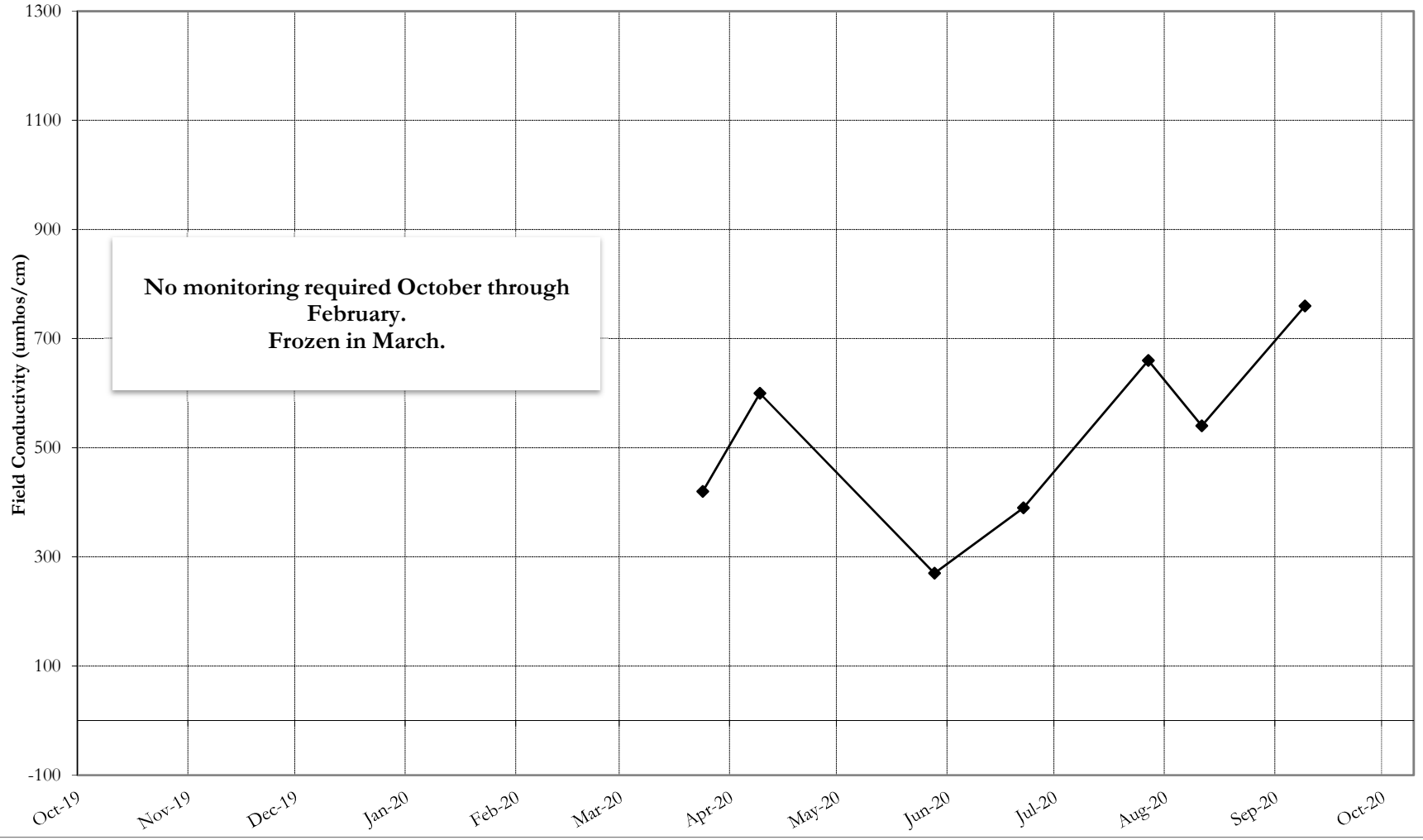

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FIGURE 104

Surface Water Site 301, Trout Creek above Confluence

Period of Record Flow Rate Data for Water Years 1995 - 2020

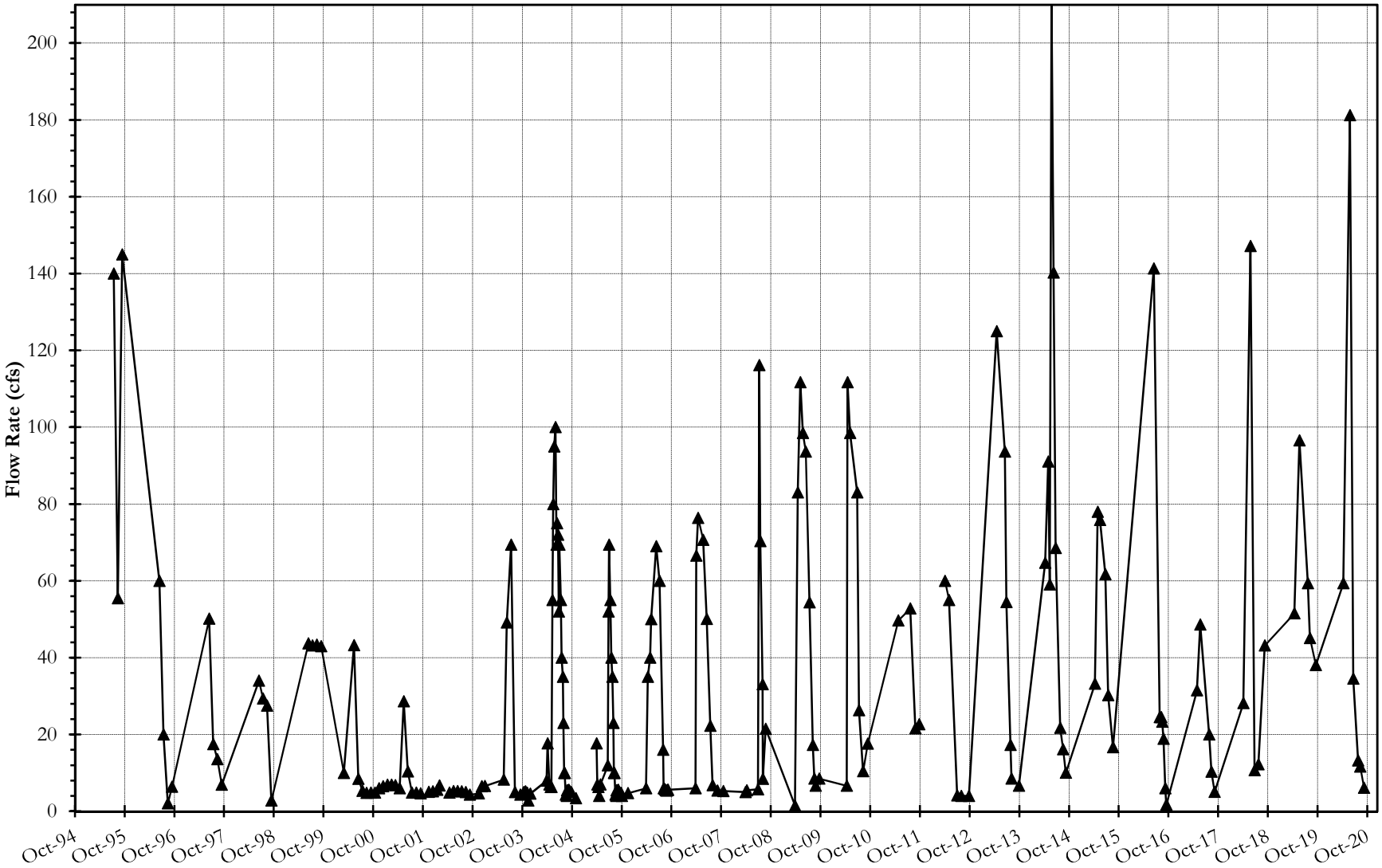

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FIGURE 105

Surface Water Site 301, Trout Creek above Confluence

Period of Record Field Conductivity Data

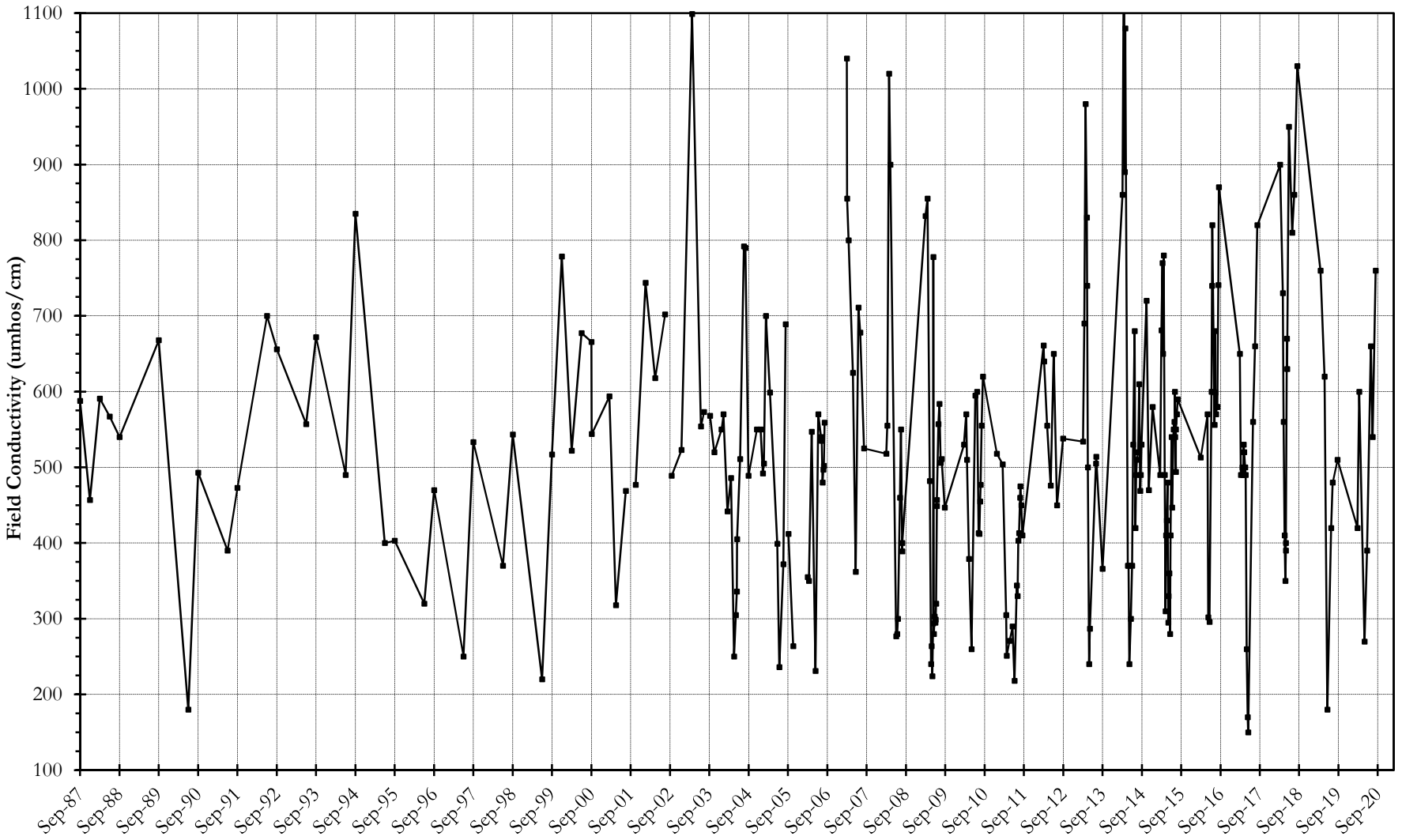

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FIGURE 106

Surface Water Site 69, Trout Creek below Confluence

2020 Water Year Flow Rate Data

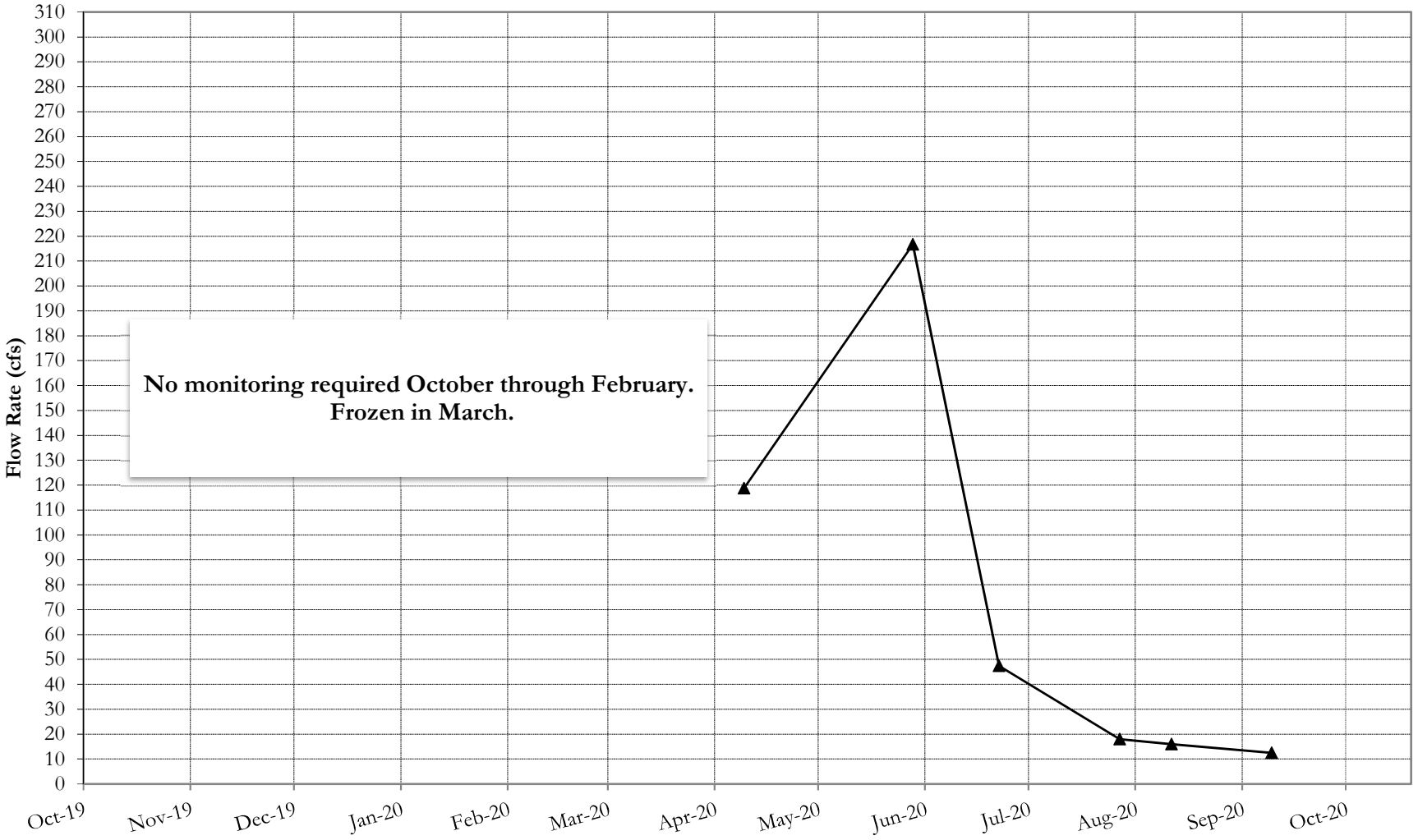

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FIGURE 107

Surface Water Site 69, Trout Creek below Confluence

2020 Water Year Field Conductivity Data

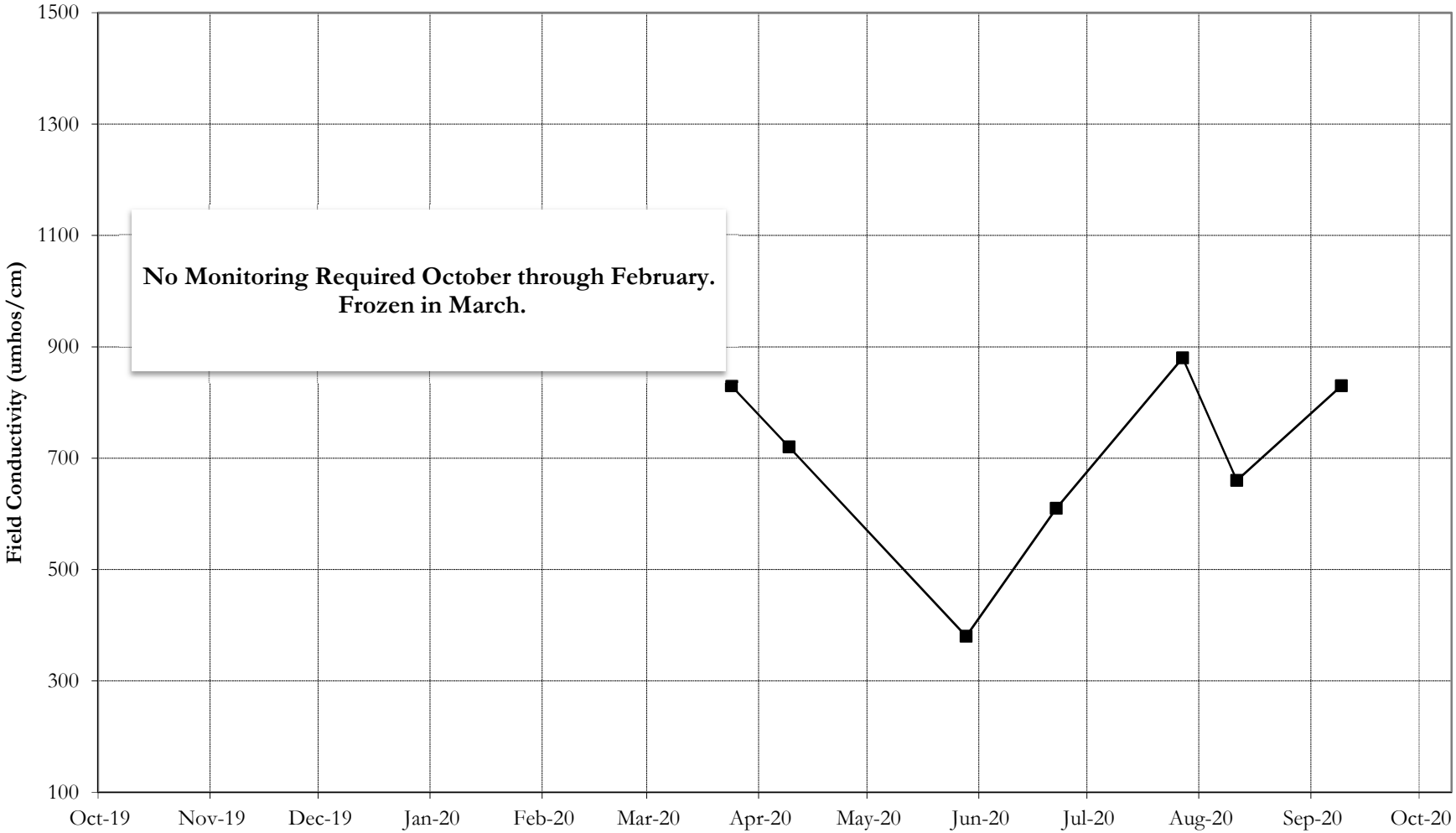

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FIGURE 108

Surface Water Site 69, Trout Creek below Confluence

Period of Record Monthly Flow Rate Data

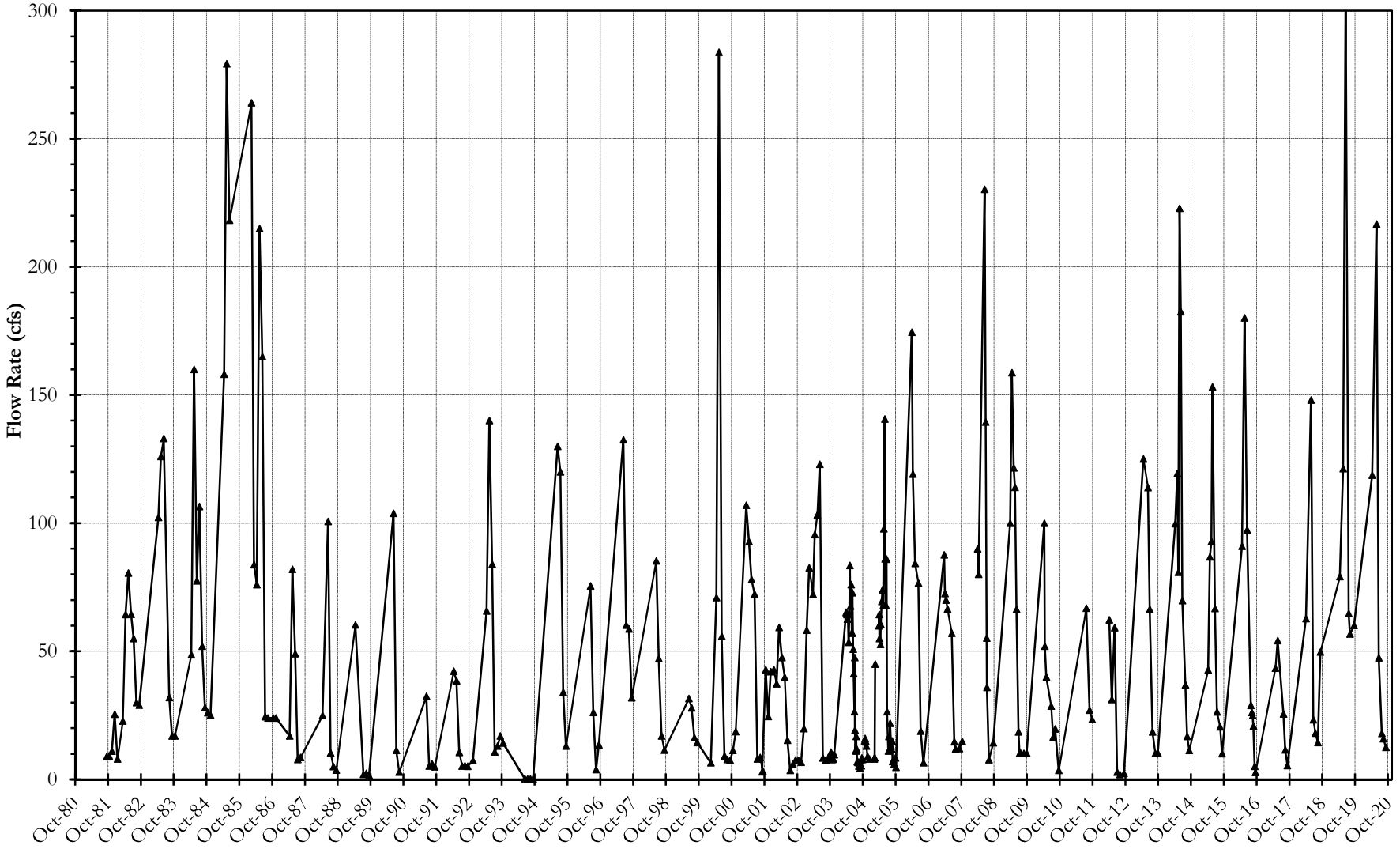

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FIGURE 109

Surface Water Site 69, Trout Creek below Confluence

Period of Record Field Conductivity Data

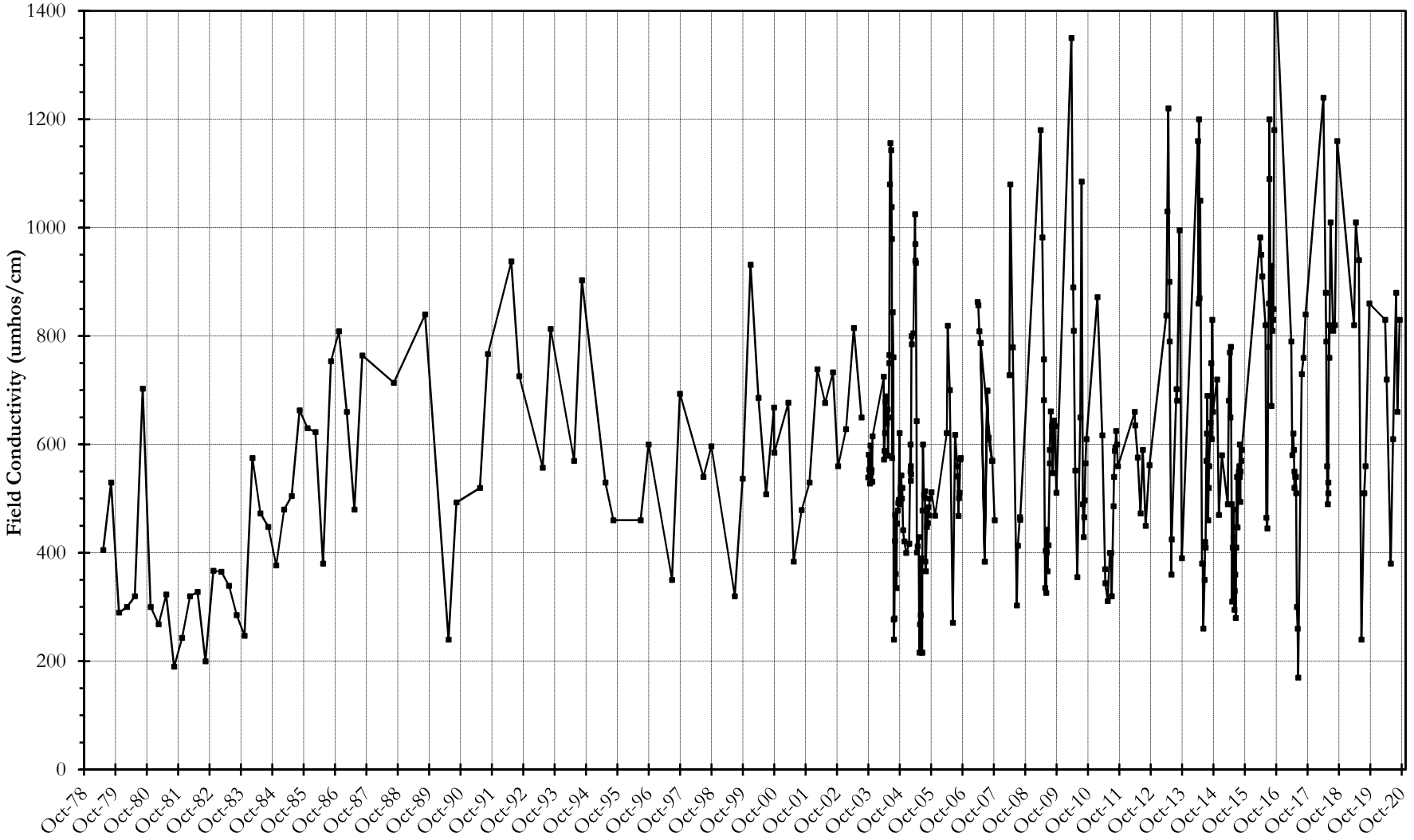

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FIGURE 110

Surface Water Site 1005, Trout Creek below Fish Creek Confluence

2020 Water Year Flow Rate Data

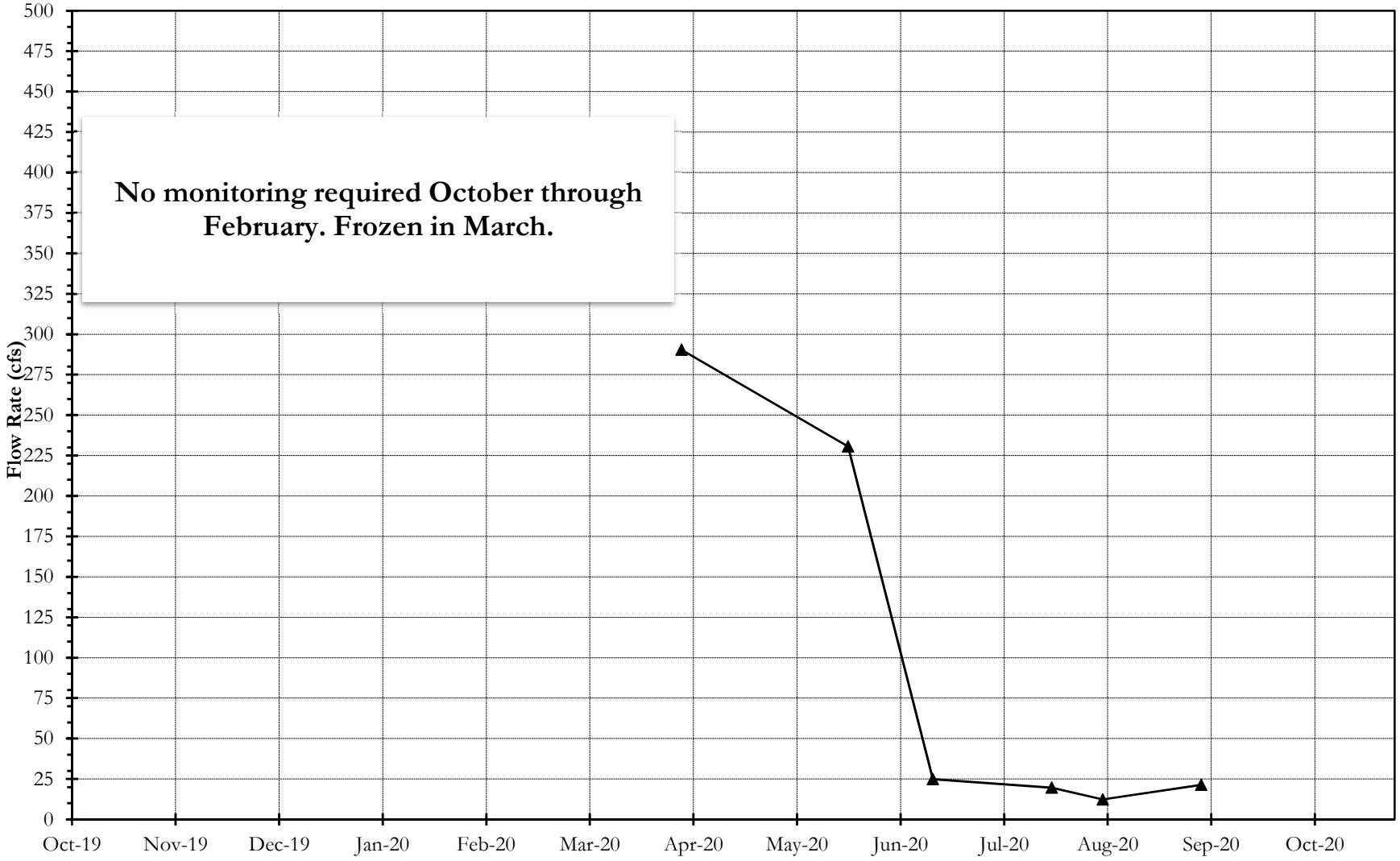

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FIGURE 111

Surface Water Site 1005, Trout Creek below Fish Creek Confluence

Period of Record TDS Data

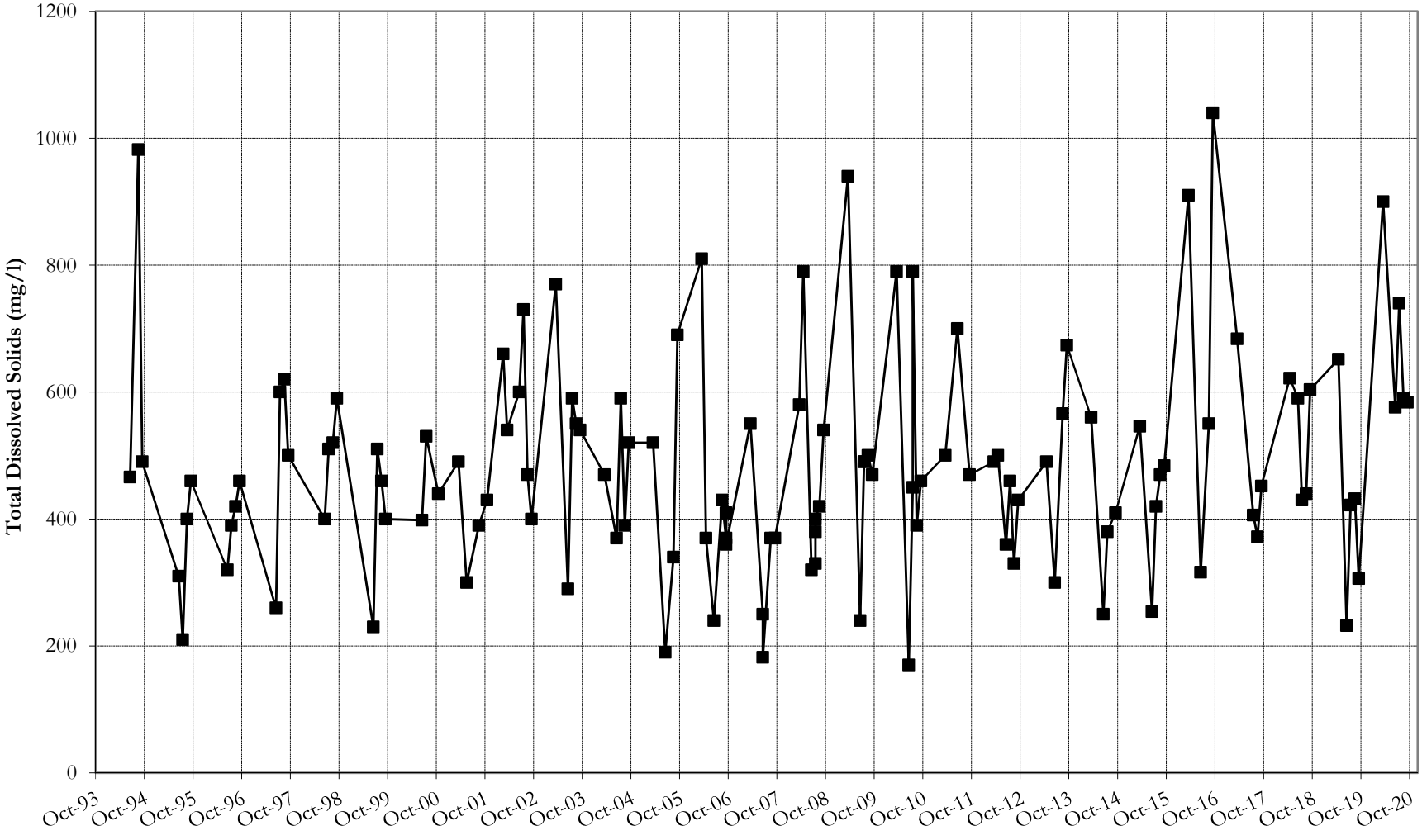

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FIGURE 112

Surface Water Site 29, Middle Creek Below Foidel Creek Confluence

2020 Water Year Flow Rate Data

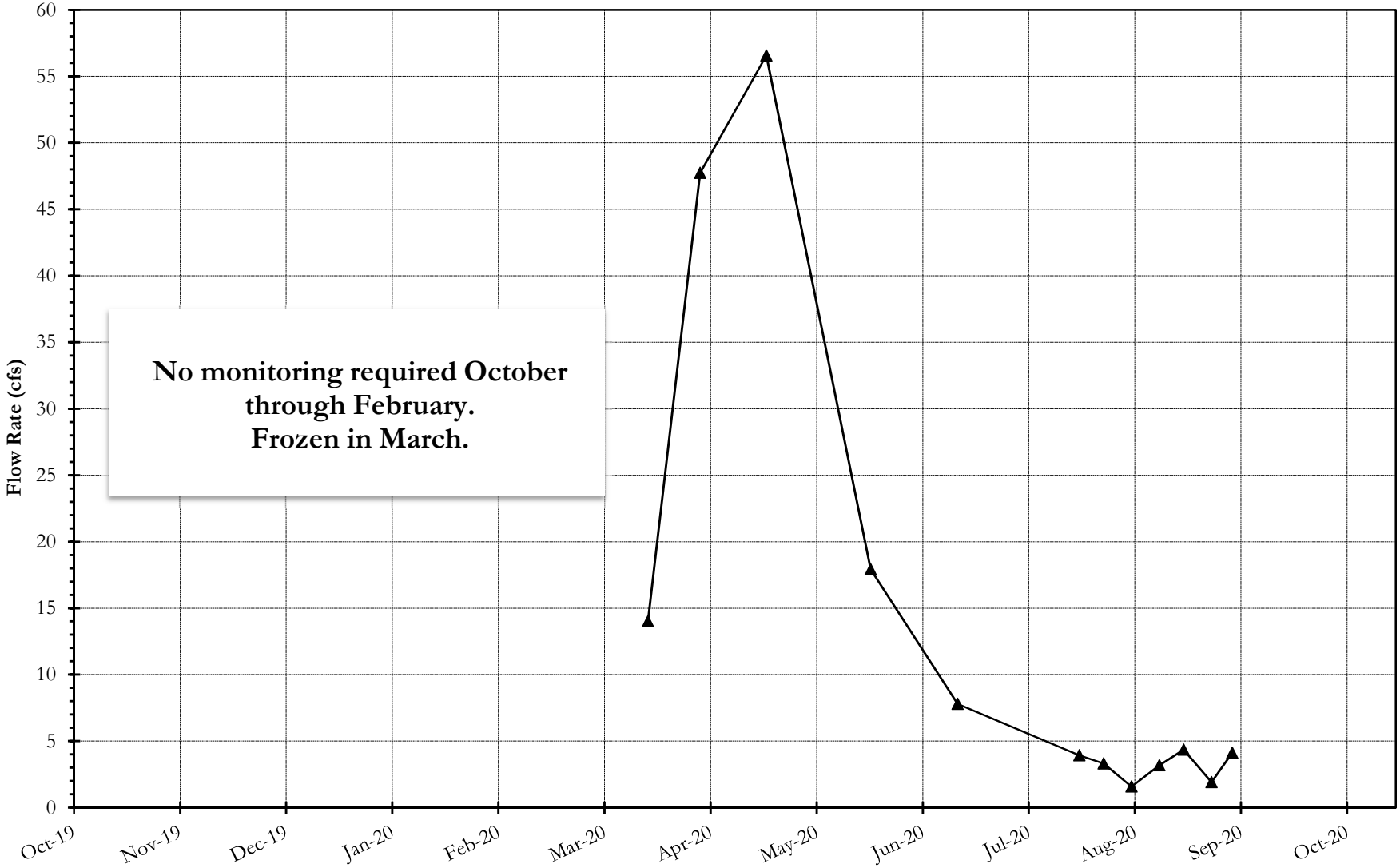

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FIGURE 113

Surface Water Site 29, Middle Creek Below Foidel Creek Confluence

2020 Water Year Field Conductivity Data

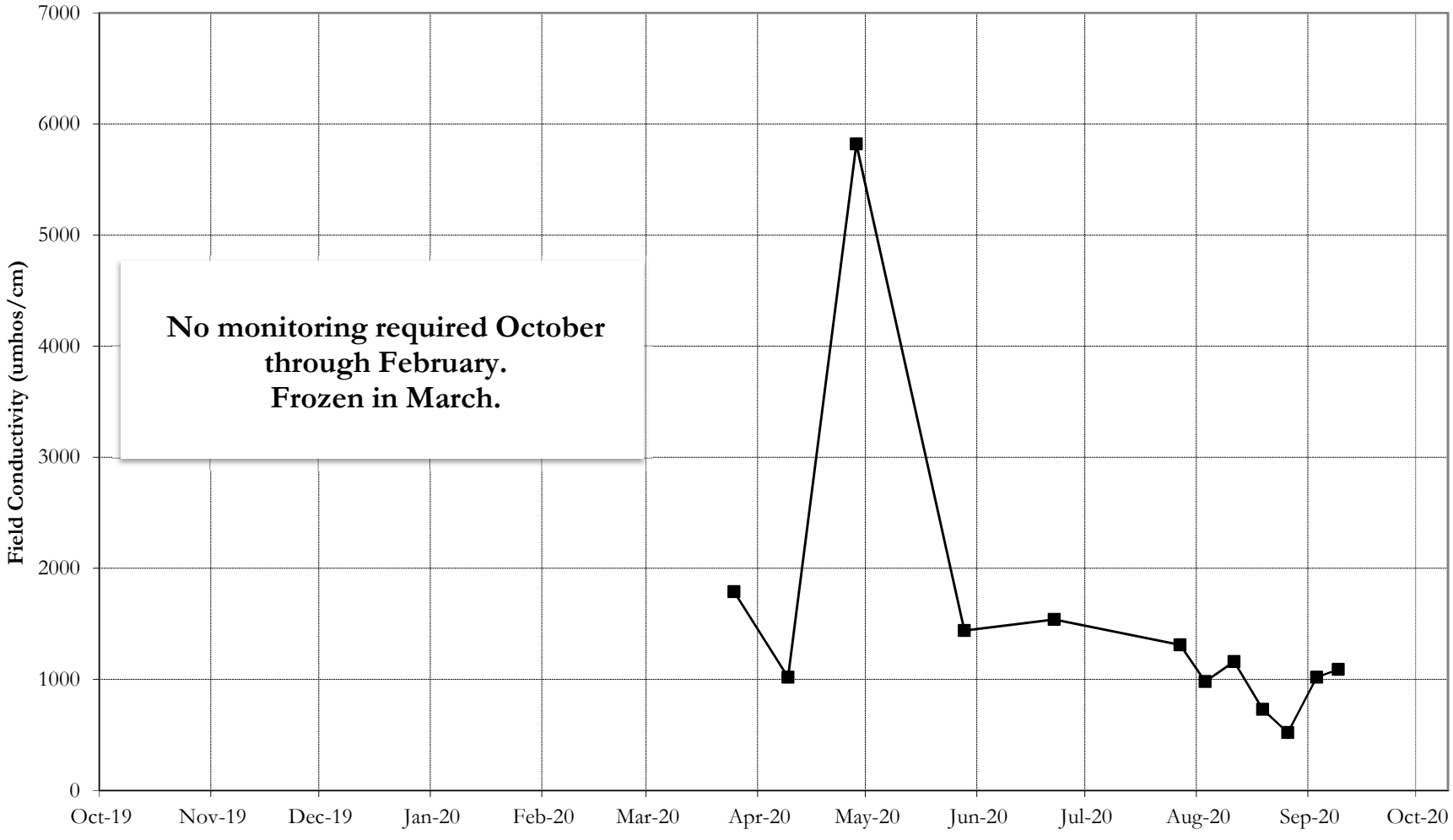

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FIGURE 114

Surface Water Site 29, Middle Creek

Monthly Flow Rate Data for Water Years 2000 - 2020

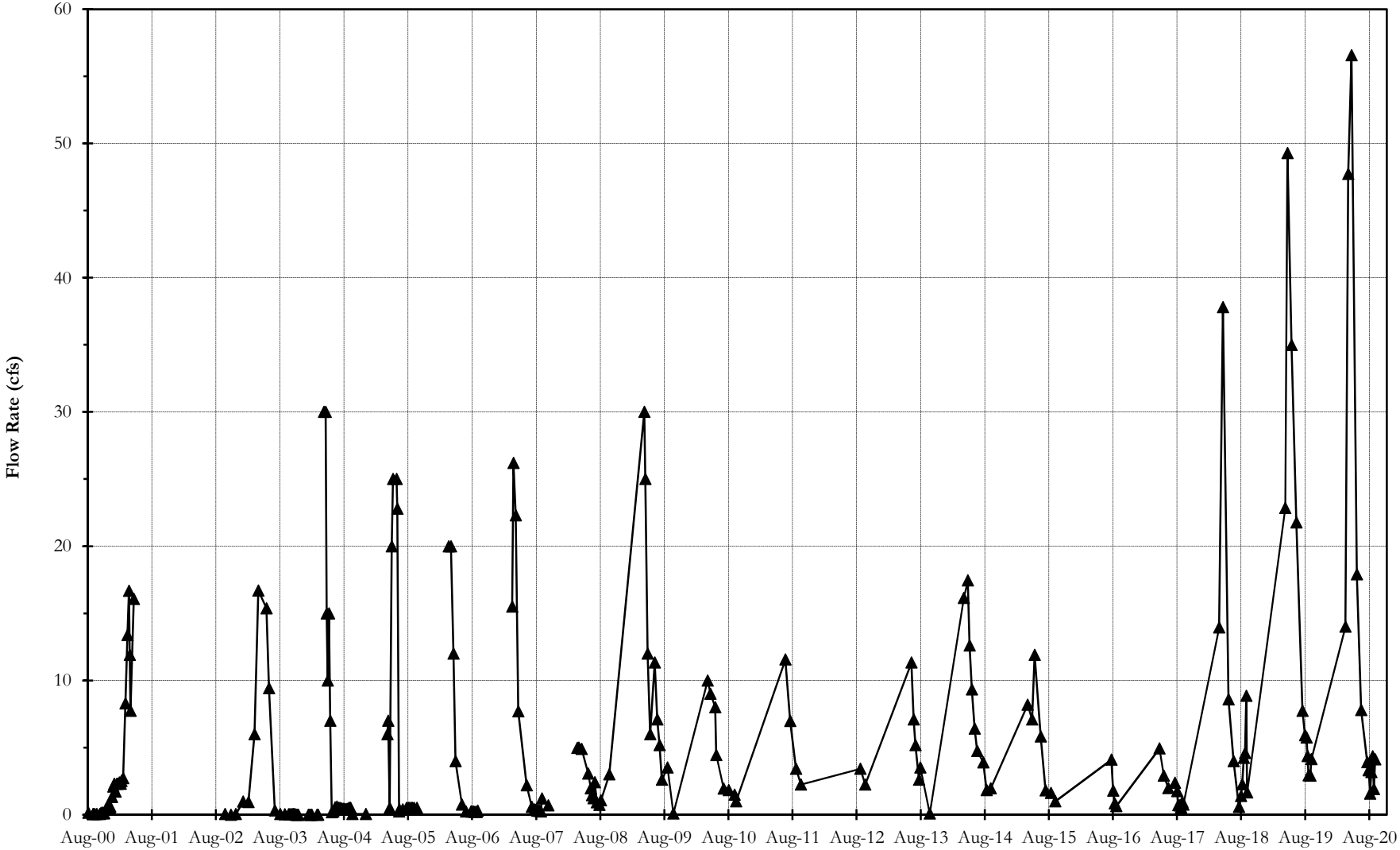

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FIGURE 115

Surface Water Site 29, Middle Creek

Period of Record

Field Conductivity Data

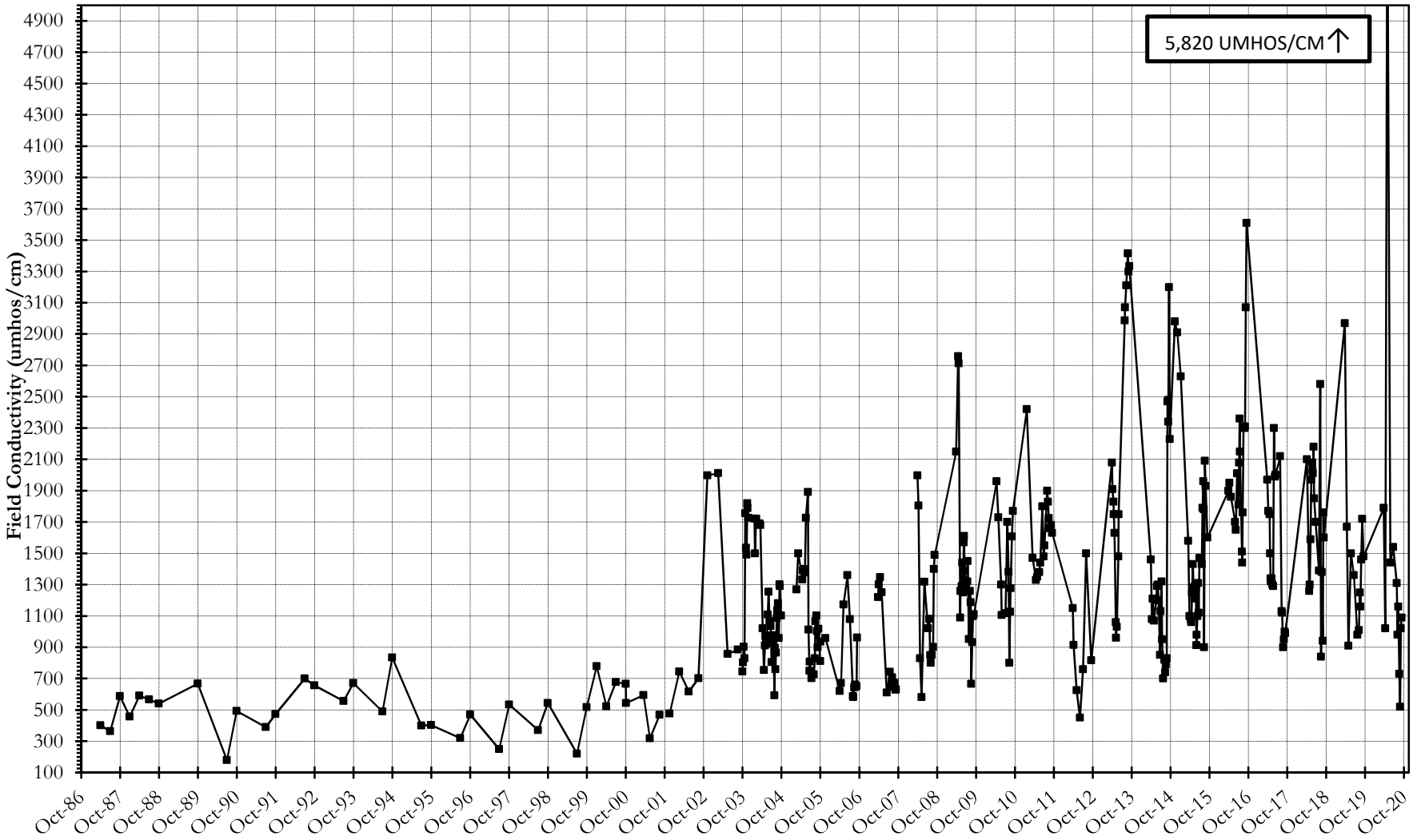

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FIGURE 116

Spring 303-1, Fish Creek Tipple Outflow

Period of Record Field Conductivity Data

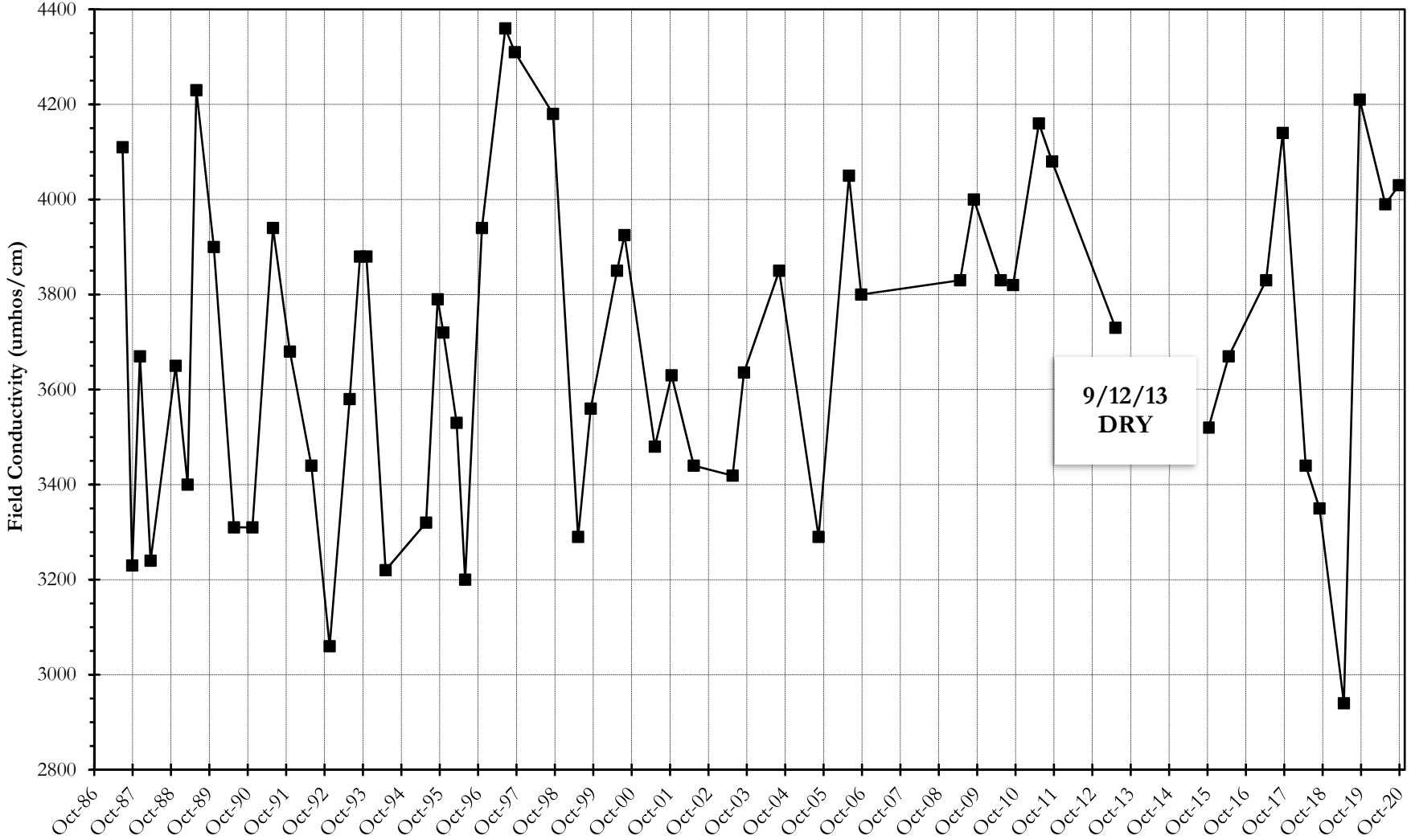

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FIGURE 117

NPDES Discharge Site 115, Fish Creek Borehole

2020 Water Year Flow Rate Data

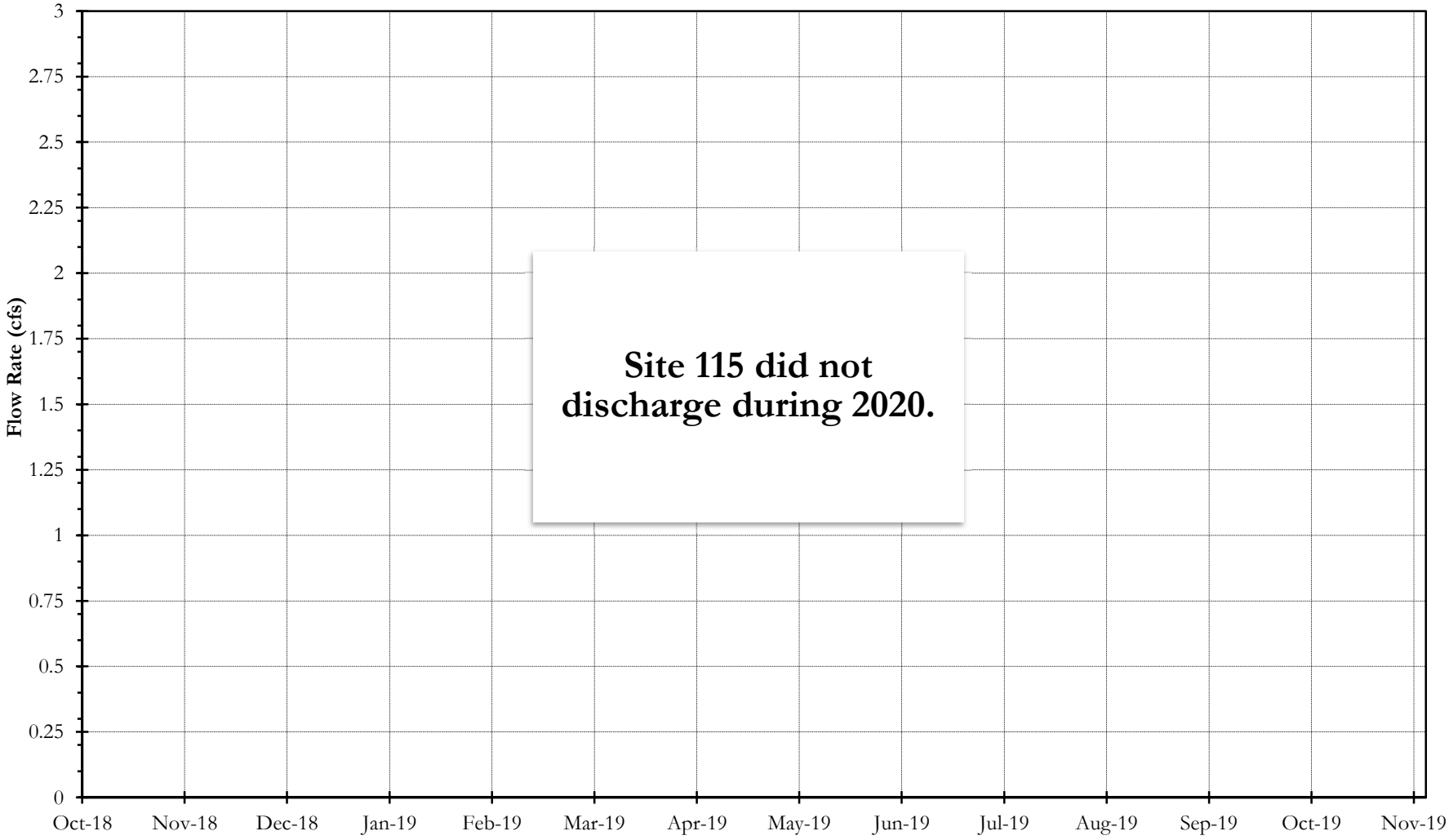

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FIGURE 118

NPDES Discharge Site 115, Fish Creek Borehole

2020 Water Year Field Conductivity Data

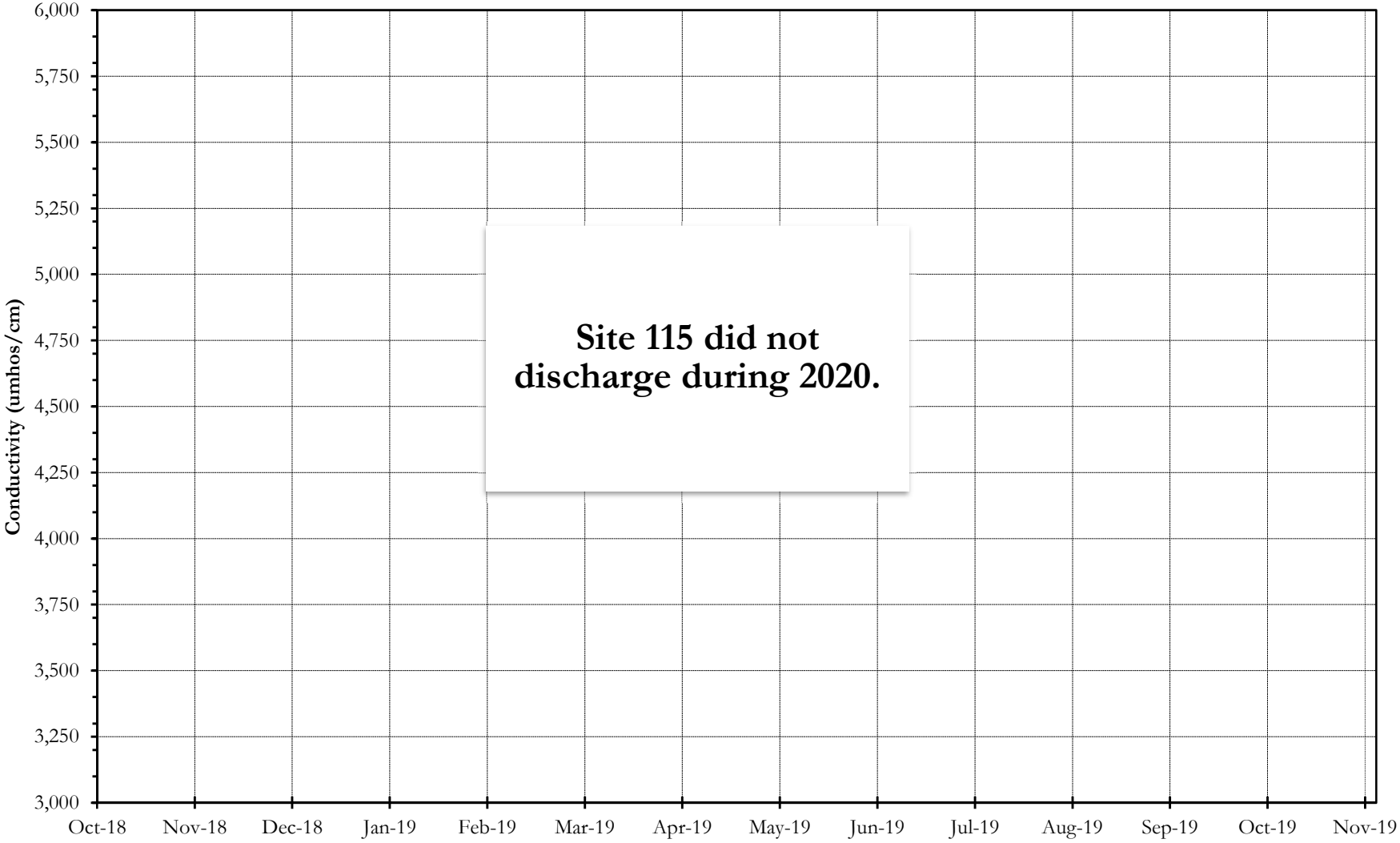

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FIGURE 119

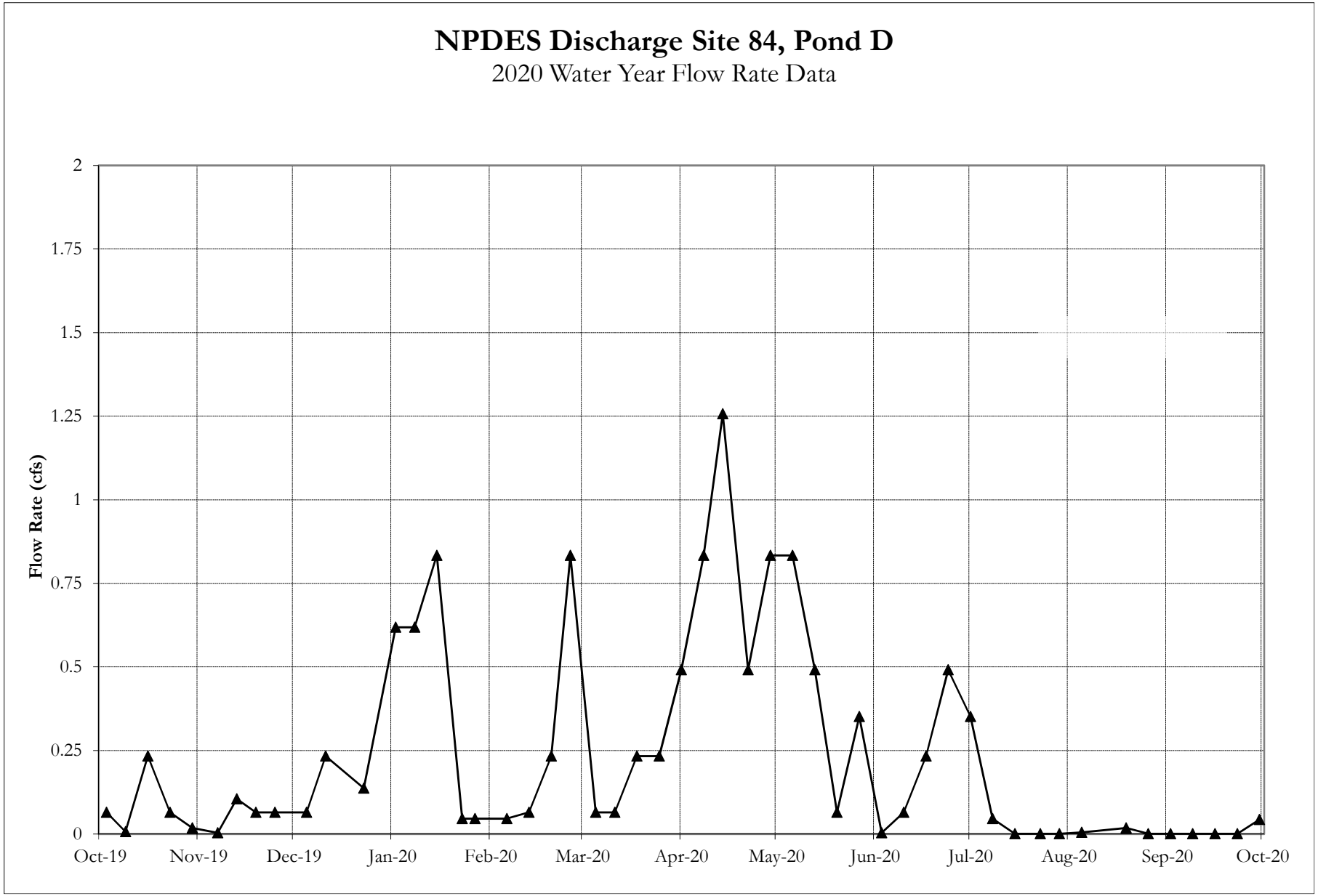

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FIGURE 120

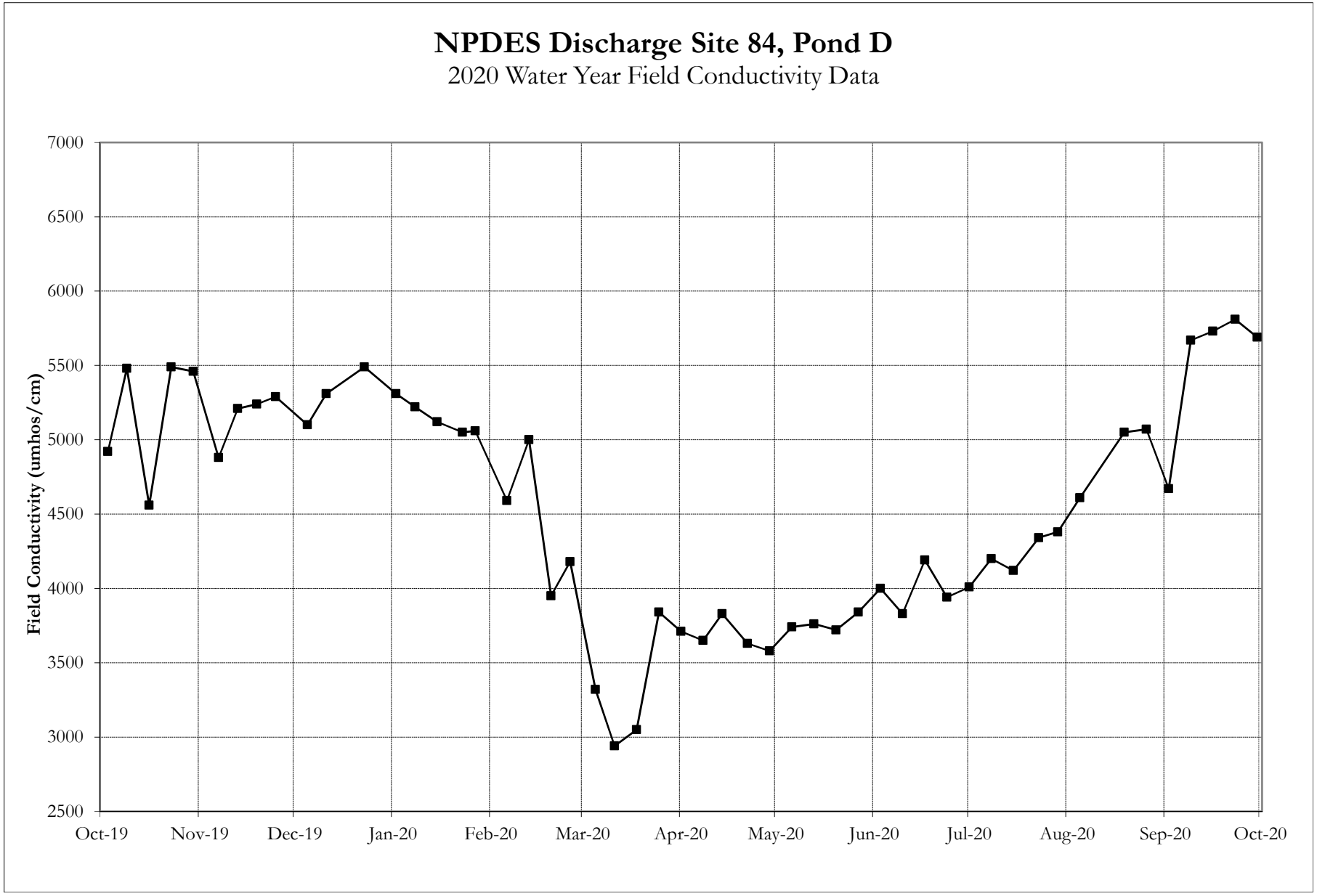

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FIGURE 121

NPDES Discharge Site 62, Sedimentation Pond - Fish Creek Tipple

2020 Water Year Flow Rate Data

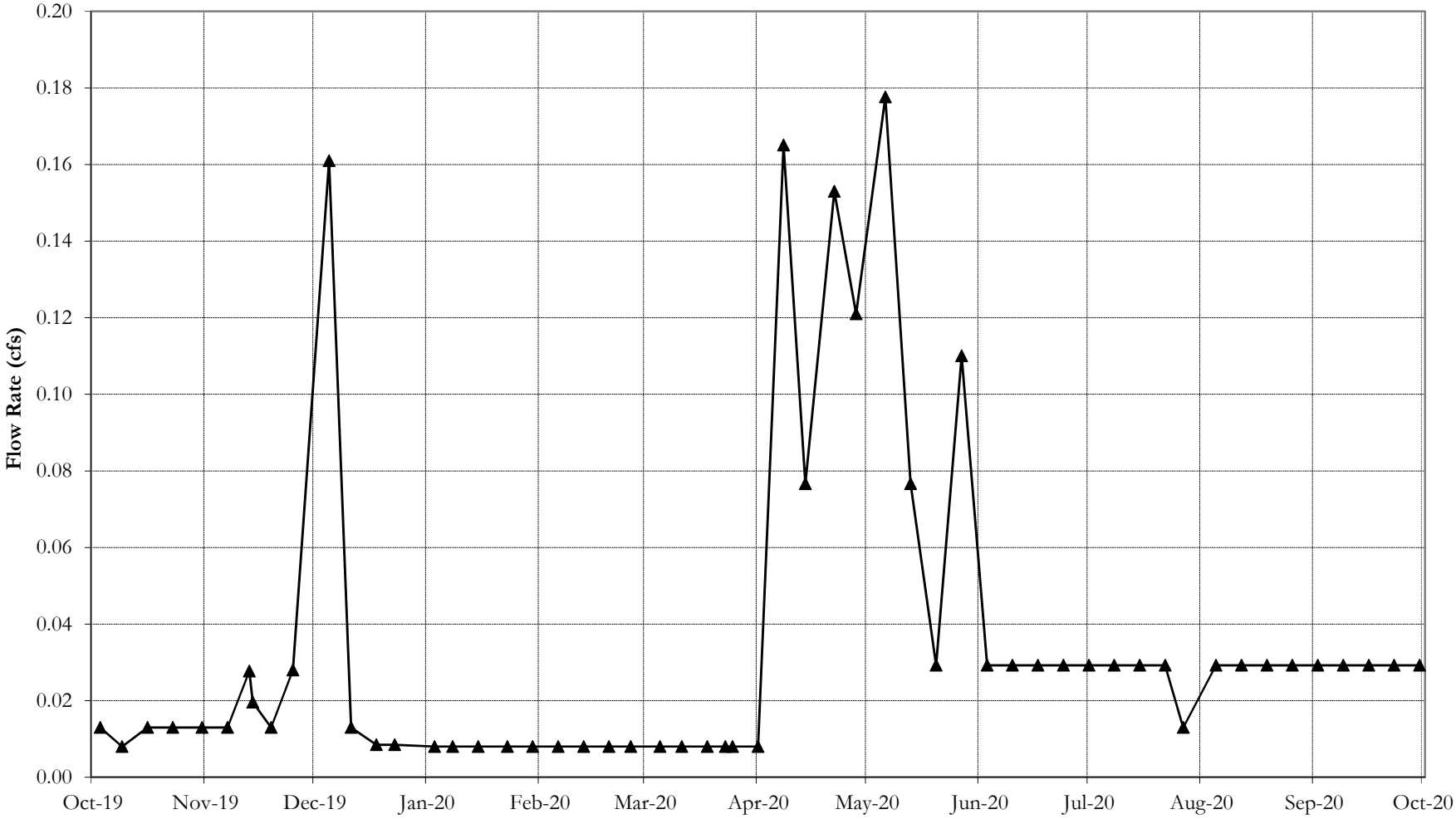

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FIGURE 122

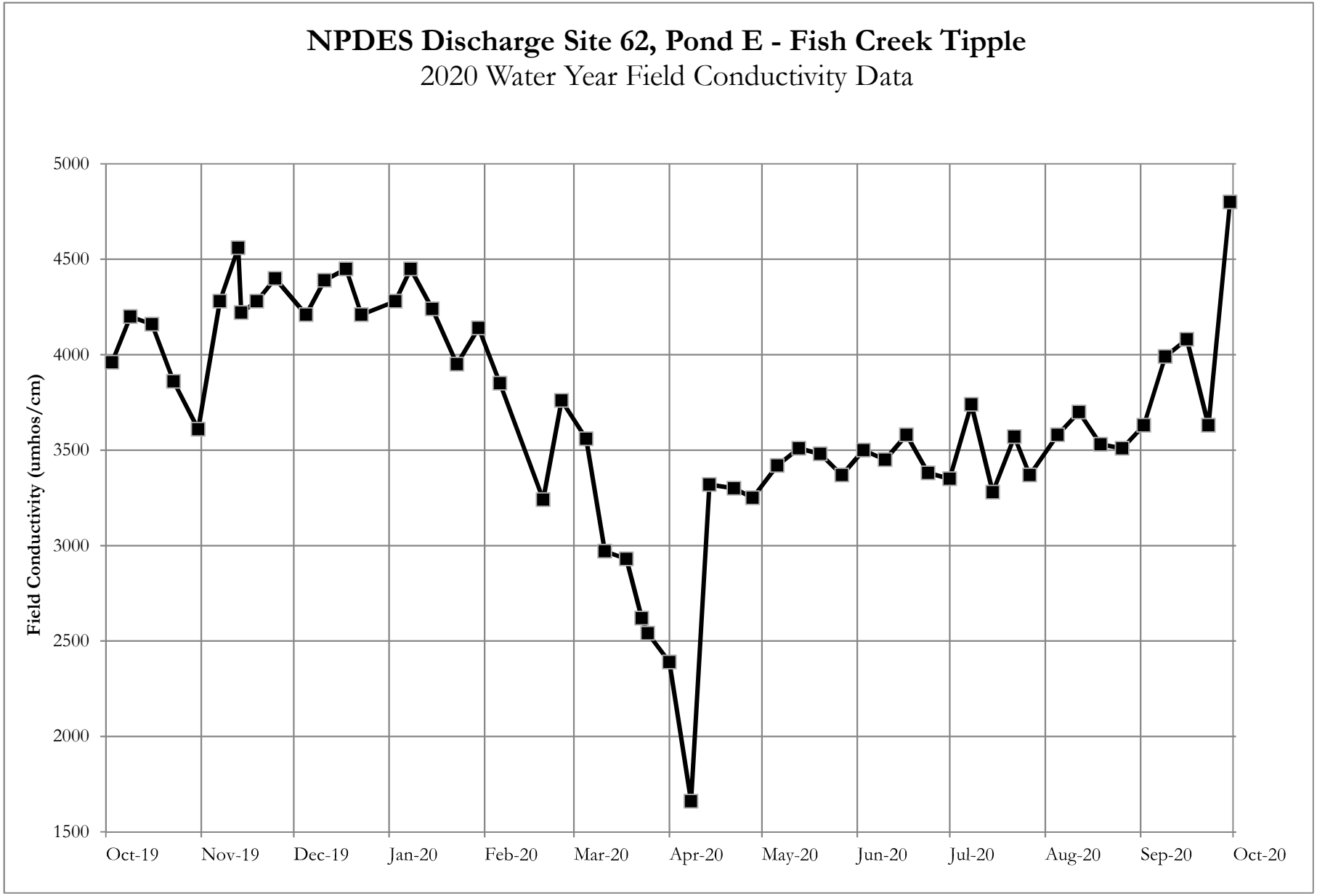

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FIGURE 123

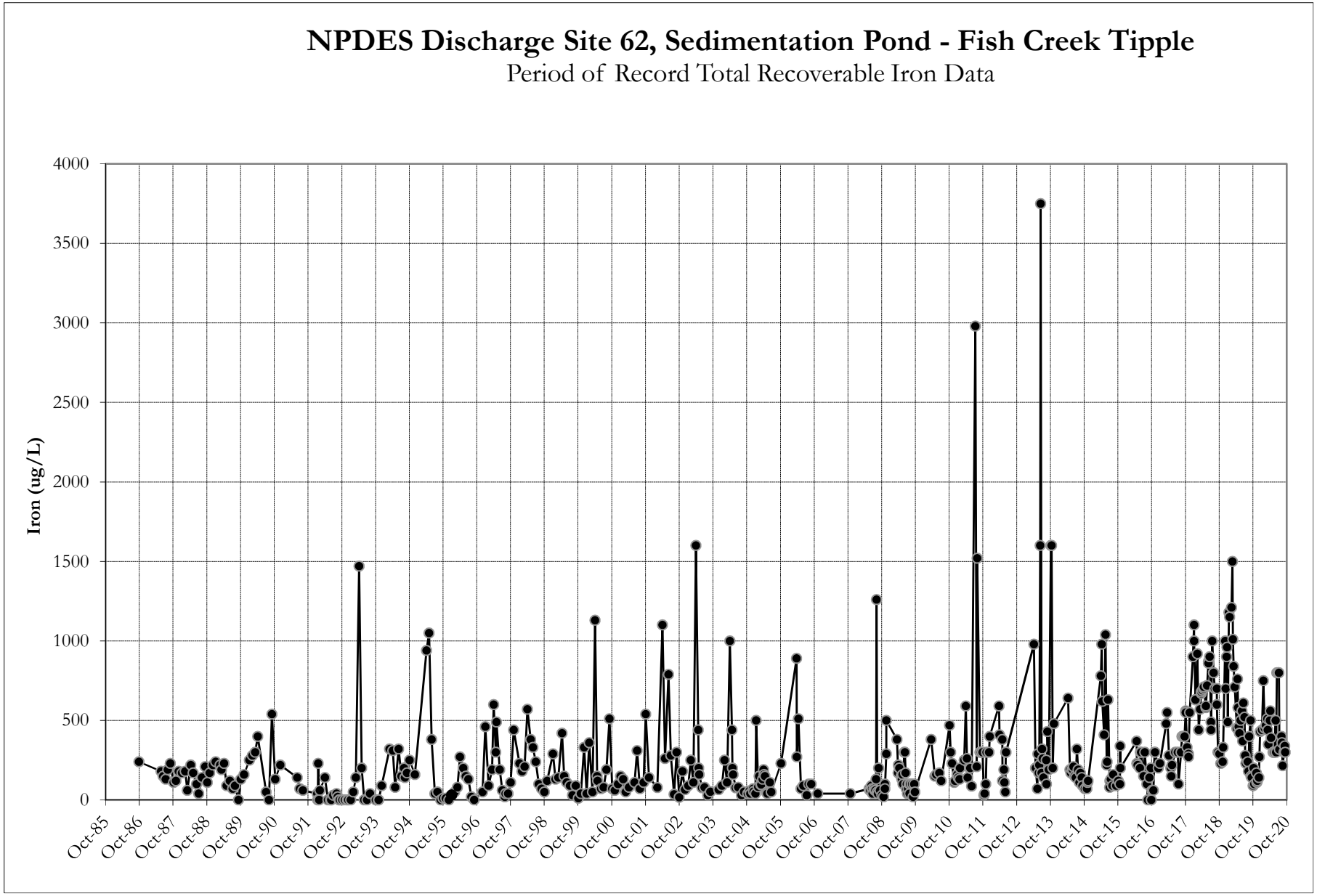

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FIGURE 124