Red Dog Operations

4th Quarter Report & Annual
Waste Management Permit 2021DB0001
Reclamation Plan Approval F20219958

February 28, 2022

Teck

Table of Contents

Tables

Figures

Appendixes

Introduction

This report has been prepared to fulfill the 4th quarter and annual reporting requirements for Teck Alaska Incorporated obligations under the State of Alaska Waste Management Permit No. 2021DB0001 and the Red Dog Mine Reclamation Plan Approval F20219958. Both permits were renewed on September 29th, 2021.

This report addresses Biomonitoring, Permafrost and Sub-permafrost Groundwater Monitoring, Mine Water Management, Waste Rock Management, Tailings Management, Class III Municipal Solid Waste Landfill, Mining and Milling Activities, Reclamation, Risk Management Plan, Financial Assurance, Amendments and Wildlife Interactions for the reporting period which includes both the 4th quarter and 2021 year.

Biomonitoring Program

Annual biomonitoring report

The annual *Biomonitoring Report* is being prepared by ADF&G and will be submitted once received. The 2021 biomonitoring report will be incorporated as Appendix A within this report.

Annual summary of biomonitoring water quality sampling

Analytical results of samples collected for biomonitoring water quality are included as electronic file *Red Dog Analytical Data 2021.xlsx*. Analytical results for the last five years are listed in this file.

Permafrost and Sub-permafrost Groundwater Monitoring

SEP permafrost and subsurface temperature monitoring

Supplemental Environmental Project (SEP) piezometer and thermistor monitoring well measurements were completed for the 4th quarter, no significant issues noted during the data collection process. Thermistor well T96-010 was not read during the quarter, a cable extension was required for this well after the seepage pond expansion and requires the line to be re-spliced.

The *5 year Long-Term Permafrost and Groundwater Monitoring Report* is expected to be completed by early March of 2022 and will submitted when received as Appendix B in this report.

Significant activities in permafrost and sub-permafrost groundwater monitoring

Per the EPA approved workplan a new replacement piezometer and digital thermistor monitoring well was constructed on the Kivalina Overburden Dump. The project commenced on November 1, 2021 and was completed on December 12, 2021. The replacement well is within 50 feet of the existing wells P-96-013 and T-96-013.

The replacement well was required to validate the groundwater elevation since it was suspected the piezometer well P96-013 had failed. An earlier attempt was made to replace the downhole equipment in P96-013 with no success. A digital thermistor string was also added to the replacement well to determine if there has been any degradation with the older analog style thermistors when compared to the new digital cable.

A subpermafrost water sample was collected and sent to GeoChron Laboratories to be age dated using C14 method and analyzed for tritium per EPA's request. A final report will be prepared by Golder Associates and submitted to the EPA Region 10 once the laboratory report is received and the final report is completed.

Non SEP related active layer permafrost monitoring

In April 2021, six shallow thermistor and monitoring wells were installed in various locations within the Red Dog Creek and Ikalukrok Creek valleys. Figure 1- Shallow Active Layer Thermistor Locations depicts their locations. The installations were initially part of an internal investigation by Red Dog Operations to access changing permafrost conditions observed in the area and to help determine the source and cause of high Total Dissolved Solids (TDS) observed in Red Dog Creek and Ikalukrok Creek.

The source of the high TDS water is hypothesized to be shallow groundwater from melting permafrost. The purpose of installing thermistors and monitoring wells in undisturbed areas away from Red Dog Operations is to monitor shallow ground temperature, potential permafrost thaw, and groundwater presence and water quality that may be caused by the long-term warming trends observed in the area. Additional shallow monitoring well installations are being reviewed for the 2022 year.

This monitoring was later required by ADEC per the Compliance Schedule in the May 19, 2021 modification to APDES Permit No. AK0038652.

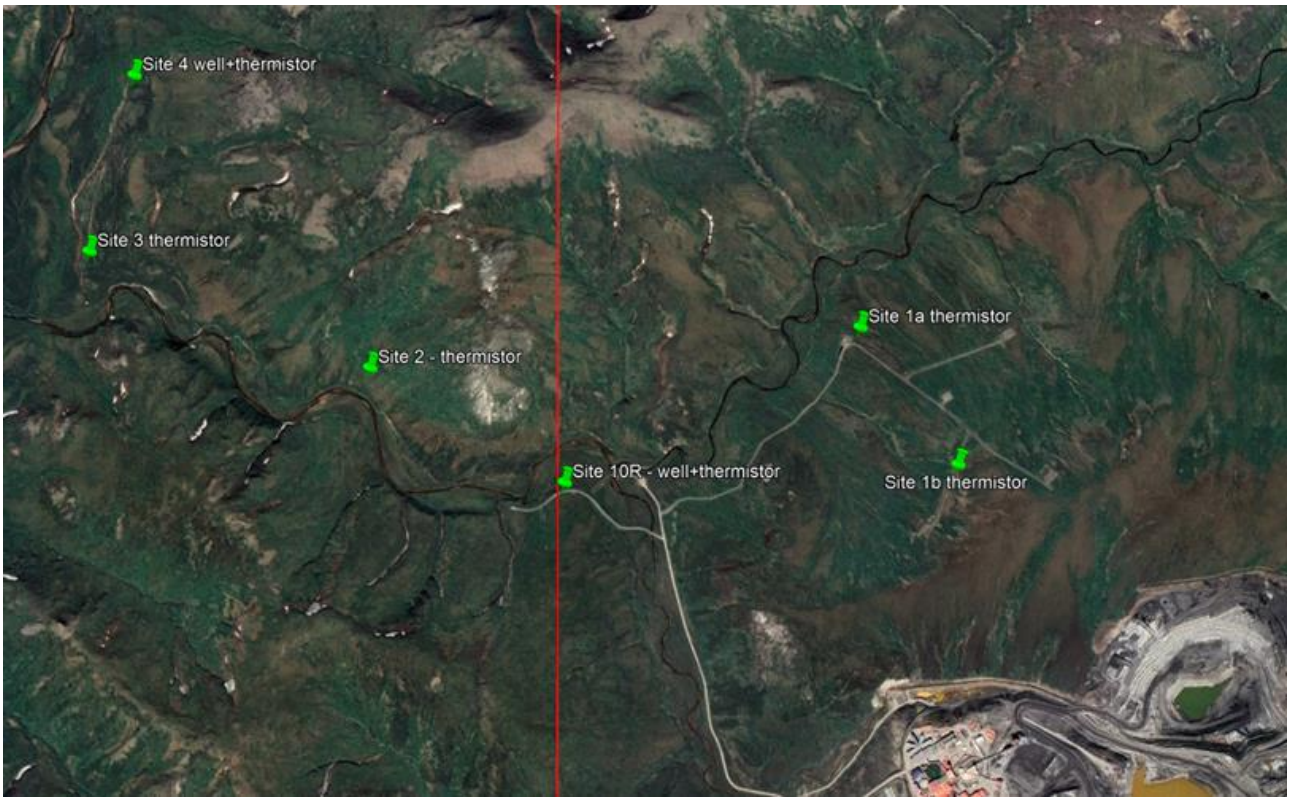


Figure 1 - Shallow Active Layer Thermistor Well Locations

Mine Water Management

Mine water flows

Table 1 below provides a summary of mine water flows for mine water monitoring stations during the reporting period. There was some disruption to several mine process water flows all related to frozen piping during the report period.

Influent process water flows to Water Treatment Plant (WTP) #1 from reclaim water diminished in November and completely ceased during the month of December due to frozen lines and ice buildup within the center well section. The system has since been thawed out and operating at capacity treating reclaim water.

The East and West overburden sump collection lines froze during December due to a failed heat trace line and an on-off type flow based on sump level floats. Work to unfreeze the lines began shortly afterward and ways to mitigate the system to a continuous type flow are being reviewed.

Table 1 - Water Monitoring Volumes

	Volume in Gallons			
Mine Water Monitoring Stations	Oct	Nov	Dec	2021 Total
Bon's Creek Total Flow	8,864,000	9,198,000	7,477,000	112,189,000
Mine Water Sump Total Flow*	80,700,000	30,190,000	29,870,000	712,376,000
Main Dam Seepage Pumpback	33,700,000	30,690,000	29,650,000	374,710,000
Reclaim Flow to Mill	322,200,000	209,700,000	226,000,000	3,229,200,000
WTP #1 Influent from Reclaim	57,450,000	2,491,000	0	88,086,000
WTP #1 Influent from Mine Sump	0	0	0	0
WTP #1 Clarifier Sludge To Tails	0	0	0	0
WTP #2 Influent from Reclaim	0	0	0	2,107,781,954
WTP #2 Sludge to Tails	0	0	0	62,262,834
Discharge to Red Dog Creek	0	0	0	1,718,419,490
WTP #3 Influent from MWD	920,100	35,010	0	25,442,410
WTP #3 Influent from Mine Sump	0	0	0	0
WTP #3 Total Effluent	0	0	0	0
East Overburden Sump	536,400	301,900	780,500	13,231,700
West Overburden Sump	1,739,000	272,500	83,600	24,259,700
Main Waste ARD to Main Pit	0	0	0	0
Treated Water to Main Pit	0	0	0	0
Tailings Water Supernatant (calc.) to TSF*	217,383,100	195,274,200	230,936,500	2,934,787,100
Mill Pad Collection	24,656	0	0	942,605
Sand filter Effluent - Mine Road Dust Control	0	0	0	5,560,510
Kaviqsaaq Diversion**	0	0	0	8,117,000

Notes: * Includes Main Pit water pumped back to Tailings Storage Facility
** Monthly total flow averaged from two measured flow readings per month

Mine water quality

An electronic spreadsheet titled *Red Dog Analytical Data 2021.xlsx* is included with this report which includes data for the last five years. The spreadsheet includes all data used to generate the trend charts listed in the Appendixes of this report.

Mine water quality trend charts

Mine water quality trend charts are provided in Appendixes C, D, E, F, I, J and K of this report. Water quality Profile I and II (*"Monitoring Plan, November 2021")* constituents for the Mine Water, Mine Drainage, Bons Creek, APDES stations, Mill Pad, Hilltop and the Kaviqsaaq Diversion are illustrated for a five year period ending with the 4th quarter. The Main Pit Water Reservoir water pH has been consistently preserving a pH between 3.0 and 3.2 since September of 2020, most likely contributing to the lower pH observed in the Tailing Storage Facility since early summer of this year. No other unusual trends were noted for the any of the monitored areas during 4th quarter period.

VISUAL MONITORING OF MINE WATER MANAGEMENT SYSTEMS

Mine water collection systems were visually inspected during the quarter as required per the *Integrated Waste Management Plan – Monitoring Plan, (November 2021).* All systems operated as designed during the 4th quarter.

The main tailings dam new seepage monitoring well was constructed during the 3rd quarter and an attempt was made during the 4th quarter to collect water samples from the well though only a few inches of water was measured at the well bottom, not enough to properly purge or collect a sample from the well. The new well was constructed next to the former sump location and at a similar depth.

The well and location are currently being evaluated by a hydrogeologist to determine the next feasible steps. If determined the shallow well will need be relocated a notice will be provided to applicable agencies.

Fish weir inspection

The fish weir fall inspection was completed on October 14th, 2021, no issues were identified and the system was operating as designed. A written report was submitted to state agencies and the US EPA Region 10 on October 15th, 2021.

Water balance

A mine water balance computer simulation program is maintained using GoldSim software. The GoldSim simulation generated a water balance projection for Life of Mine (LOM) by predicting surface water elevation in the Tailings Storage Facility. Figure 1 depicts simulated Tailings Storage Facility elevation based on current operations. A free water inventory chart is provided in Figure 2 which represents historic trends through 2021 and includes water volumes for the Tailings Storage Facility, Main Pit Water Reservoir and Aqqaluk Pit.

Waste water treatment reagent consumption

Significant reagents consumed for wastewater treatment during 2021:

- Total quantity of flocculant used in Water Treatment Plant 2 (WTP2) and WTP1 was 102 metric tonnes, the majority being used in WTP2.
- Total quantity of lime used in WTP2 is not tracked individually, though the total lime used in WTP1, WTP2 and WTP3 was 8,919 metric dry tonnes.
- Total quantity of sodium sulfide used in WPT1 and WTP2 was 498 metric tonnes, utilized to precipitate cadmium.
- Total quantity of flocculants used in WTP3; - None
- Quantity of any other chemicals used in significant quantities in WTP2; - Gypsum 10,196 metric tonnes, a lot more gypsum use than previous years as a result of the change in discharge strategy due to new permit.

Figure 2 Water Balance & Tailing Storage Facility Water Surface Elevation

	Current Volume (Mgal) (as of Dec 28th YR2021)
Aqqaluk	2
MPWR	529
TSF	5,020
Total	5,551

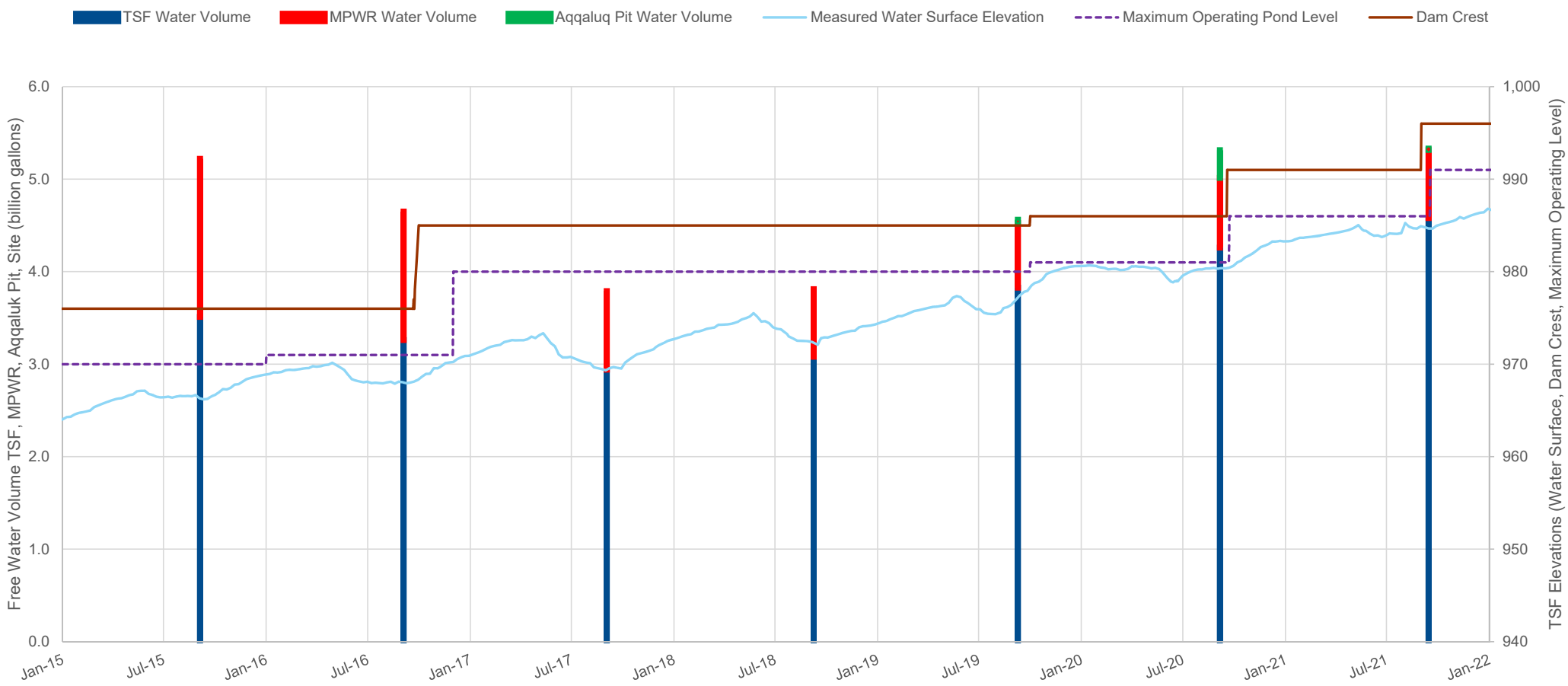
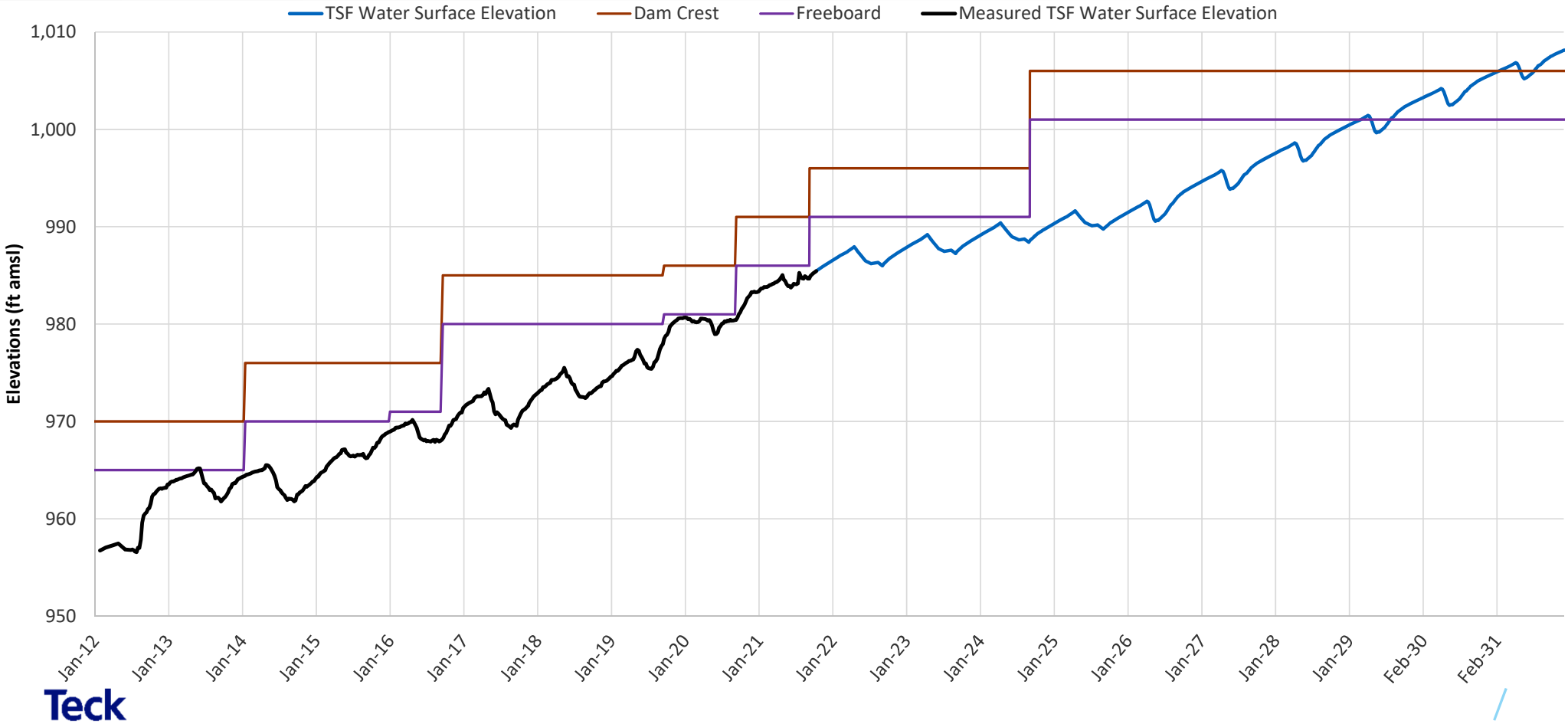


Figure 3 – Tailings Storage Facility Surface Elevation Forecast



Teck

Significant activities in mine water management

The Tailings Storage Facility contained an estimated 5.011 billion gallons of free water (Dec 2021) compared to 4.852 billion gallons same time for the previous year. The slight increase in water volume was attributable to the abnormally heavy precipitation, 30" of precipitation was recorded during the 2021 year, almost double the normal amount for the area.

A total of 1.719 billion gallons of water was discharged from outfall 001 during 2021 compared to 870.6 million gallons discharged in 2020. Red Dog commenced water discharge from Outfall 001 on May 9th and ceased discharging on September 25th, 2021.

The Kaviqsaaq seep water quality sampling ended on September 10th due to diminished flow and freezing conditions. The last flow measurement was observed on September 18th with the seep flow becoming completely frozen in late September. Kaviqsaaq flow measurements for 2021 were notably higher when compared to the 2020 year, most likely from the high amount of precipitation occurring during the spring, summer and fall periods. Kaviqsaaq trend charts are located in Appendix I : *Kaviqsaaq Diversion Profile I Trend Charts*. Decreased concentrations for most parameters are noted and most likely attributable to high flow rates and dilution.

The last thin walled section of 24" HDPE piping was replaced with thicker walled pipe on October 22nd, 2021. The section replaced was located near the northwest side of the sand filter building and extended to the lined process water ditch directly to the south. Approximately 200 feet of buried piping was replaced. In addition, the existing 24" ninety degree "mitred" stainless elbow which connects to the HDPE line near the sand filter building was replaced with a manufactured sweeping ninety which should provide for a smoother flow transition.

Waste Rock Management

Quantities, placement locations and analysis of waste rock

Dig face inspections of waste rock shots were completed to confirm waste rock characteristics and suitability for stockpile locations. Weekly waste rock dump inspections were completed to confirm waste was placed in suitable locations. There were no exceptions noted for waste rock management during the report period.

The primary waste placement locations were:

- Main Pit Dump (Cover Dump 2 [north of MPD4], Crusher Pad, MPD3, MPD4, MPD5)
- Oxide / Main Waste Dumps (Cover Dump [Oxide East Triangle])
- Projects & Construction Areas (Incinerator Pad, MS-15 and PAC)

During the 4th quarter, a total of 2,186,976 tonnes of Aqqaluk waste rock and 39,129 tonnes of Qanaiyaq waste rock were hauled to the waste dump areas noted in Table 2 below which summarizes waste rock haulage by dump area, dump location and lithology.

Table 2 - Waste Rock Haulage, Location and Lithology

Wet Tonnes			Waste Rock Type			
Dump Area	Location	Lithology	Construction Waste	Cover Material	Most Reactive Waste*	Other Waste
Main Pit Dump	COV2	Kayak		277,530		
		Kivalina		798,227		
	COV2 Total			**1,075,757**		
	MPD3	Ikalukrok			4,641	
		Okpikruak			31,121	
	MPD3 Total				**35,762**	
	MPD4	Ikalukrok			67,557	39,882
		Kayak				240
		Kivalina				38,271
		Okpikruak			212,957	12,901
		Siksikpuk			9,834	411,361
	MPD4 Total				**290,348**	**502,655**
	MPD5	Ikalukrok			15,346	
		Okpikruak			42,703	22,138
		Siksikpuk			5,525	89,213
	MPD5 Total				**63,574**	**111,351**
Main Pit Dump Total				**1,075,757**	**389,684**	**614,006**
Oxide / Main Waste Dump	COV	Kivalina		87,969		
	COV Total			**87,969**		
Oxide / Main Waste Dump Total				**87,969**		
Projects & Construction	INC	Okpikruak	5,986			
		Siksikpuk	51,152			
	INC Total		**57,138**			
	MS15	Okpikruak	601			
	MS15 Total		**601**			
	PAC	Siksikpuk	950			
	PAC Total		**950**			
Projects & Construction Total			**58,689**			

** For current reporting period, "Most Reactive Waste" tonnages use the original self-heating capacity risk calculations which over-assigned Other Waste rock as Most Reactive in quarterly reporting totals. All reactive waste rock was hauled and managed as per the Waste Rock Management Plan (Sept 2021). Starting Q1 2022, Most Reactive waste tonnages will be reported using the self-heating capacity calculation and classification as per the plan.*

Table 3 lists the volume of cover rock used to date of reclamation projects as well as the total material stockpiled for closure cover.

Table 3 - Cover Material

Cover Stockpile Location	Total Tonnes
Ramp to Nowhere (RNC)	1,271,891
North Oxide (COV)	2,721,487
South Oxide Top Soil (SOT)	81,094
Kivalina Overburden Top Soil (KOB)	70,913
North Oxide (COV2)	2,044,134
Total collected to date	6,189,519
Cover utilized to date	167,400
Amount stockpiled	6,022,119

Results of waste rock geochemical monitoring

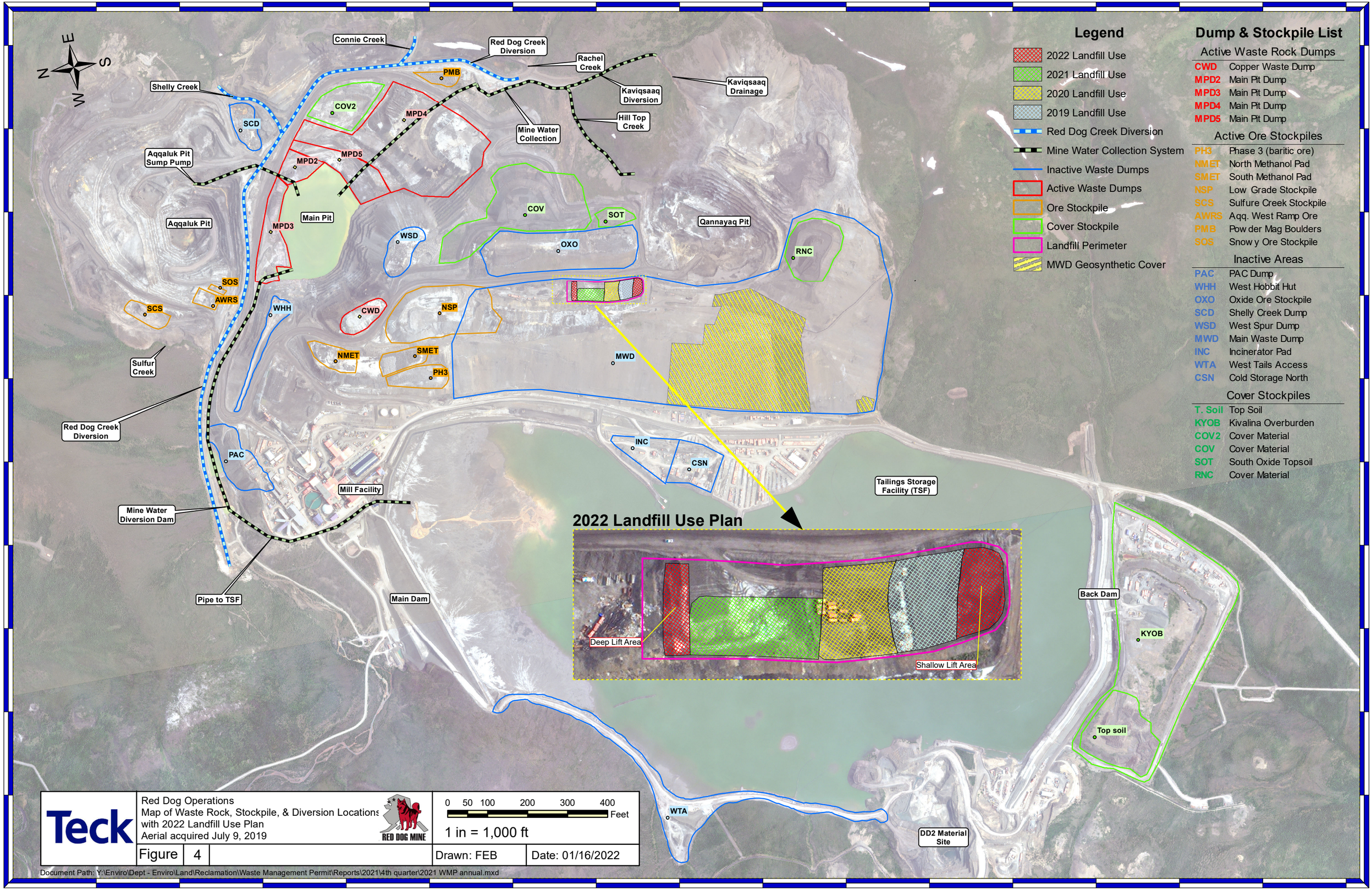
Other than blasthole analyses, no additional geochemical testing was conducted on waste rock during the reporting period. Geochemical waste rock test results are included in the *Waste Rock and Cover Rock Summary Report* listed in Appendix G of this report. The report addresses quantity, location placement and geochemical analysis for waste rock managed during this reporting period. All waste rock was managed in accordance with the *Integrated Waste Management Plan - Waste Rock Management (Sept 2021)*. A detailed Cover Rock report is included within Appendix G.

Visual monitoring of waste rock dumps

Weekly visual inspections of active waste rock dumps were conducted by the Senior Geotechnical Engineer or their designee if offsite. Other than minor settling along some dump surfaces, no significant incidents were observed during the inspections.

Significant activities in waste rock management

While not waste rock a new cover material stockpile was added during the 2021 year and named the Cover 2 (COV2) stockpile. The new stockpile area is depicted on Figure 4 – *Map of Waste Rock, Stockpile & Diversion Locations*.



Legend

- 2022 Landfill Use
- 2021 Landfill Use
- 2020 Landfill Use
- 2019 Landfill Use
- Red Dog Creek Diversion
- Mine Water Collection System
- Inactive Waste Dumps
- Active Waste Dumps
- Ore Stockpile
- Cover Stockpile
- Landfill Perimeter
- MWD Geosynthetic Cover

Dump & Stockpile List

Active Waste Rock Dumps

CWD	Copper Waste Dump
MPD2	Main Pit Dump
MPD3	Main Pit Dump
MPD4	Main Pit Dump
MPD5	Main Pit Dump

Active Ore Stockpiles

PH3	Phase 3 (baritic ore)
NMET	North Methanol Pad
SMET	South Methanol Pad
NSP	Low Grade Stockpile
SCS	Sulfure Creek Stockpile
AWRS	Aqq. West Ramp Ore
PMB	Pow der Mag Boulders
SOS	Snow y Ore Stockpile

Inactive Areas

PAC	PAC Dump
WHH	West Hobbit Hut
OXO	Oxide Ore Stockpile
SCD	Shelly Creek Dump
WSD	West Spur Dump
MWD	Main Waste Dump
INC	Incinerator Pad
WTA	West Tails Access
CSN	Cold Storage North

Cover Stockpiles

T. Soil	Top Soil
KYOB	Kivalina Overburden
COV2	Cover Material
COV	Cover Material
SOT	South Oxide Topsoil
RNC	Cover Material

Teck

Red Dog Operations
Map of Waste Rock, Stockpile, & Diversion Locations
with 2022 Landfill Use Plan
Aerial acquired July 9, 2019

RED DOG MINE

0 50 100 200 300 400 Feet

1 in = 1,000 ft

Figure 4

Drawn: FEB

Date: 01/16/2022

Document Path: Y:\Enviro\Dept - Enviro\Land\Reclamation\Waste Management Permit\Reports\2021\4th quarter\2021 WMP annual.mxd

Tailings Management

Quantities and analysis of tailings

Table 4 depicts the dry tonnes of tailings generated and the average lead, zinc and iron concentrations in the tailings solids discharged to the Tailings Storage Facility for the quarter. No tailings were placed into DD2 this quarter.

Table 4 - Tailings Produced

		Analysis		
Month	Dry Tonnes Tailings	% Pb	% Zn	% Fe
Oct	286,090	2.5	3.2	11.0
Nov	208,480	2.0	5.2	9.7
Dec	246,554	1.3	2.8	11.0

Tailings Storage Facility, Main Pit and Aqqaluk Pit water elevations

Table 5 lists surveyed Aqqaluk, Main Pit and the Tailings Storage Facility water elevation levels during the reporting period. The Tailings Storage Facility was maintained within the permitted level. The Main Pit was maintained below a water elevation of 850 feet amsl.

Table 5 - Tailings Storage Facility, Main Pit and Aqqaluk Pit Water Elevations

Survey Date	MPRW	Survey Date	TAILINGS STORAGE
10/1/2021	842.53	10/1/2021	984.95
10/5/2021	841.64	10/5/2021	985.09
10/8/2021	841.04	10/8/2021	985.17
10/12/2021	839.60	10/12/2021	985.23
10/15/2021	839.21	10/15/2021	985.26
10/22/2021	839.50	10/19/2021	985.33
10/26/2021	839.68	10/22/2021	985.33
10/29/2021	839.78	10/26/2021	985.44
11/2/2021	839.85	10/29/2021	985.55
11/9/2021	840.43	11/2/2021	985.60
11/16/2021	840.51	11/9/2021	985.90
11/30/2021	839.45	11/16/2021	985.74
Frozen	N/A	11/25/2021	985.98
Frozen	N/A	11/30/2021	986.10
Frozen	N/A	12/7/2021	986.23
Frozen	N/A	12/14/2021	986.37
Frozen	N/A	12/29/2021	986.80

Visual monitoring of tailings facilities

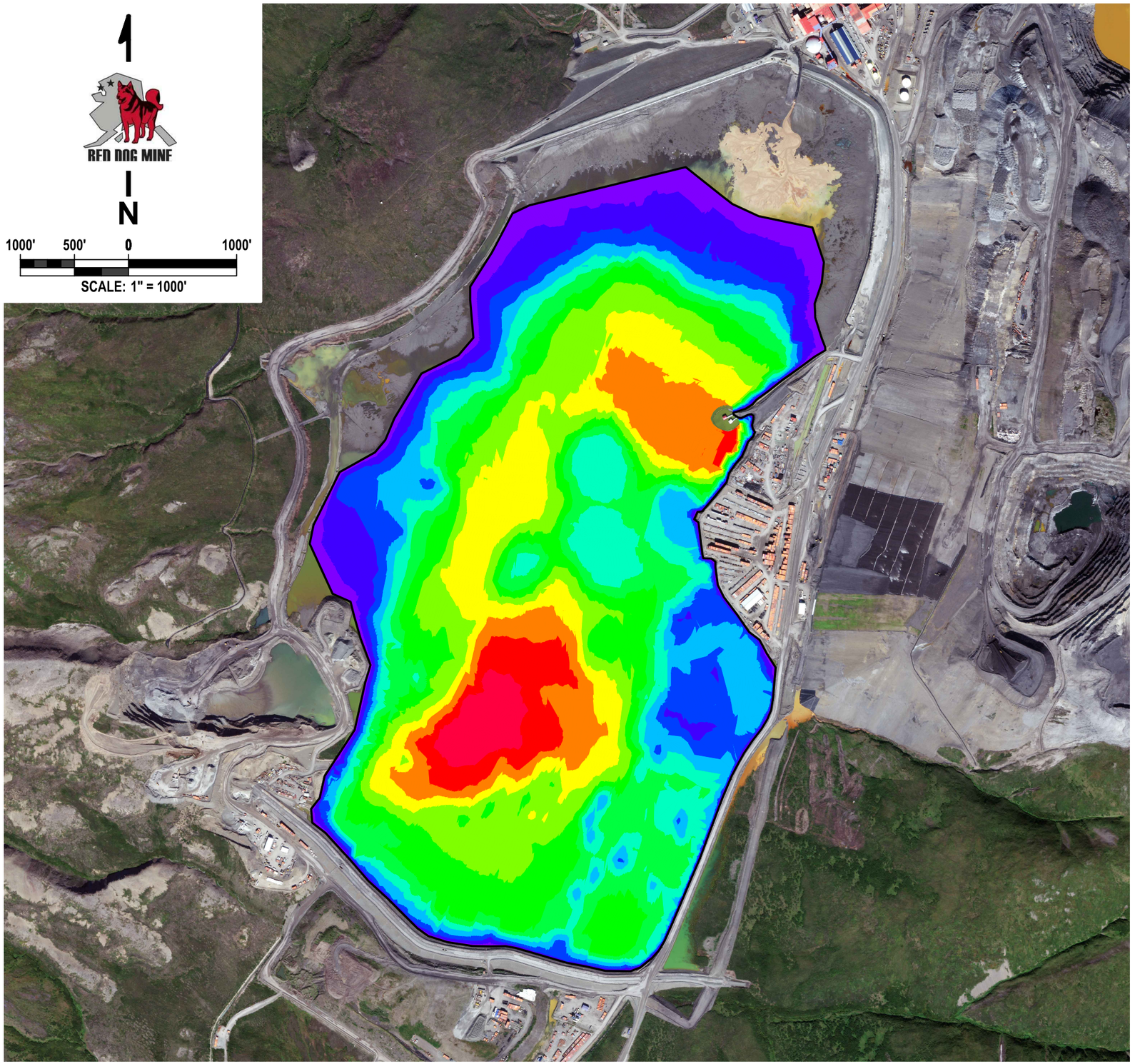
Visual monitoring inspections of the Tailings Storage Facility were completed as required. All systems operated as designed with no findings noted for the quarter. Monitoring of the dams per the requirements specified by each dams Operation and Maintenance Manual was completed for the period. A weekly main dam inspection in November noted a piece of heavy equipment had driven over a portion of the dam liner based on tire tracks observed on the liner surface. The liner was inspected by qualified personnel and no damage was noted.

Significant activities in tailings management

ADNR-Dam Safety issued two Certificates of Approvals on November 29th, one allowed for the stage XI-B Tailings Main Dam (AK00201) to operate at an elevation of 996' and the other was for the Water Supply Dam (AK00200).

The Tailings Storage Facility and Main Pit Water Reservoir bathymetry surveys were completed during the 2nd quarter and are presented in Figures 5 and 6.

As noted in the 3rd quarter report a tailings beach dust suppression test using water sprayed from an industrial irrigation gun to create an ice cap above exposed beaches was conducted earlier and results concluded the ice cap performed well, dust suppressant chemicals and application methods will continue to be evaluated in 2022.



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	927	932	
2	932	937	
3	937	942	
4	942	947	
5	947	952	
6	952	957	
7	957	962	
8	962	967	
9	967	972	
10	972	977	
11	977	982	
12	982	987	

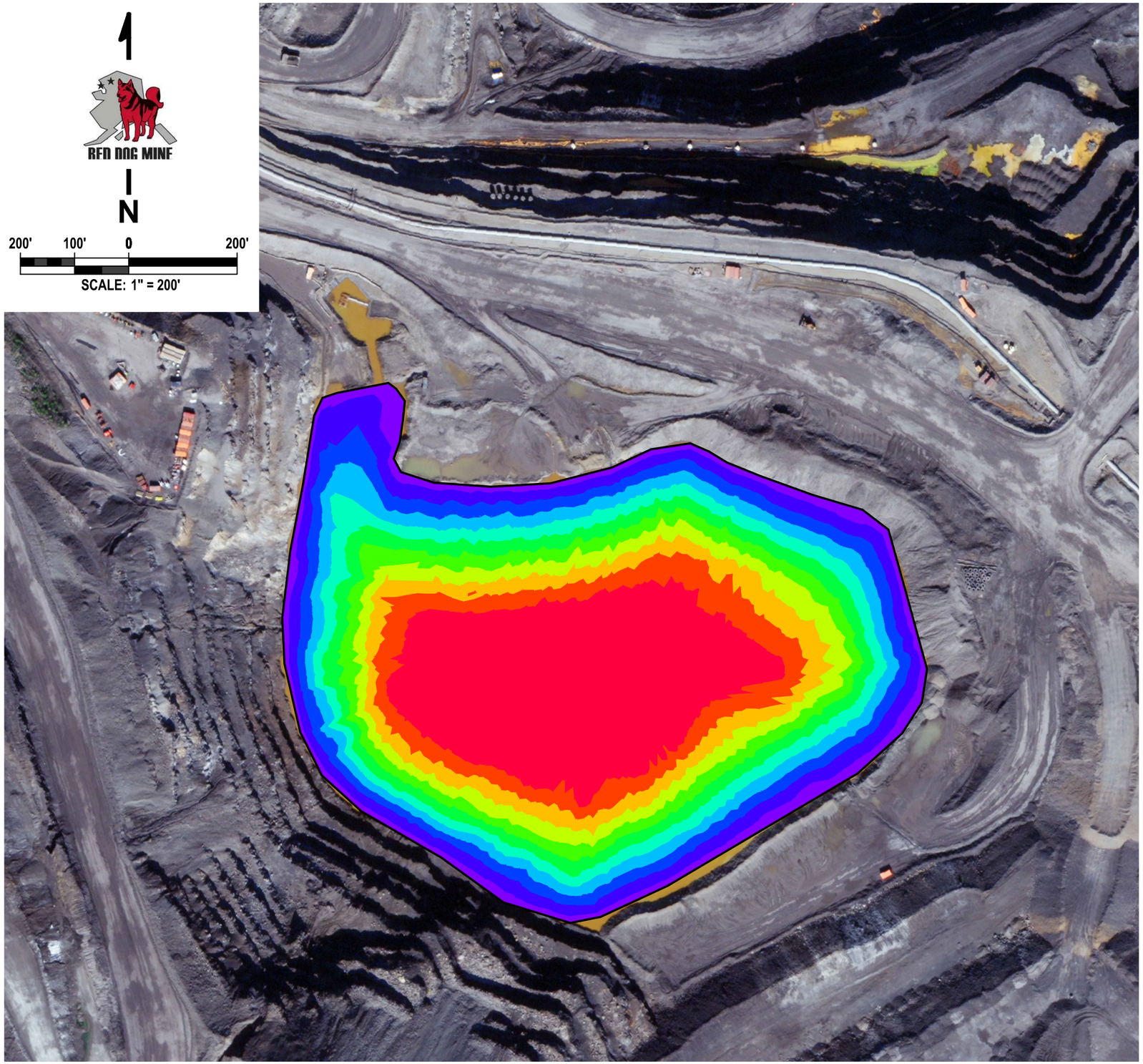
BATHYMETRY DATE: SEPTEMBER 21, 2021
IMAGERY DATE: AUGUST 2021
TSF WATER ELEVATION: 984.5
TSF AREA: 23,562,036 Sq. Ft. 541.910 Acres
FREE WATER VOLUME: 4,579.757 M Gal

2021 TSF BATHYMETRIC MAP

PROJECT #	753230
DRAWN BY:	JM
CHECKED BY:	TO
DATE:	10/12/2021
SCALE:	1"=1000'
SHEET:	1 OF 2

RED DOG MINE

Red Dog Operations
Teck



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	687	702	
2	702	717	
3	717	732	
4	732	747	
5	747	762	
6	762	777	
7	777	792	
8	792	807	
9	807	822	
10	822	837	
11	837	852	

BATHYMETRY DATE:	SEPTEMBER 20, 2021
IMAGERY DATE:	AUGUST 2021
TSF WATER ELEVATION:	845.3
TSF AREA:	793,453 Sq. Ft. 18.215 Acres
FREE WATER VOLUME:	526.188 M Gal

2021 MPWR BATHYMETRIC MAP

PROJECT #	753230
DRAWN BY:	JM
CHECKED BY:	TO
DATE:	10/12/2021
SCALE:	1"=200'
SHEET:	2 OF 2

RED DOG MINE

Red Dog Operations

Teck

Class III Municipal Solid Waste Landfill

Monthly visual landfill inspections were completed as required, one incident was noted on a random inspection of the landfill. The inspection noted a significant portion of recyclable copper wire observed in the landfill. It was later determined contractors had accessed the landfill in a pickup and placed the copper wire in the landfill. The wire was later collected from the landfill and placed in a recycling connex. Two other monthly landfill inspection noted fox tracks observed in the snow though no animals were observed.

Visual inspections were conducted at the landfill and random inspections conducted on bins of refuse prior to being hauled to the landfill. No incidents were reported for the Random Dumpster Inspections.

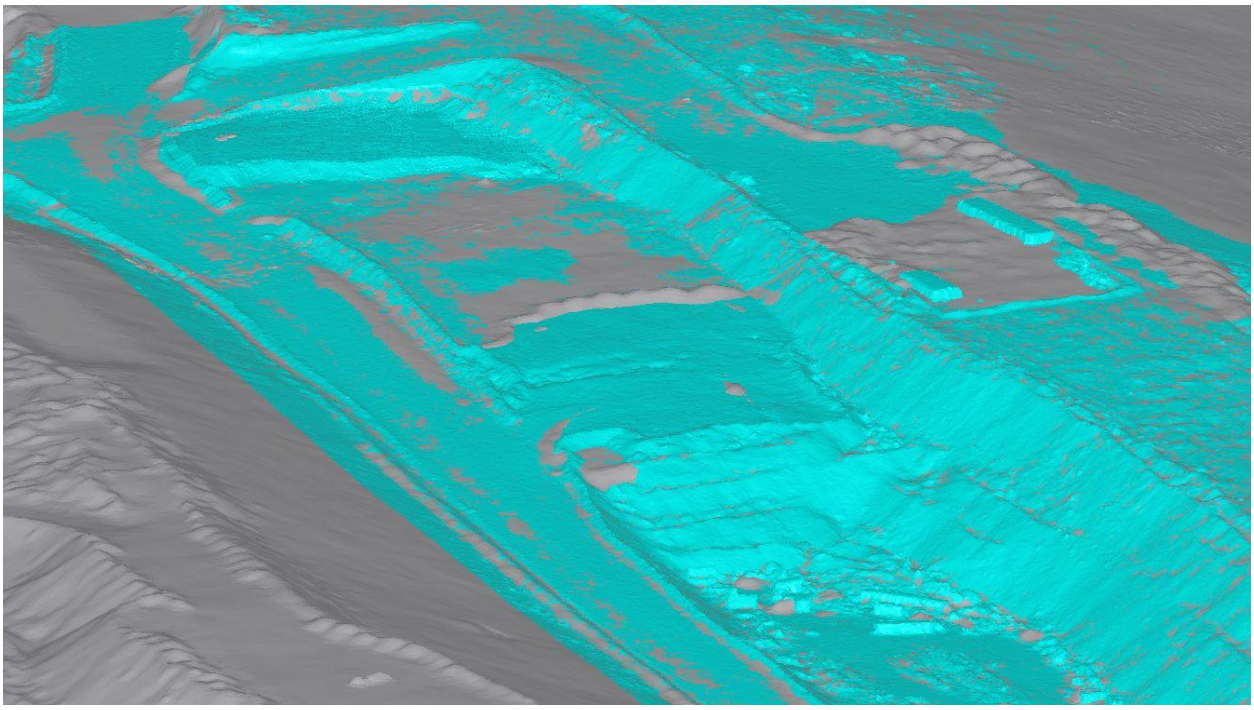
The annual mine incinerator composite (3-week) ash sample was collected during October and analyzed for metals using EPA method 1311 - Toxicity Characteristics Leaching Procedure (TCLP). Polychlorinated biphenyls (PCB) were also analyzed. TCLP and PCB results indicate the ash is considered non hazardous waste under the EPA Resource Conservation Recovery Act (RCRA). A copy of the analytical lab report was submitted in December to Neil Lehner with ADEC.

Quantities of inert solid waste

The Red Dog survey department performed a LiDAR scan of the landfill surface on September 29th, 2021 and calculated a total volume 21,560 cubic yards of refuse and waste rock cover placed. Approximately 9,268 cubic yards of waste rock was added to the landfill as cover material, leaving a total amount of non-municipal refuse placed at 12,292 cubic yards in the landfill for the 2021 reporting year.

Figure 7 – *2021 Landfill LiDAR image looking south* depicts the difference between the operating years 2021 and 2020. The difference in volumes was taken as a volumetric calculation between surfaces utilizing MineSight.

Figure 7 - Landfill LiDAR image looking south



Significant activities in solid waste landfill and waste management

Red Dog Operations continued with the recycling program for the year. Opportunities to enhance recyclables will continue into 2022. The bullet list below represents the amount of waste which was sent off site for recycling from all of Red Dog Operations (mine and port) for the 2021 reporting year.

- Recycled 131,915 lbs of cardboard
- Returned to generator 153,865 lbs of cardboard boxes for reuse
- Recycled sent offsite 1,630 lbs. of plastic
- Recycled sent offsite14,930 lbs. paper
- Recycled 204,830 lbs. of scrap steel
- Recycled 422,337 lbs. of used tires
- Recycled 42,750 lbs. of electronic waste
- Recycled 856,040 lbs. of sag mill liners
- Recycled 42,790 wooden pallets
- Recycled, sent 485,360 lbs of used oil for reprocessing

Landfill Use Plan

For the 2022 year, non municipal refuse will continue to be placed within the existing cell with refuse placement progressing to the north. Figure 4 - *Map of Waste Rock, Stockpile & Diversion Locations* incorporates an integrated *Landfill Use Plan Map* and depicts the areas of past use for 2019, 2020, 2021 and the expected use areas for 2022. Two active areas are identified on the *Land Fill Use* plan for the 2022 year, a shallow and deep fill. A shallow fill is necessary for the south end due to the limited space in the area, larger types of refuse will only be placed in the northern end which has more depth.

Significant activities in Class III municipal solid waste landfill

No significant activities were noted for the 2021 year.

Mining and Milling Activities

Mining quantities

Table 6 lists the total tonnes of ore hauled to the mill stockpile each month during the reporting period. The total includes both Aqqaluk and Qanaiyaq ore and does not include any marginal ore placed within the Marginal Ore Stockpile.

Table 6 - Ore Mined and Stockpiled

Month	Ore Mined, tonnes
Oct	295,258
Nov	392,614
Dec	379,175

Milling Quantities

Table 7 lists the total tonnes of ore processed through the mill facilities each month during the reporting period.

Table 7 - Ore Processed through Mill

Month	Ore Milled, tonnes
Oct	385,224
Nov	273,008
Dec	348,375

Significant activities in mining and milling

Qanaiyaq ore continued to be mixed with Aqqaluk ore at a mill feed blend of approximately 20% to 30% for the 4th quarter.

Reclamation

Significant activities associated with reclamation

The main waste dump geosynthetic liner cover project evolved from several small pilot projects and officially commenced in 2021. Reclamation civil work began in mid-May with the intention of covering approximately 48 acres during 2021. The following depicts project highlights for the year:

- Liner subcontractor arrived on site in mid-June to assist with the placement of LLDPE and geotextile composite materials
- From June and July, progress was severely impacted by six weeks of heavy rain during which 15.97" of precipitation was recorded resulting little progress made placing geotextiles
- With addiontal poor weather in the forecast, decision was made to send geotextile subcontractors home
- The project was restarted in August and continued through to September.
- The 2021 project deployed 31.27 acres of geosynthetic material and placed cover rock on 23.51 acres. Weather inhibited the remaining acreage to be covered with cover material.
- 2022 MWD cover project will target work planned for 2022 and include the "missed" acreage which was not completed in 2021.
- Of the approximate 125 acres to be completed, approximately 46 acres have been covered with geosynthetic material to date.

Disturbance

A map of the new land disturbance for the mine site for the year is shown in Figure 8 – *Red Dog Operations 2021 Land Disturbance Map*. Table 8 lists the areas or projects contributing to the disturbance for 2021. No areas were reclaimed during the reporting period. Top soil recovered from newly disturbed areas was stockpiled for future use.

Table 8 - Area Disturbed in 2021

2021 New Disturbance Area	Acres
Aqqaluk Communication Road	6.3
West tails Road Relocation	15.7
Main Dam Seepage	1.4
Transportation Corridor – Phase II	2.7
East oxide Road Relocation	4.4
DD2 Development	9.4
Total 2021 Disturbance	40.0

5,130,000 570,000 5,135,000 5,140,000 575,000 5,145,000 5,150,000 580,000

585,000

590,000

Fish Wier

State Land
NANA Land

DD-2 Quarry

Bons Reservoir

State Land
NANA Land

Natural Gas Area

Overburden Stockpile

Construction Camp

Main Dam

Tailings Storage Facility

Mill Facility

Crusher Pad

Airport

Backdam

Cold Storage

Aqqaluk Pit

Main Waste Dump

Oxide Stockpile

Main Pit

Qanaiyaq Pit

Disturbance Legend

2021 Disturbance Area

Prior Disturbance Areas

NANA/State Boundary

ITEM	2021 ACRES	CHANGE	COMMENTS
2020 Total	2110.3		
Aqqaluk Communications Road	6.3	6.3	For pit network upgrade.
West Tails Road Relocation	15.7	15.7	Necessary because of rising water in TSF.
Main Dam Seepage	1.4	1.4	For preparation of Main Dam raise.
Transportation Corridor - Phase 2	2.7	2.7	Necessary because of rising water in TSF.
East Oxide Road Relocation	4.4	4.4	For additional cover stockpile capacity.
DD2 Development (State land)	9.4	9.4	For pushback of DD2 to support Main Dam construction.
Total 2021 Land Disturbance (State + NANA)	2,150.3	40.0	
Total 2021 Land Disturbance (NANA)		30.6	

W N S E

Teck

Red Dog Operatons
Figure 1 - 2021 Land Disturbance Map
Aerial acquired September 2021

Red Dog Mine

0 425 850 1,700 2,550 3,400 Feet
1 inch = 1,700 feet

file location
Y:\Minetech\Inter\MAPS\Land_Use\Drawings\disturbance\2021 Land Disturbance\2021 Disturbance.mxd

Drawn: MRH

Date: 12/23/2021

Reclamation research

No reclamation research was completed for the reporting year.

Reclamation monitoring

No reclamation monitoring was completed for the reporting year.

Amendments to the WMP and RPA

Two amendments were requested and approved during the 2021 reporting year.

1. ADNR issued amendment F20219958RPA.01 for the Reclamation Plan Approval on November 18, 2021. This amendment delayed covering a small section of the main waste dump until closure.

2. ADEC approved the seepage pond expansion tied to the Stage XI-B Main Dam raise and approved on November 29, 2021 which was dependent on the following stipulations below:

    - Installation of the Seepage-Seepage pump and sump will be replaced by a monitoring well
    - *Monitoring Plan Red Dog Mine, Alaska, USA*, associated with the upcoming issuance of Waste Management Permit 2021DB0001, will be updated to include the new monitoring well with quarterly monitoring of profile II constituents.

Both of the required stipulations were completed during the report year.

Risk Management Plan

The 2020 Risk Management Plan Annual report was submitted December 2021, no notable fugitive dust changes were noted in the report. The 2021 Risk Management Plan annual report is expected to be completed and submitted during the 2nd quarter of this year and will be submitted to agencies as Appendix H - 2021 Risk Management Plan Annual Report.

Dust monitoring activities

Dust monitoring activities for the reporting year will be presented in the 2021 Risk Management Plan Annual Report anticipated to be submitted during the 2nd quarter.

Financial Assurance

Financial assurance was adjusted when the Reclamation Plan Approval was renewed and issued on September 23rd, 2021. The current bond of amount of $585,662,000.

Wildlife

Wildlife interactions and casualties

There were thirteen recorded wildlife interactions noted for this reporting period. Table 9 provides details for each recorded event.

Figure 9 - Wildlife Interactions

SIR ID	Date	Incident Comments
12398	5-Oct-21	On October 4, 2021 a live trap was set to capture a fox that was reported in the area. On the morning October 5, 2021 two of Environmental found a cross fox in the trap and relocated it to Material Site 6.
12400	8-Oct-21	The Environmental Department received a report of a young fox near the airport tower. The report stated the fox startled an employee when it made contact with the employee's leg. A live trap was set near the airport tower later that morning. On October 8 (the next day) a report of a fox in the live trap was reported to the Environmental Deportment. The fox was relocated to MS6 and released.
12404	10-Oct-21	On October 9th the Environmental Department got a report of a fox hanging around the NMS bay door. A live trap was set under neigh the bay. The next day a fox was found in the trap. The fox was marked and relocated to MS6.
12436	30-Oct-21	After setting up a trap below F-Wing facing north at ~0830, a fox was found to be captured at 1600 the same day by the Environmental Department. The fox was loaded into a truck and relocated to MS-6.
12446	7-Nov-21	A fox was seen in the laydown yard and the warehouse supervisor asked environmental to relocate it. A live trap was set near the McDonalds building and the fox was caught later that night. The fox was relocated to Pit 6 and marked with some orange spray paint to indicate if it returns to the mine site.
12447	8-Nov-21	While conducting a landfill inspection at the main waste dump, a technician found food waste and fox tracks in the landfill. Food waste is not permitted in the landfill.
12448	9-Nov-21	A report of a fox at the F&G wings was given to environmental so a live trap was set on 11/08/2021. Environmental personnel went and checked the trap just after 10am and a fox was in it. The fox was relocated to MS6 and spray painted green to indicate if it returns to site.
12458	14-Nov-21	A fox trap was set near the NMS Kitchen unloading doc and was checked at 10am. A fox was caught and transported to MS6, spray painted florescent pink and released.
12462	18-Nov-21	A fox trap was left on the back of the PAC and this morning's check had a fox in the trap. I closer look at the fox showed it was caught before as there was a spray paint near the hind legs. Before releasing at MS6, it was spray painted green near the head to help indicate if it returns.
12472	25-Nov-21	Fox found in trap set up under PAC building between double doors and ESB. After cage was put into back of truck, another fox appeared in the area of where the trap was set up. We plan on setting another trap in the same area. Transported fox to MS-6 where it was released. Fox was not found marked, so we assume it was the first time it has been captured.
12483	7-Dec-21	When driving to the Enviro shop, a fox was observed in the vicinity of the incinerator building. Technicians deployed trap, Within an hour the fox was caught in a live trap and transported to ms-6 where it was released.
12485	9-Dec-21	Received complaints of a fox near tire tent. Trap was deployed in the morning, and a fox was found caught shortly after 1300. Brought fox to ms-6 where it was released.
12490	14-Dec-21	While conducting a mine landfill inspection, evidence of food and wildlife were found. Fox tracks were found with trash bags ripped apart nearby.

Closing

Please accept this report as required under the State of Alaska Waste Management Permit No. 2021DB0001 and Reclamation Plan Approval F20219958. If there are any questions, please contact Frank Bendrick at (907) 754-5138 or myself at (907) 754-5700.

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate and complete.

Sincerely,
Teck Alaska Incorporated

Michael Gonzales M. Gonzales for L. Yesnik

Les Yesnik
General Manager

cc: Tim Pilon, ADEC, Fairbanks
Brent Martellaro, ADNR, Fairbanks
Adam Daniels, ADNR, Fairbanks
Neil Lehner, ADEC, Fairbanks
DNR.Water.Reports
Audra Brase, ADF&G, Fairbanks
Lance Miller , NANA
Mike Gonzales, Red Dog Operations
Richard Hudson, Red Dog Operations

Appendix A: Biomonitoring Report (pending 2nd quarter)

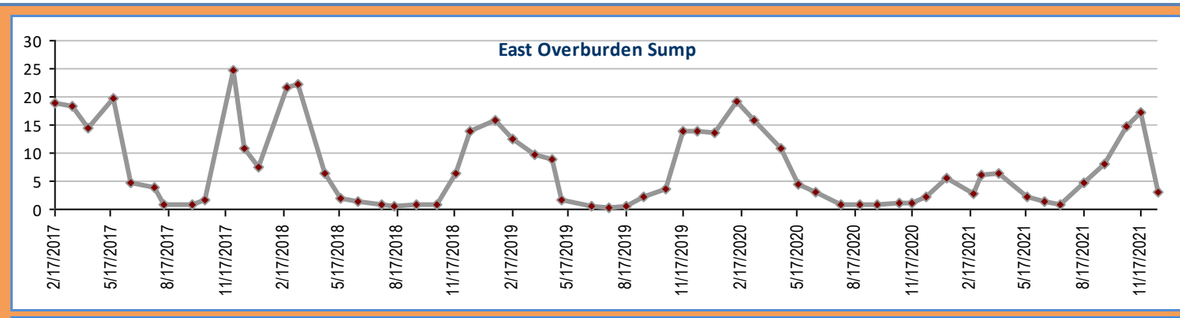
Appendix B: 5 year Long Term Permafrost and Groundwater Monitoring (pending early March 2022)

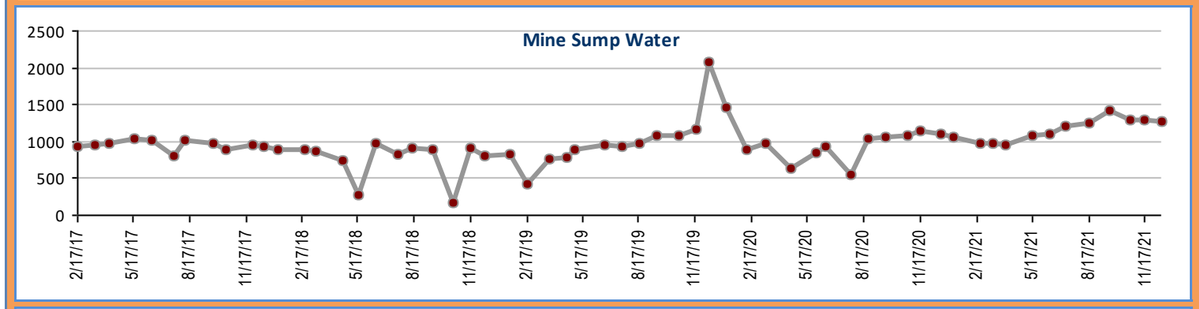
Appendix C: Water Quality Profile II Charts – Mine Water Monitoring Stations

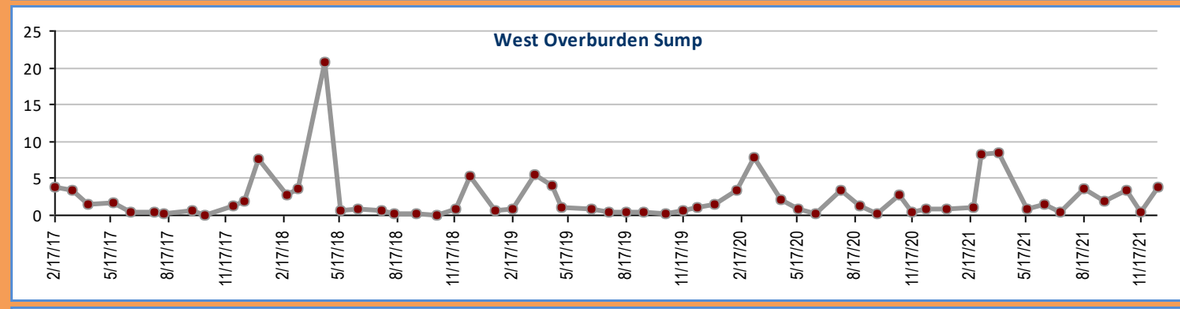
RED DOG MINE

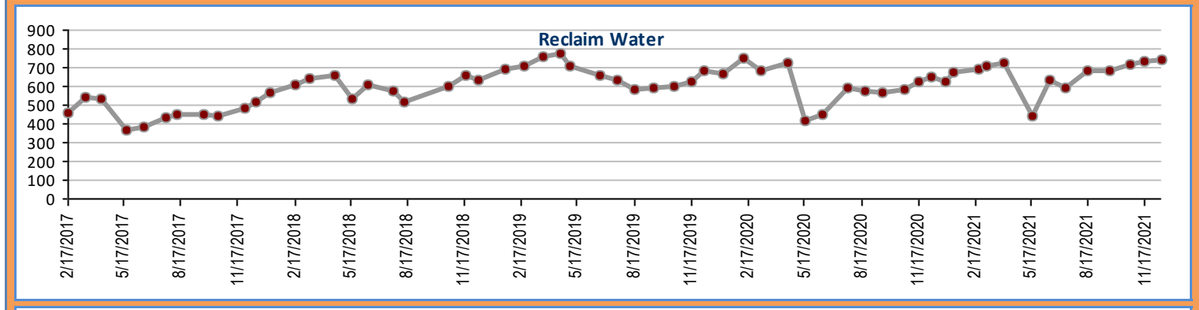
Mine Water Monitoring - Water Quality Profile II, Trend Charts

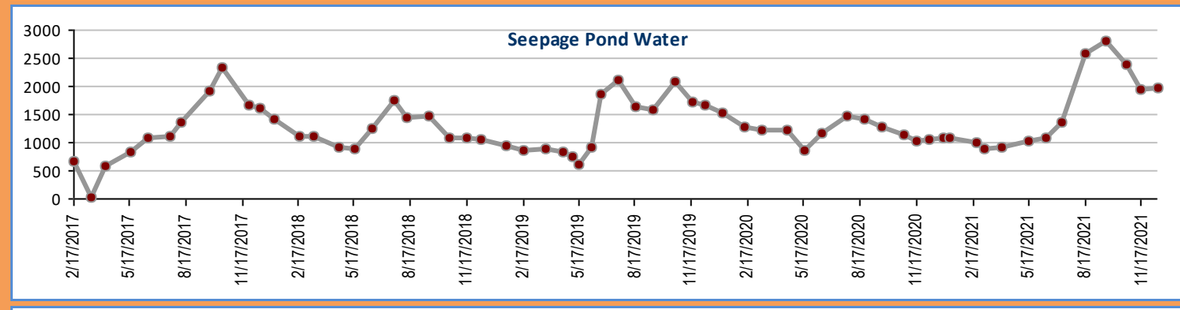
Zinc, dissolved, units, mg/L

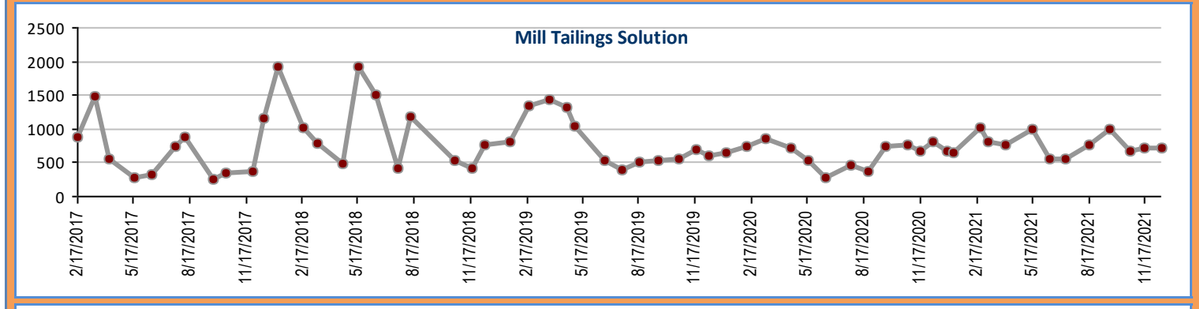


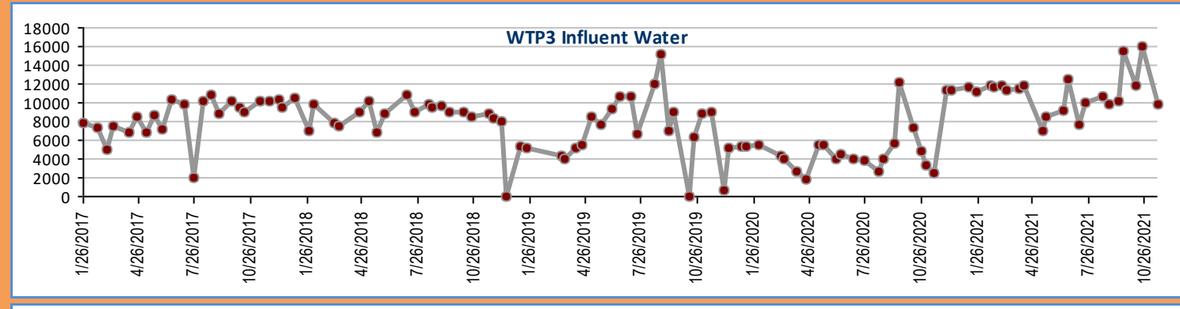


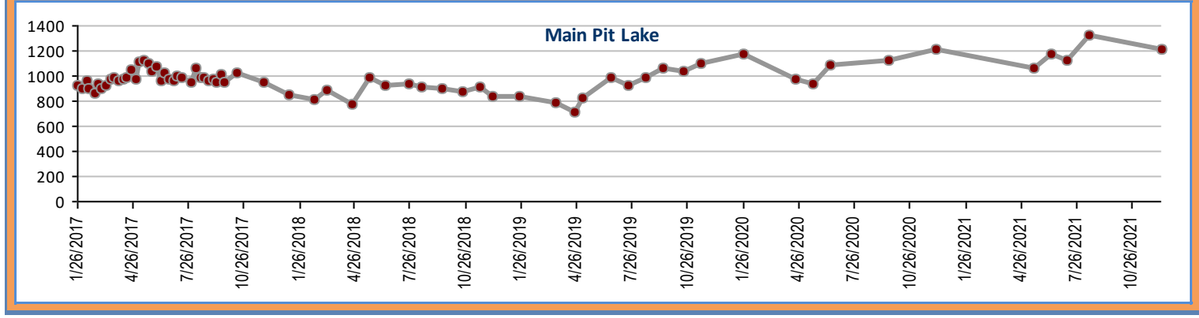


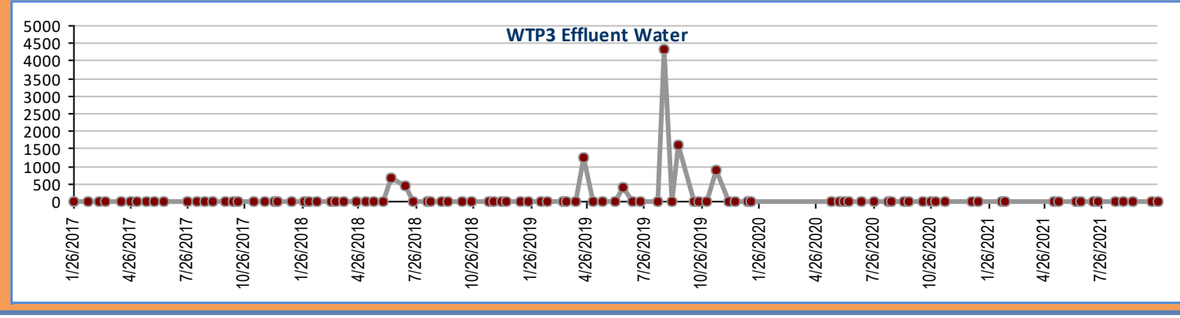








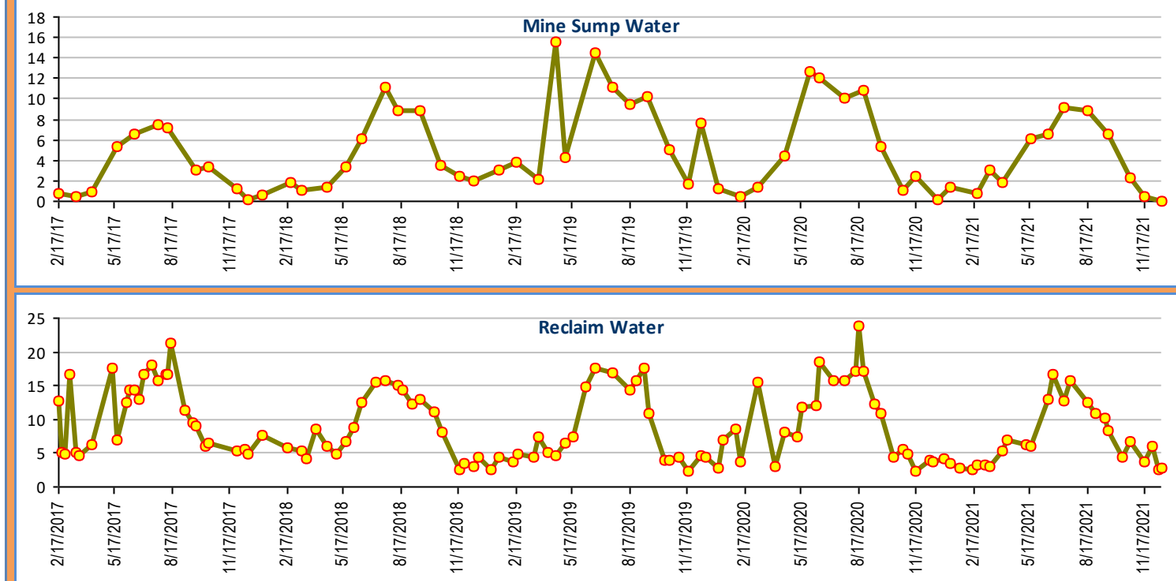


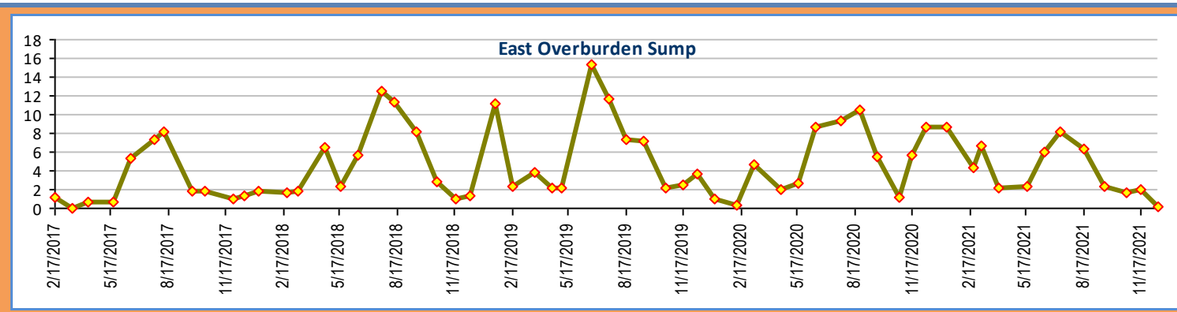


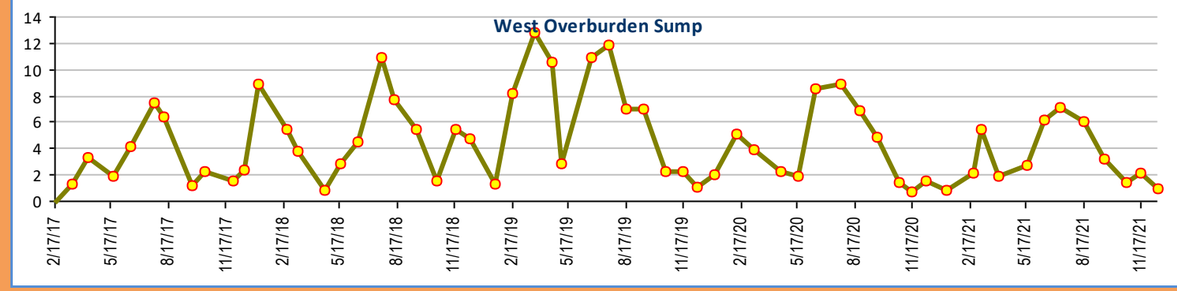
RED DOG MINE

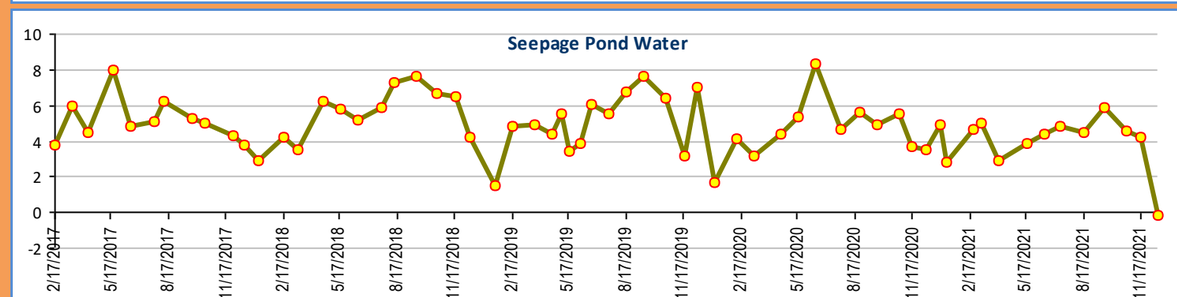
Mine Water Monitoring - Water Quality Profile II, Trend Charts

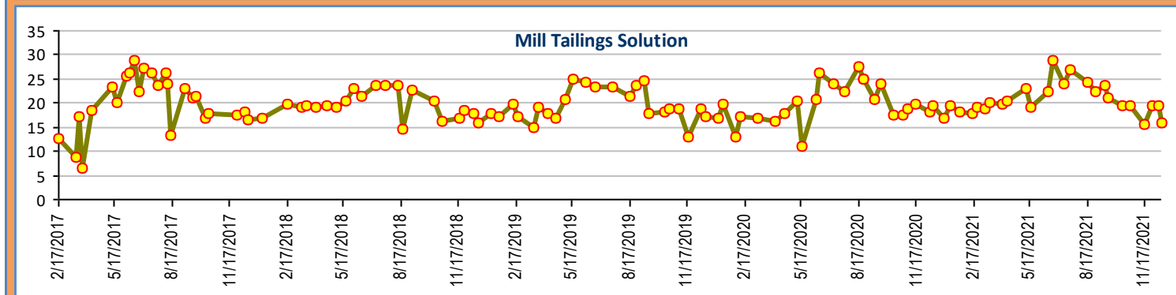
Temperature, Celsius

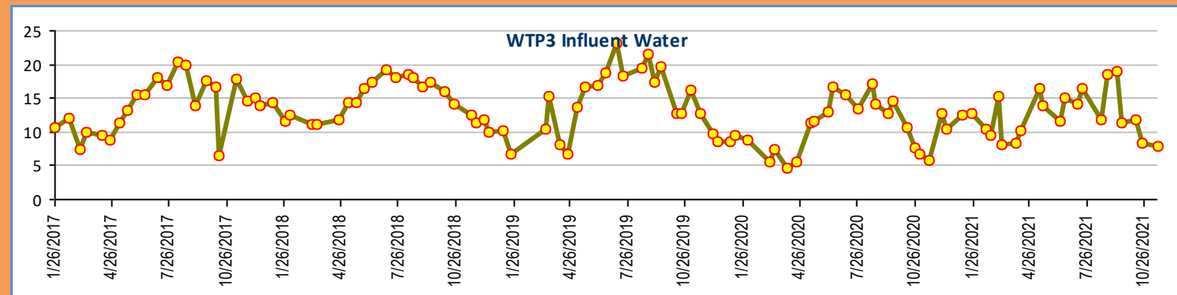


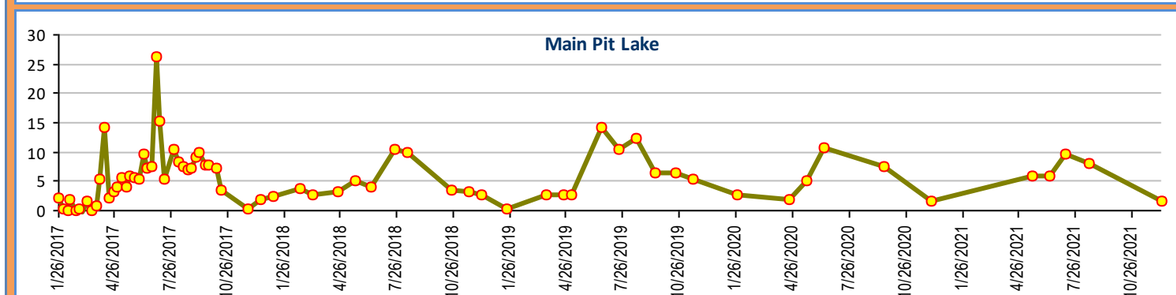


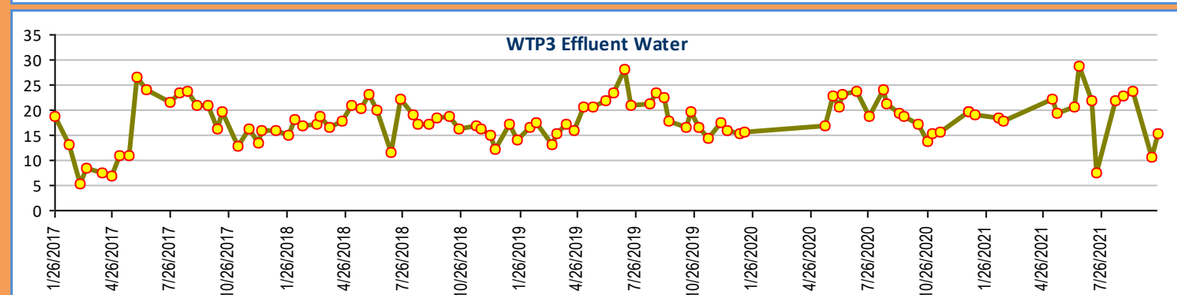








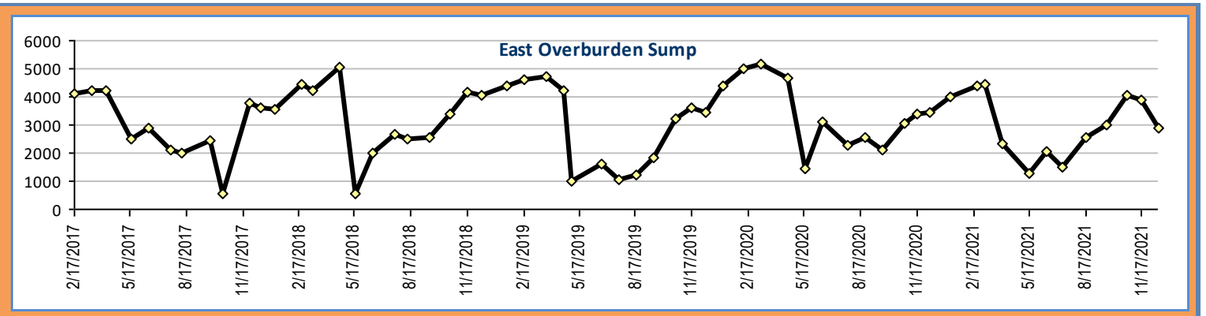


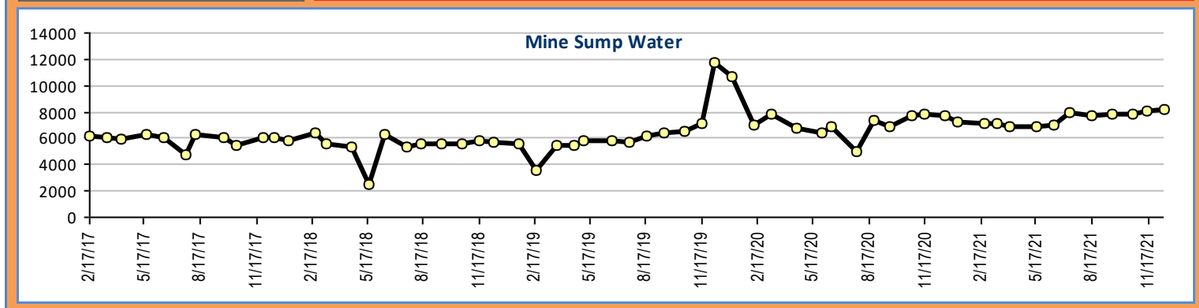


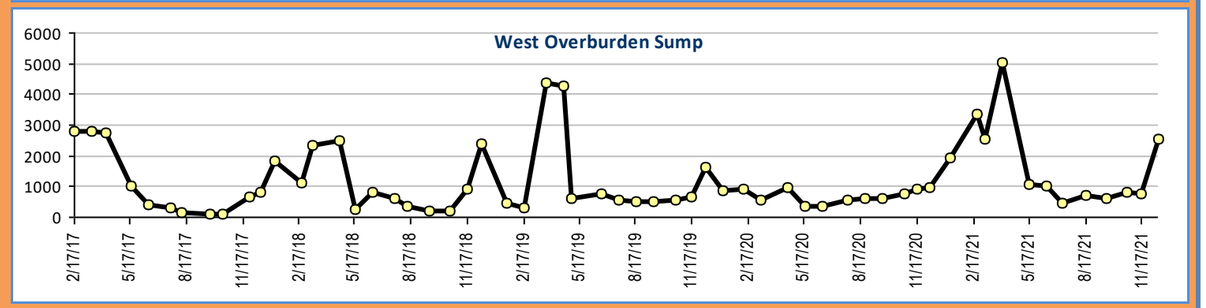
RED DOG MINE

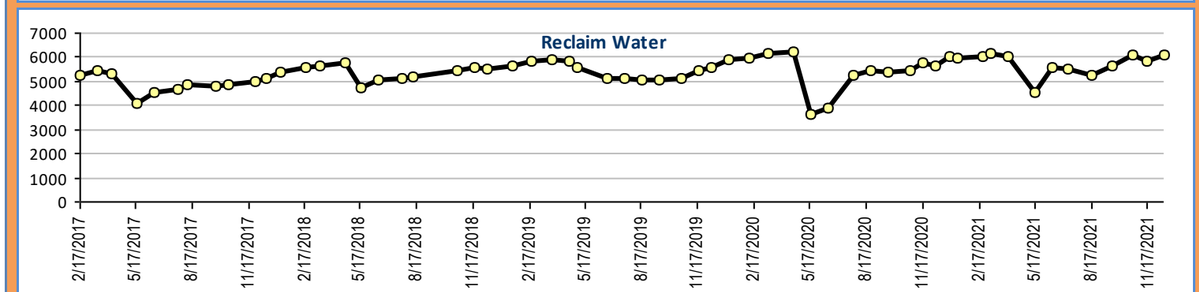
Mine Water Monitoring - Water Quality Profile II, Trend Charts

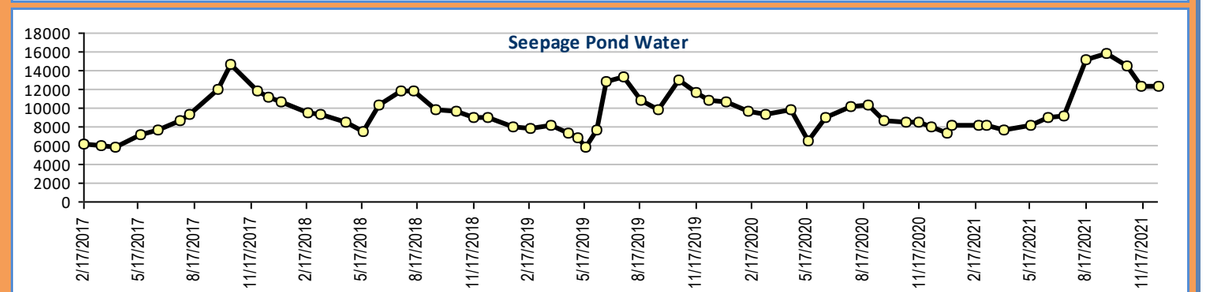
Total Dissolved Solids, units, mg/L

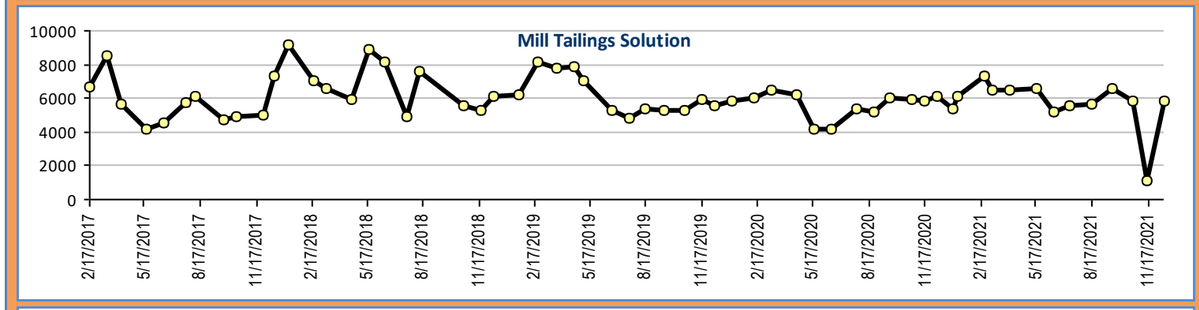


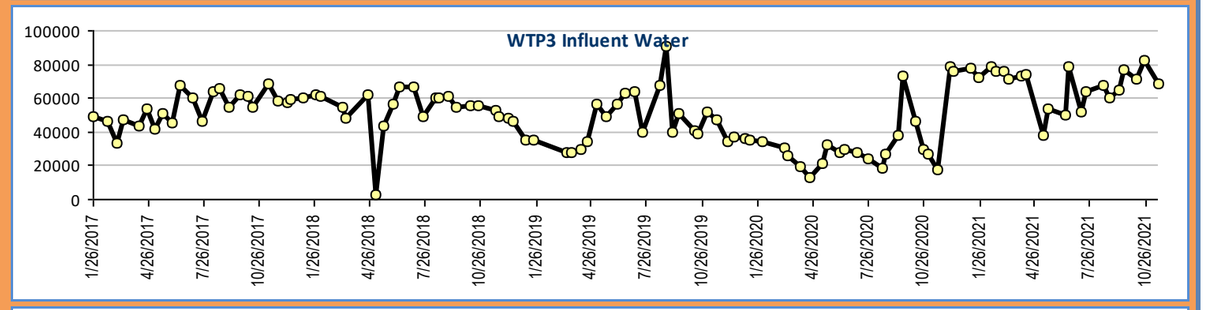


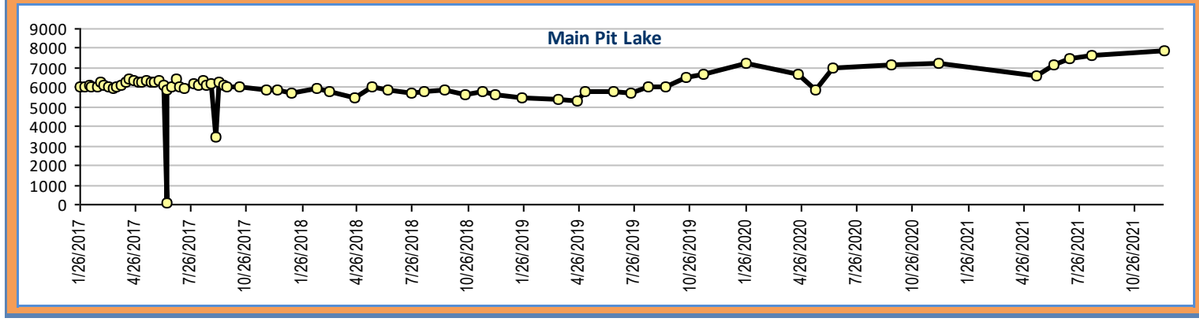


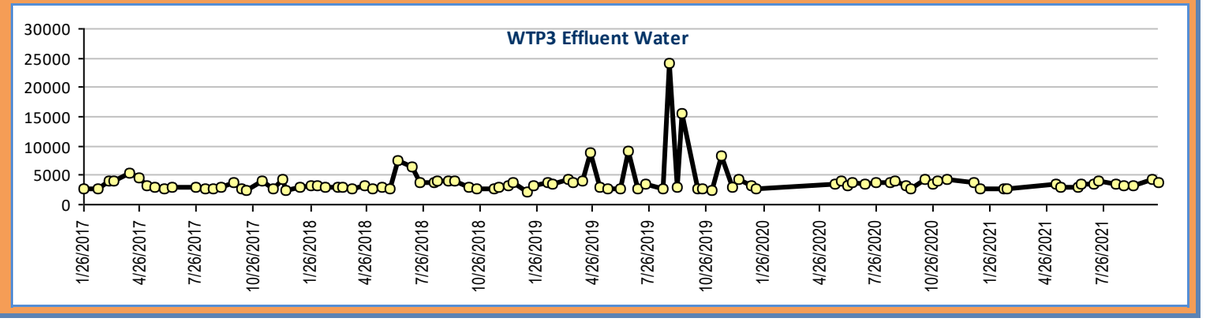








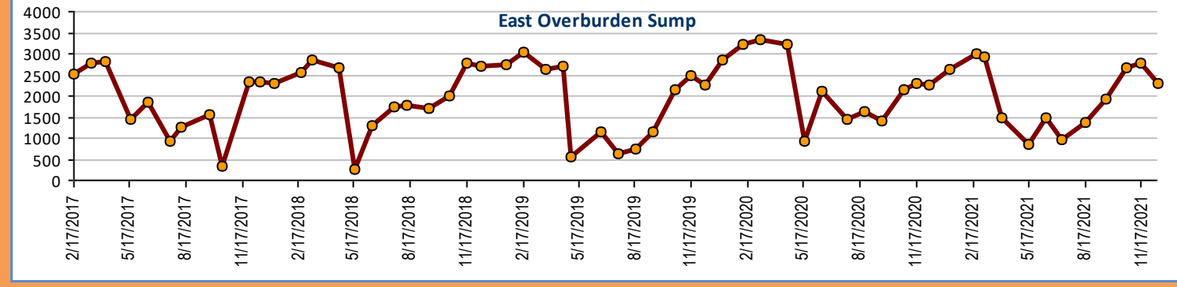


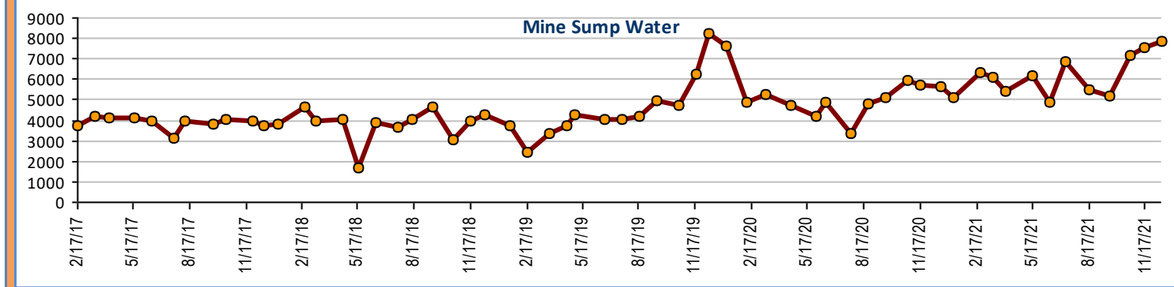


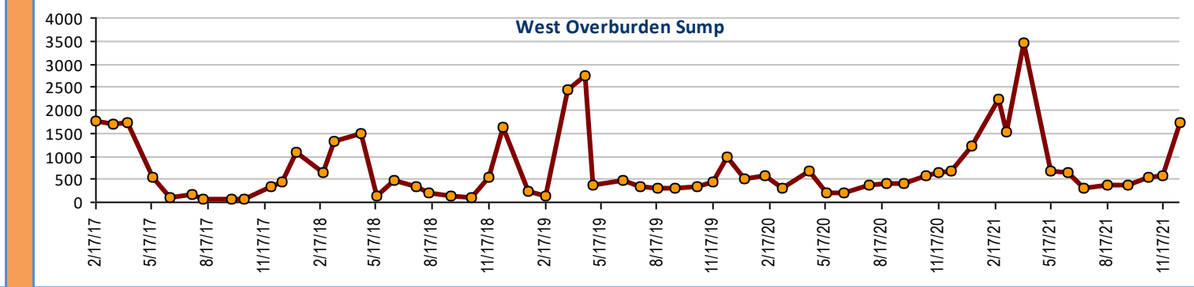
RED DOG MINE

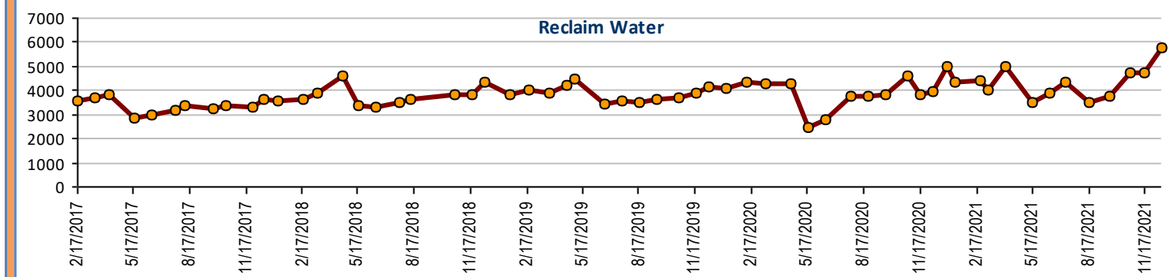
Mine Water Monitoring - Water Quality Profile II, Trend Charts

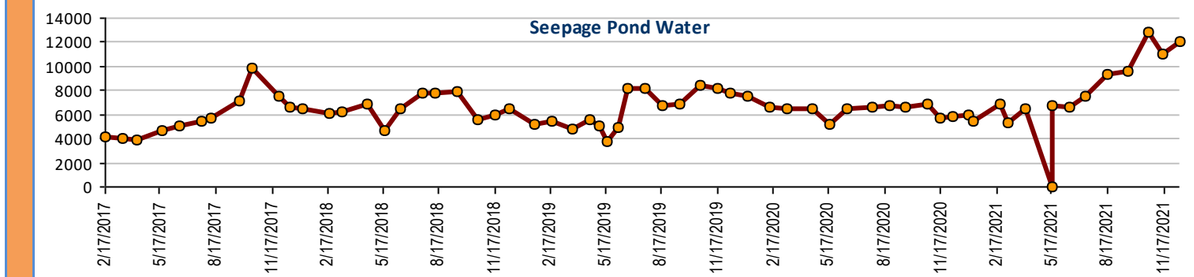
Sulfate, units mg/L

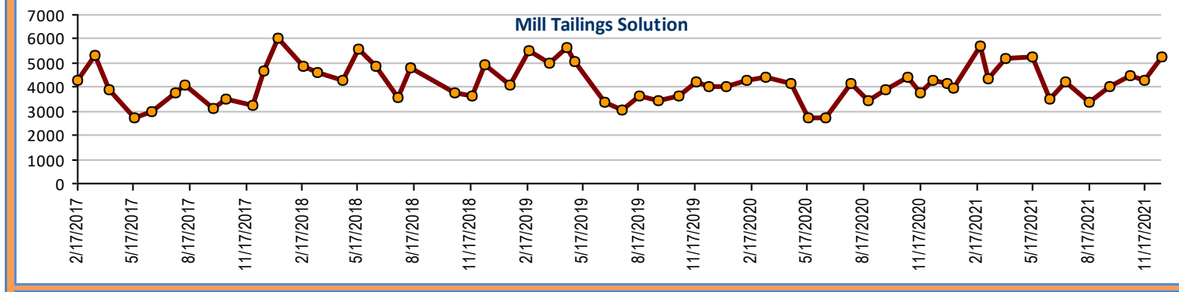


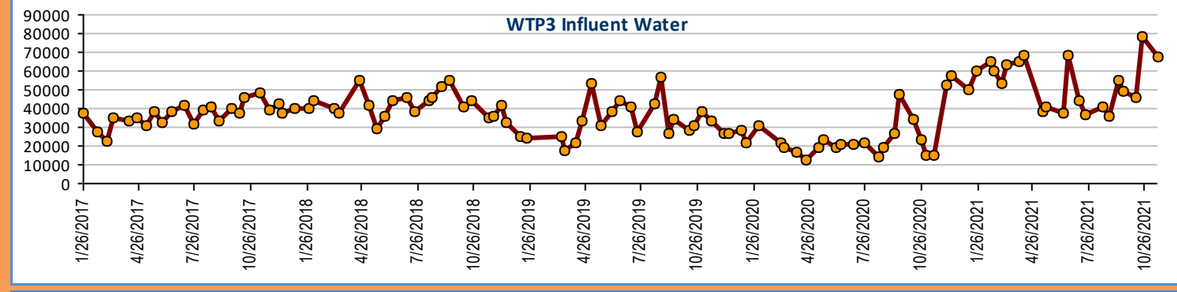


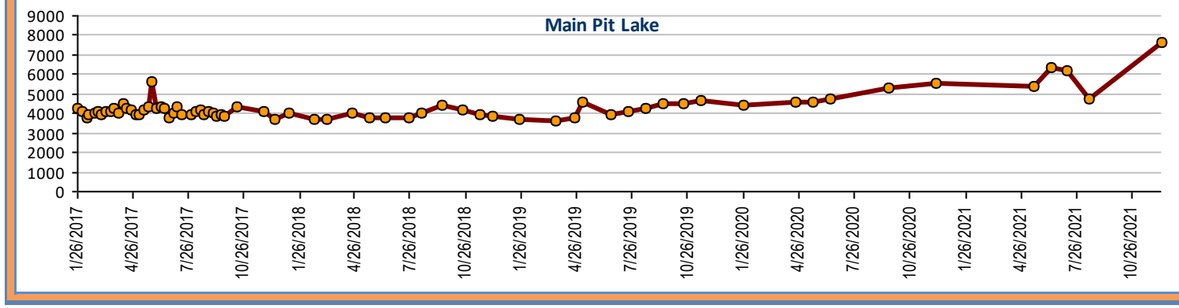


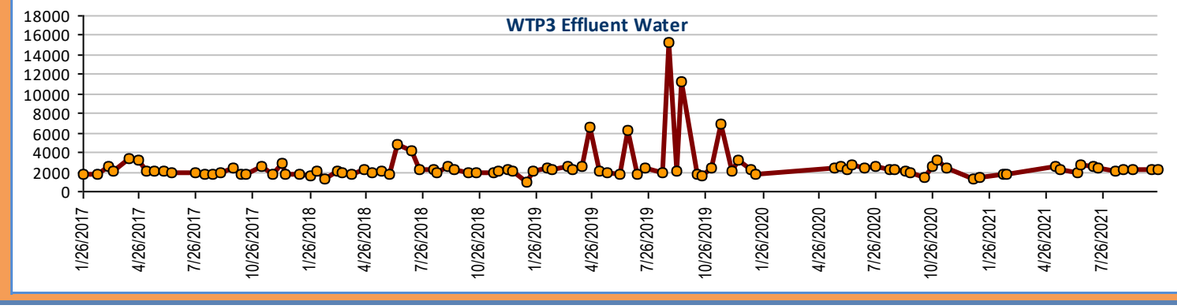








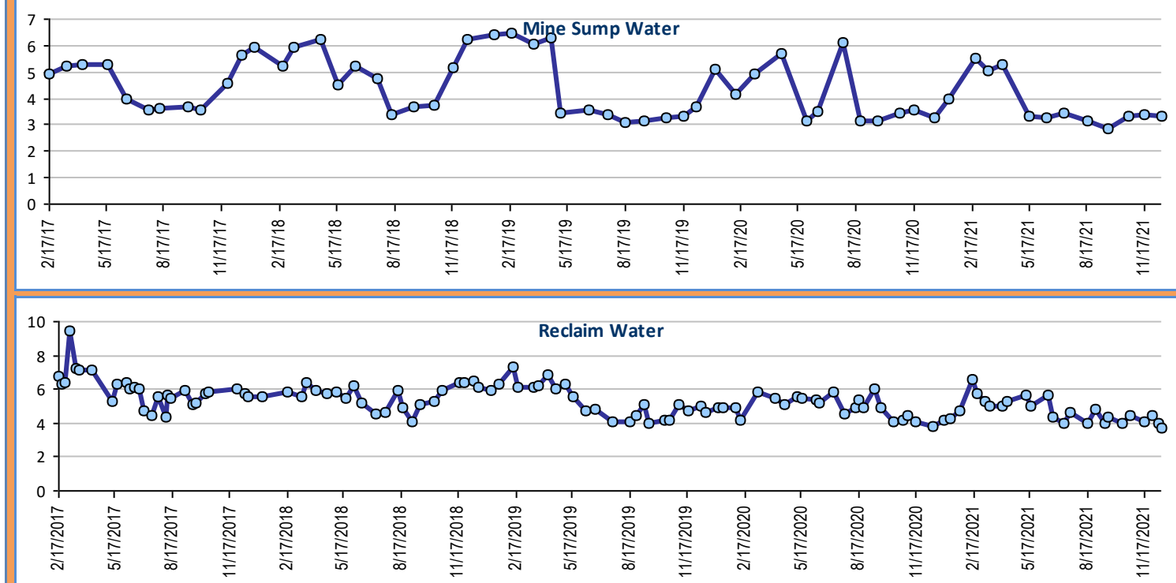


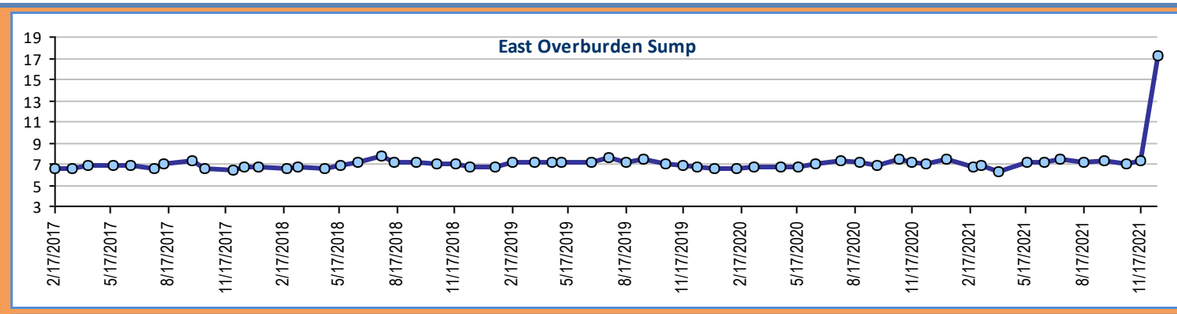


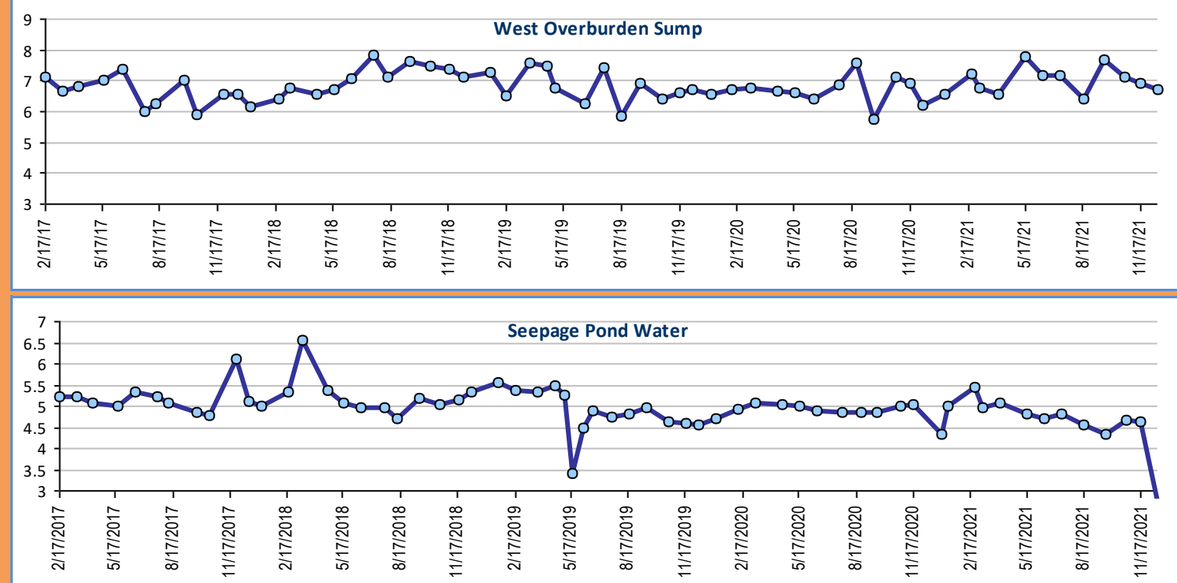
RED DOG MINE

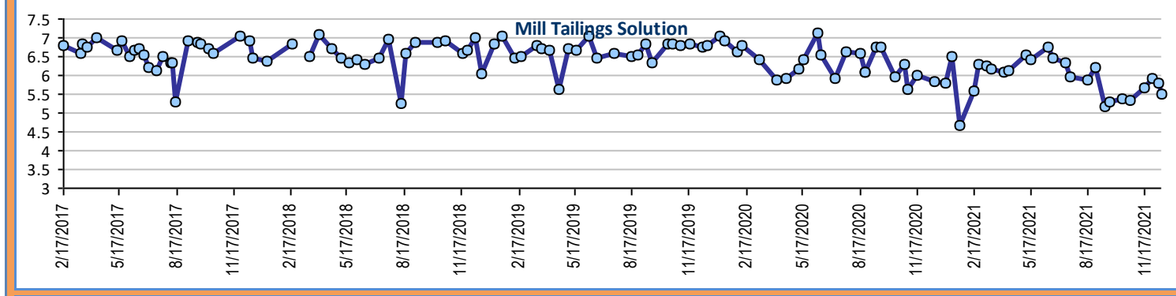
Mine Water Monitoring - Water Quality Profile II, Trend Charts

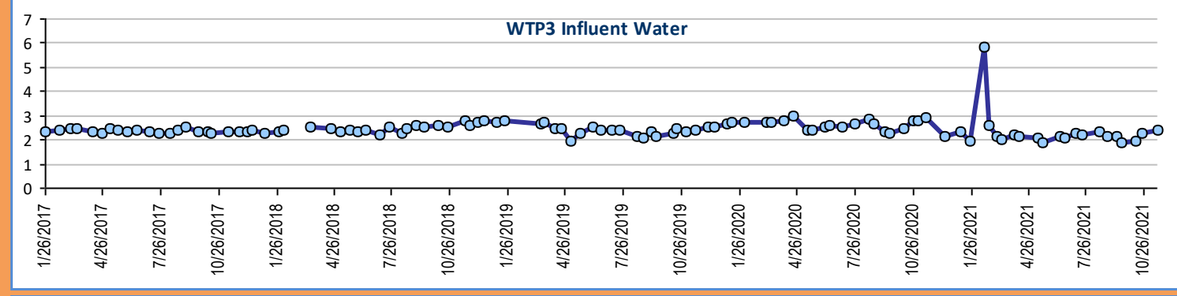
pH, units

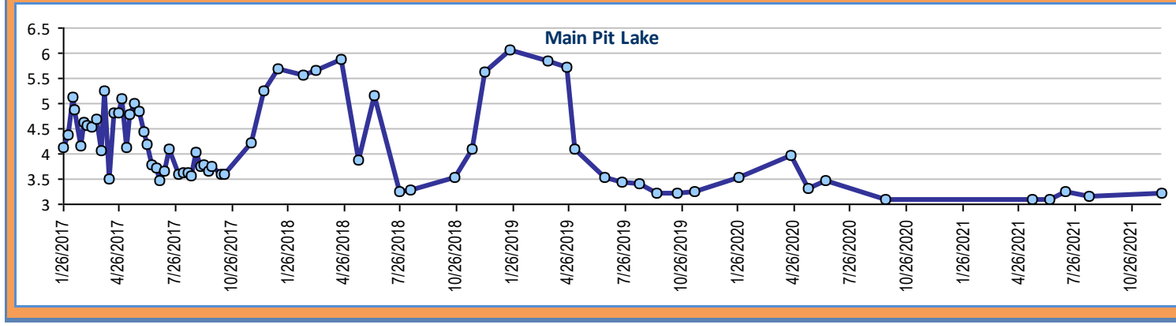


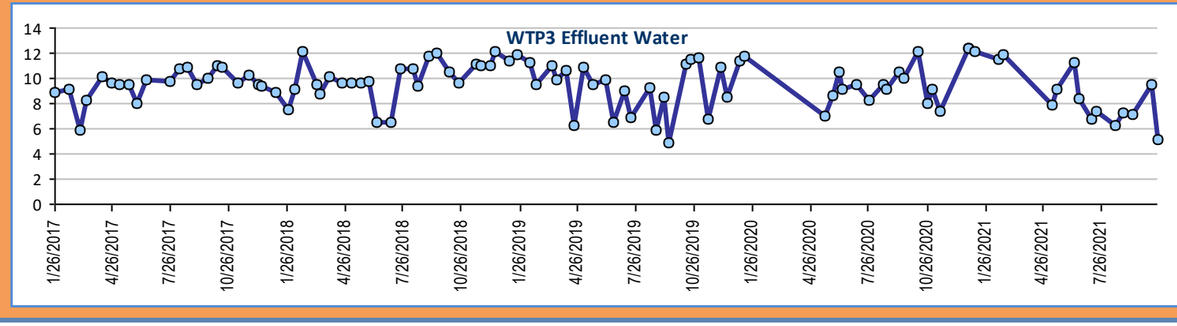








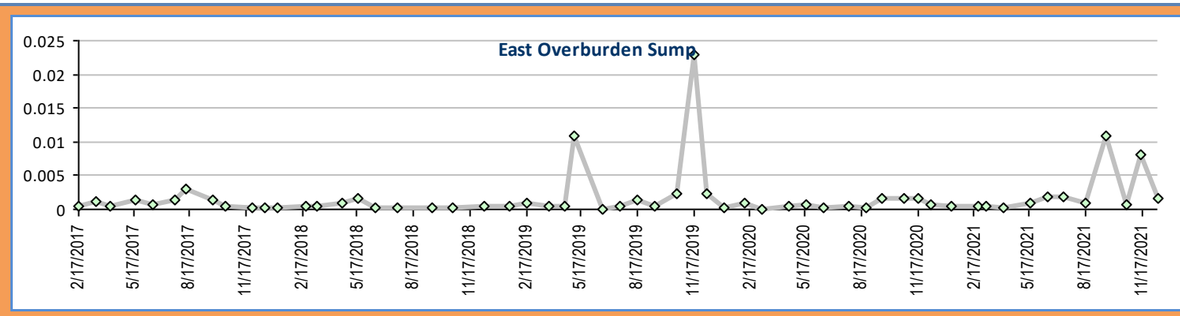


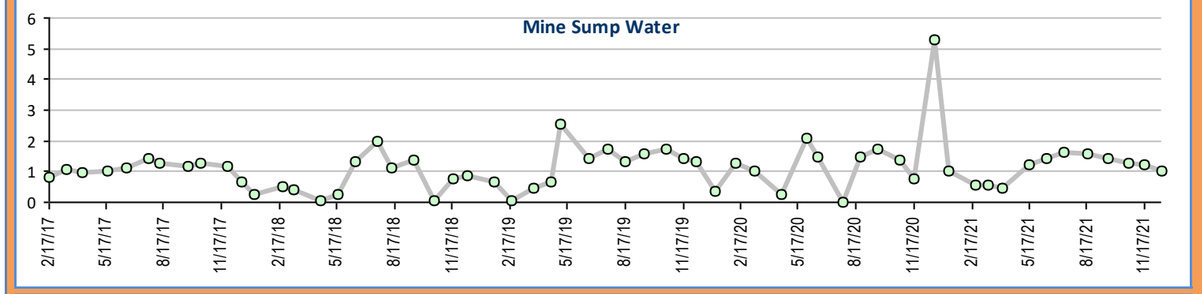


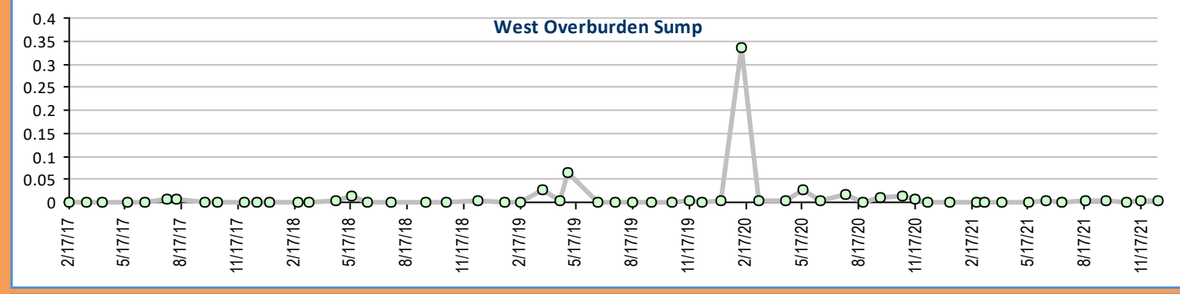
RED DOG MINE

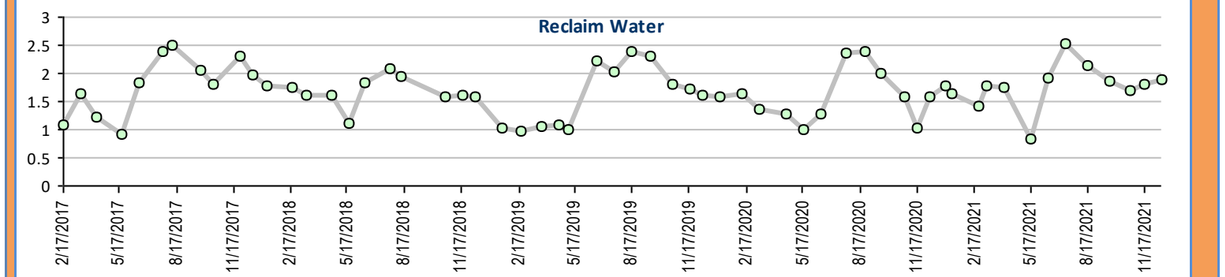
Mine Water Monitoring - Water Quality Profile II, Trend Charts

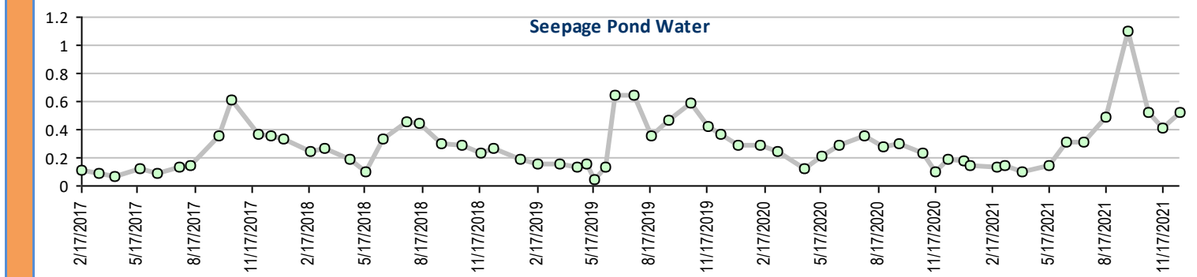
Lead, dissolved, units mg/L

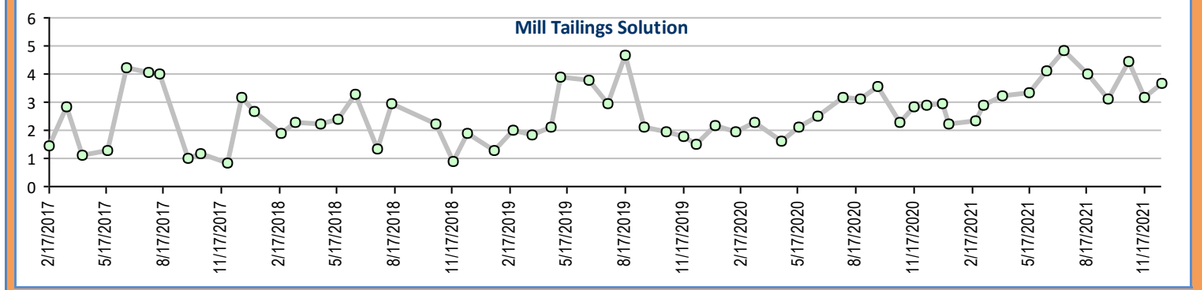


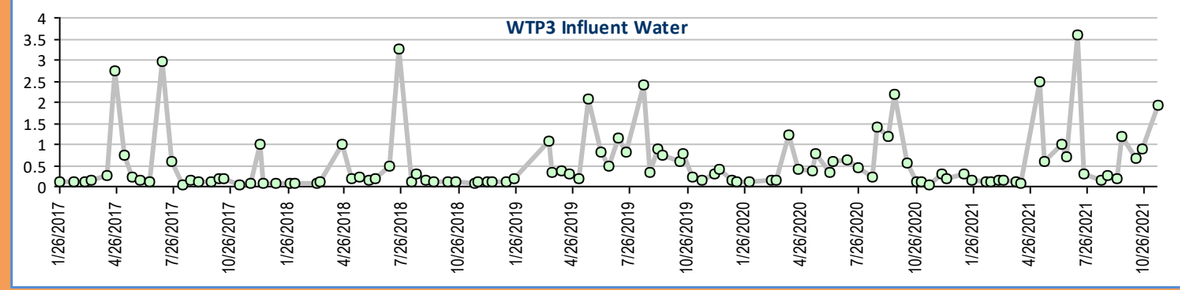


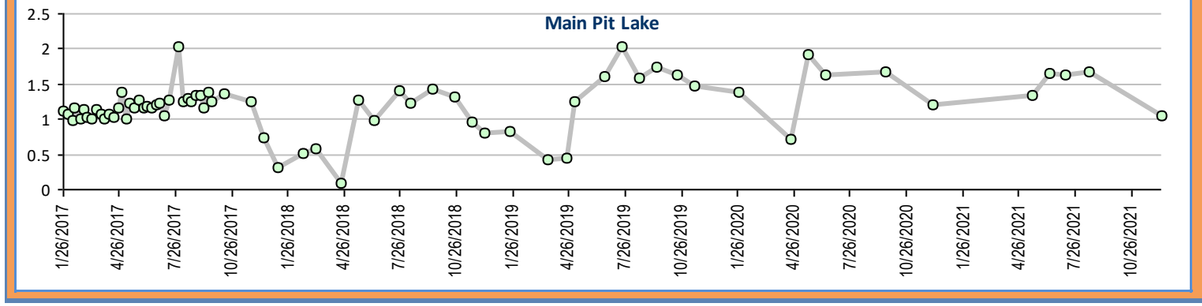


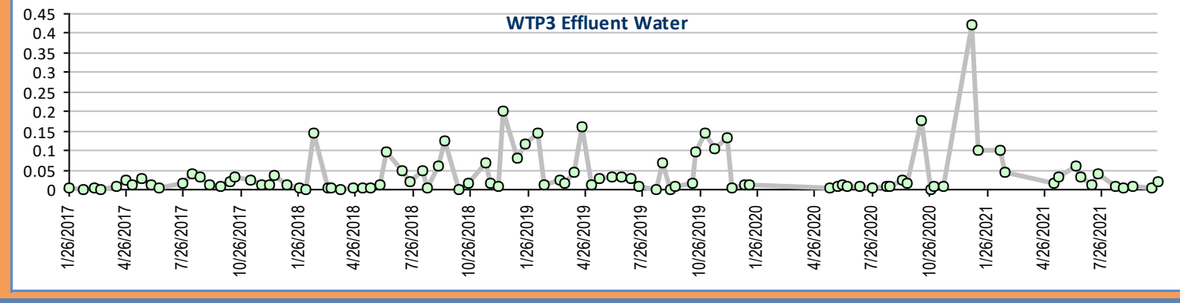








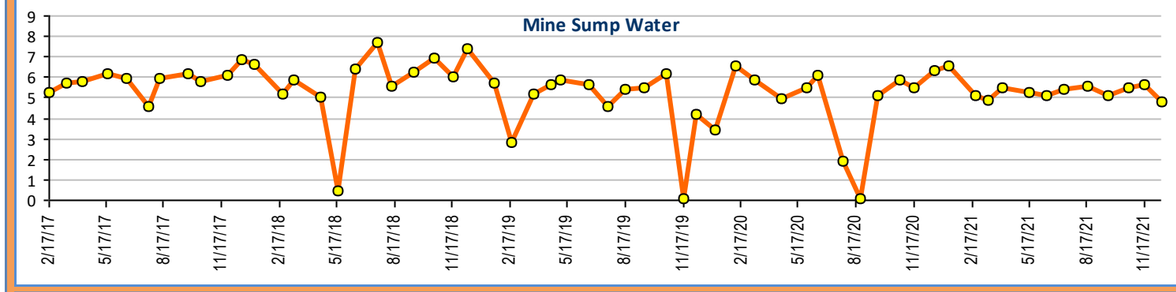


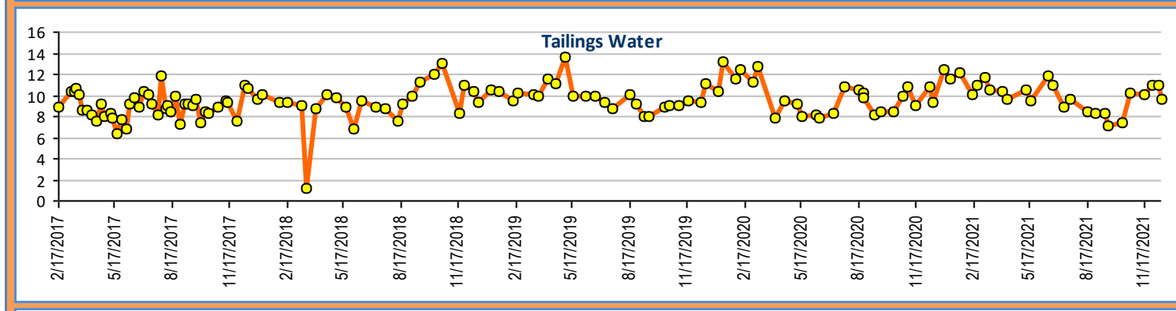


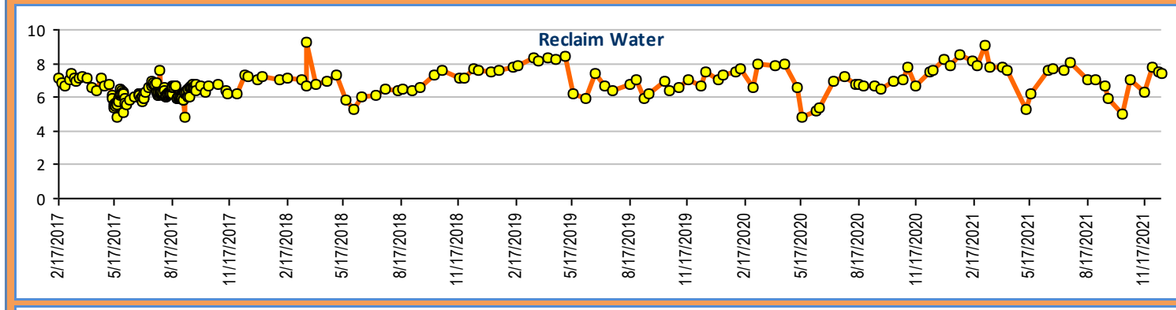
RED DOG MINE

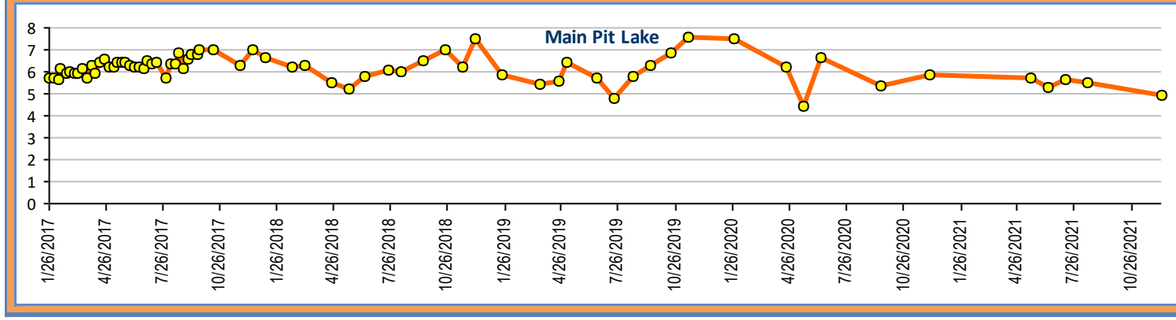
Mine Water Monitoring - Water Quality Profile II, Trend Charts

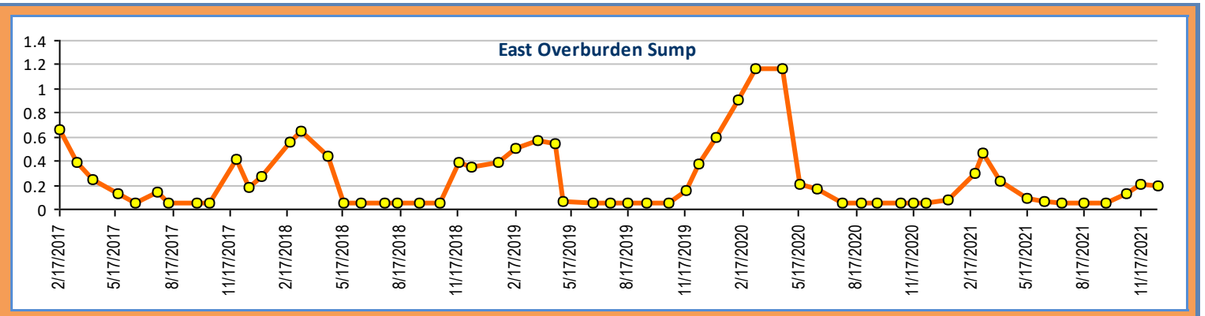
Ammonia as N, units mg/L

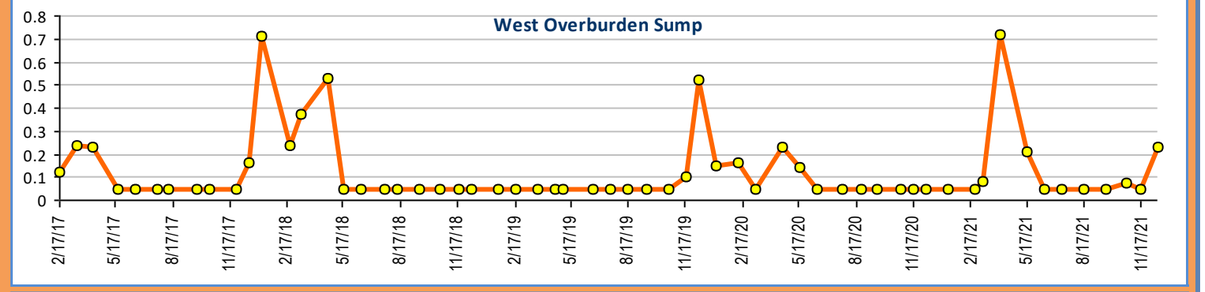


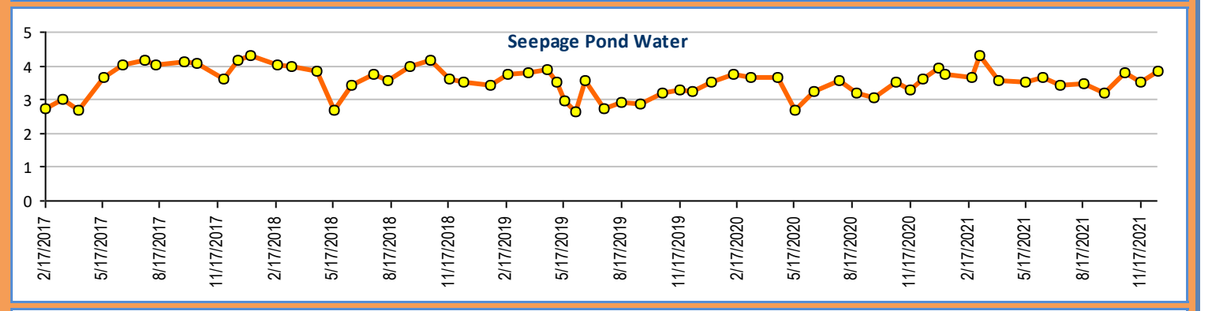


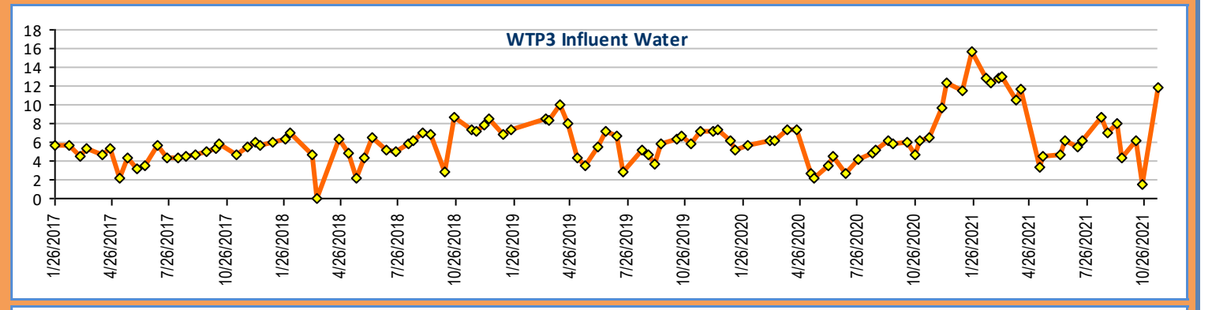


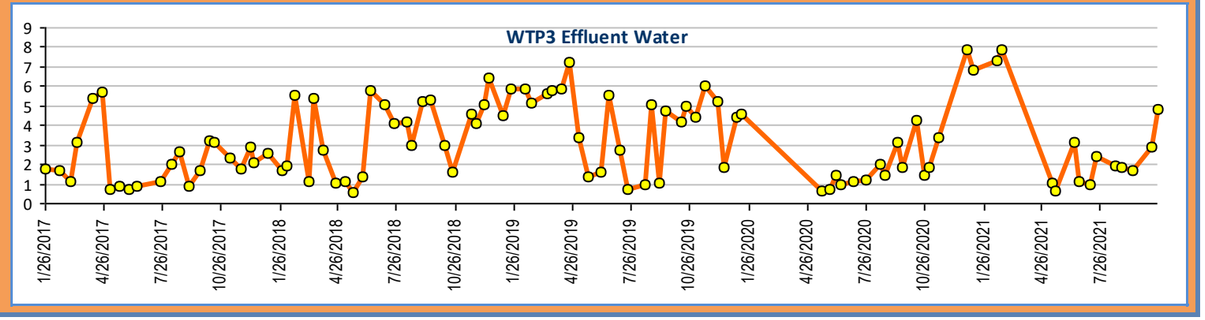








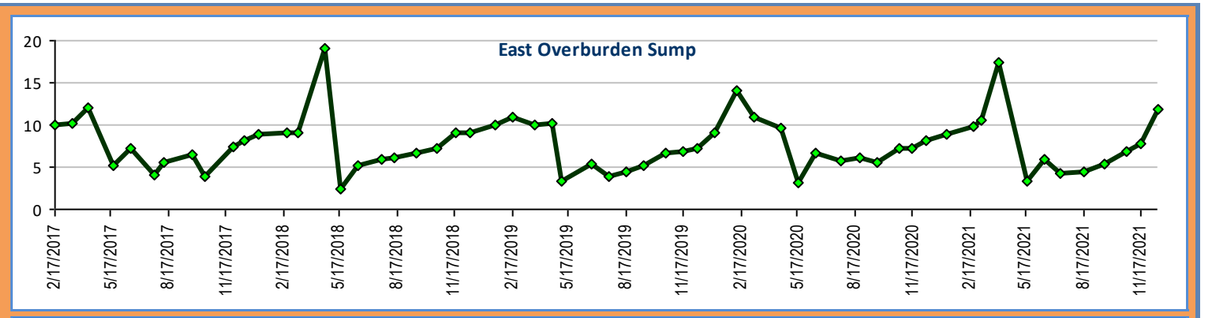


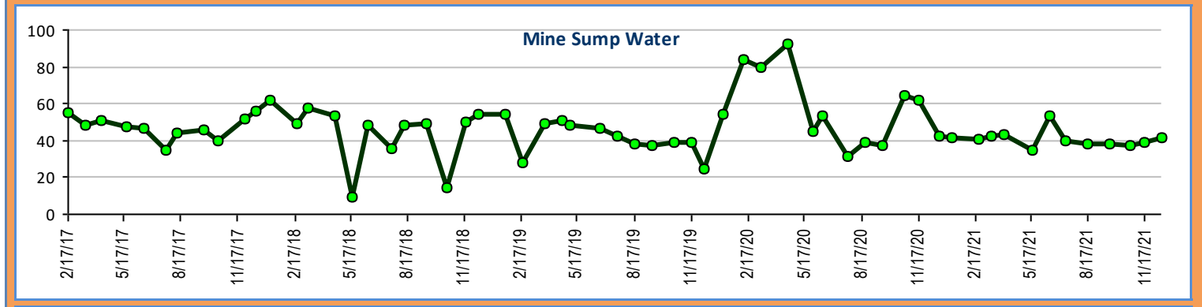


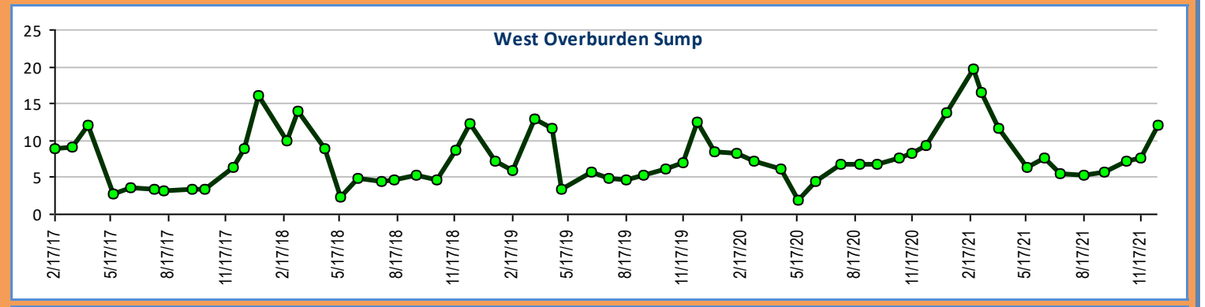
RED DOG MINE

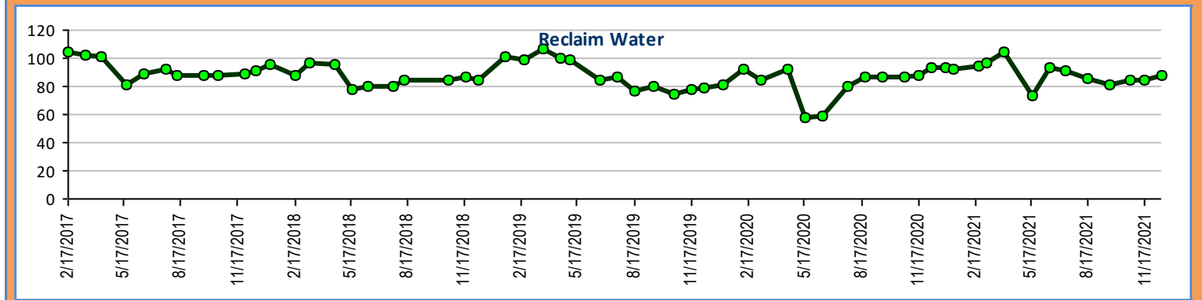
Mine Water Monitoring - Water Quality Profile II, Trend Charts

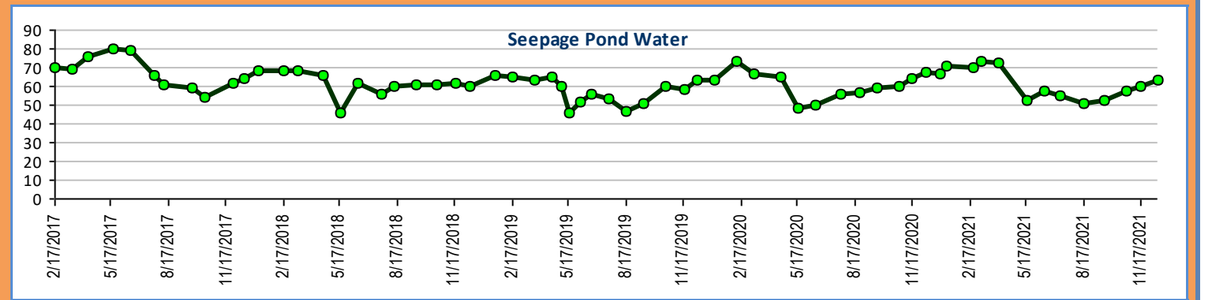
Sodium, dissolved, units mg/L

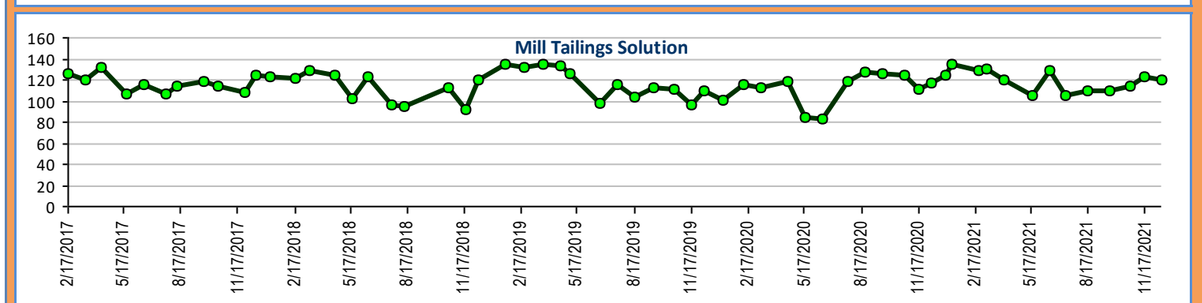


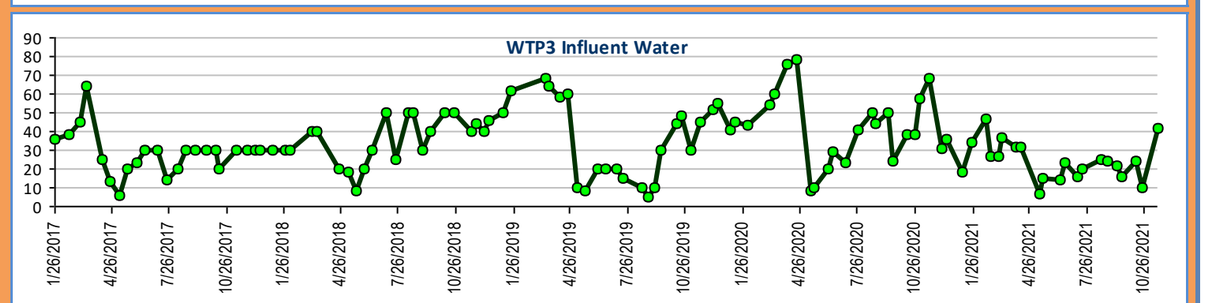


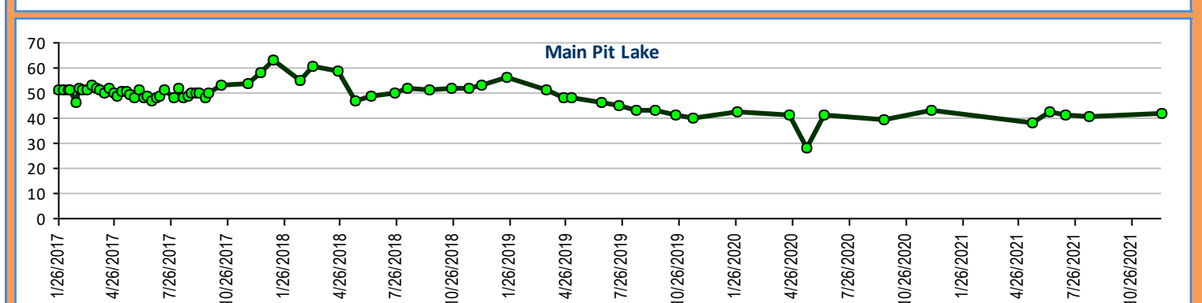


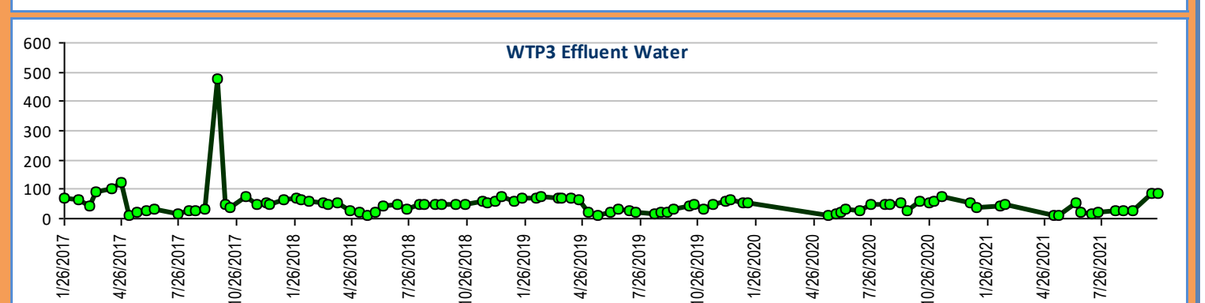








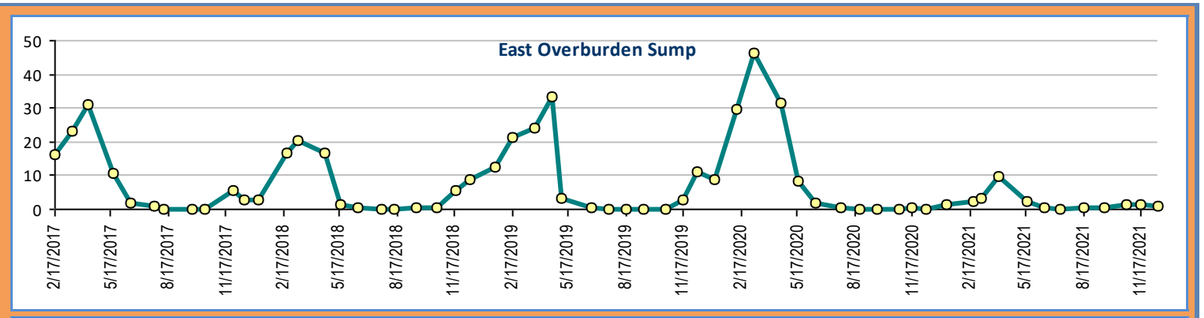


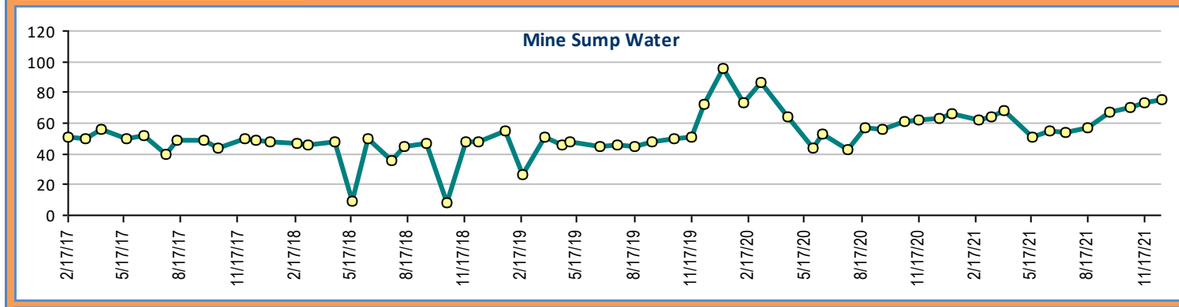


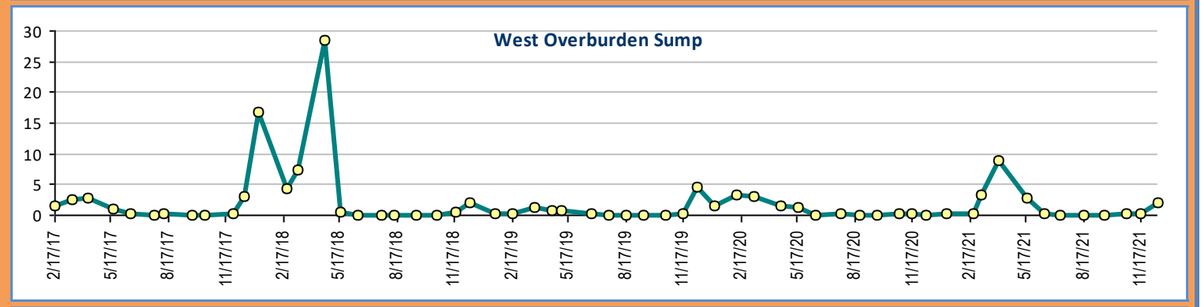
RED DOG MINE

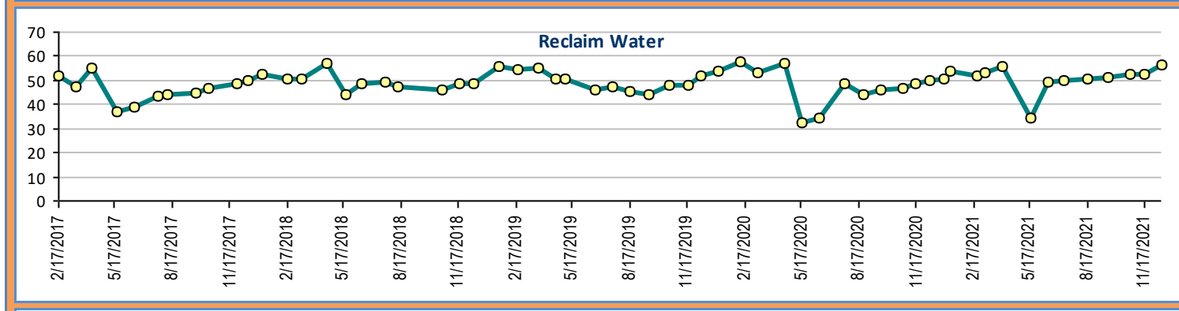
Mine Water Monitoring - Water Quality Profile II, Trend Charts

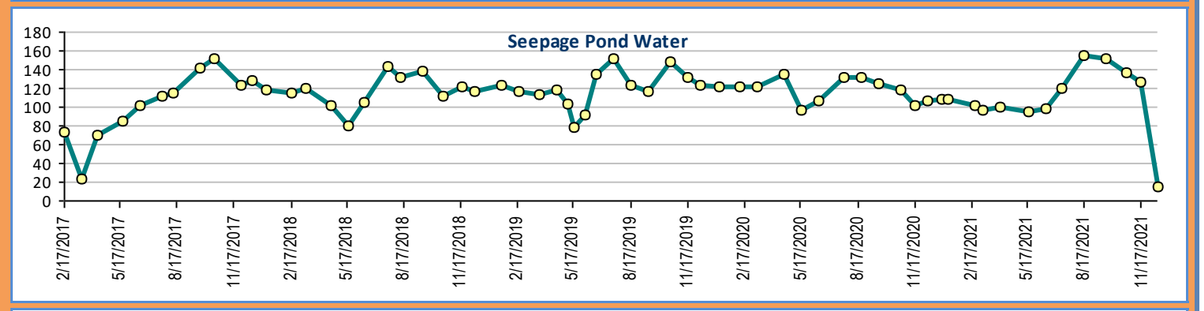
Manganese, dissolved, units mg/L

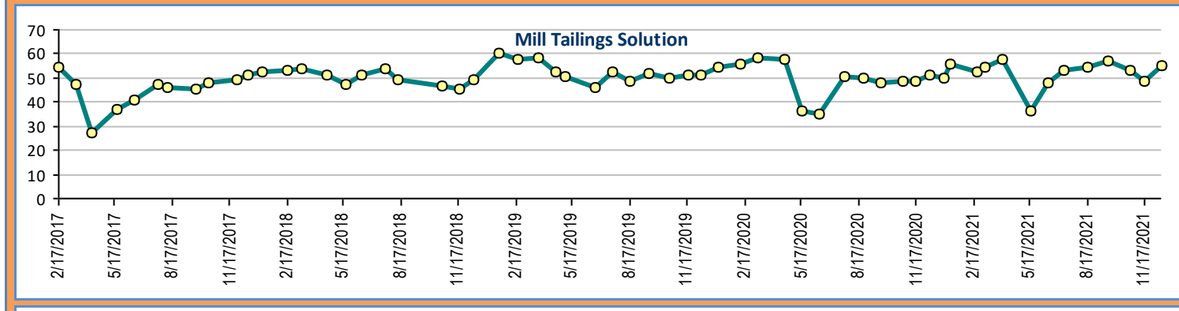


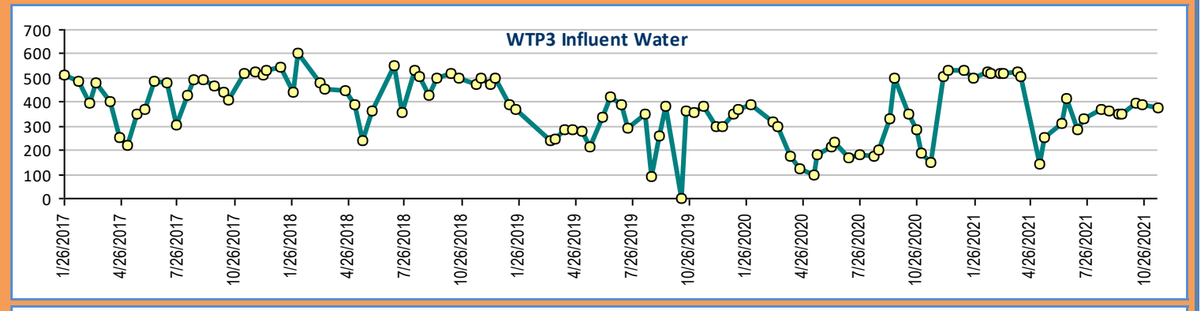


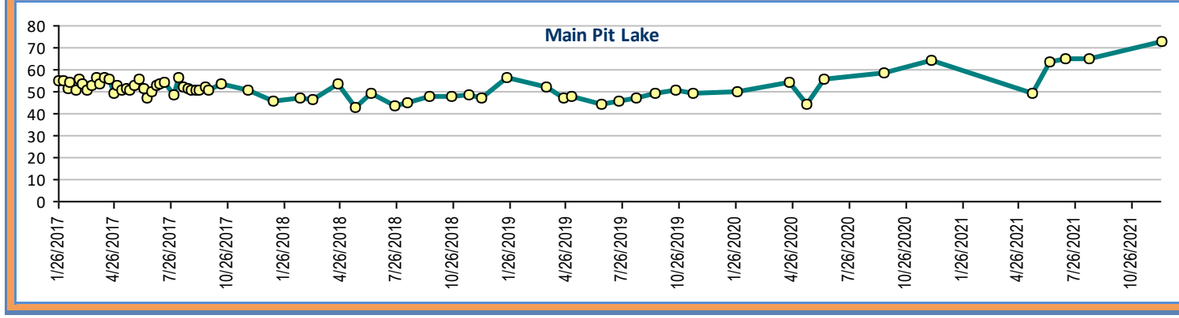


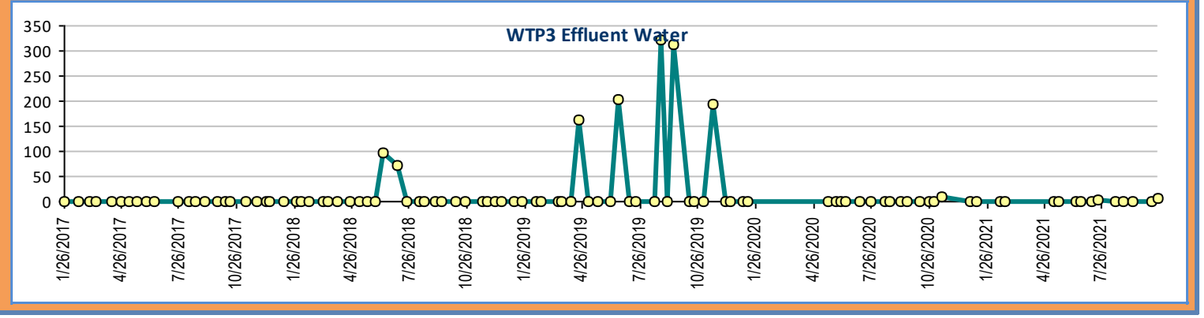








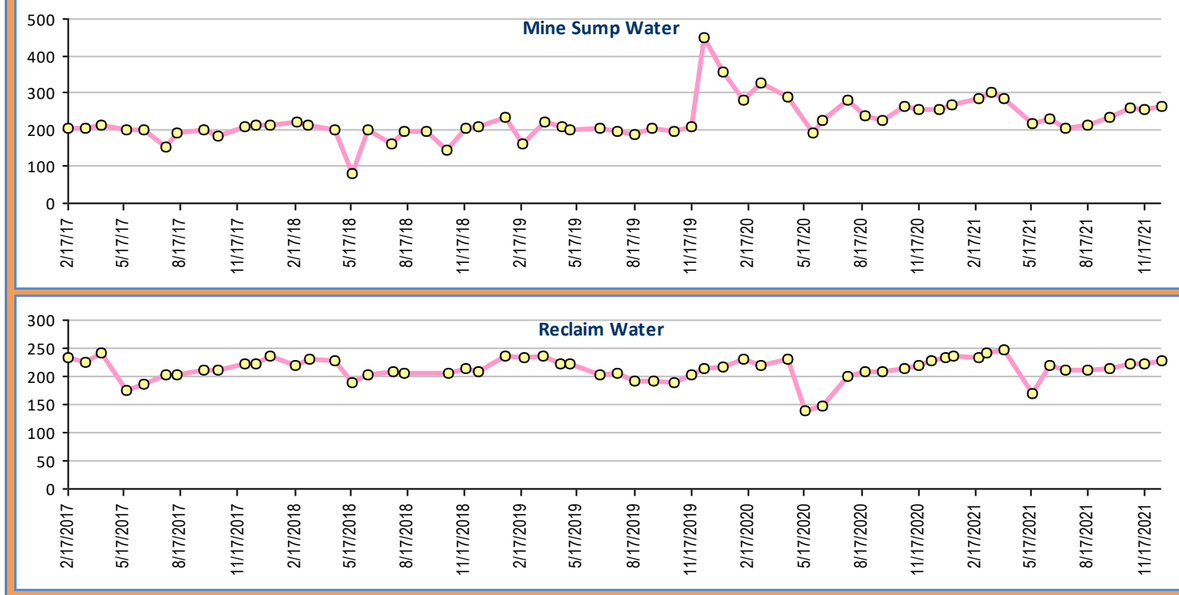


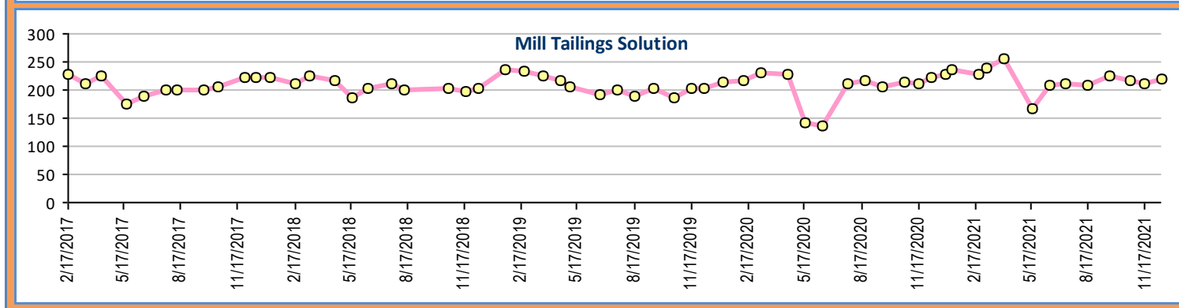


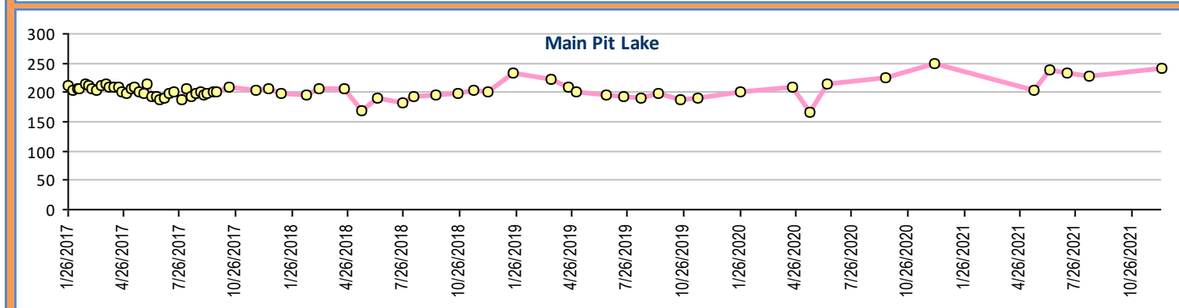
RED DOG MINE

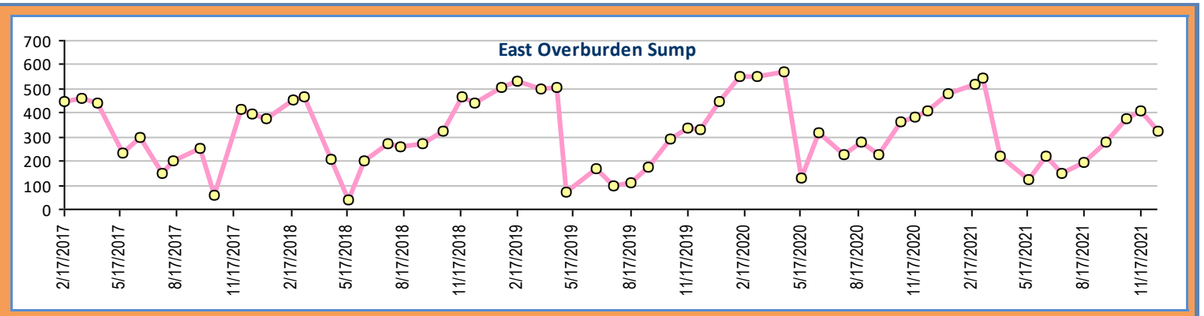
Mine Water Monitoring - Water Quality Profile II, Trend Charts

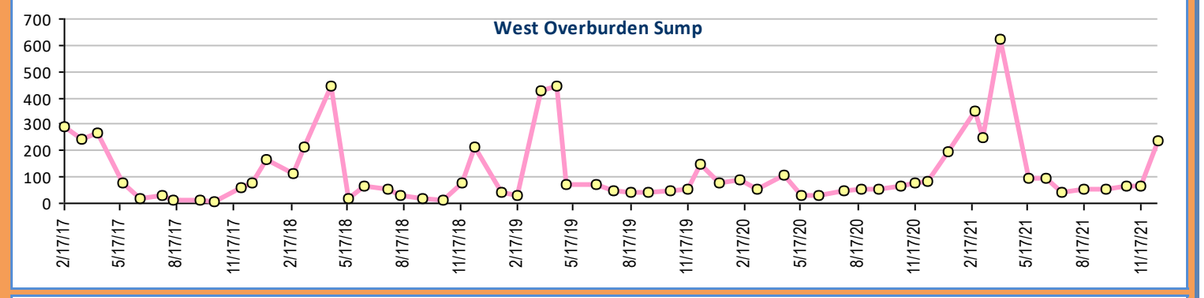
Magnesium, dissolved, units mg/L

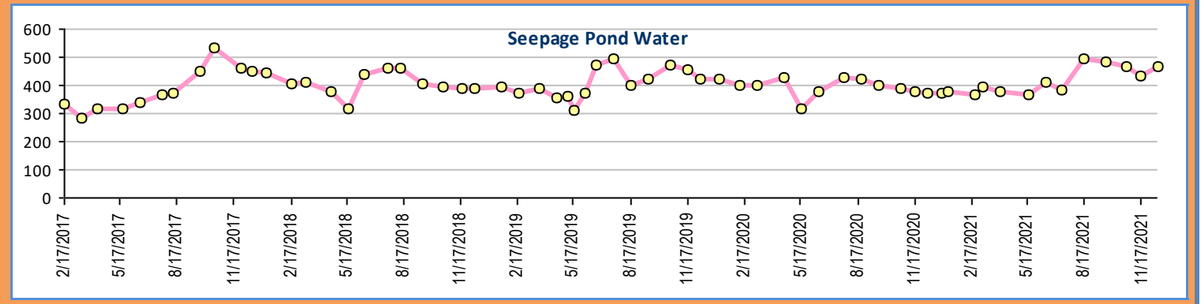


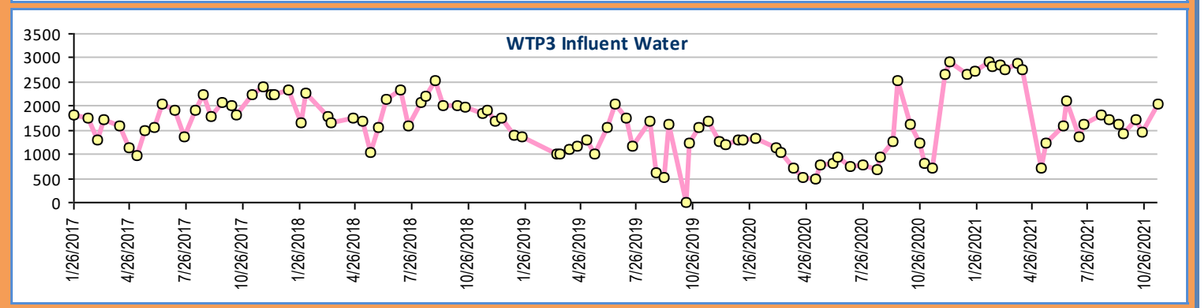


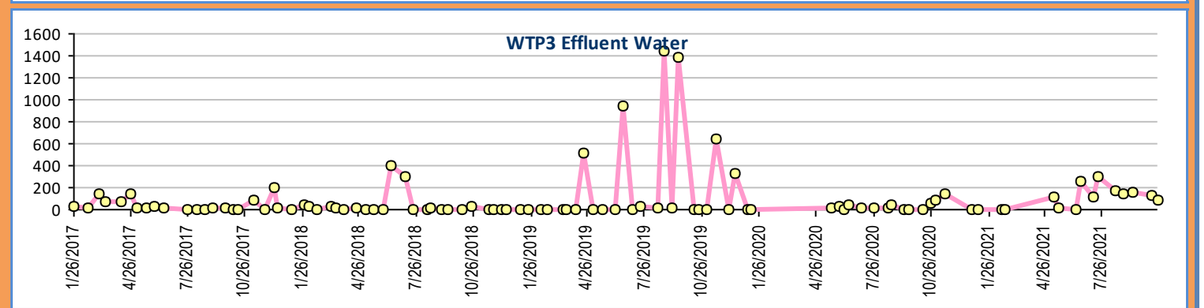








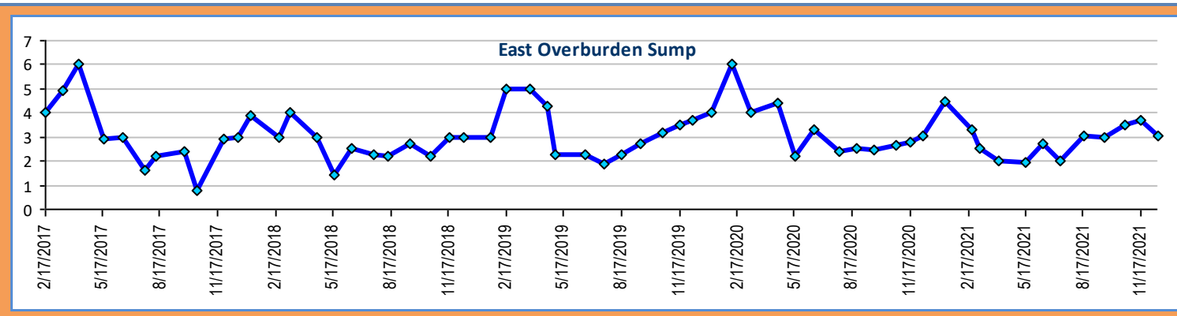


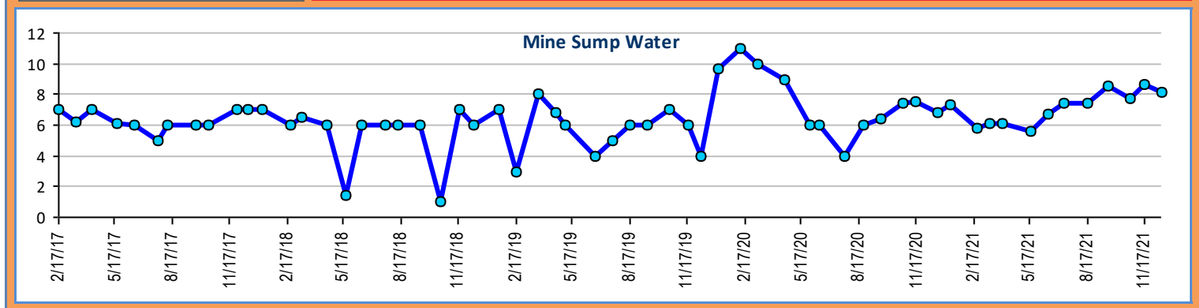


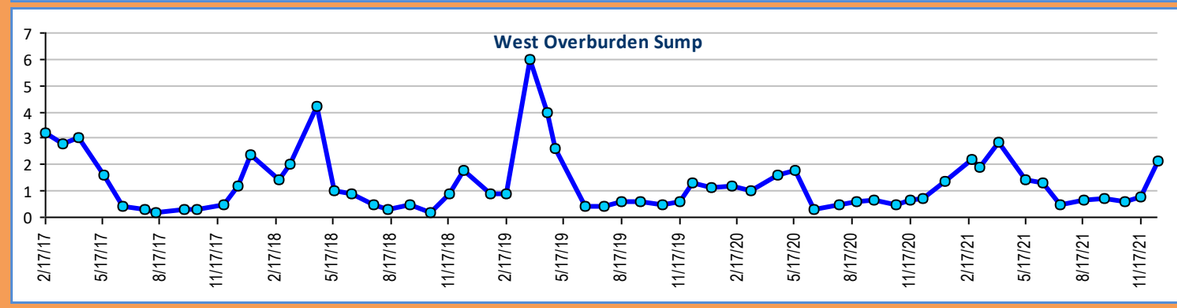
RED DOG MINE

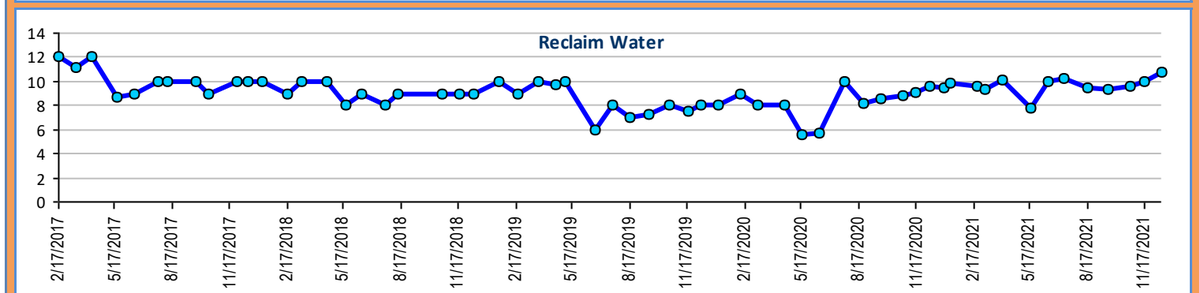
Mine Water Monitoring - Water Quality Profile II, Trend Charts

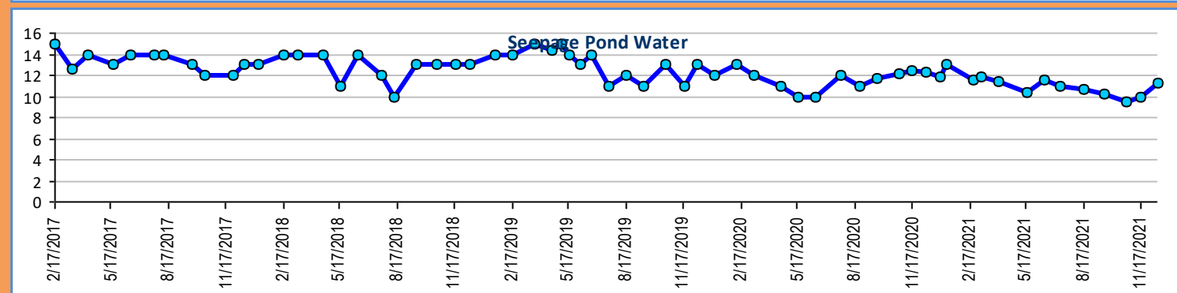
Potassium, dissolved, units mg/L

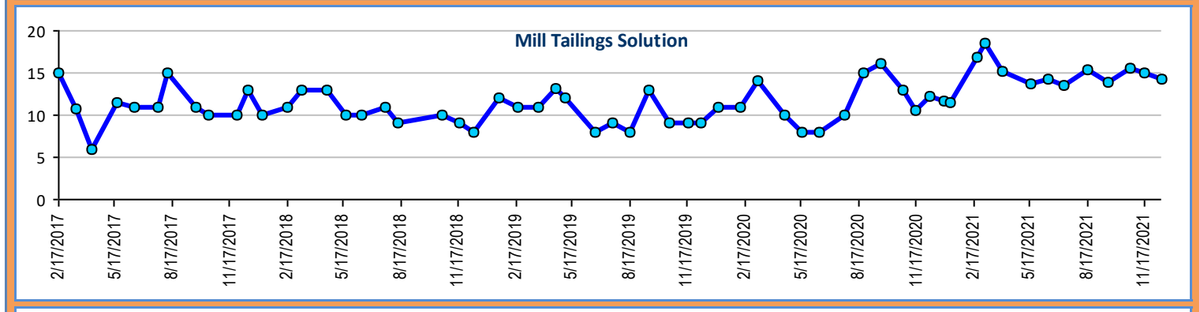


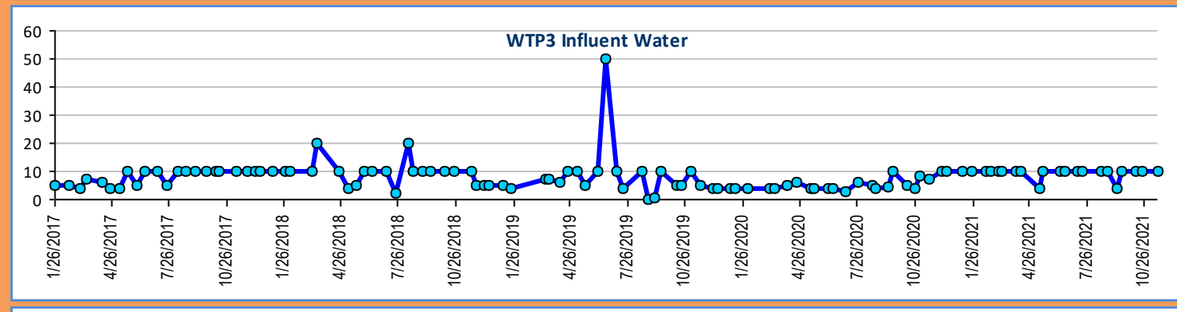


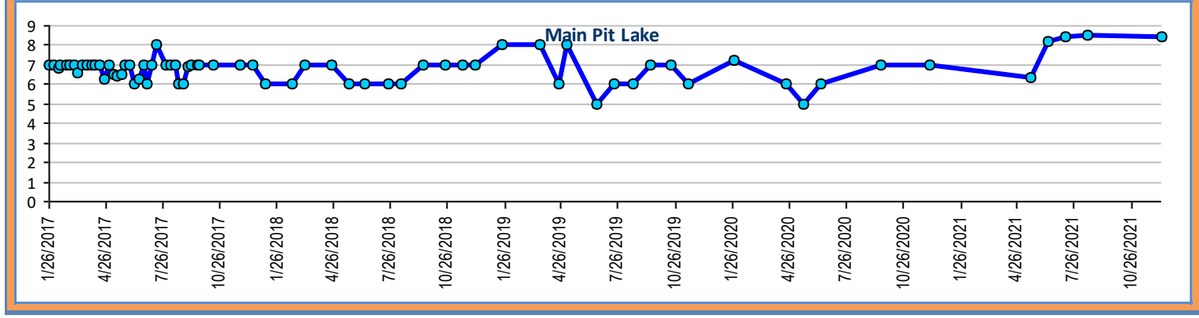


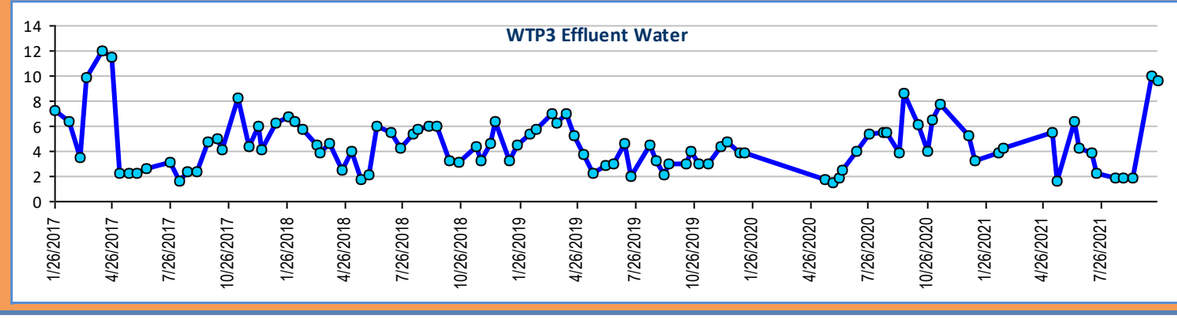








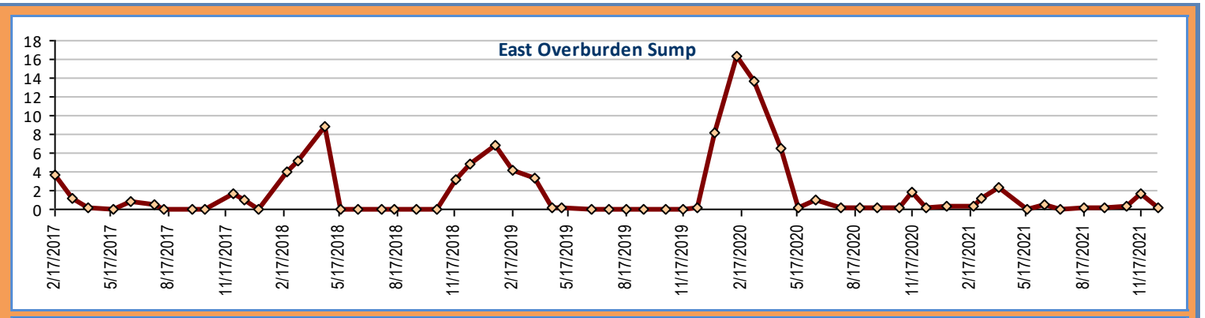


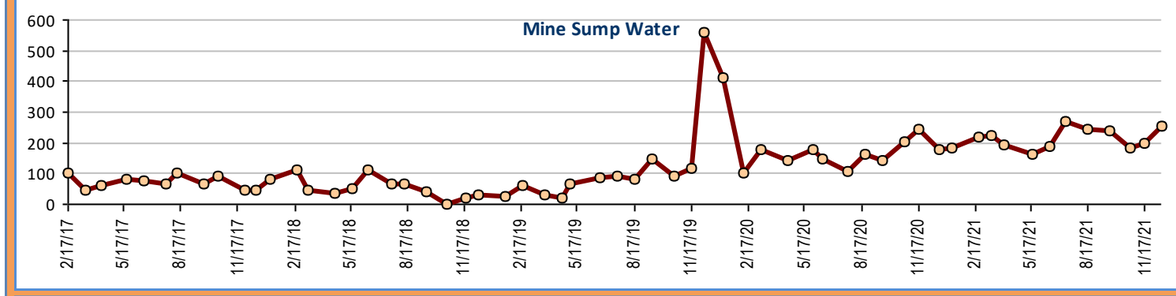


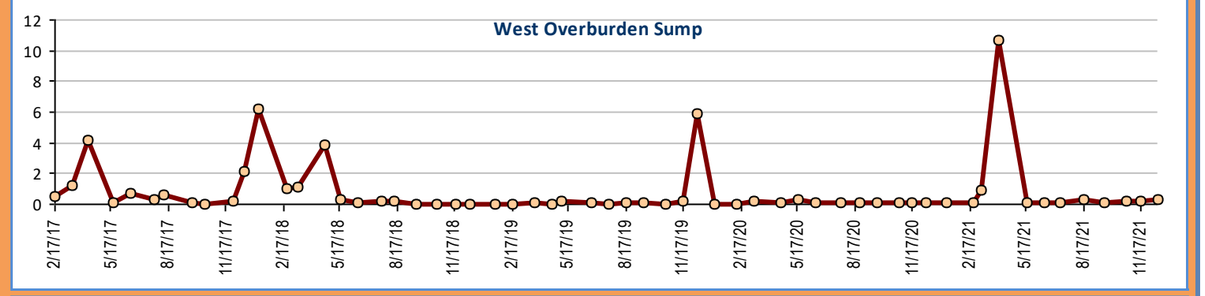
RED DOG MINE

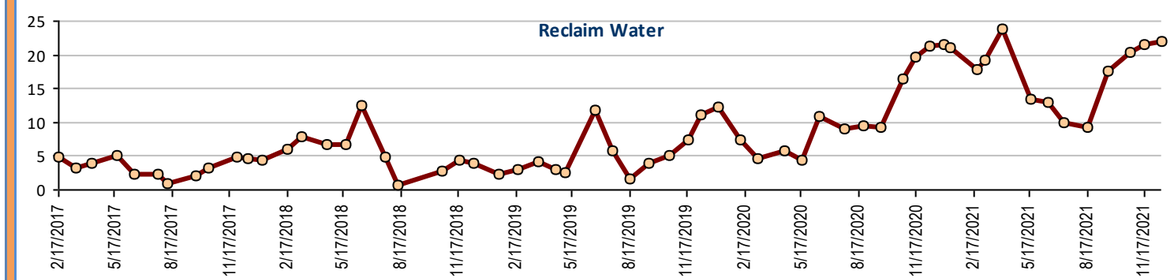
Mine Water Monitoring - Water Quality Profile II, Trend Charts

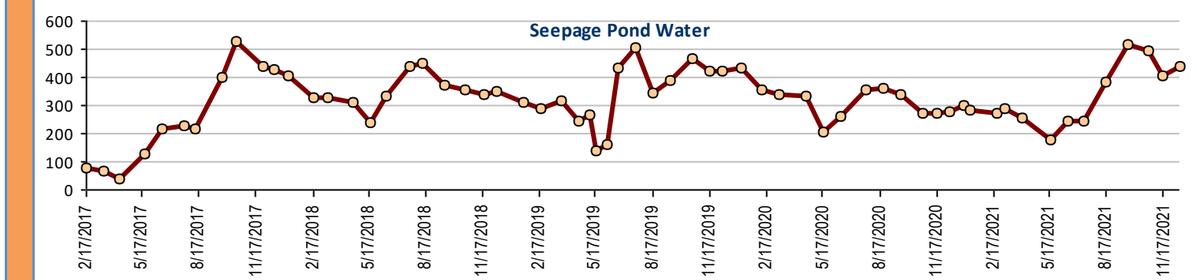
Iron, dissolved, units mg/L

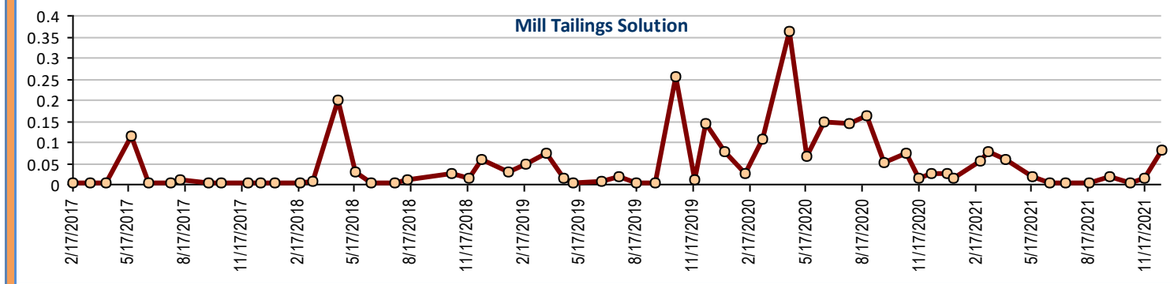


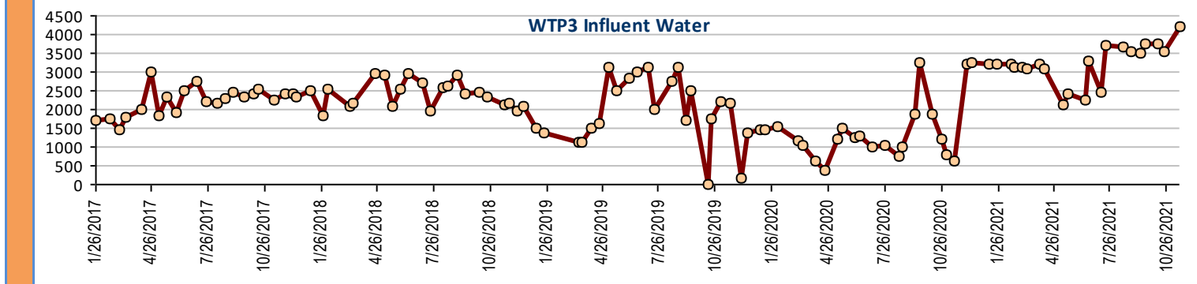


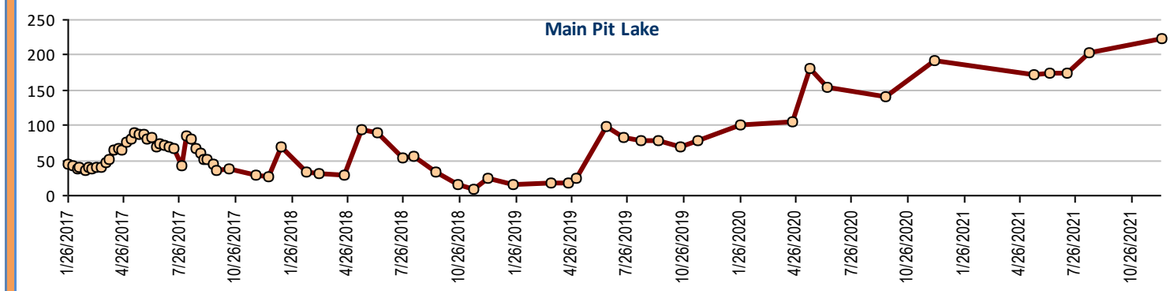


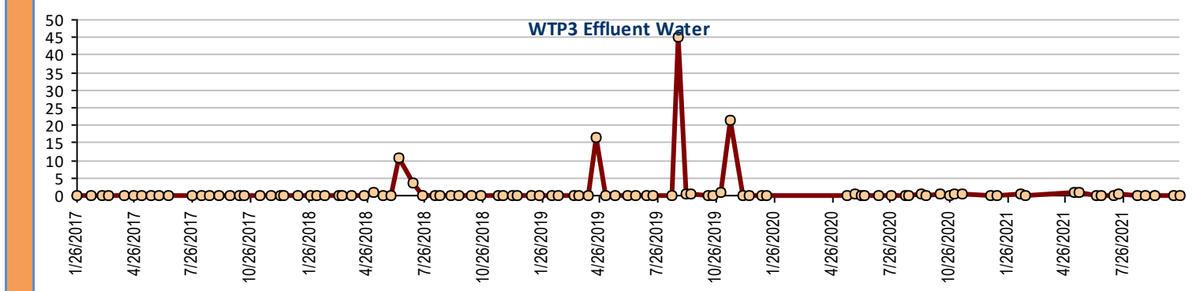








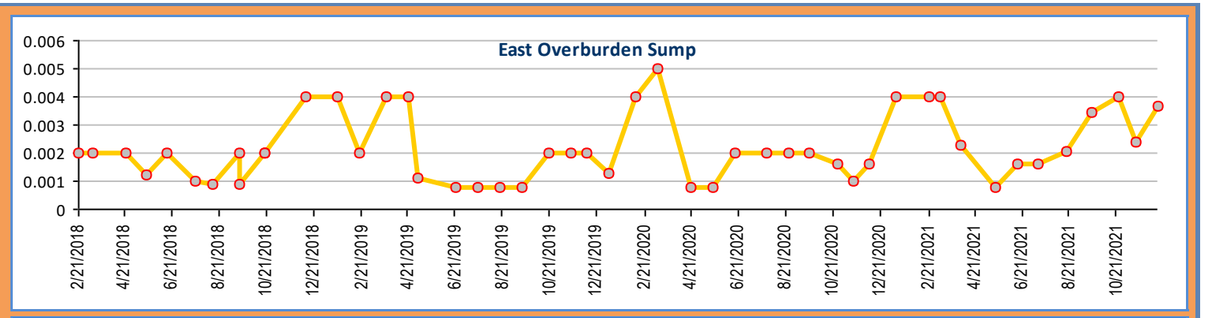


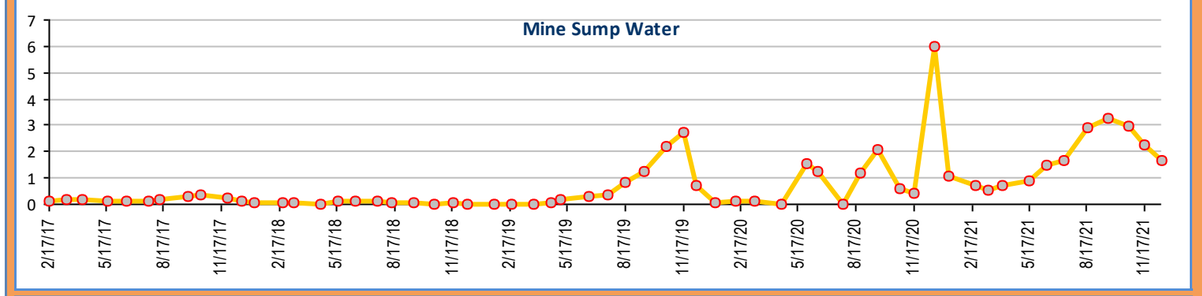


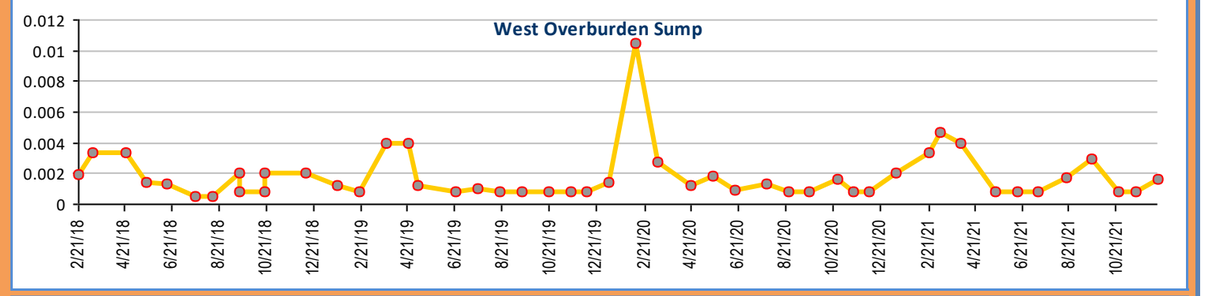
RED DOG MINE

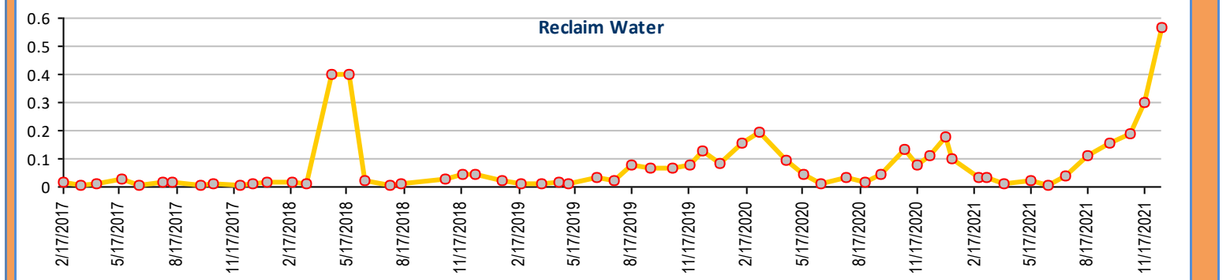
Mine Water Monitoring - Water Quality Profile II, Trend Charts

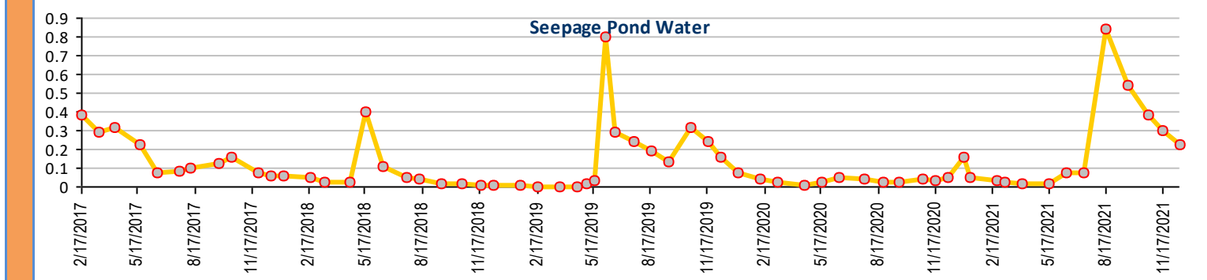
Copper, dissolved, units mg/L

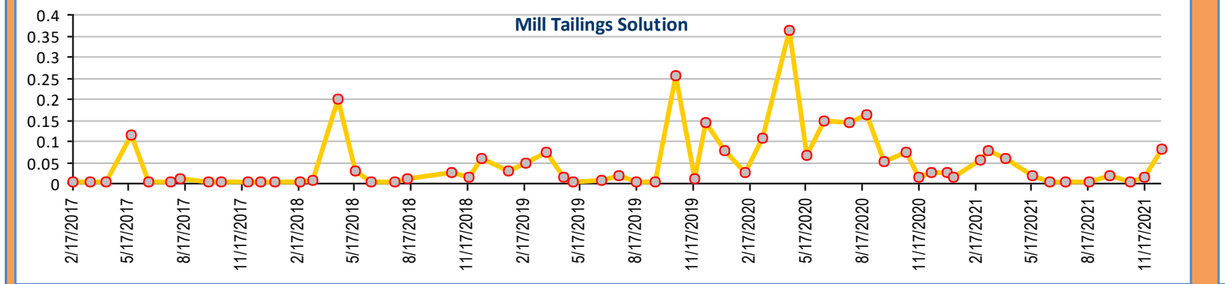


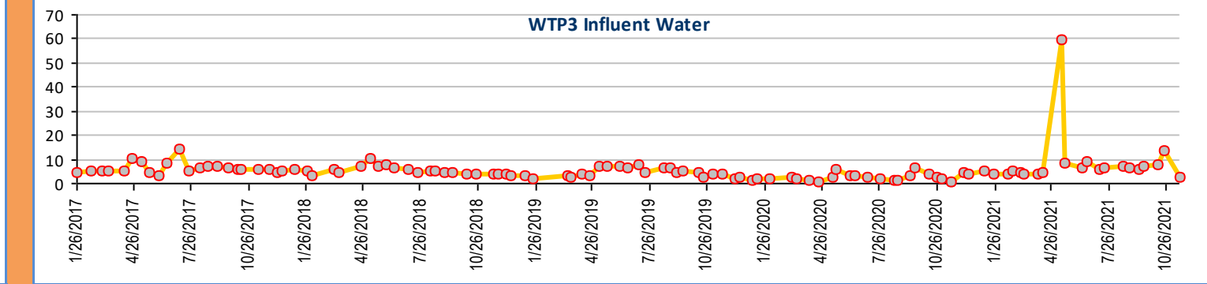


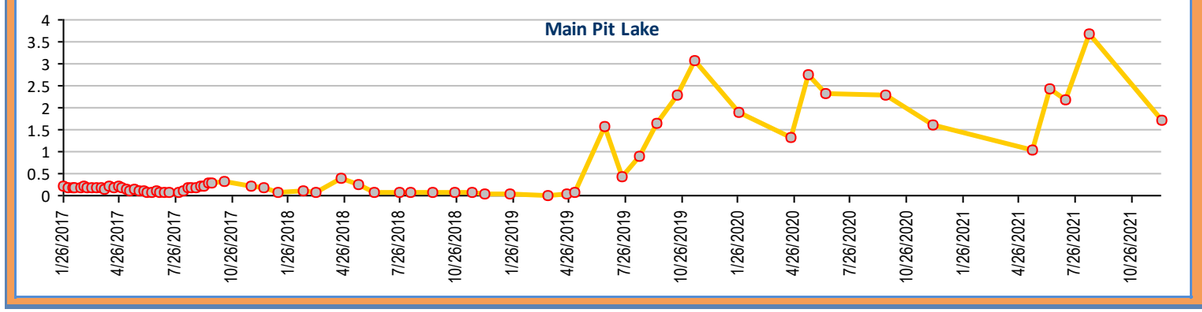


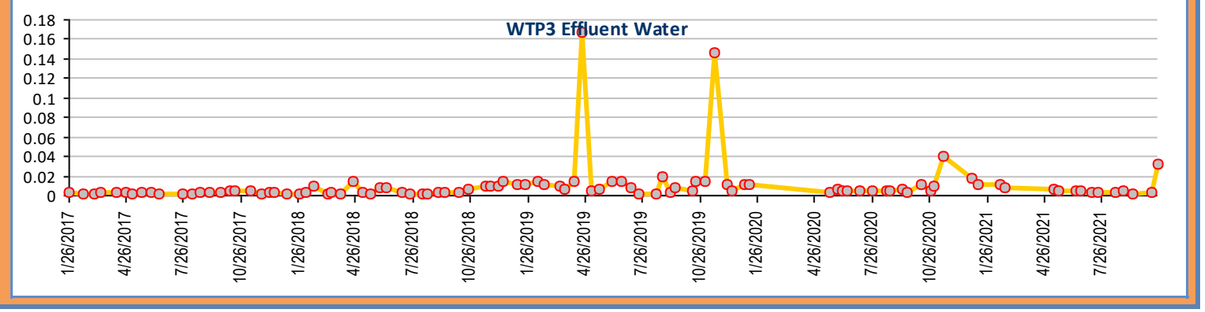








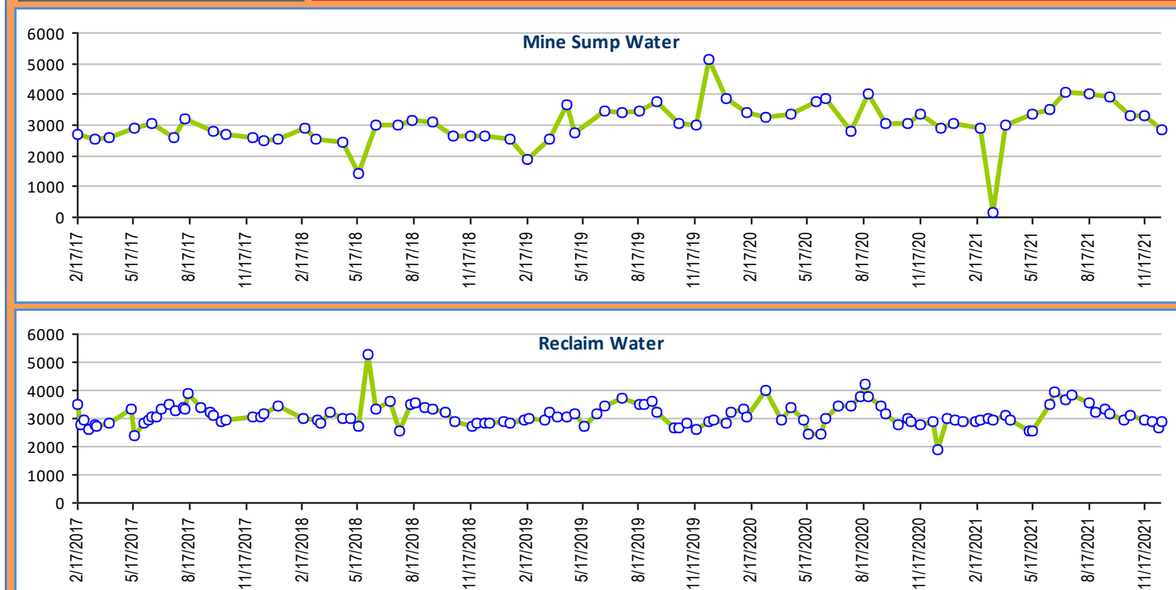


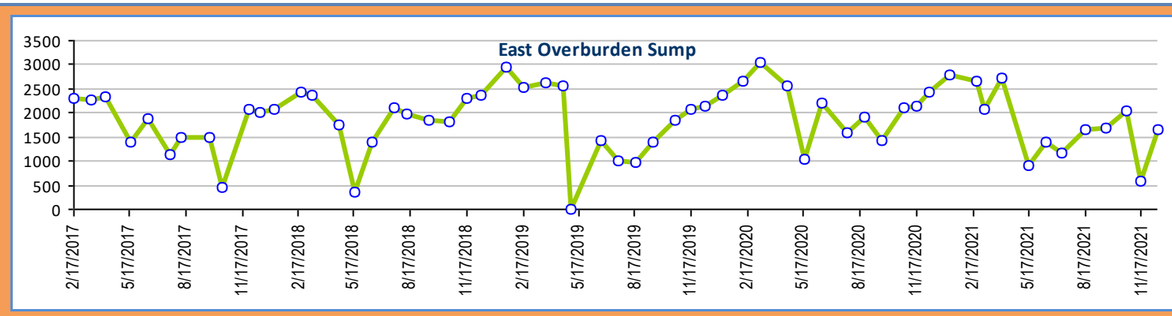


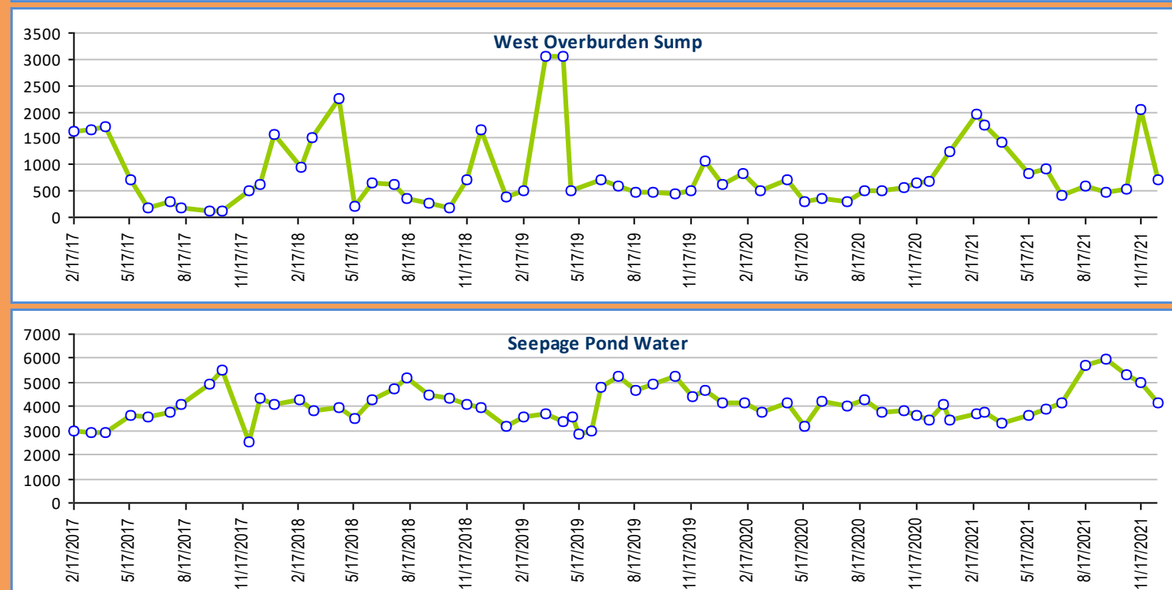
RED DOG MINE

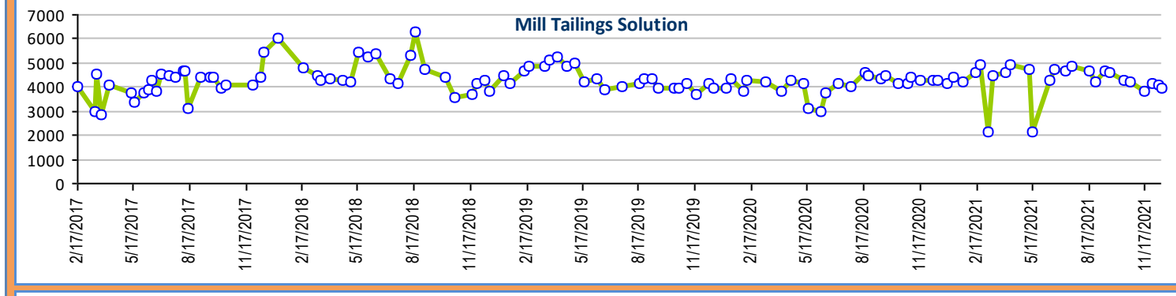
Mine Water Monitoring - Water Quality Profile II, Trend Charts

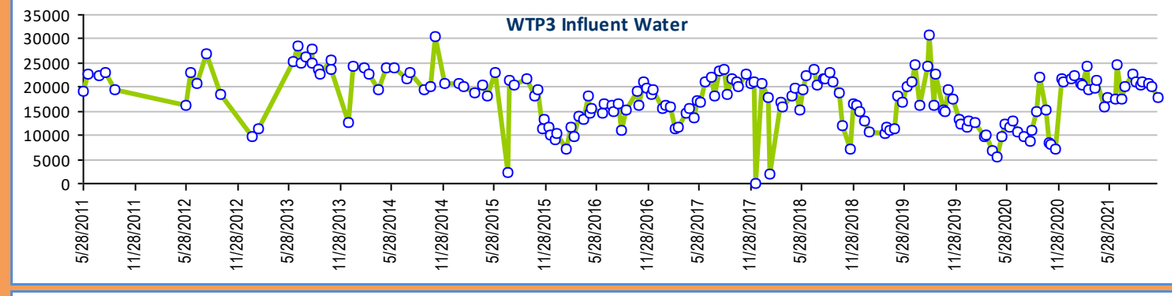
Conductivity, units uS/cm

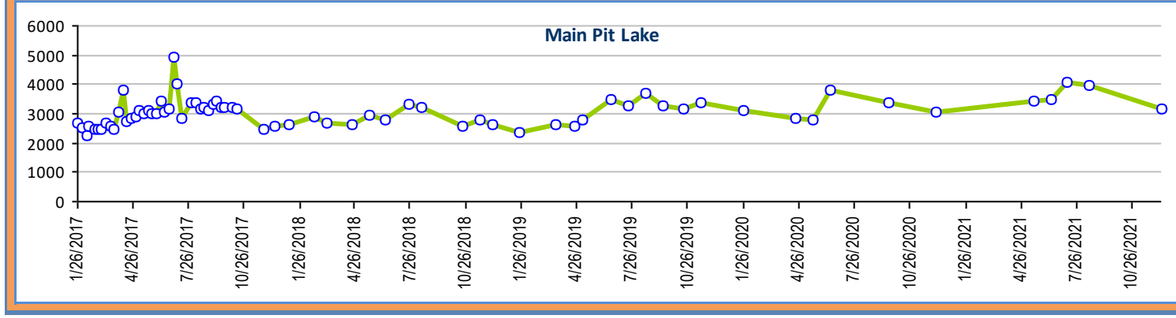


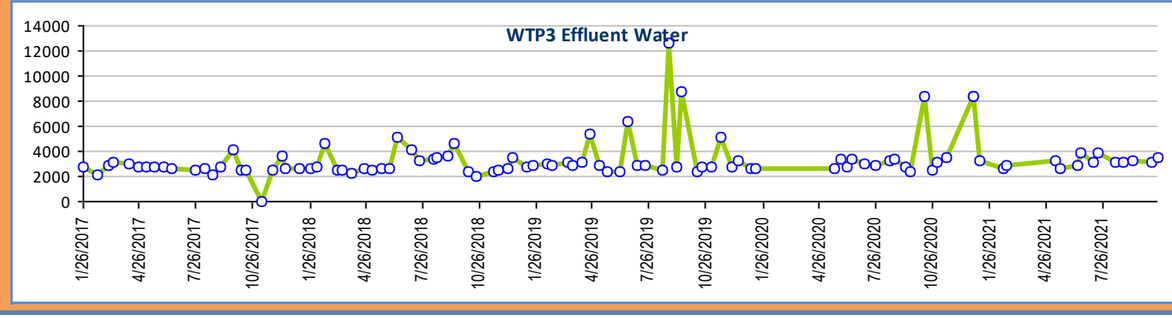








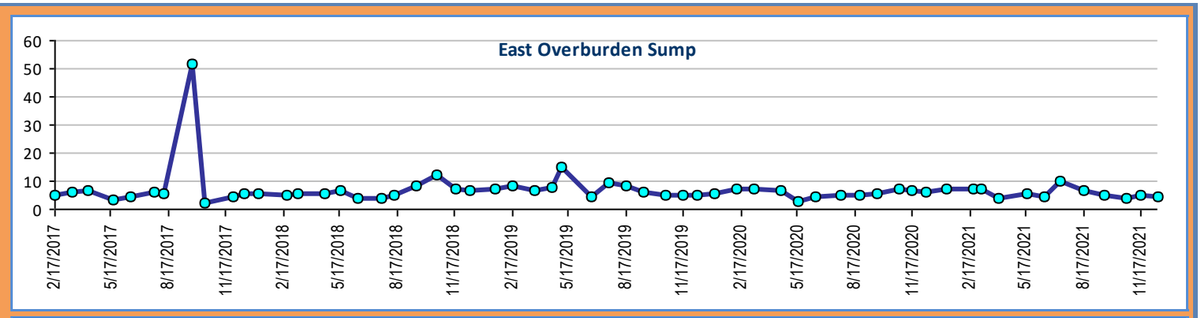


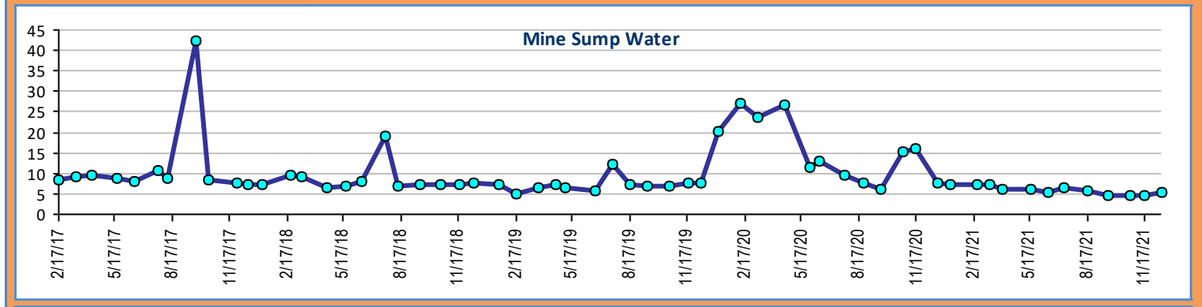


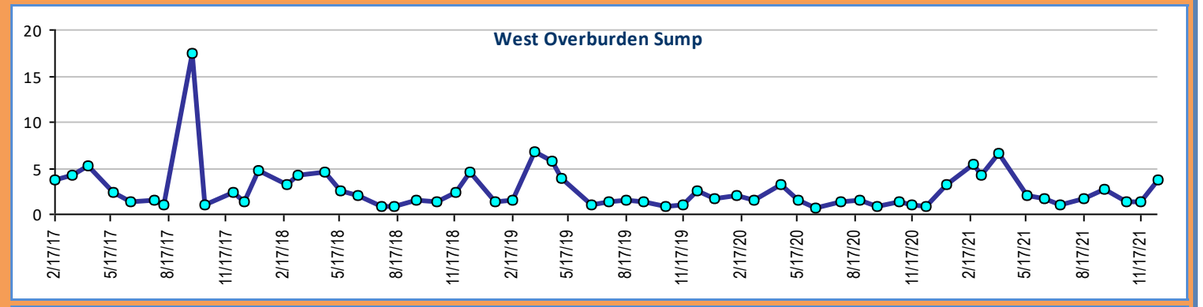
RED DOG MINE

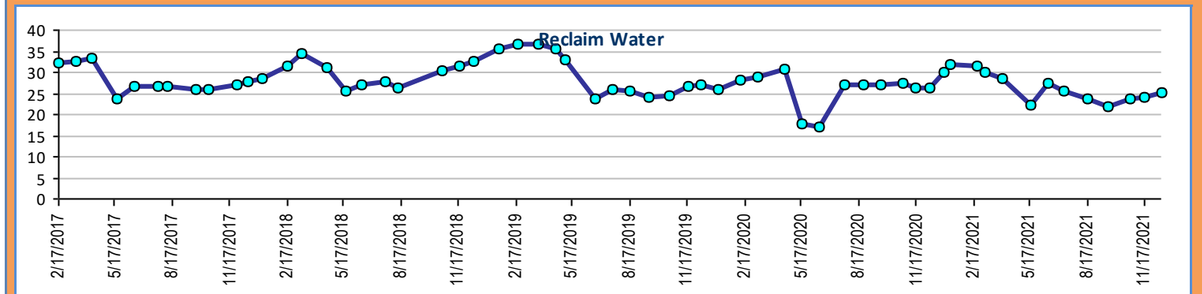
Mine Water Monitoring - Water Quality Profile II, Trend Charts

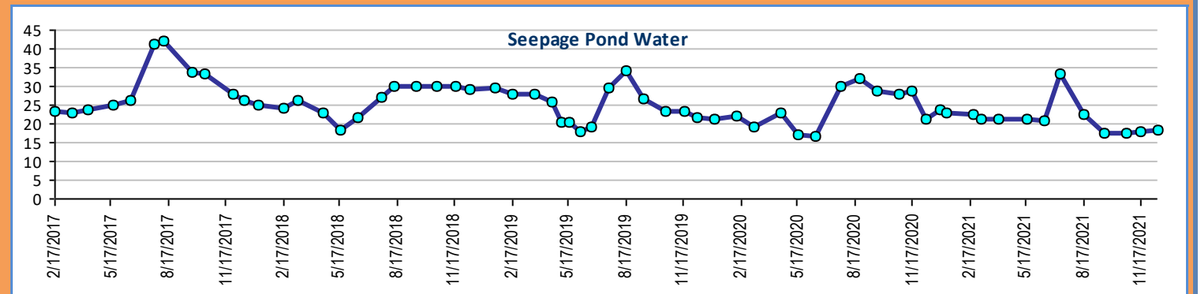
Chloride, dissolved, units mg/L

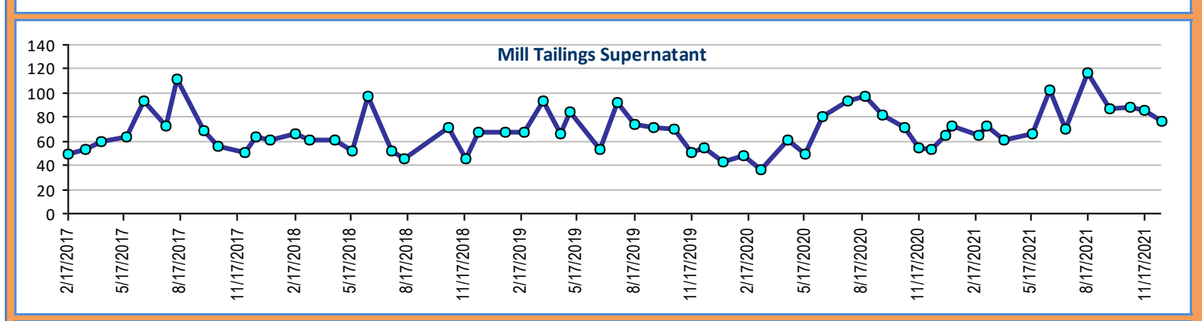


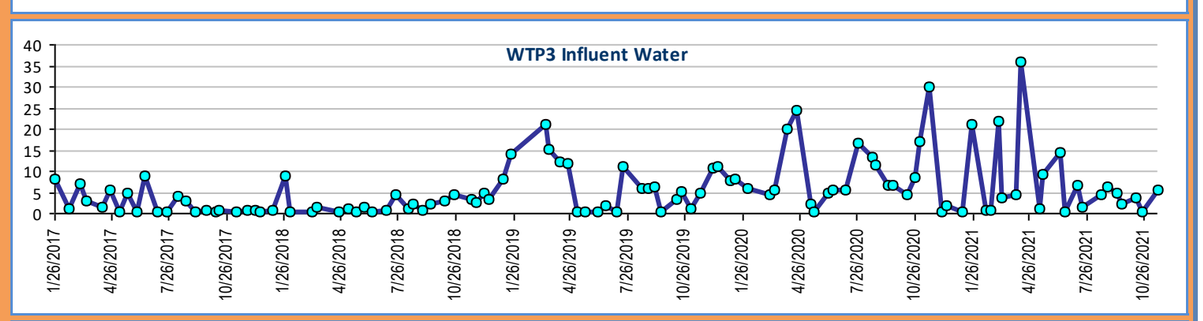


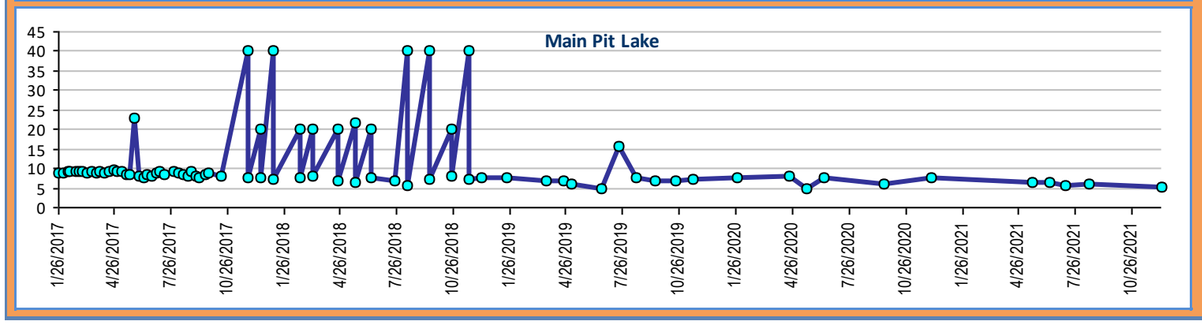


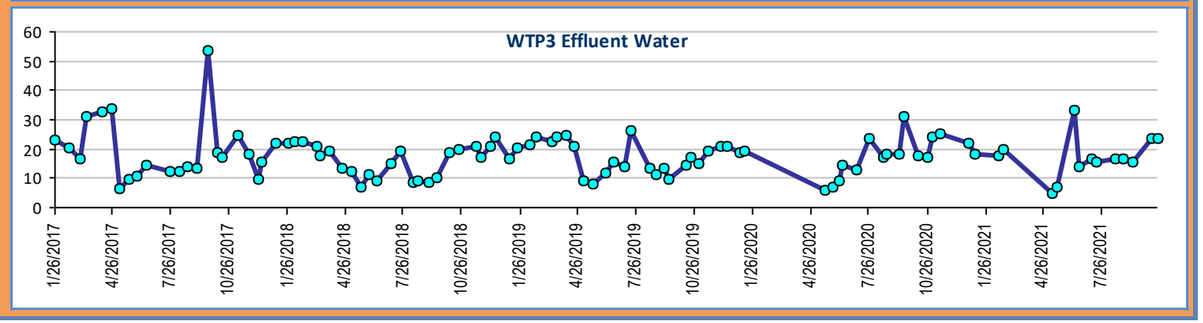








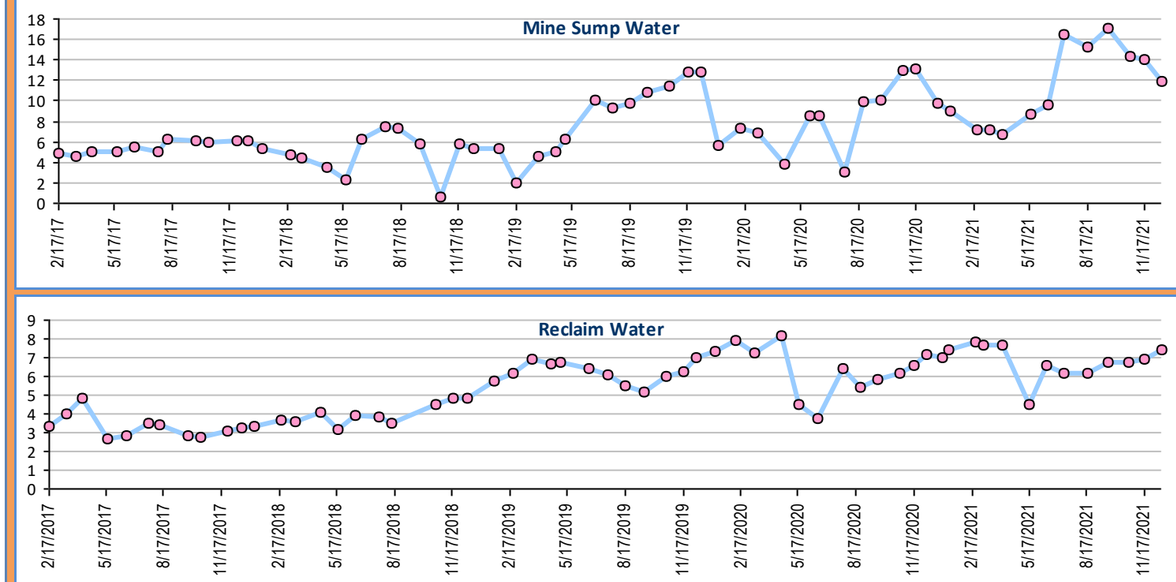


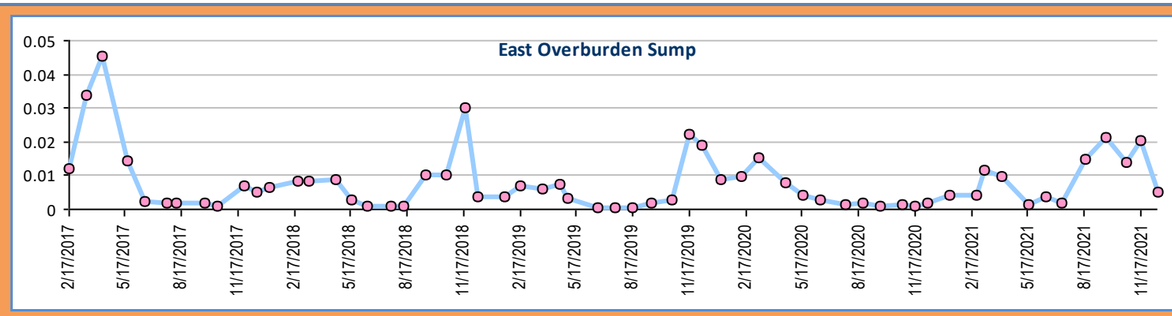


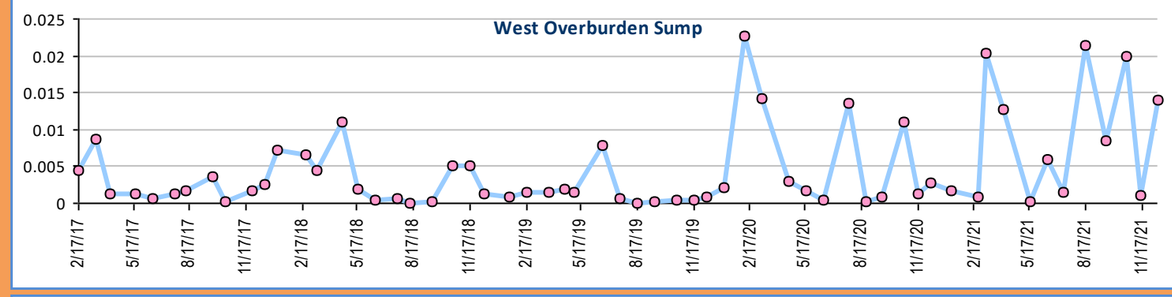
RED DOG MINE

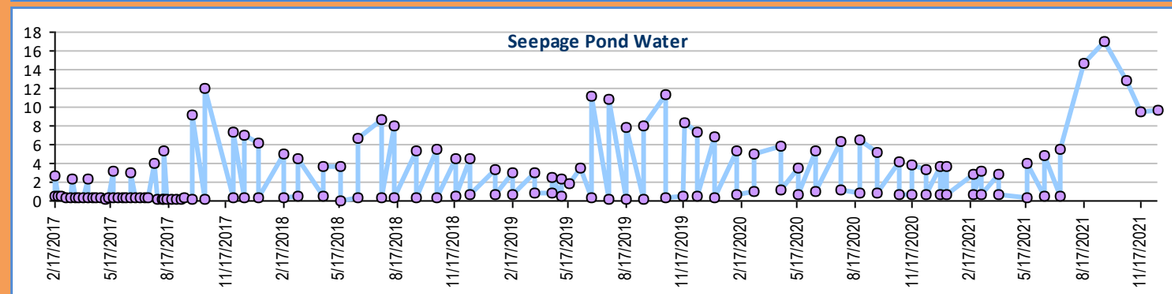
Mine Water Monitoring - Water Quality Profile II, Trend Charts

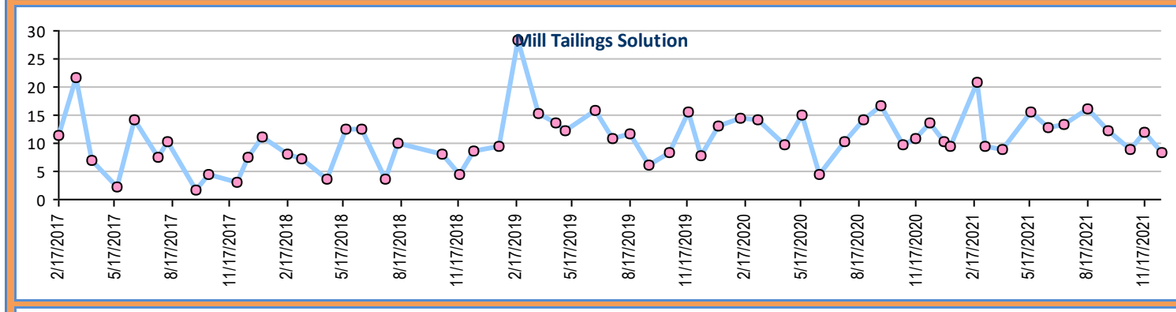
Cadmium, dissolved, units mg/L

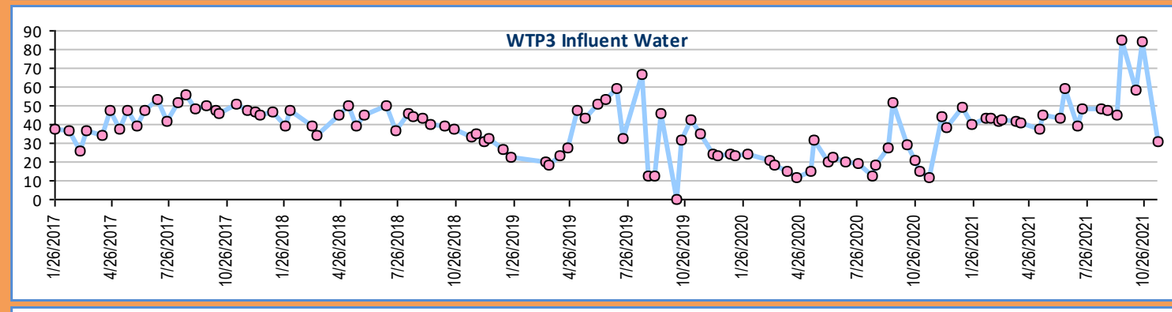


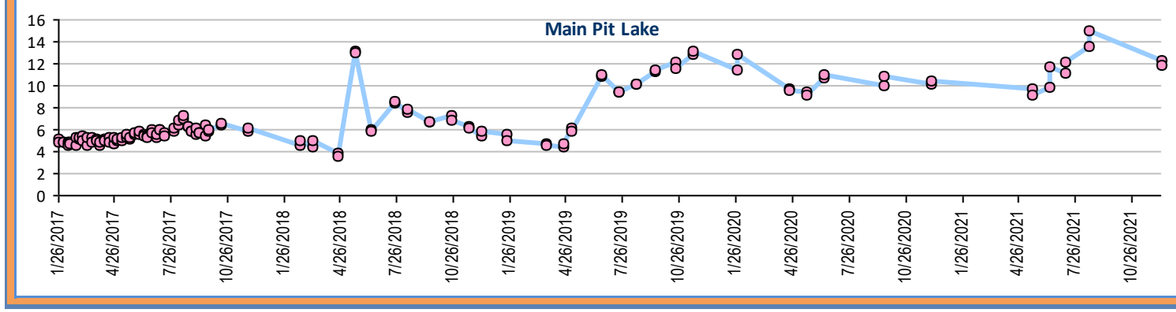


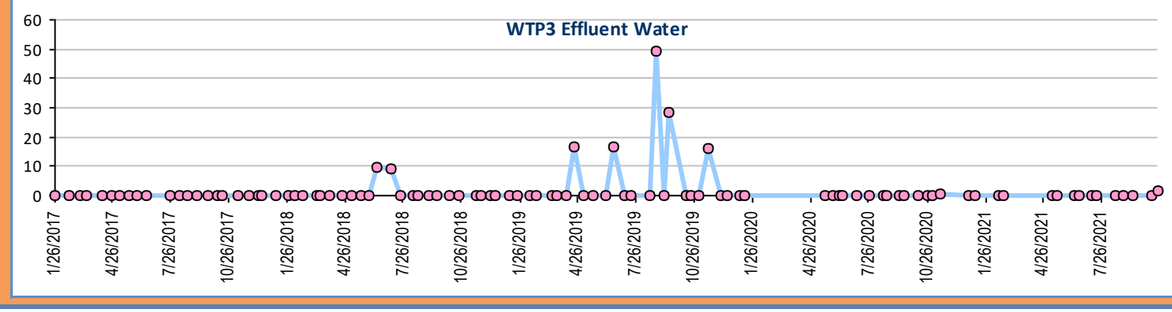








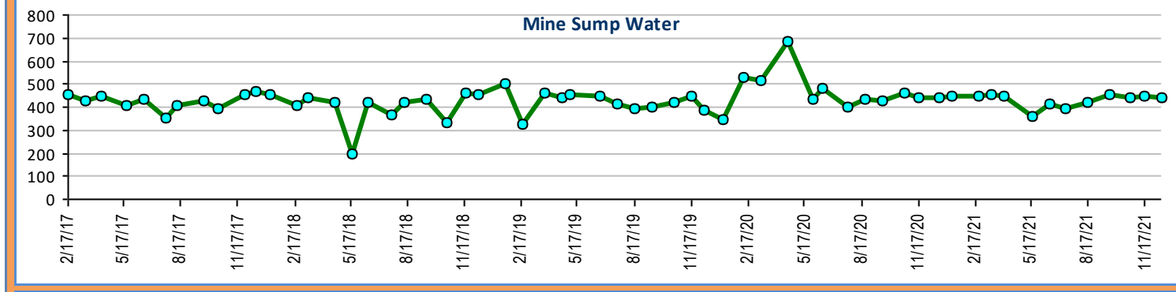


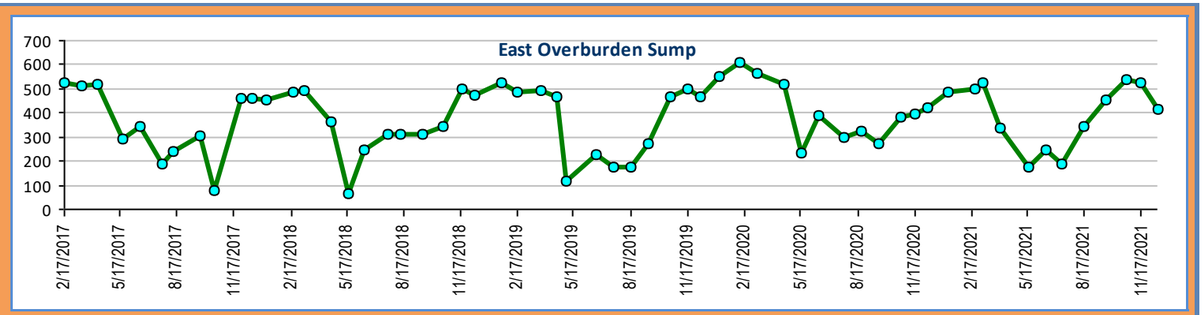


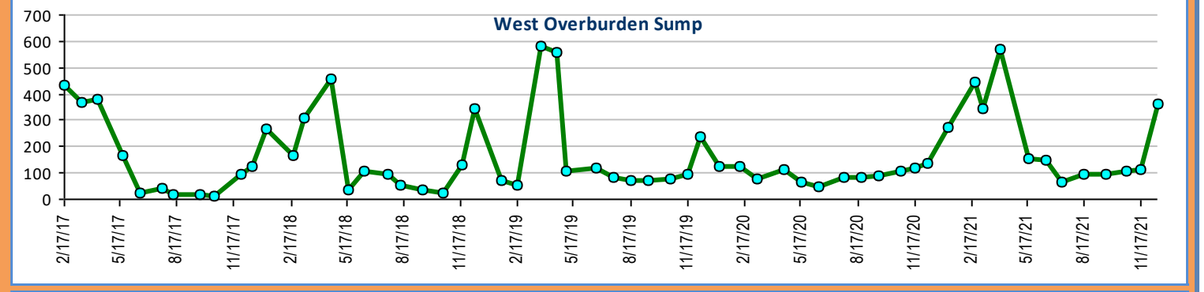
RED DOG MINE

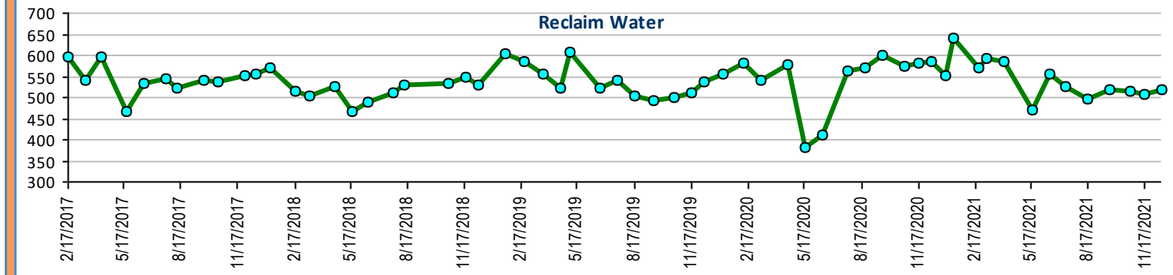
Mine Water Monitoring - Water Quality Profile II, Trend Charts

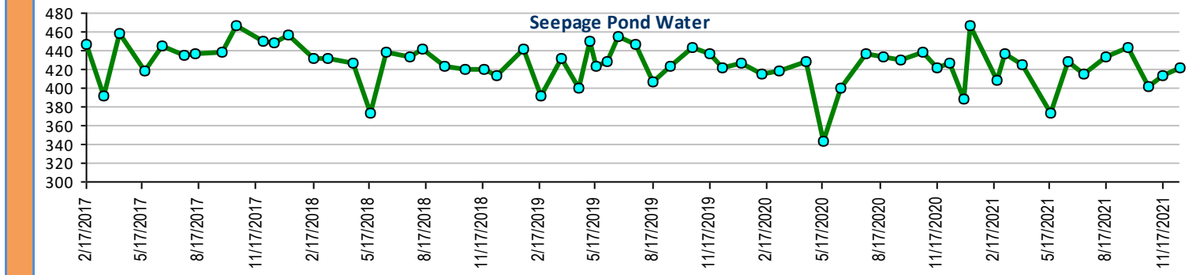
Calcium, dissolved, units mg/L

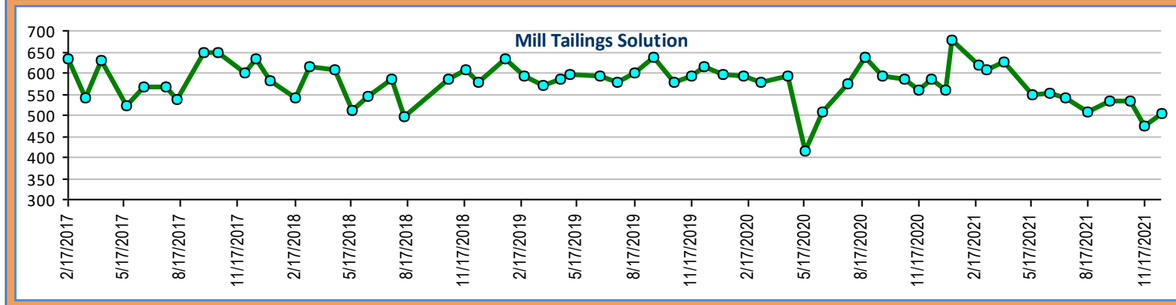


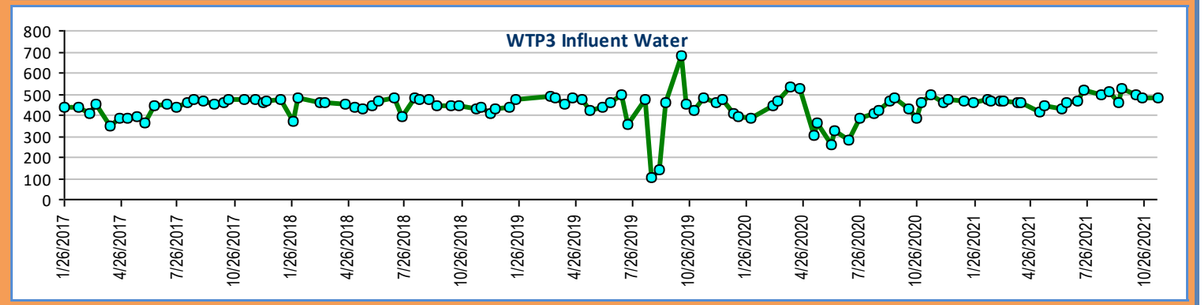


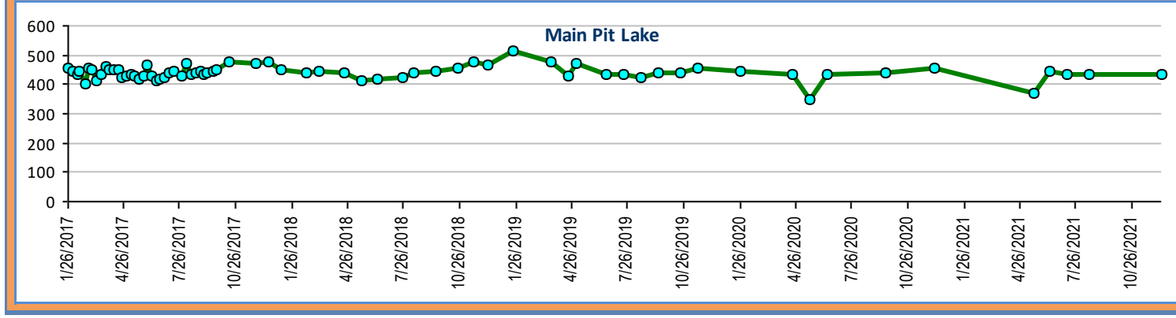


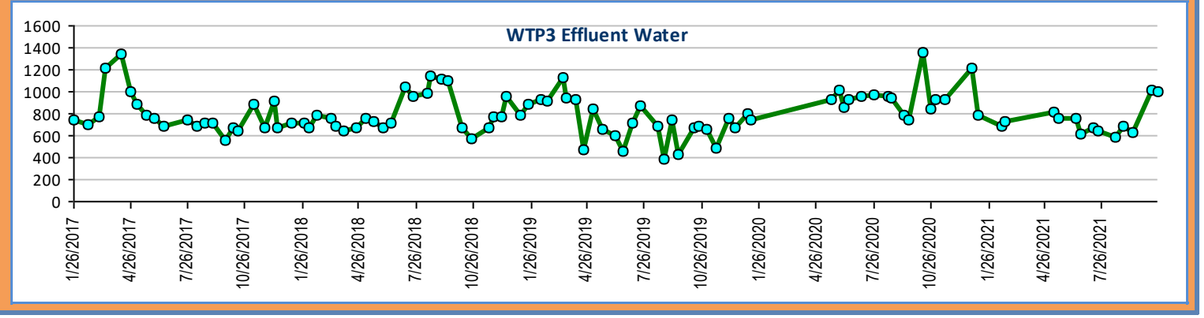








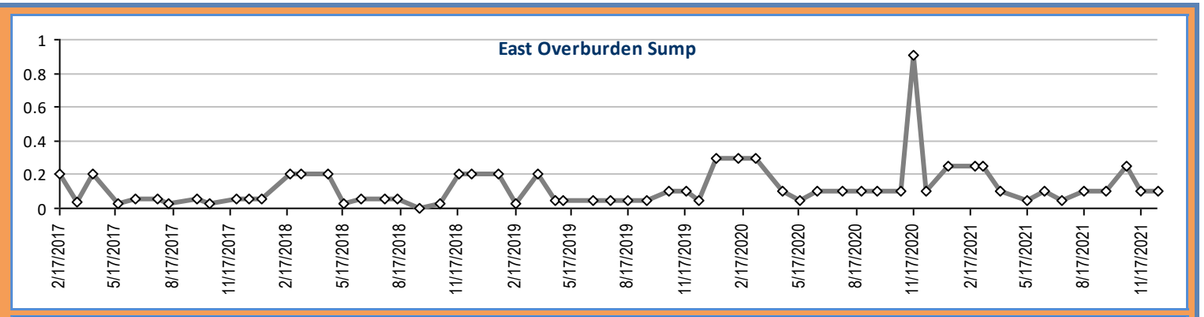


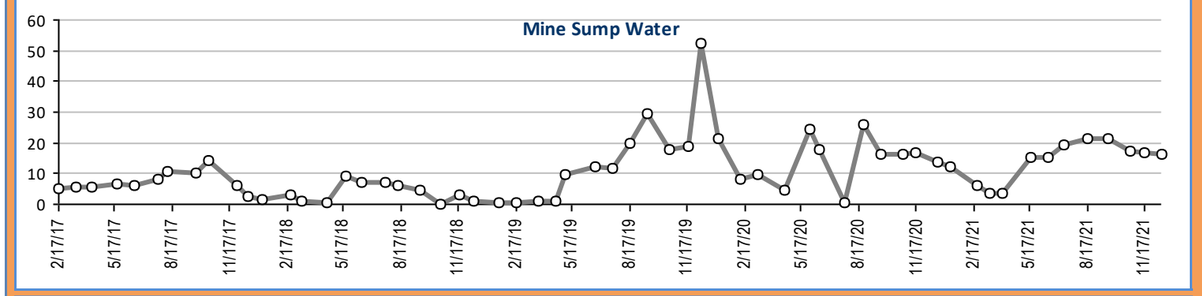


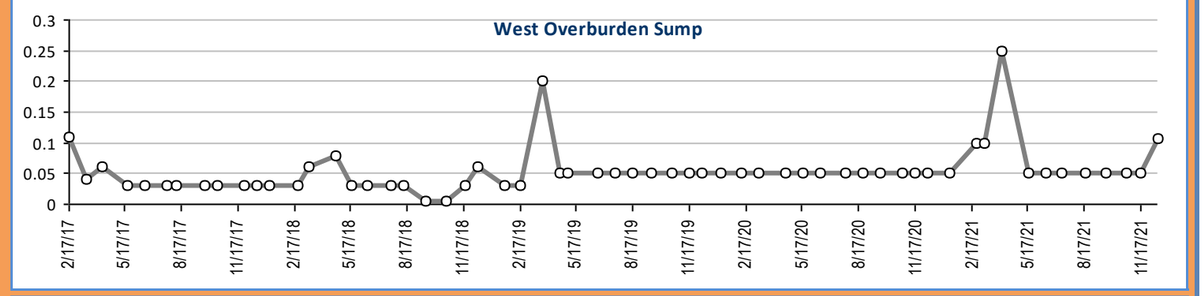
RED DOG MINE

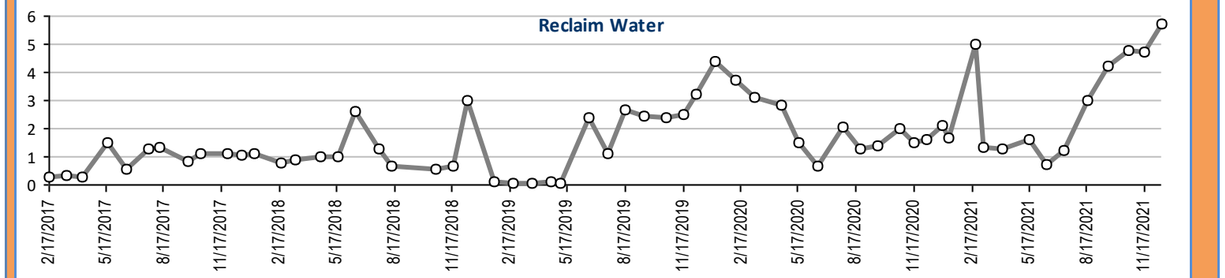
Mine Water Monitoring - Water Quality Profile II, Trend Charts

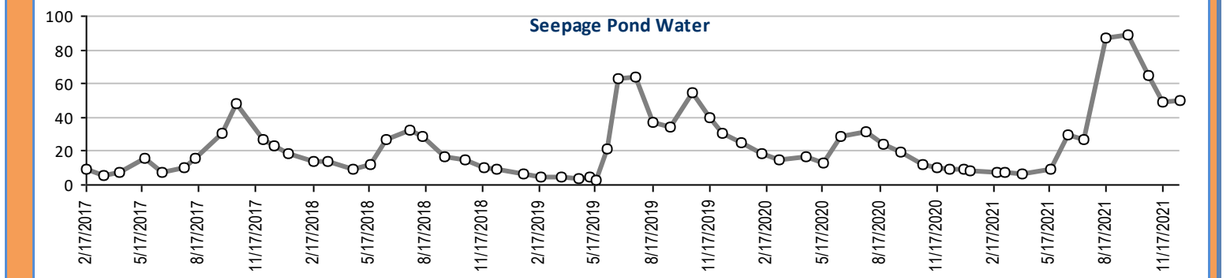
Aluminum, dissolved, units mg/L

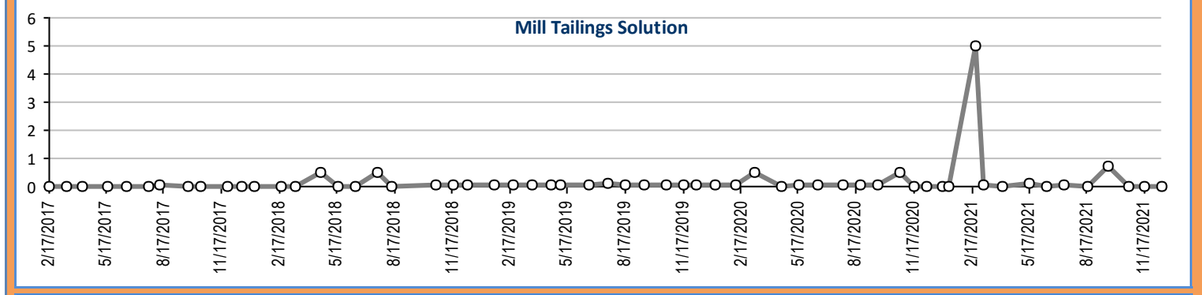


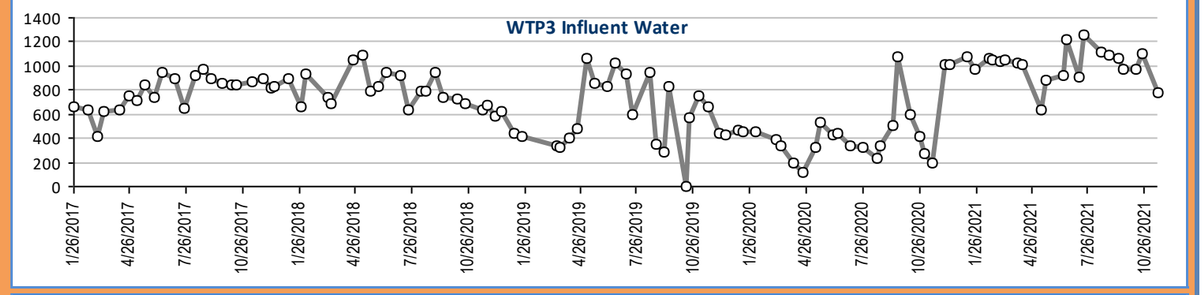


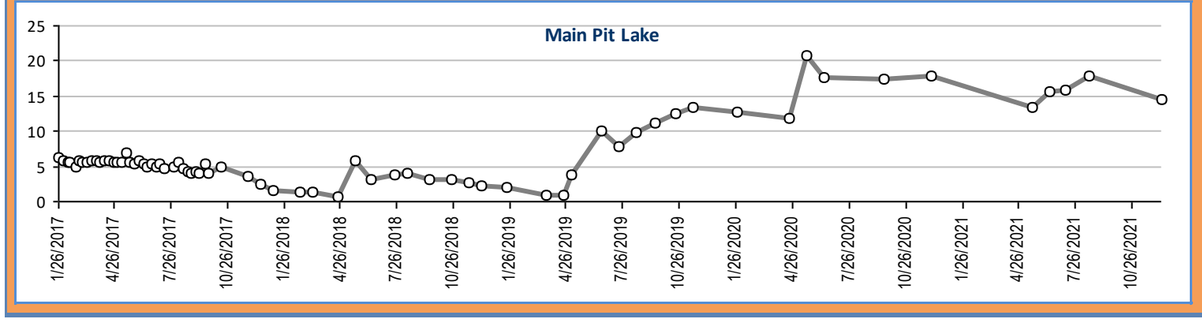


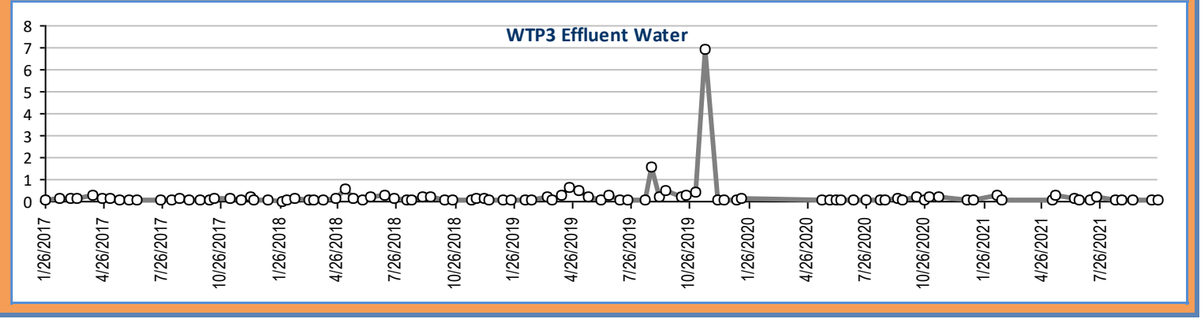








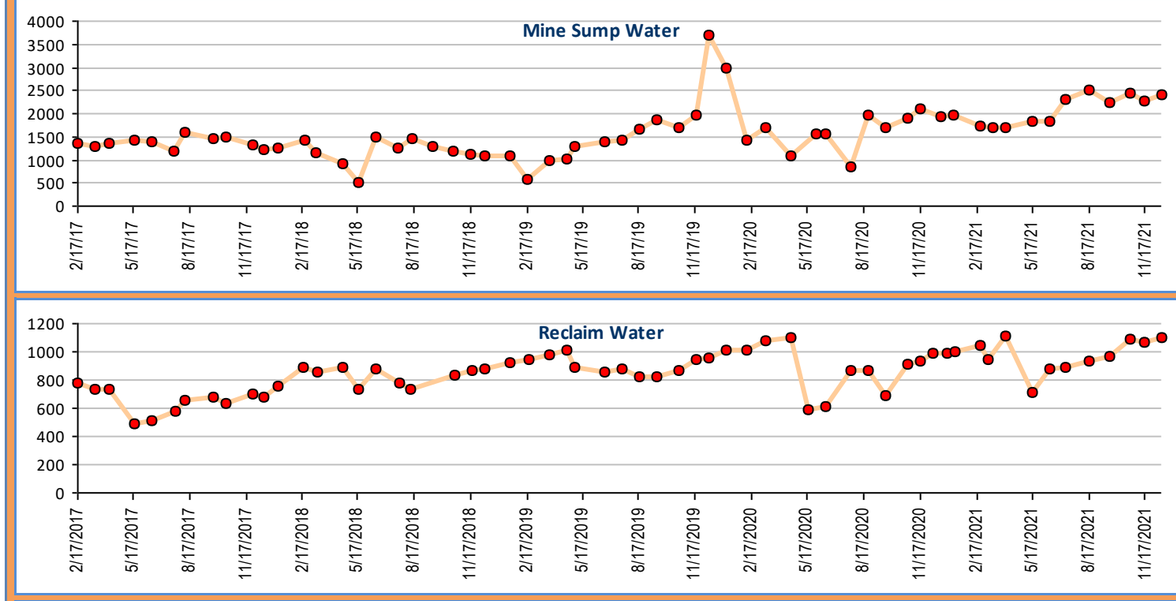


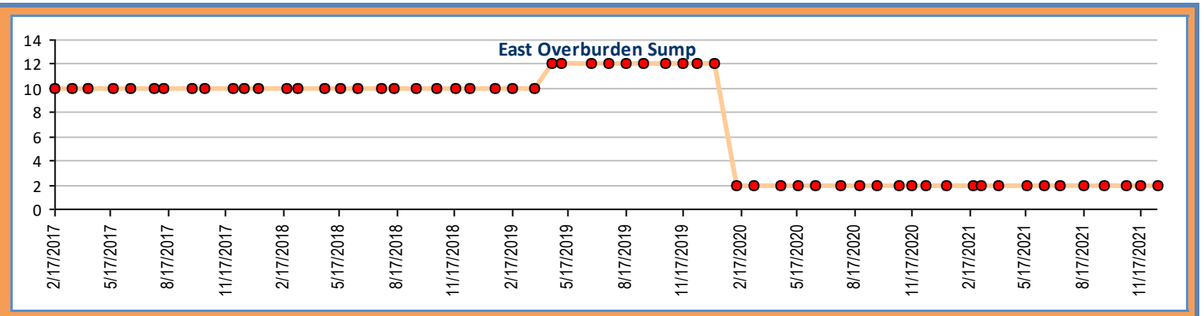


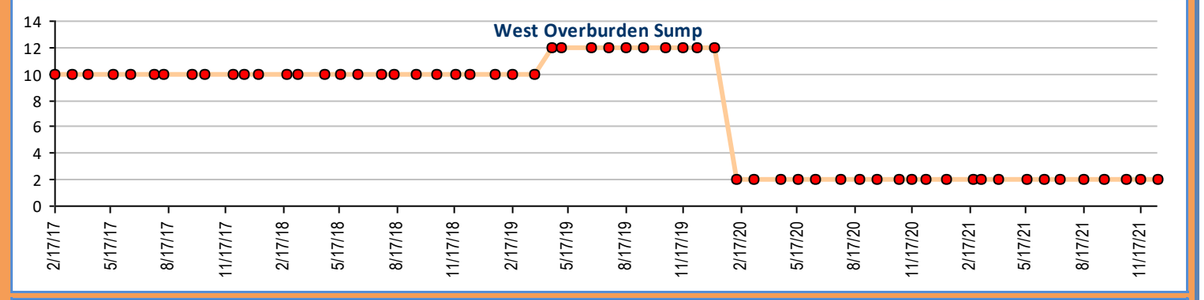
RED DOG MINE

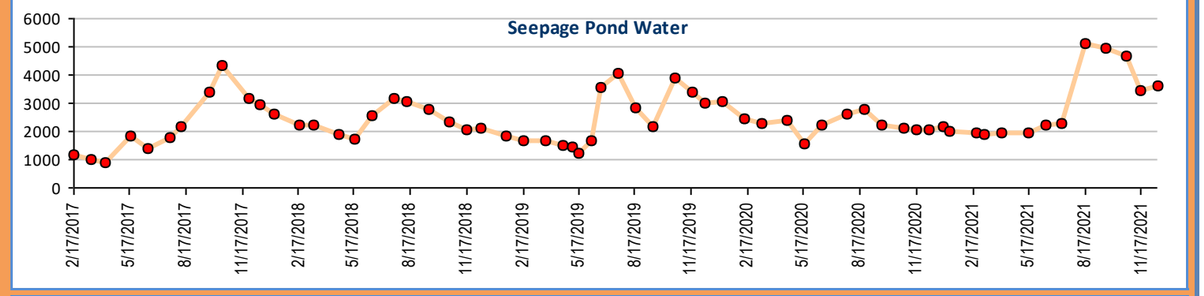
Mine Water Monitoring - Water Quality Profile II, Trend Charts

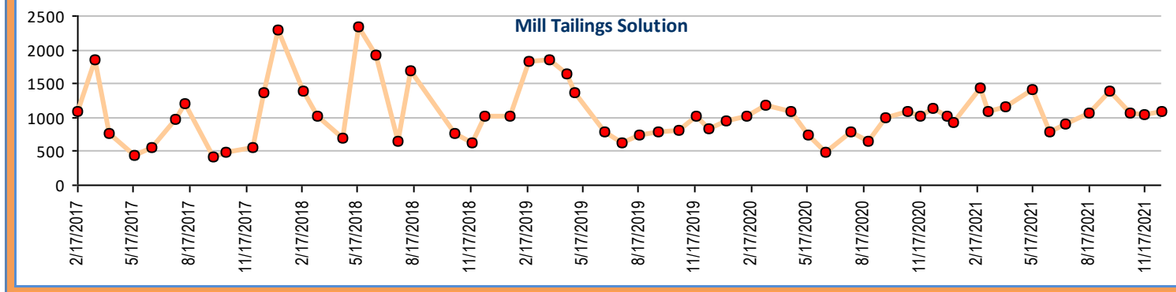
Acidity as CaCO3, units mg/L

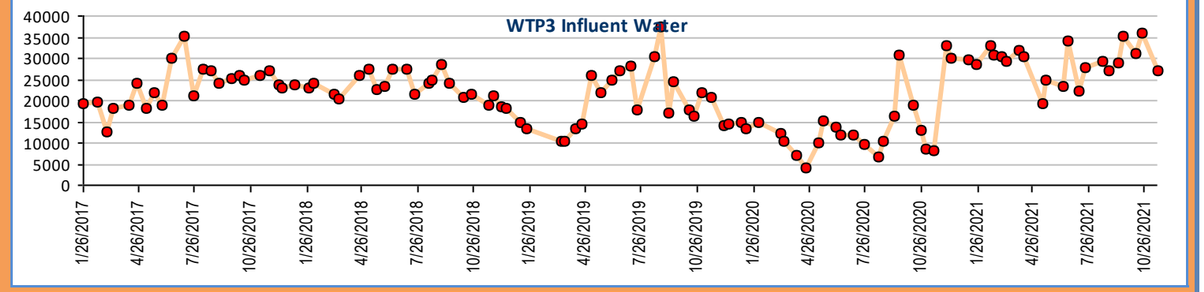


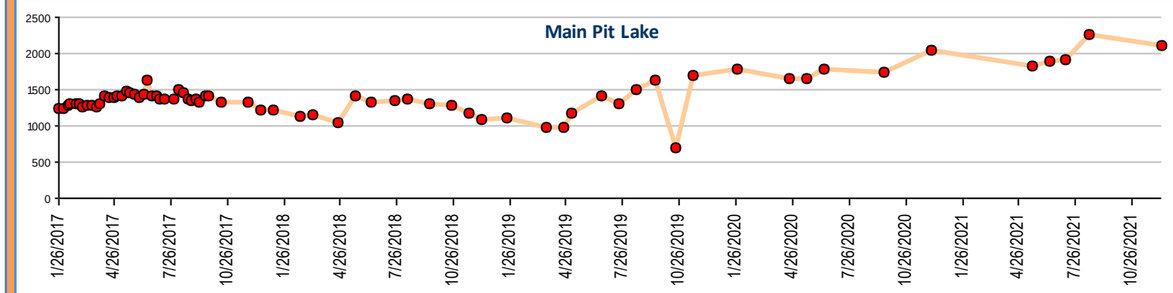


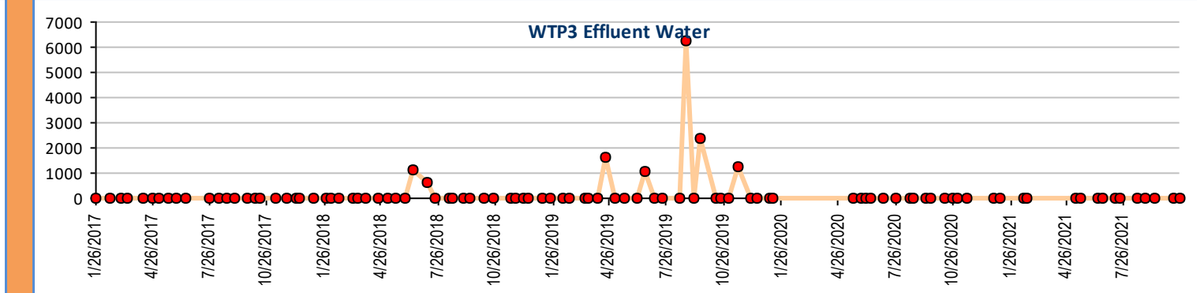












Appendix D: Water Quality Profile I Charts – Mine Drainage Monitoring Stations

RED DOG MINE

Water Monitoring Drainage
Water Quality Profile I , 5-Year Trend Charts

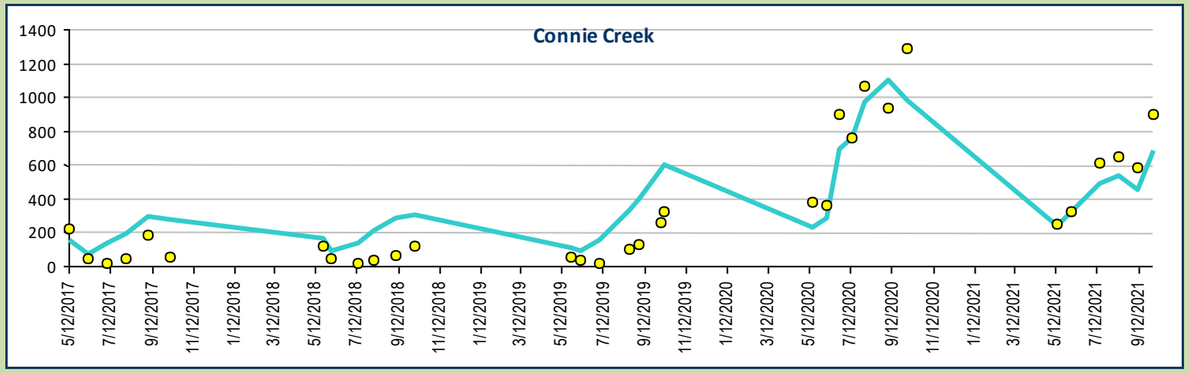
Zinc, Total Recoverable, units ug/L

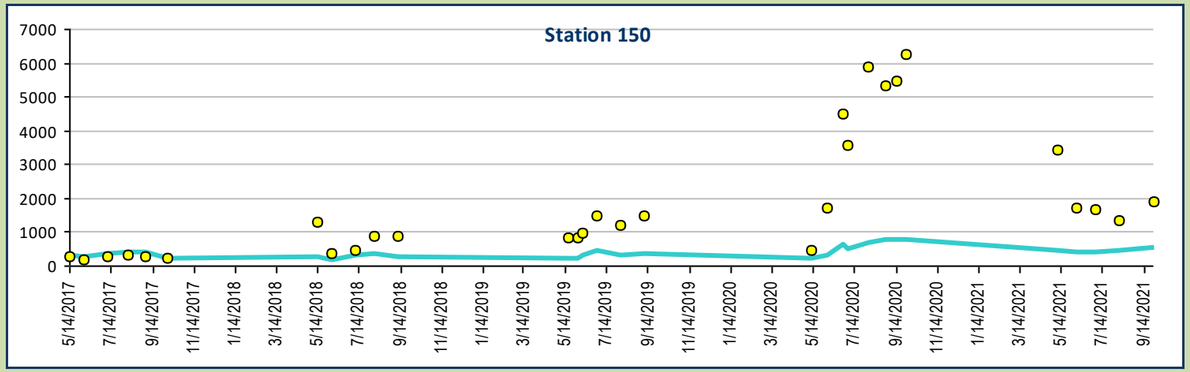
Aquatic Life - Fresh Water Acute WQS ug/L

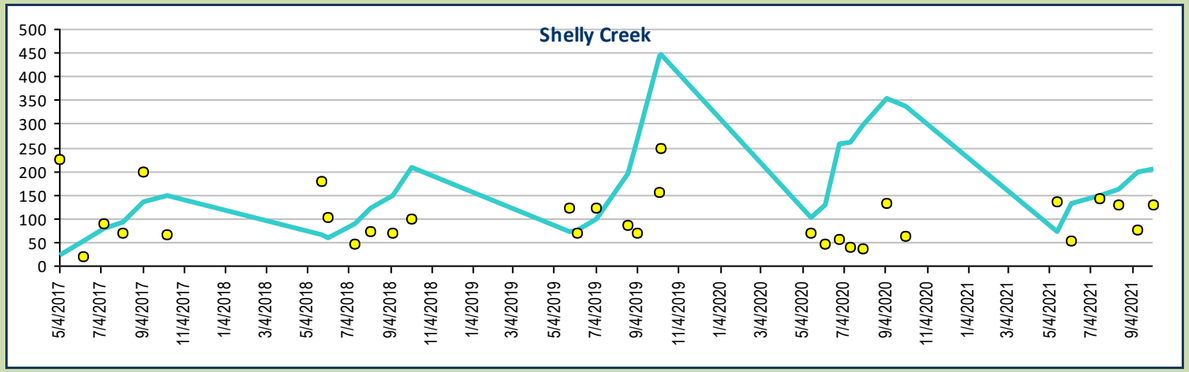
Hardness Dependent Calculation

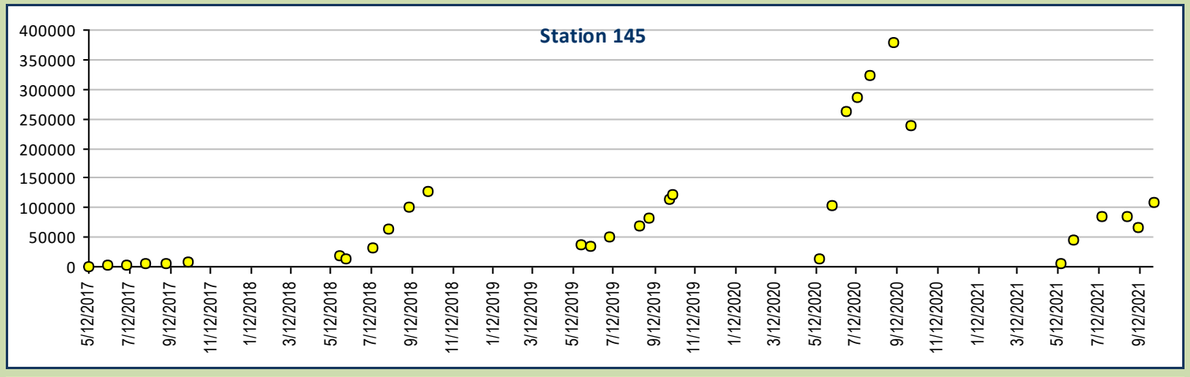
=EXP(0.8473*(LN(*hardness))+0.884)

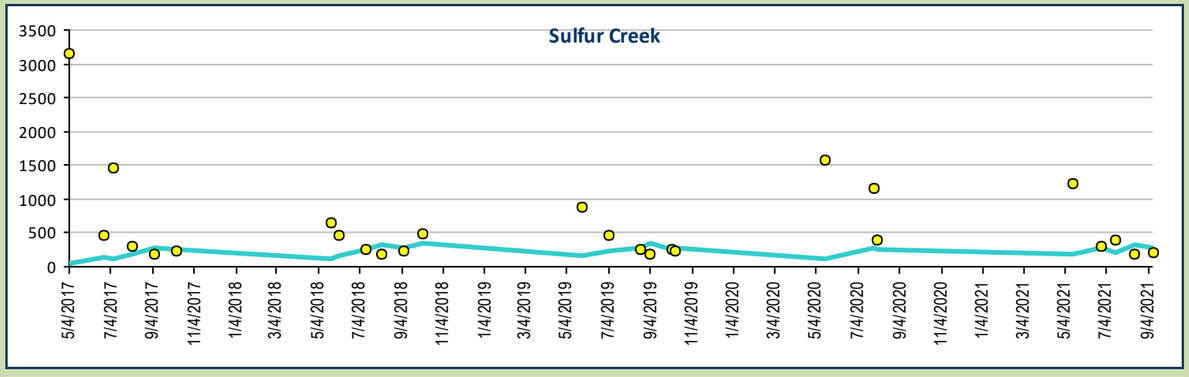
* Calculated using Standard Methods 2340B

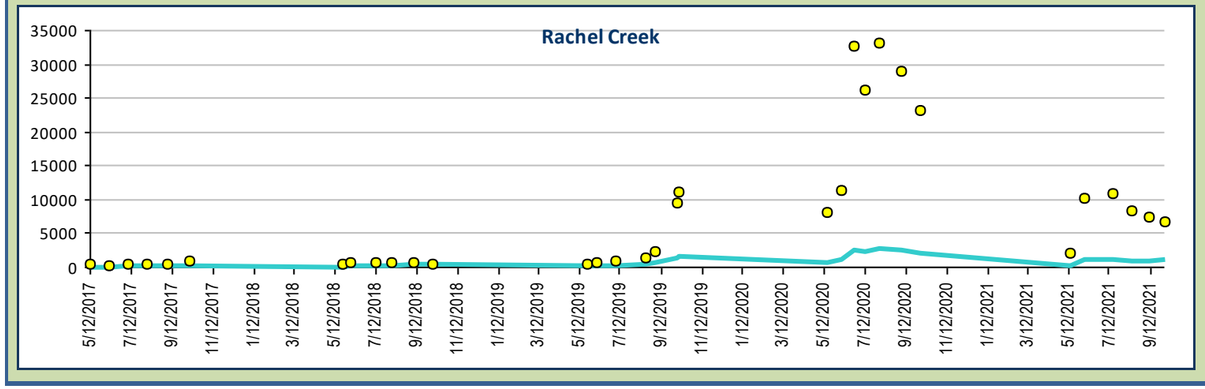


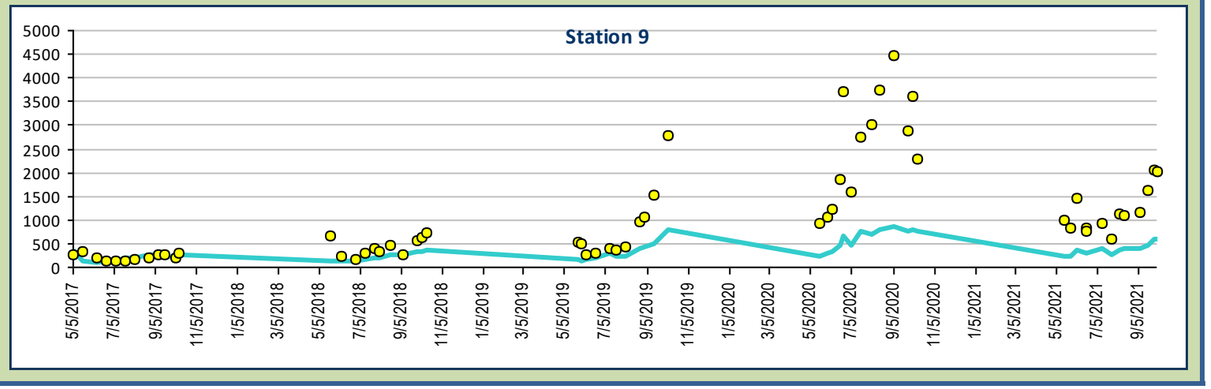








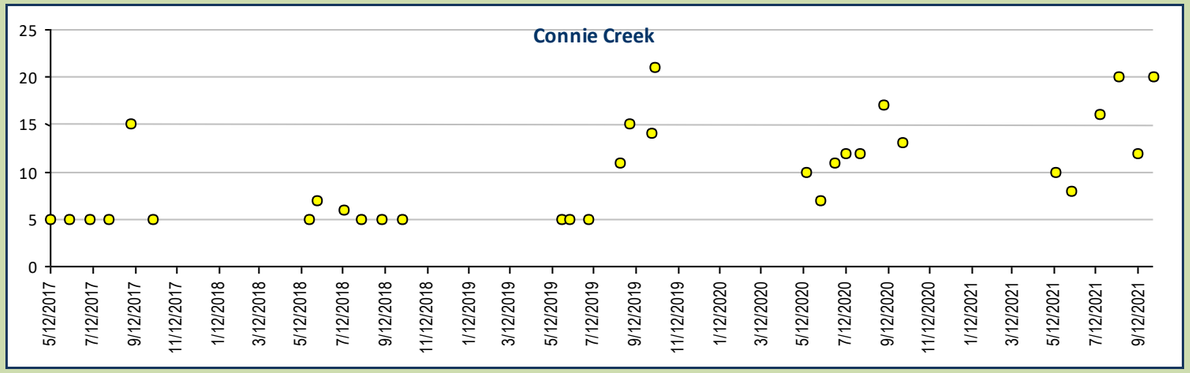


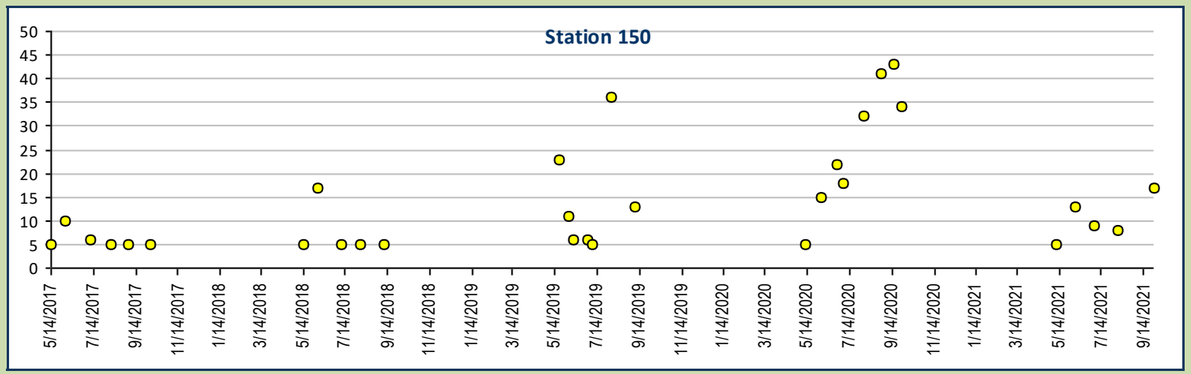


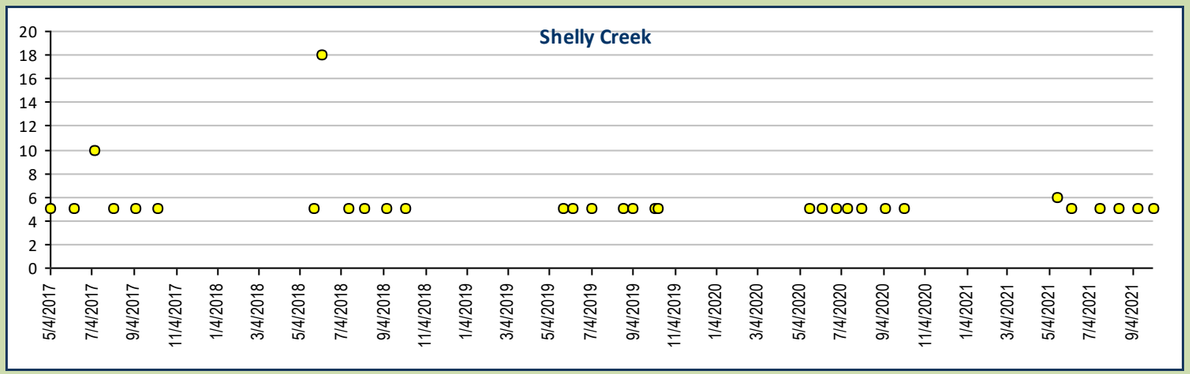
RED DOG MINE

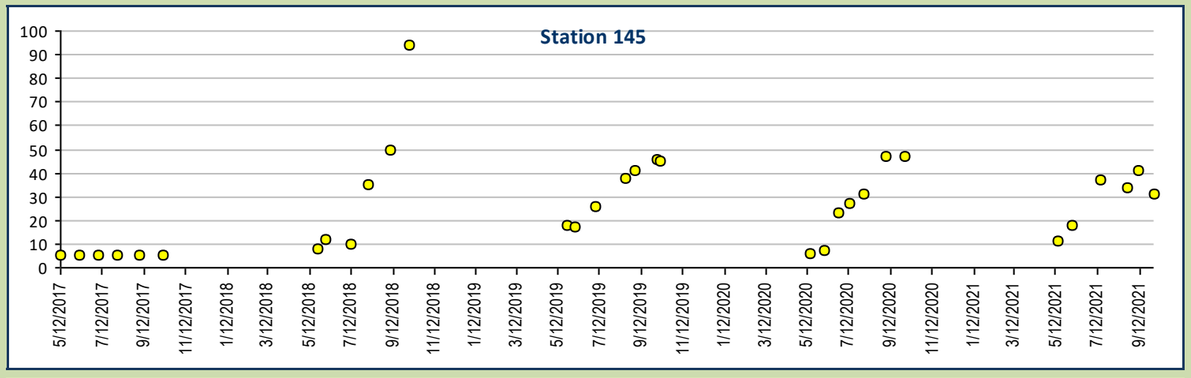
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

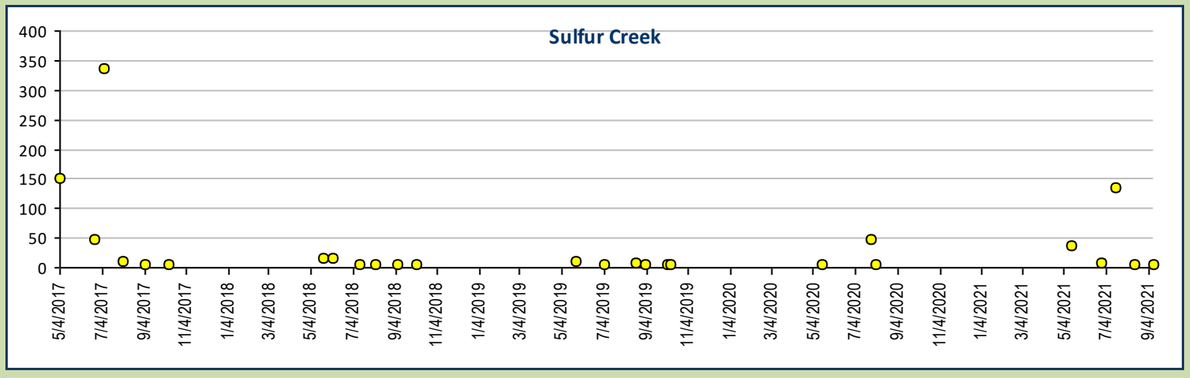
Total Suspended Solids, units mg/L

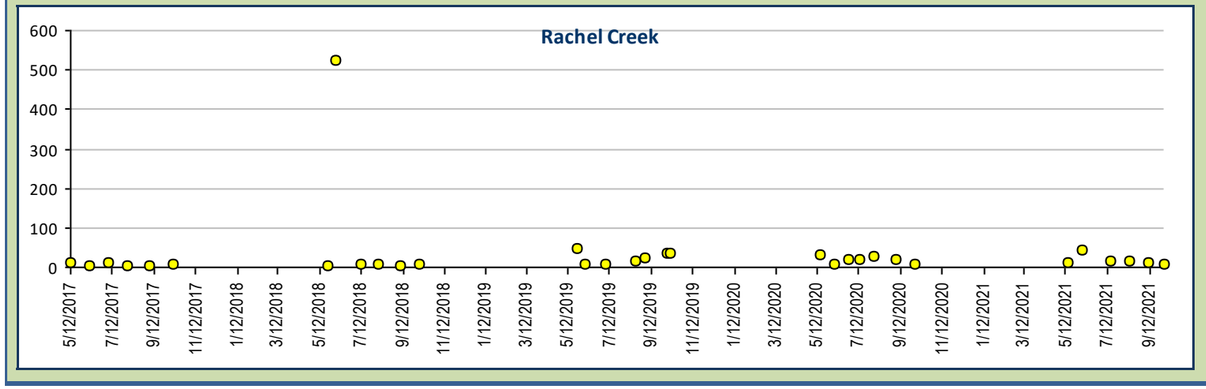


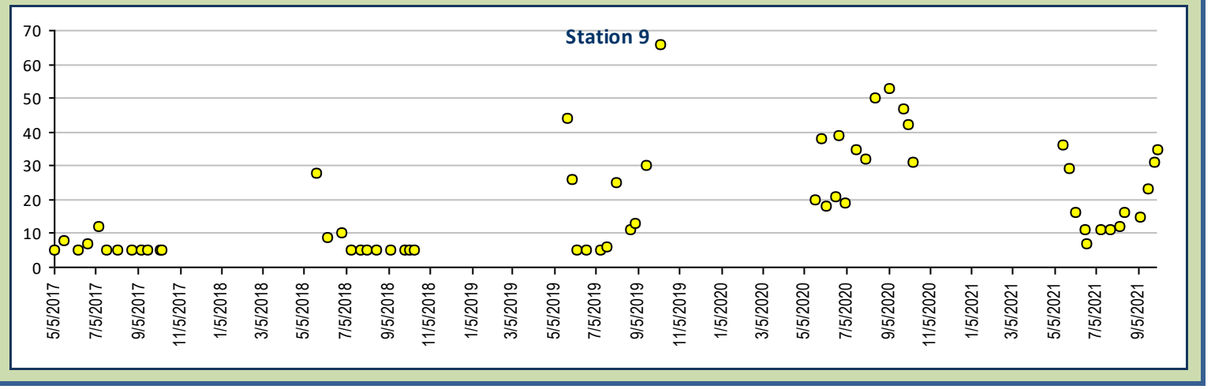












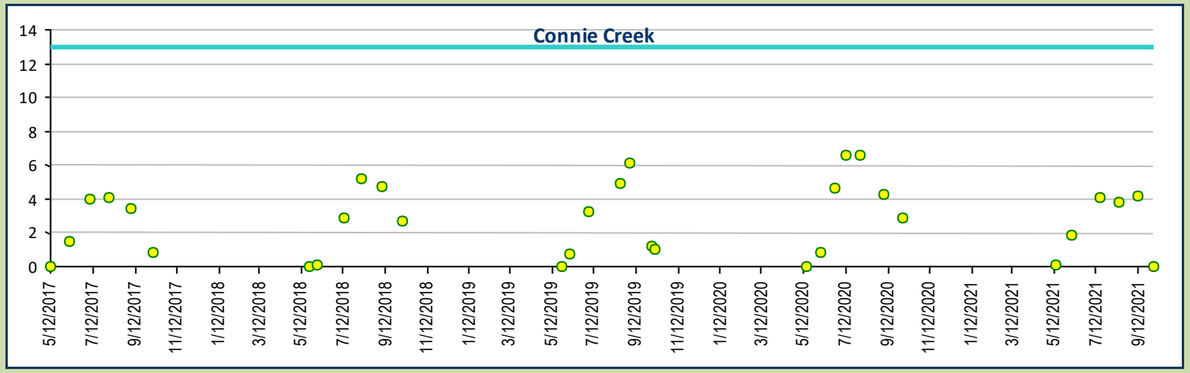
RED DOG MINE

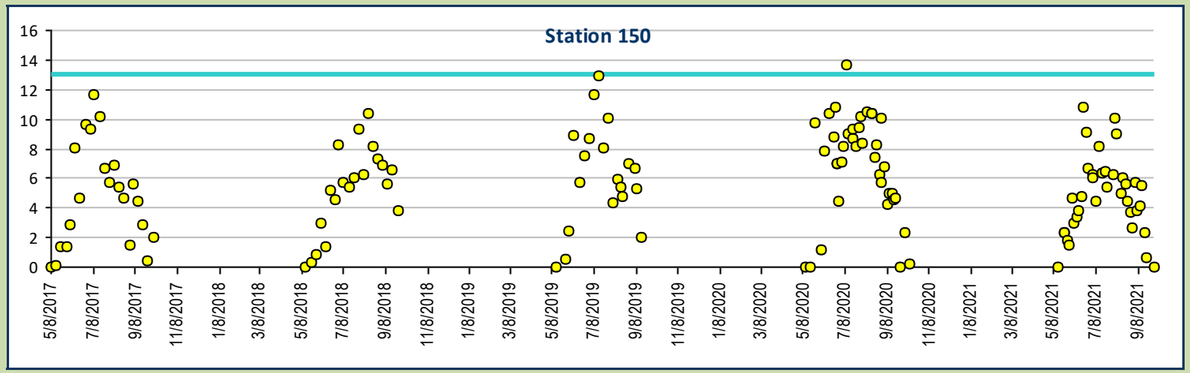
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

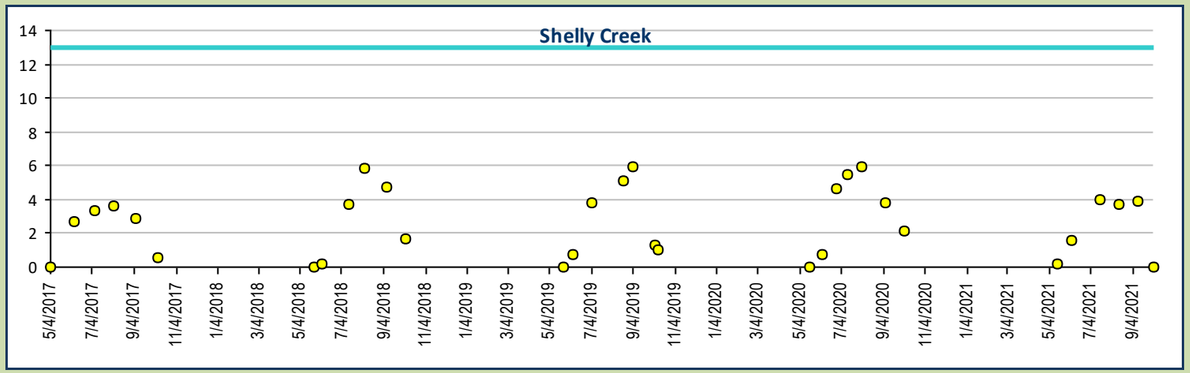
Temperature Field, Celsius

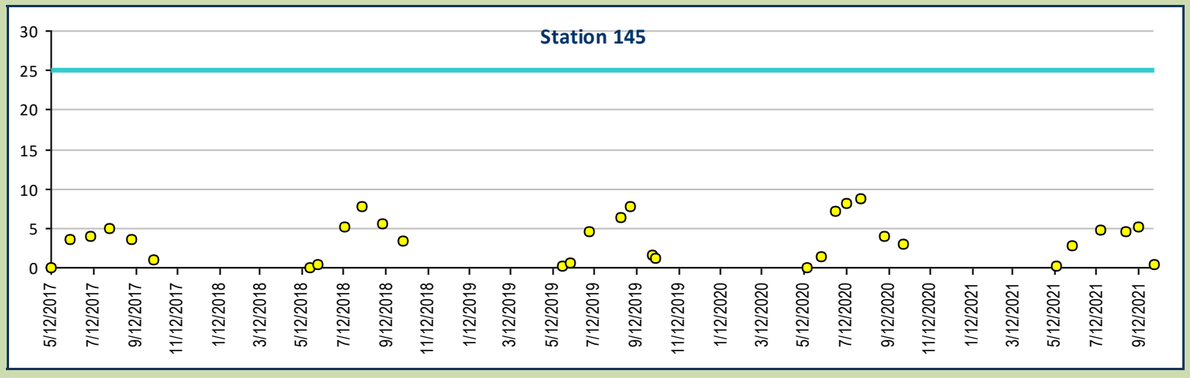
Site Specific WQS mg/L

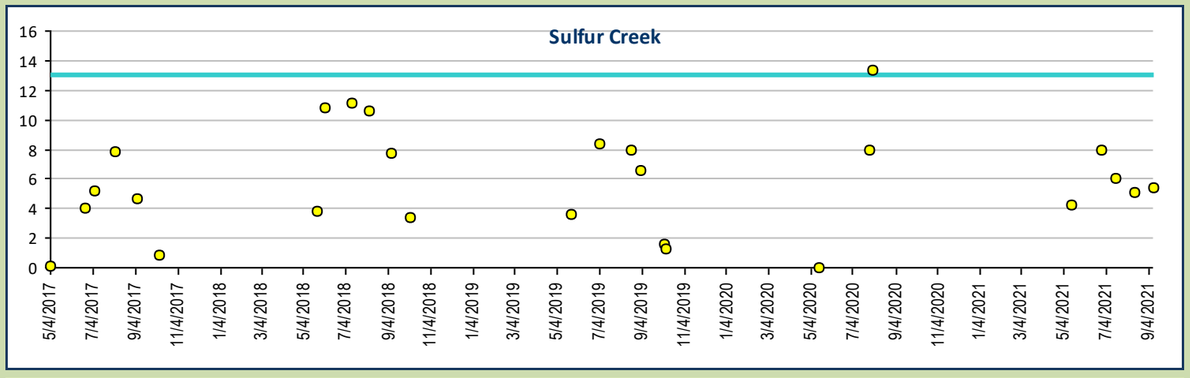
13 Celsius

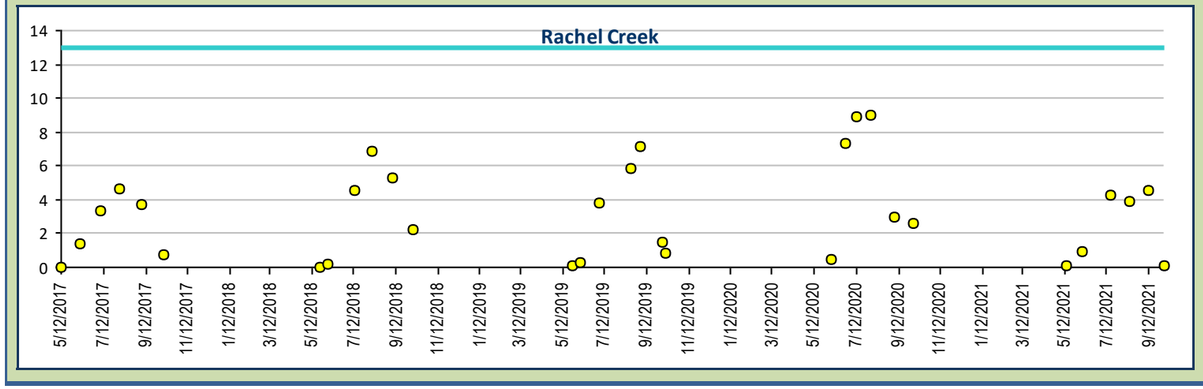


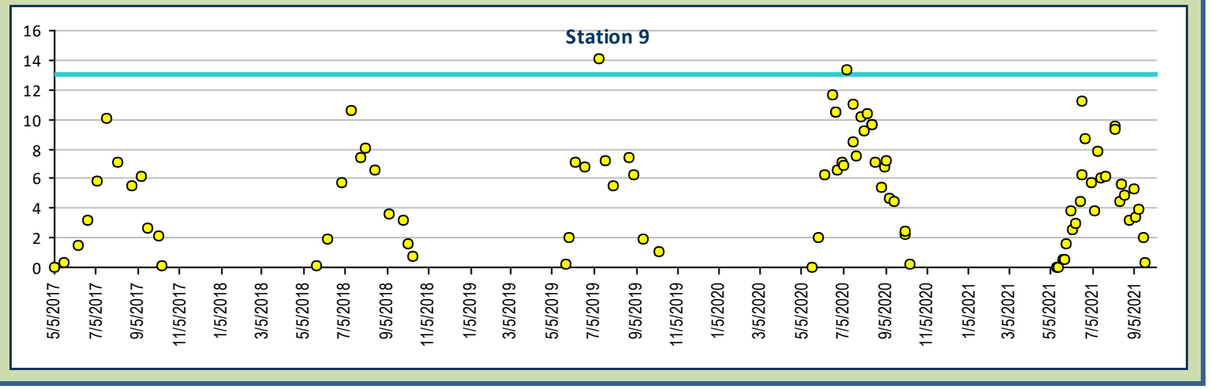












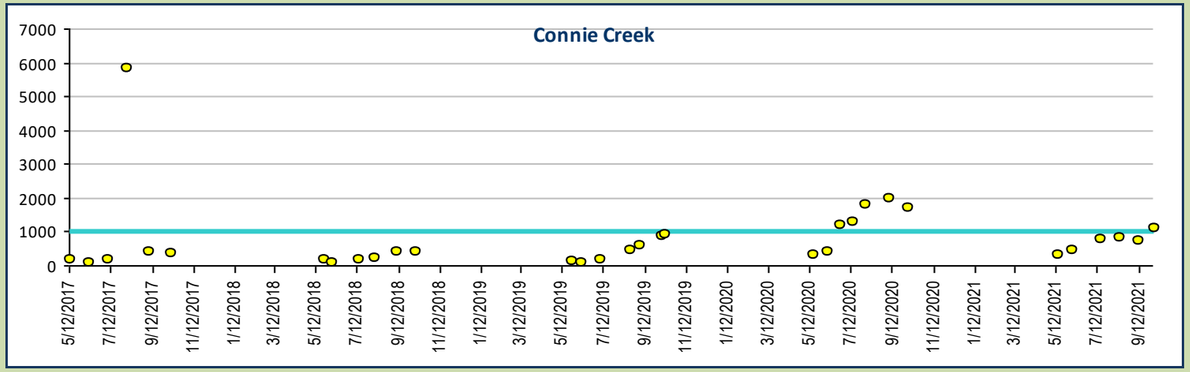
RED DOG MINE

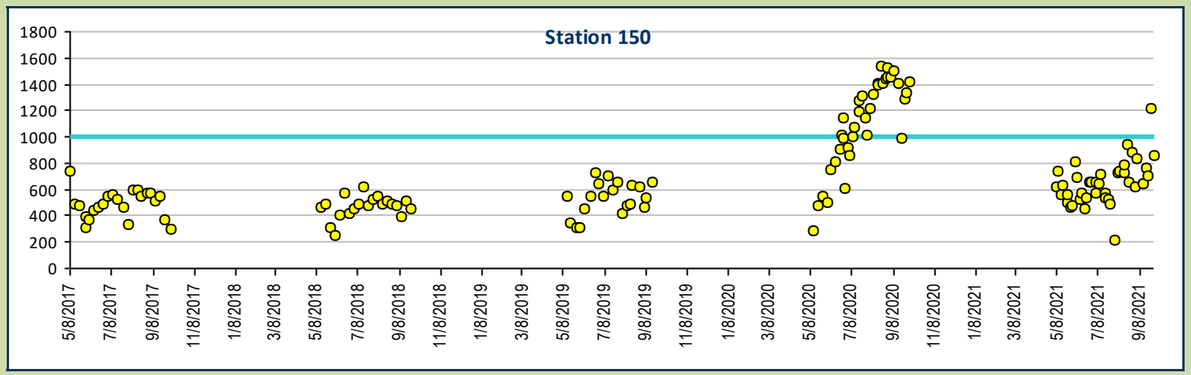
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

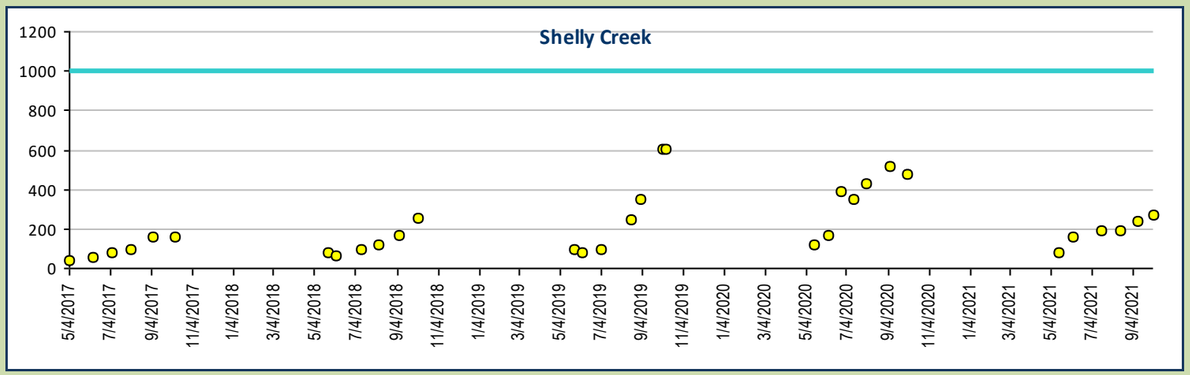
Total Dissolved Solids, units mg/L

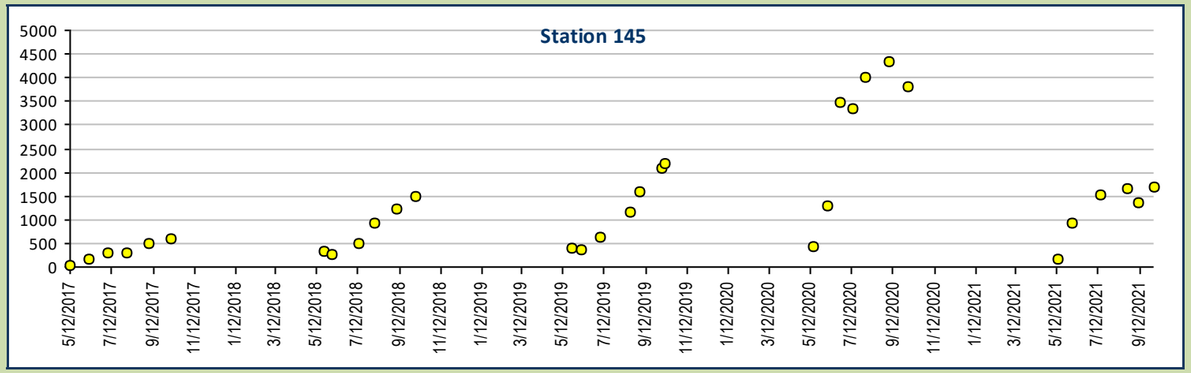
Site Specific WQS mg/L

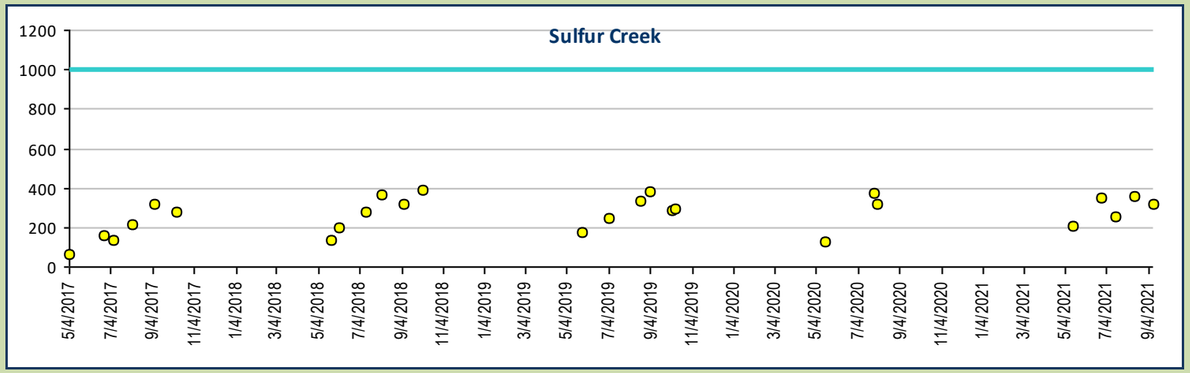
1000 mg/L

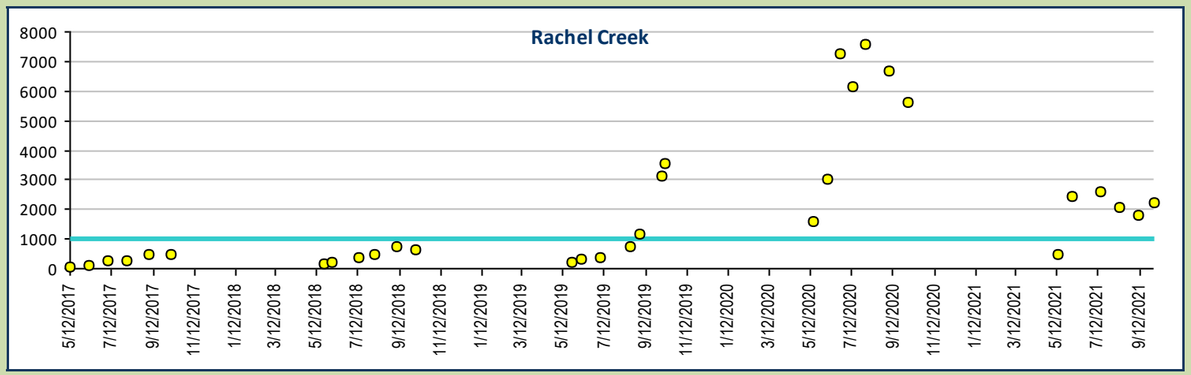


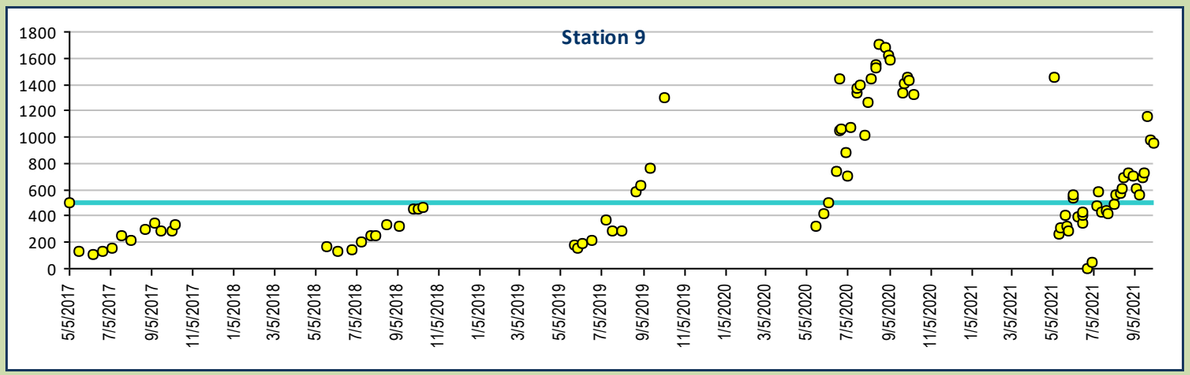








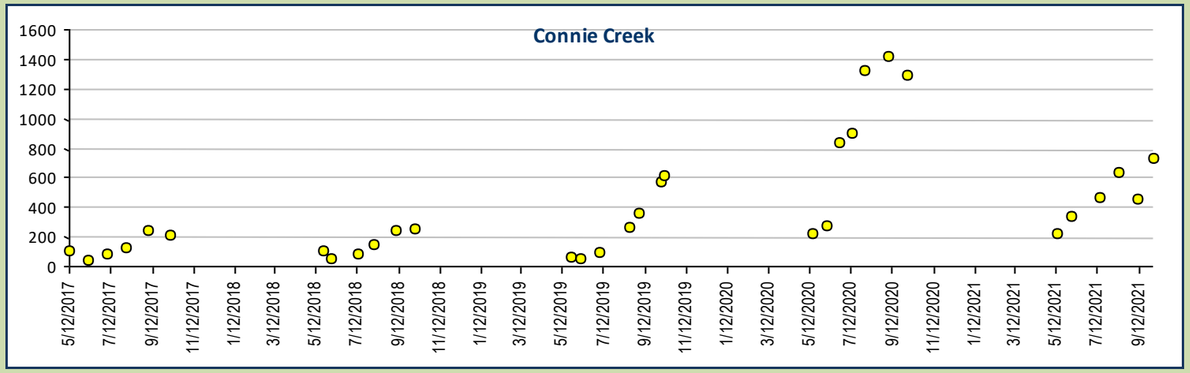


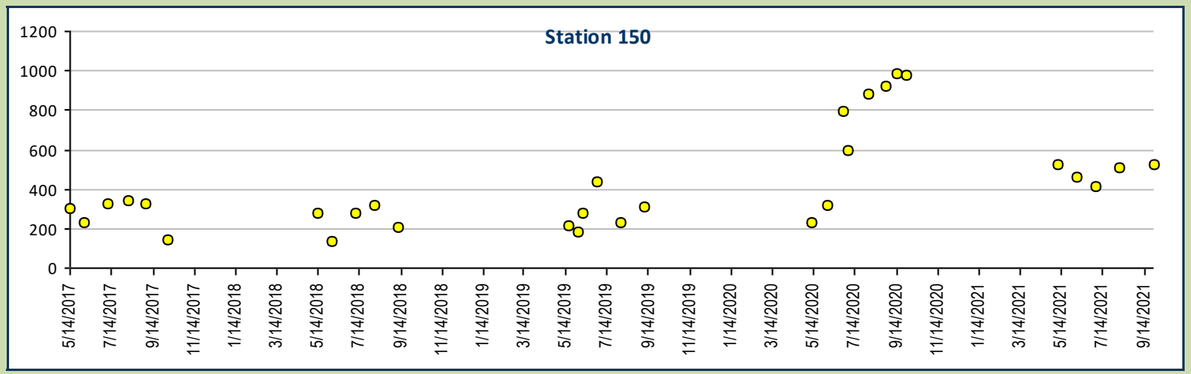


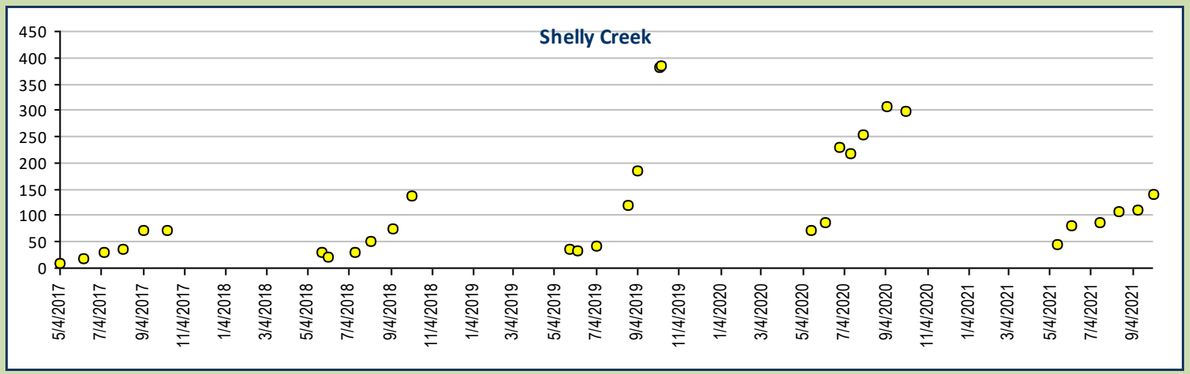
RED DOG MINE

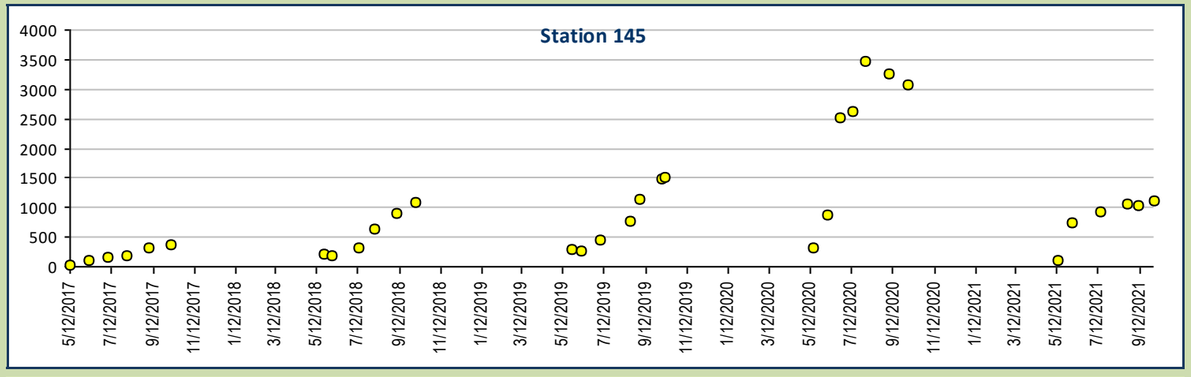
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

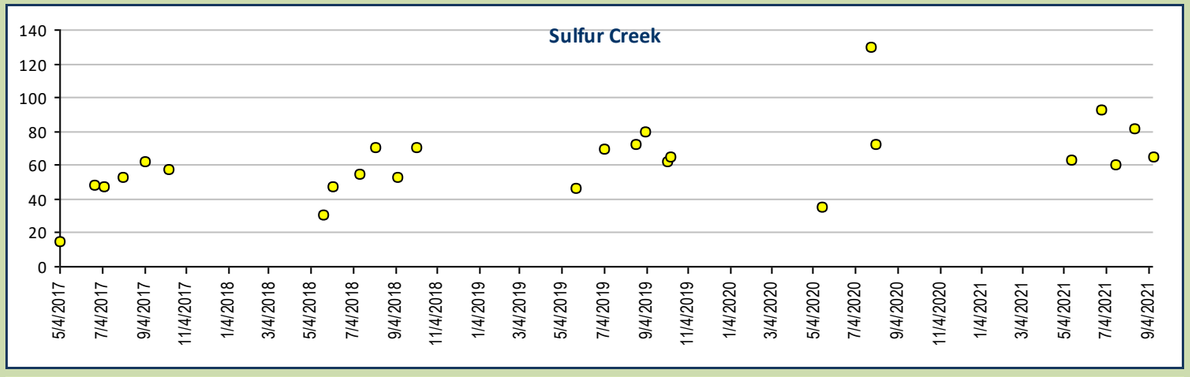
Sulfate, units mg/L

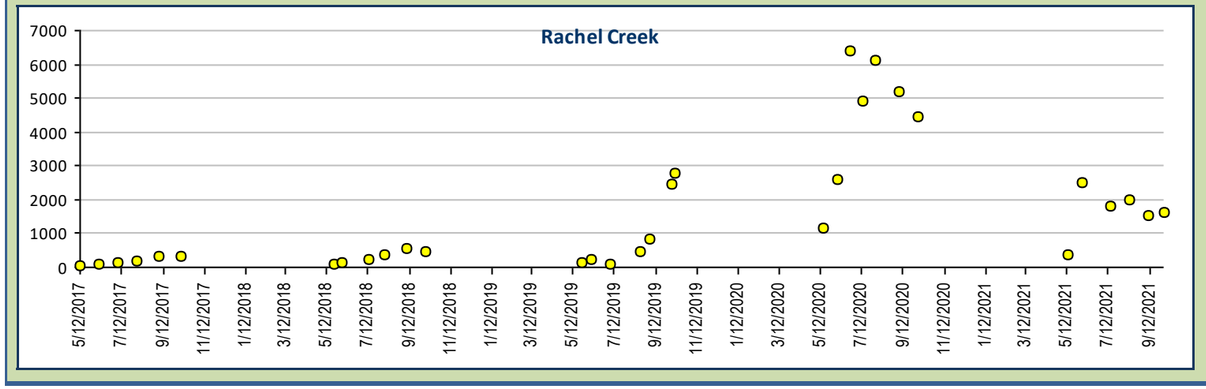


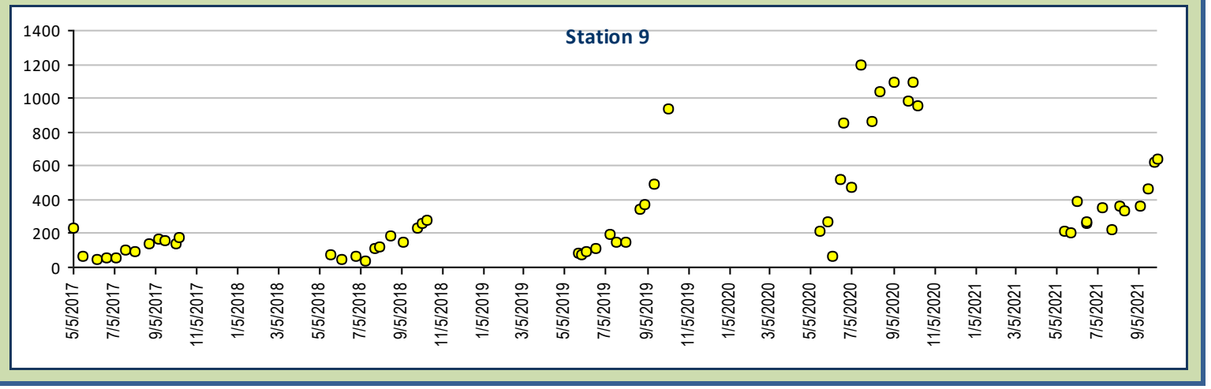












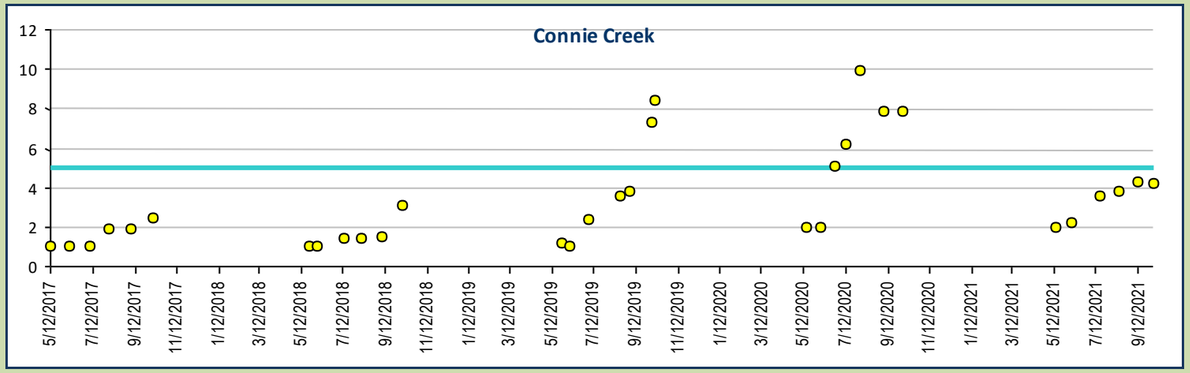
RED DOG MINE

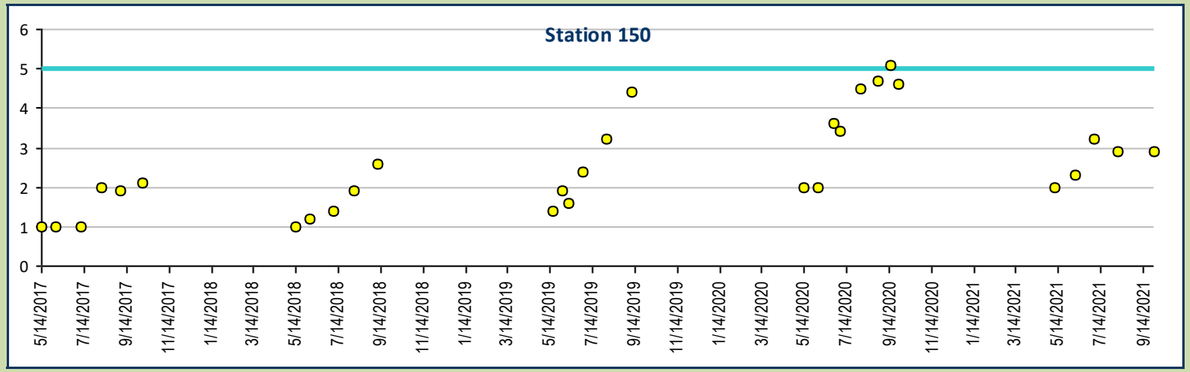
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

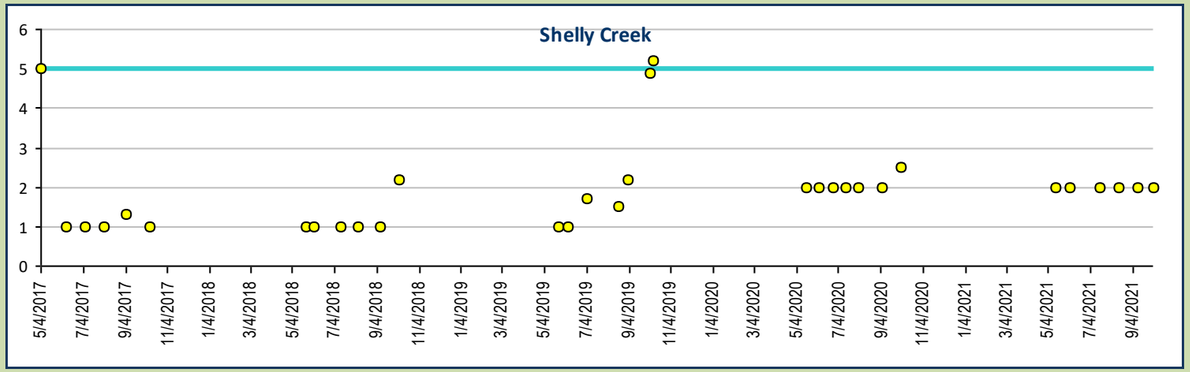
Selenium, Total Recoverable, units ug/L

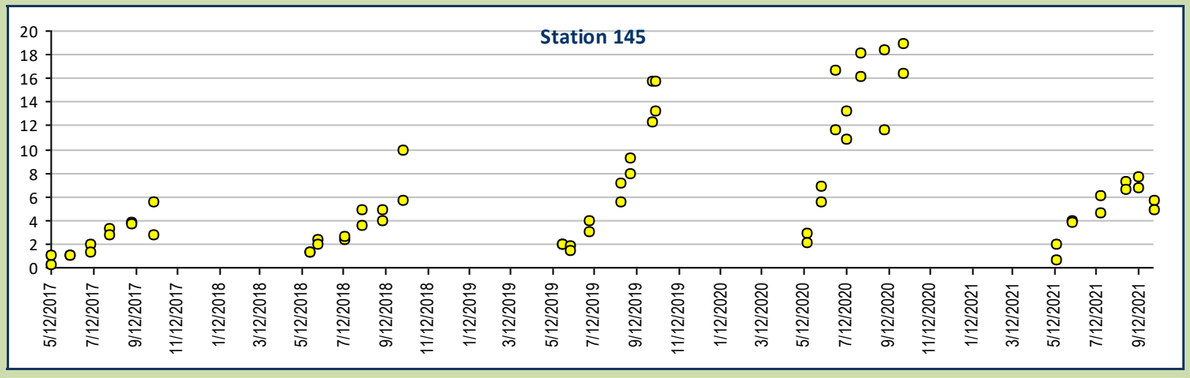
Aquatic Life - Fresh Water Chronic WQS ug/L

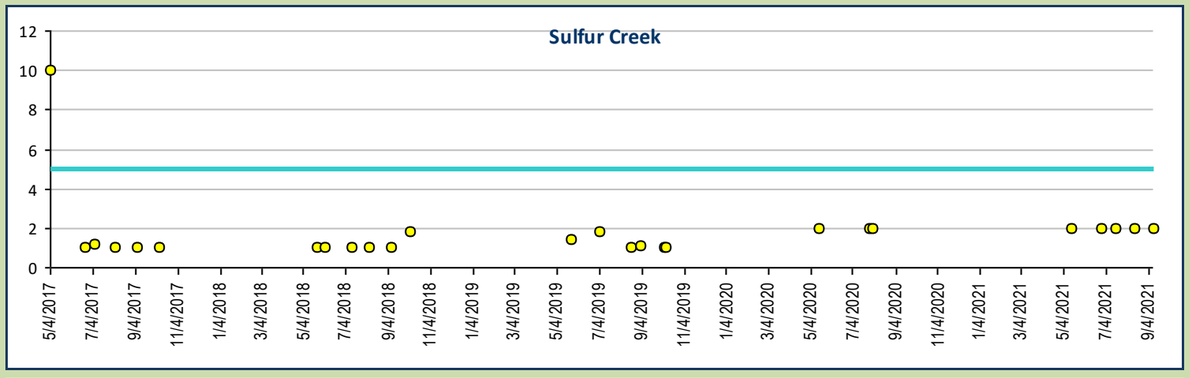
5 ug/L

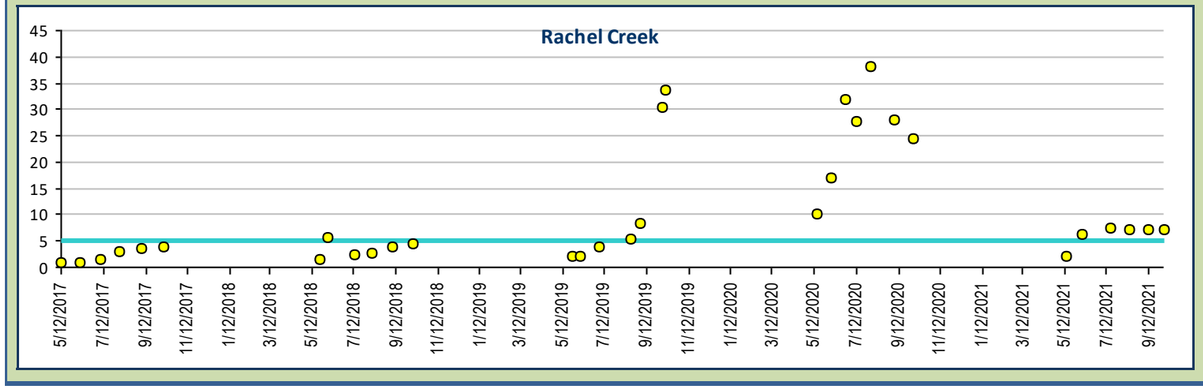


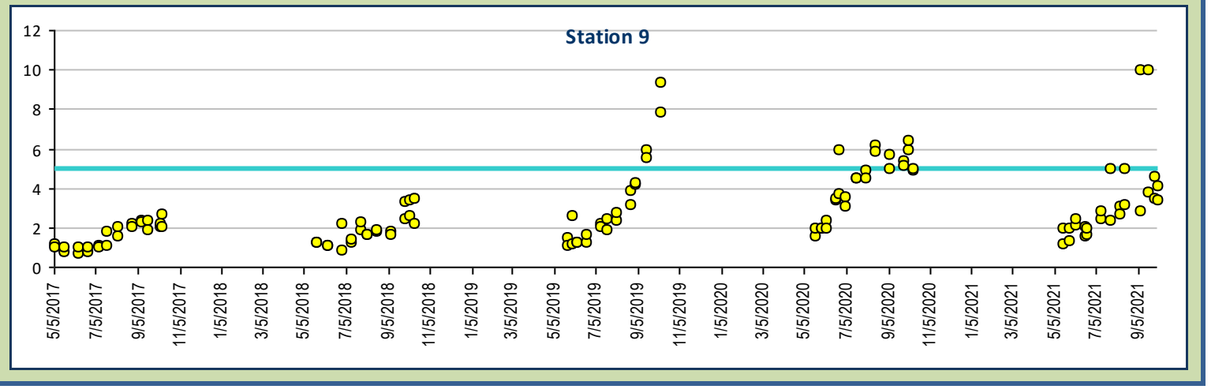










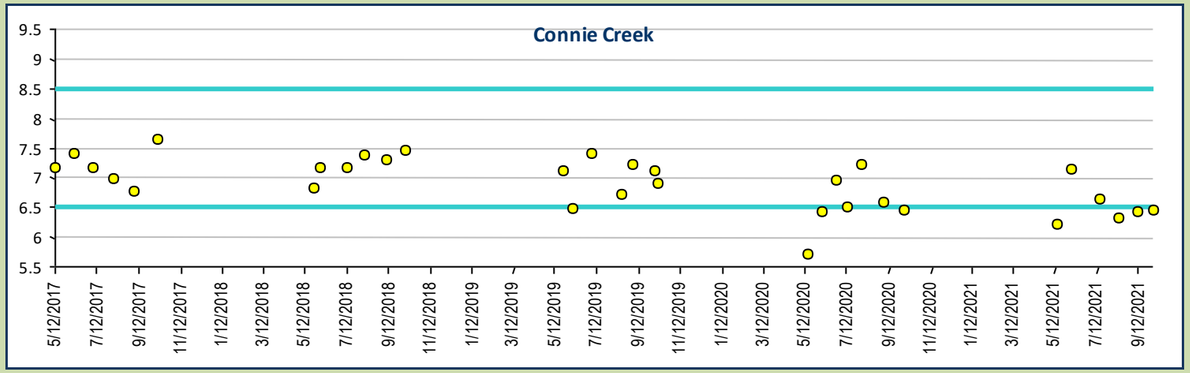


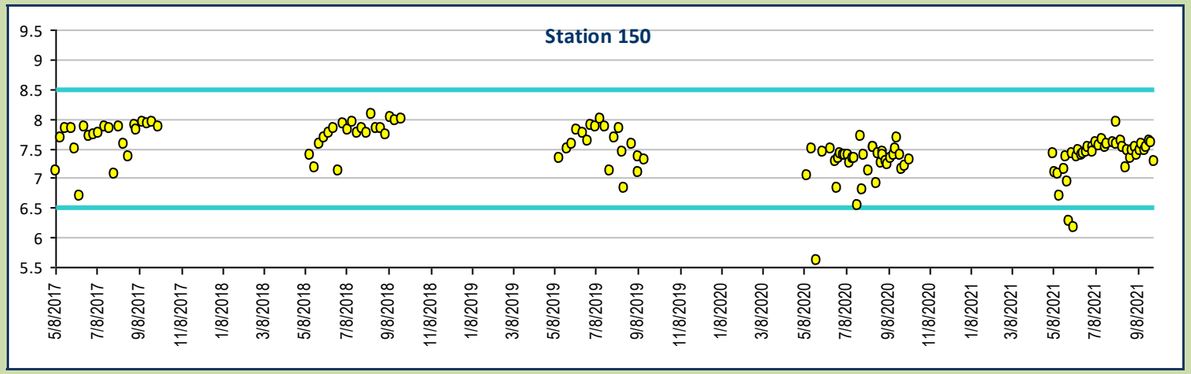
RED DOG MINE

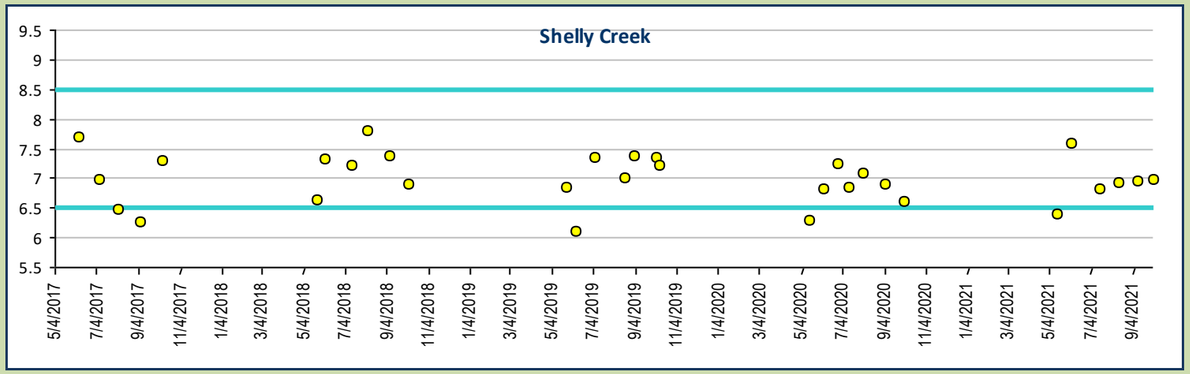
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

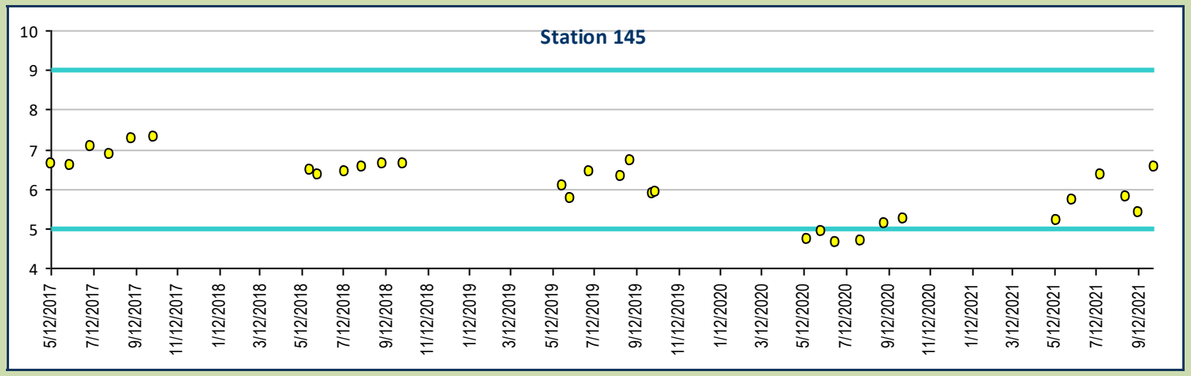
pH

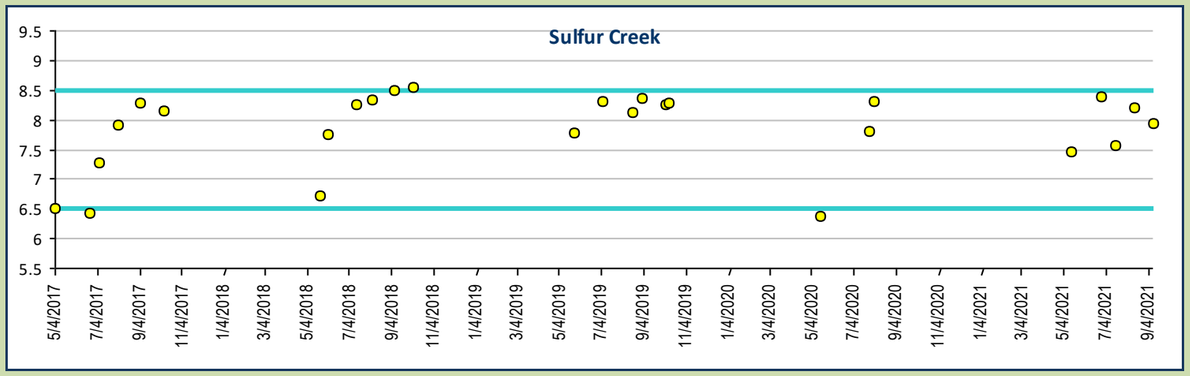
Site Specific WQS pH units

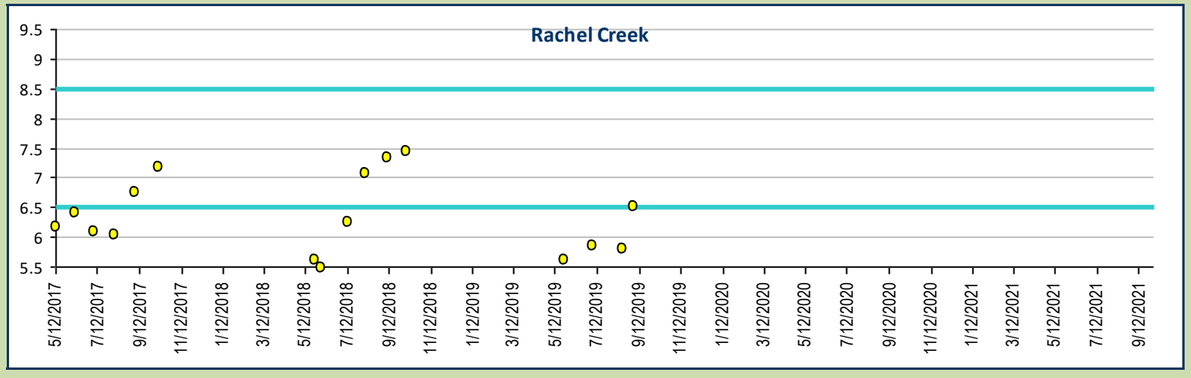


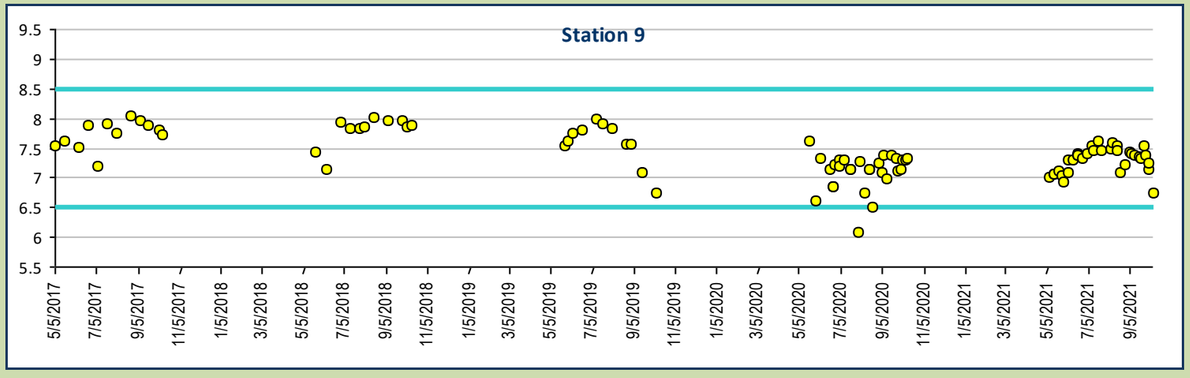












RED DOG MINE

Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

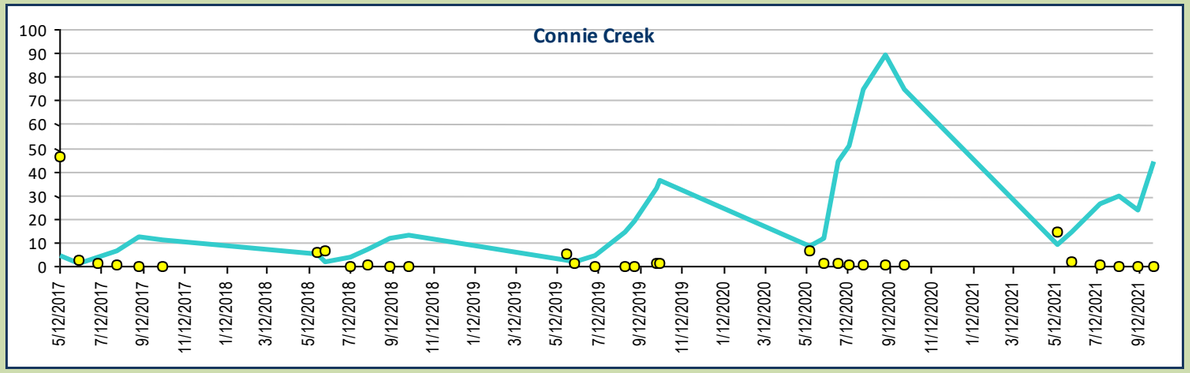
Lead, Total Recoverable, units ug/L

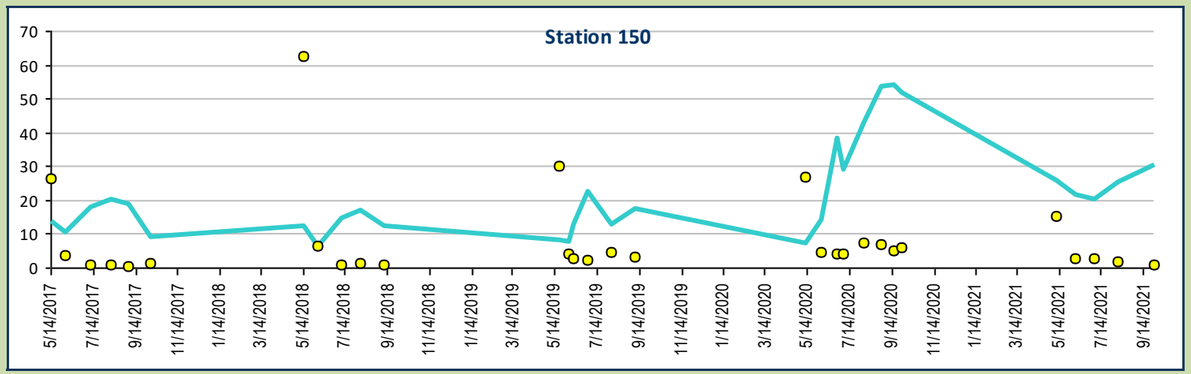
Aquatic Life - Fresh Water Chronic WQS ug/L

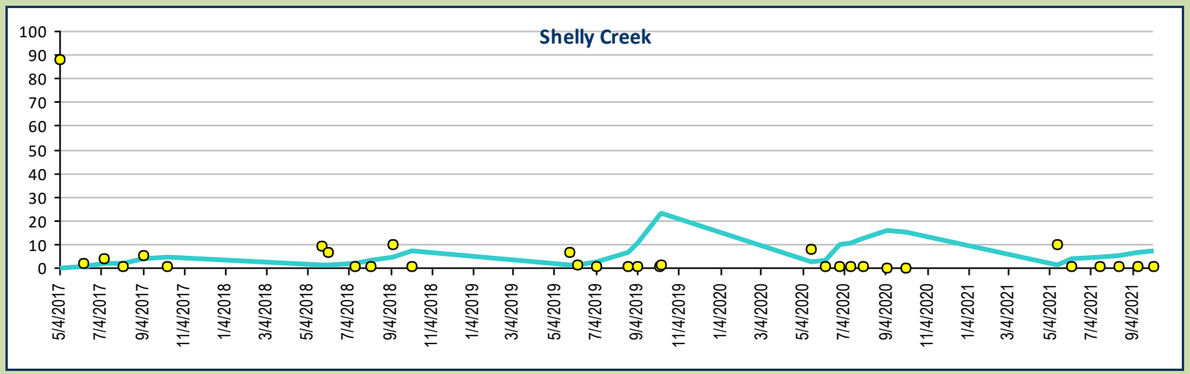
Hardness Dependent Calculation

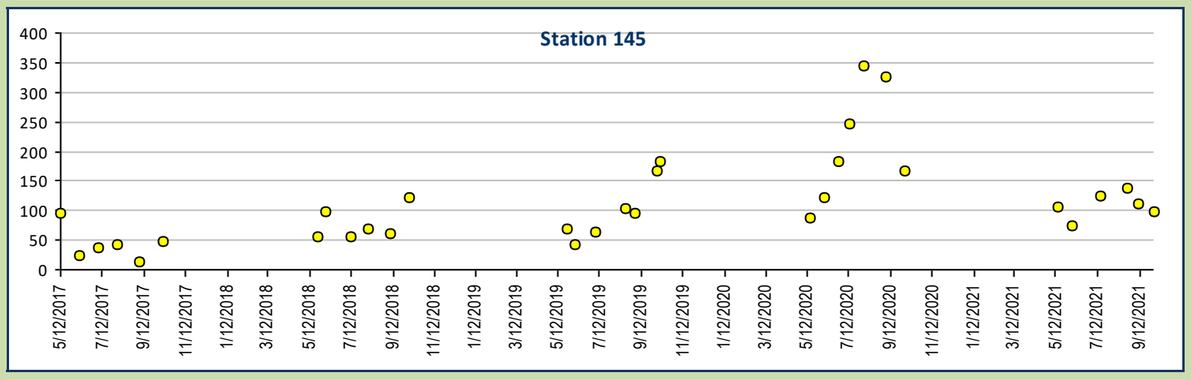
=EXP(1.273*(LN(calc *hardness))-4.705)

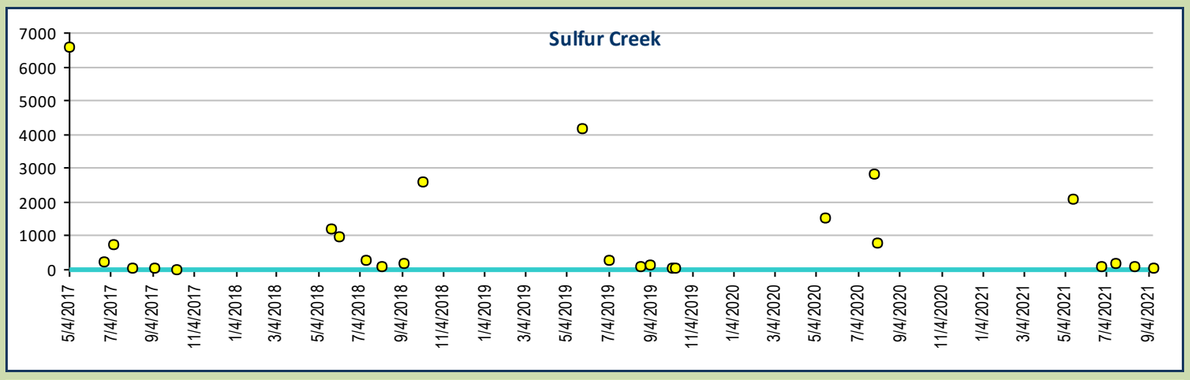
* Calculated using Standard Methods 2340B

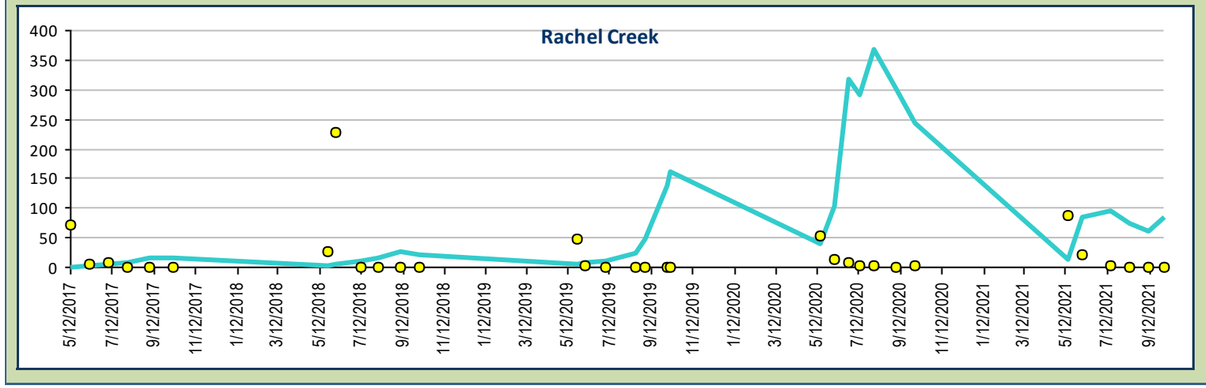


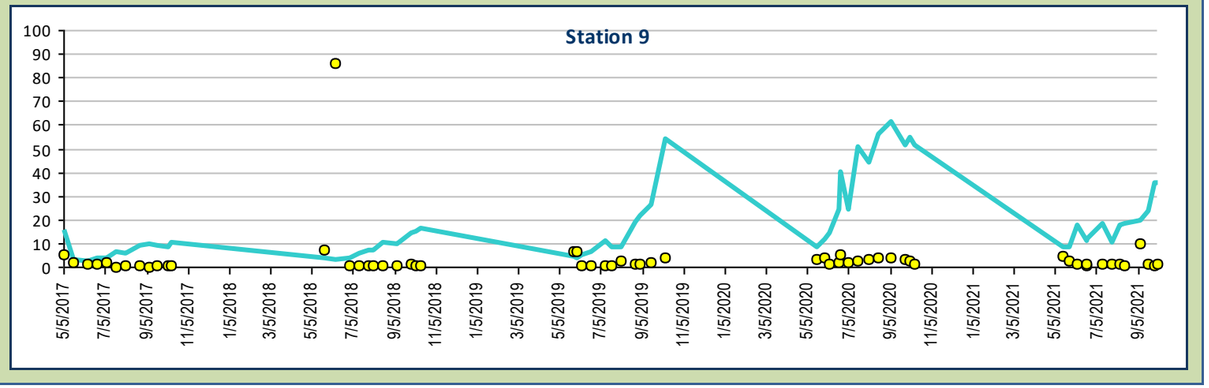








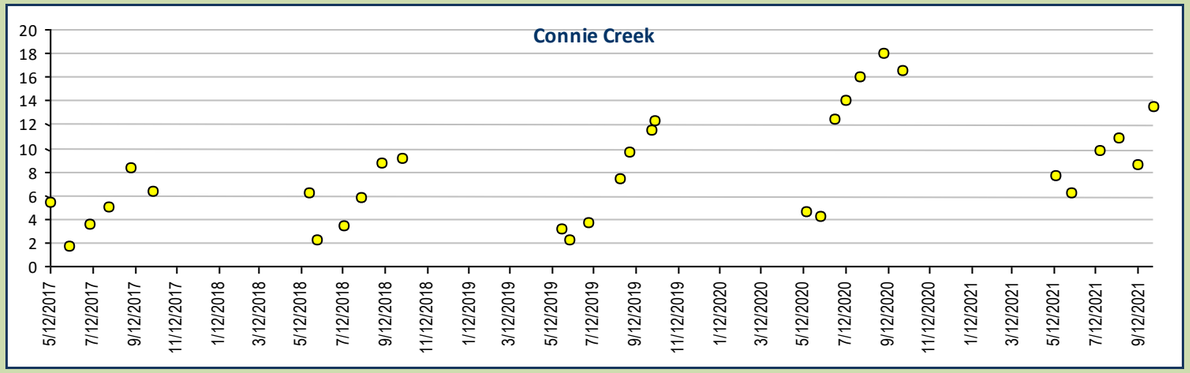


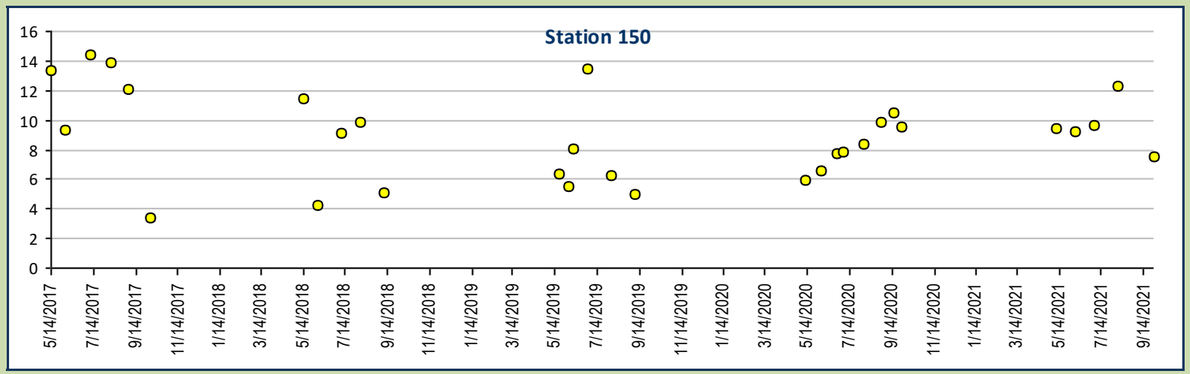


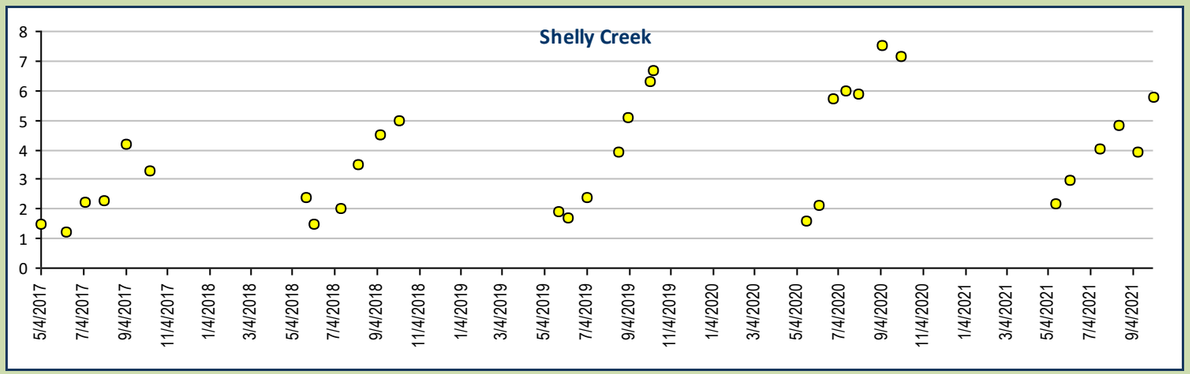
RED DOG MINE

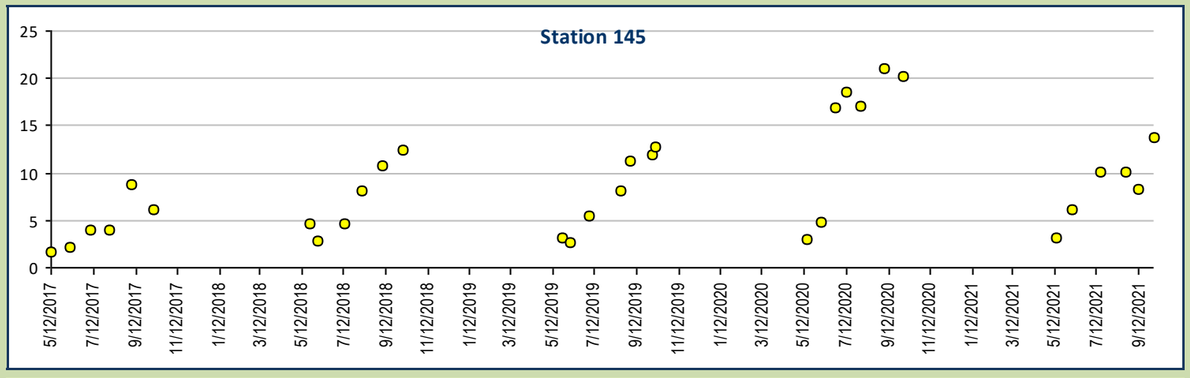
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

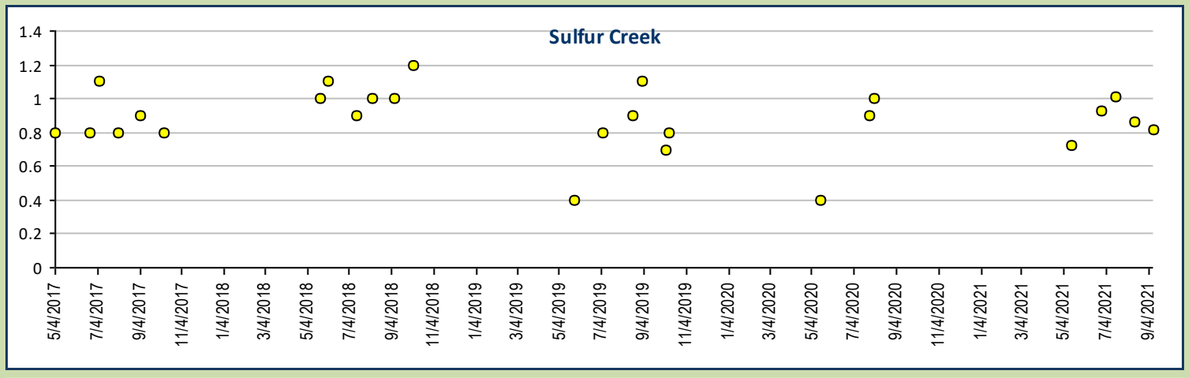
Sodium, Total Recoverable, units mg/L

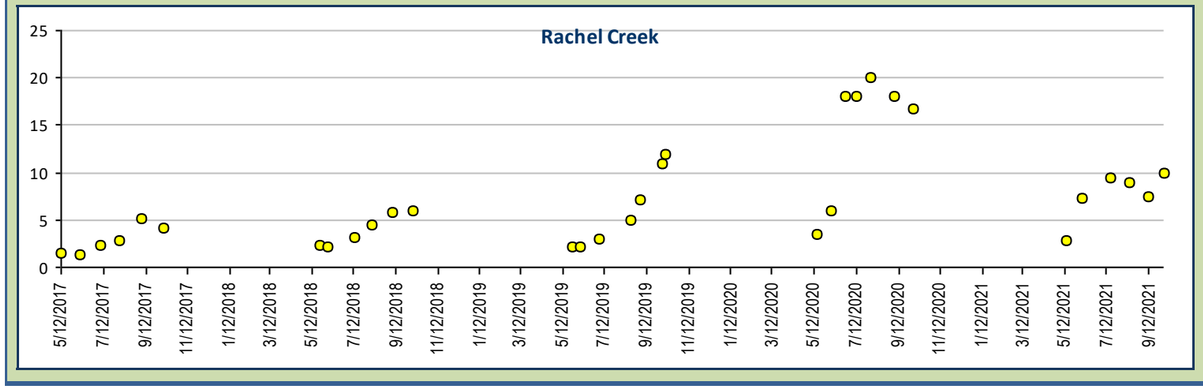


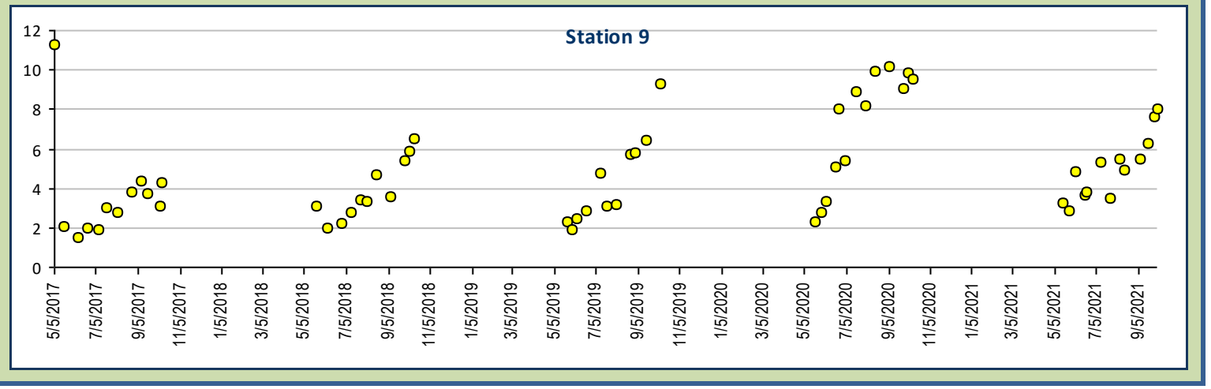








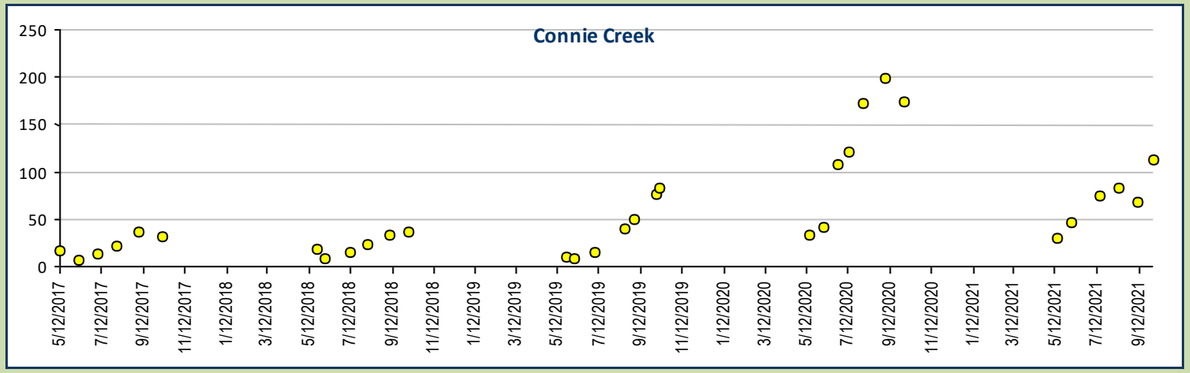


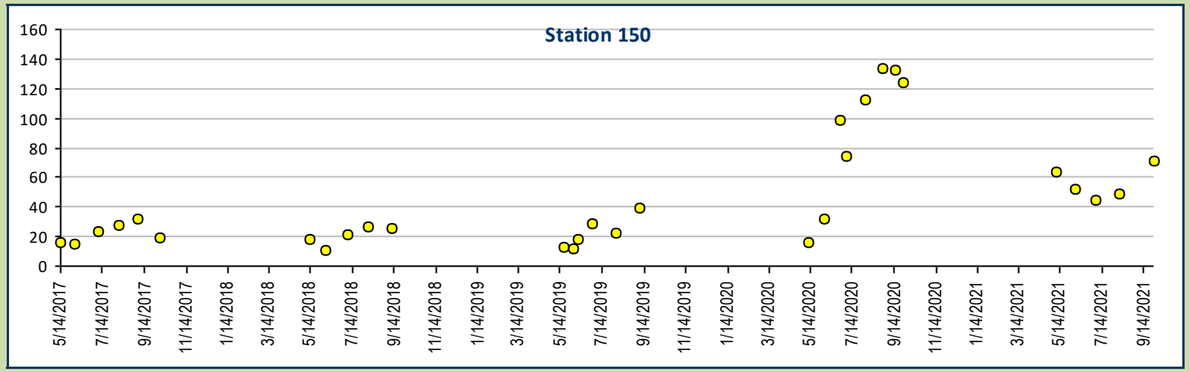


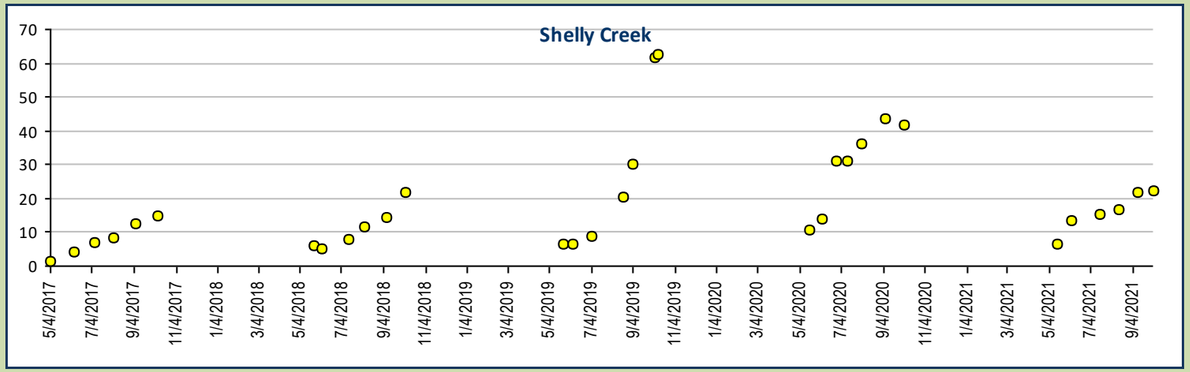
RED DOG MINE

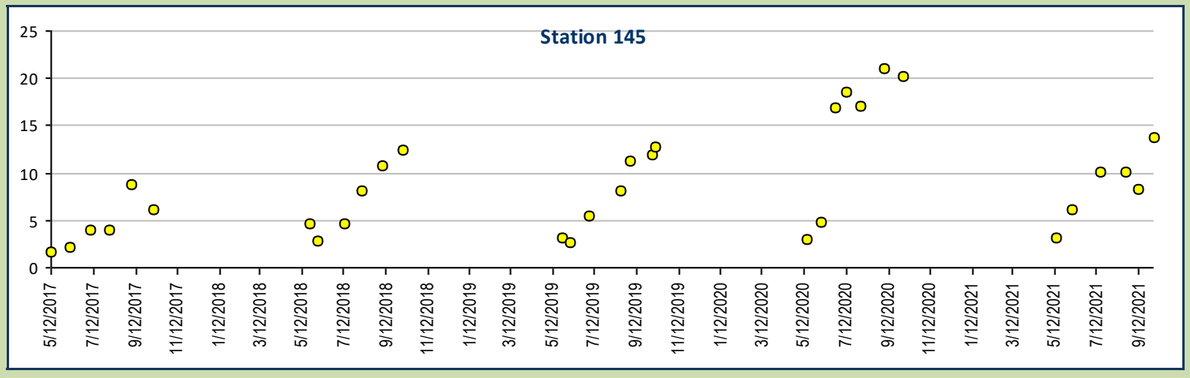
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

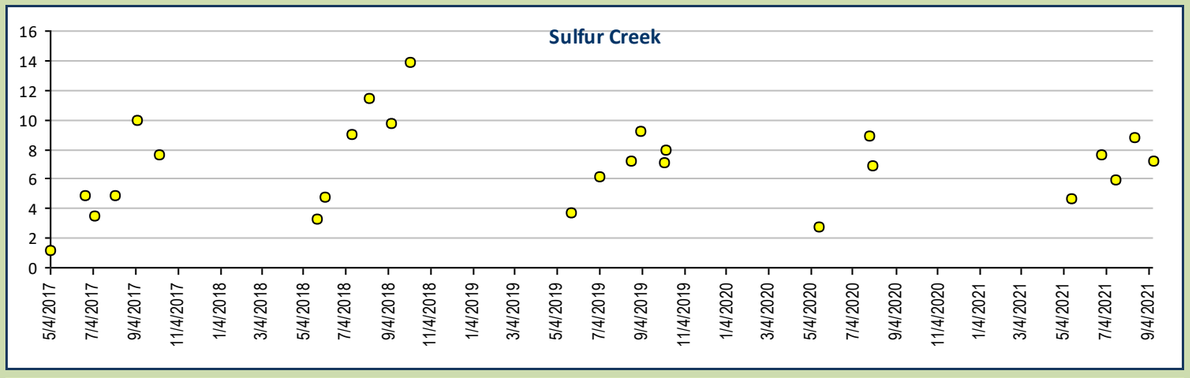
Magnesium, Total Recoverable, units mg/L

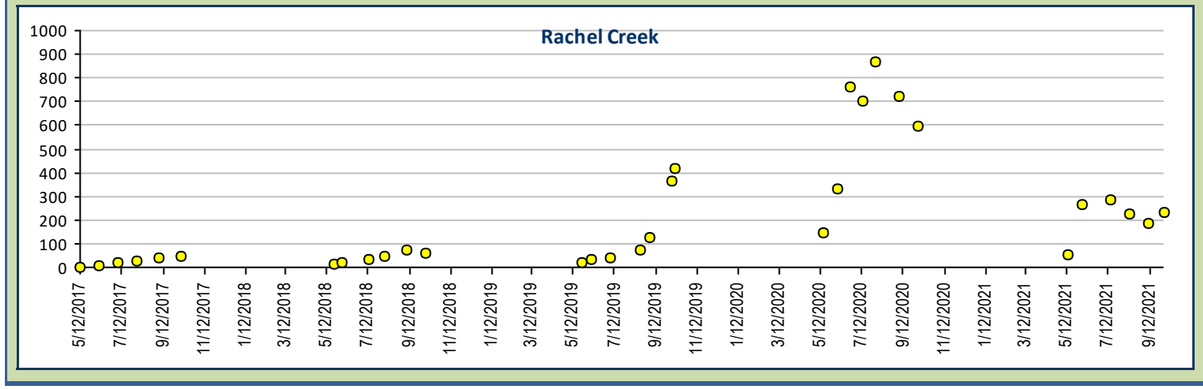


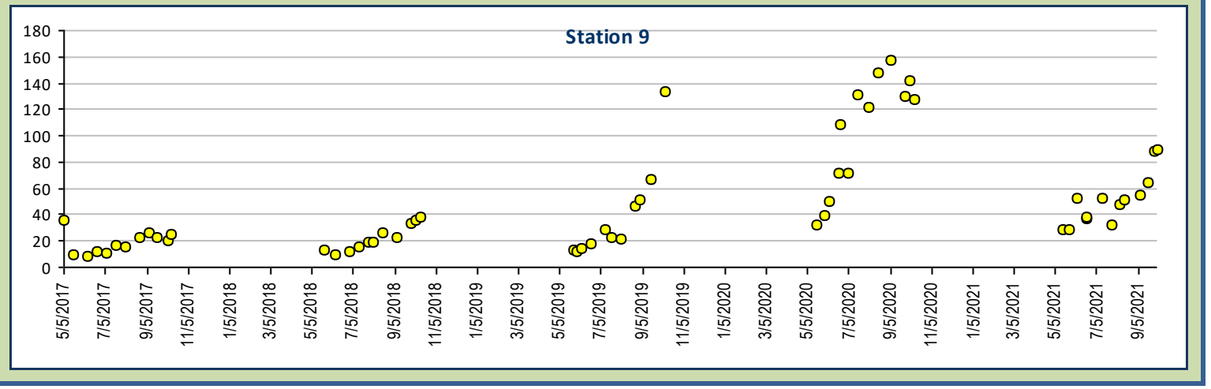






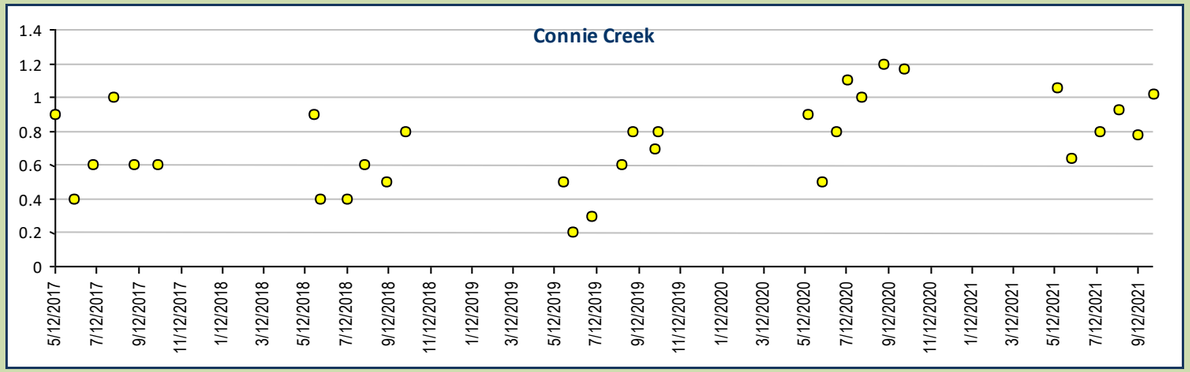


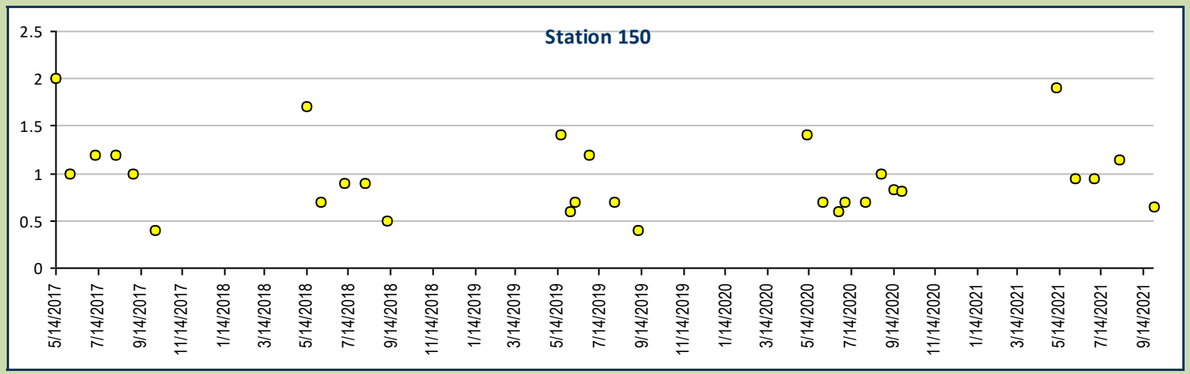


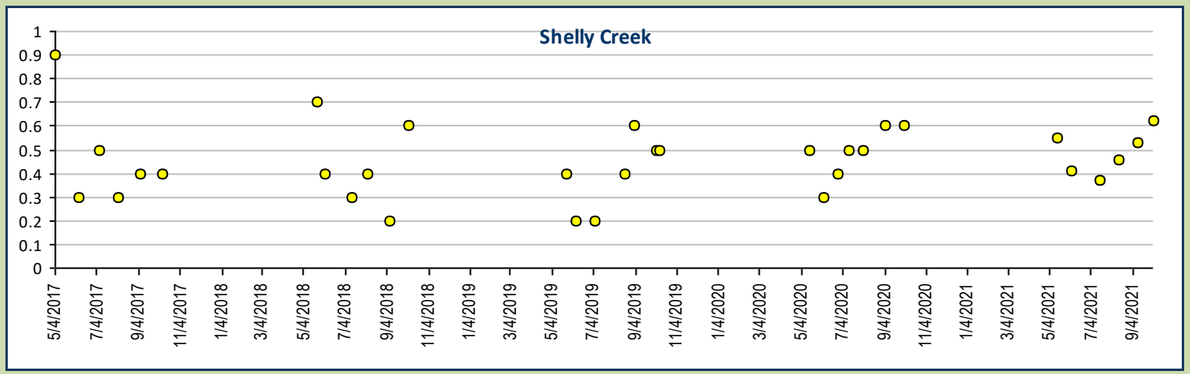


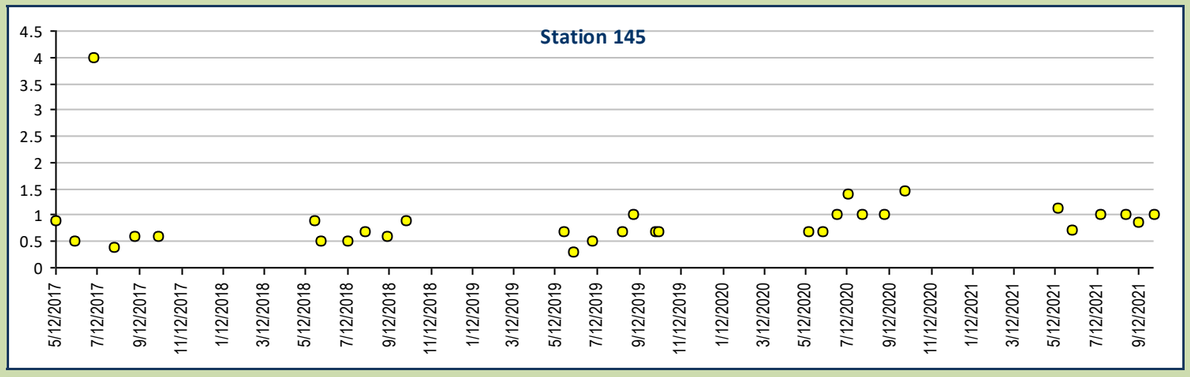
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

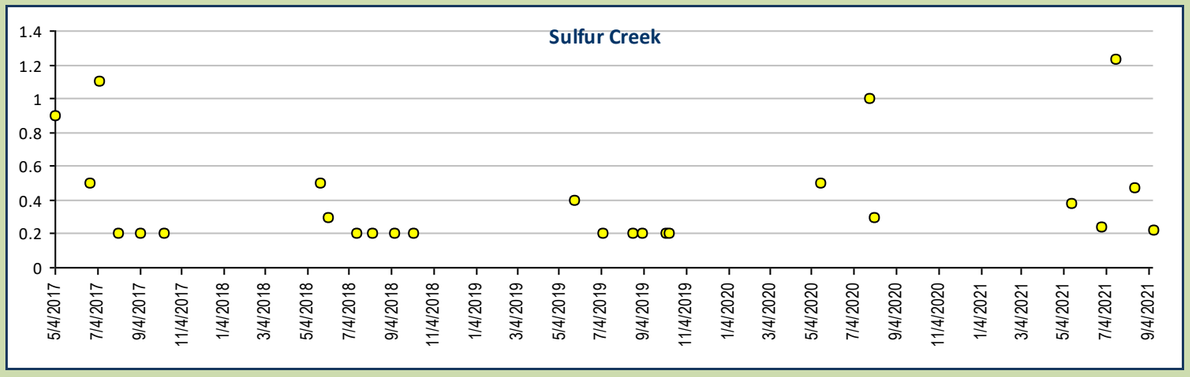
Potassium, Total Recoverable, units mg/L

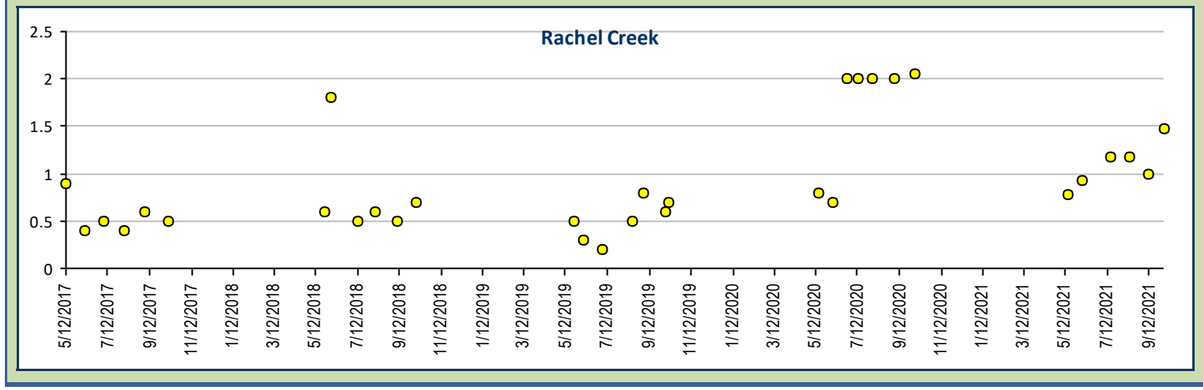


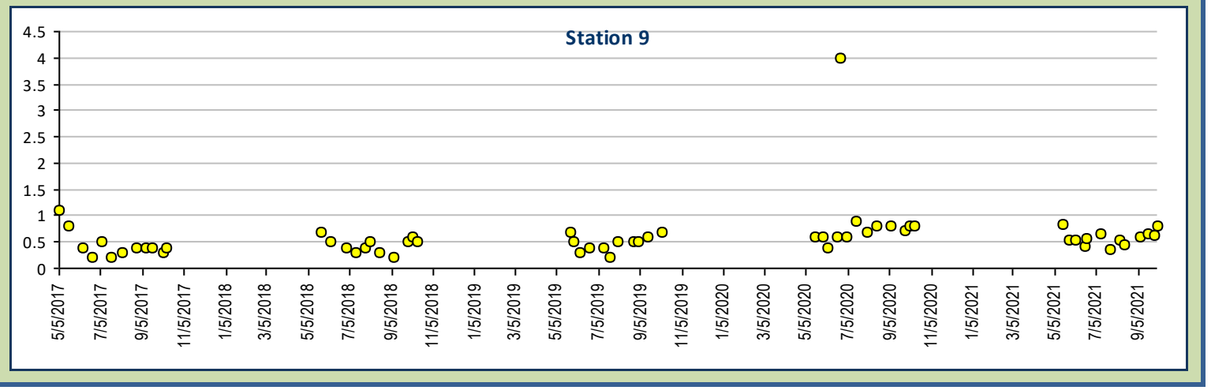












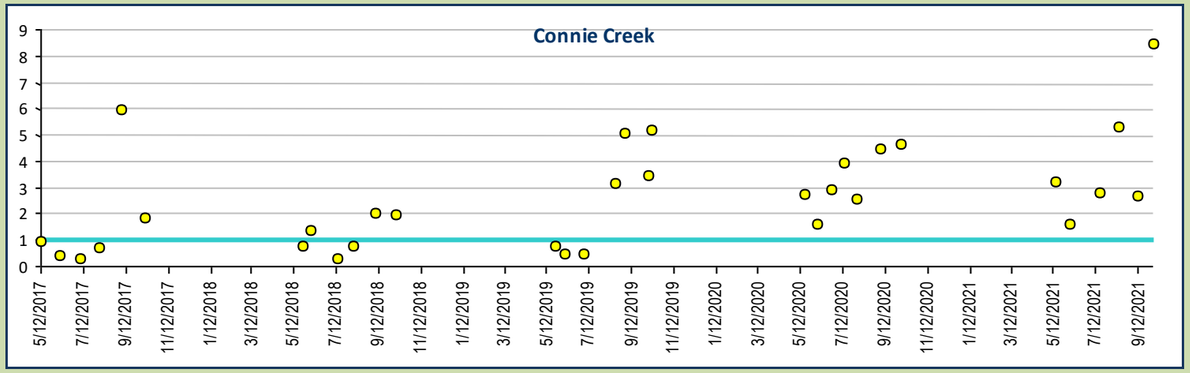
RED DOG MINE

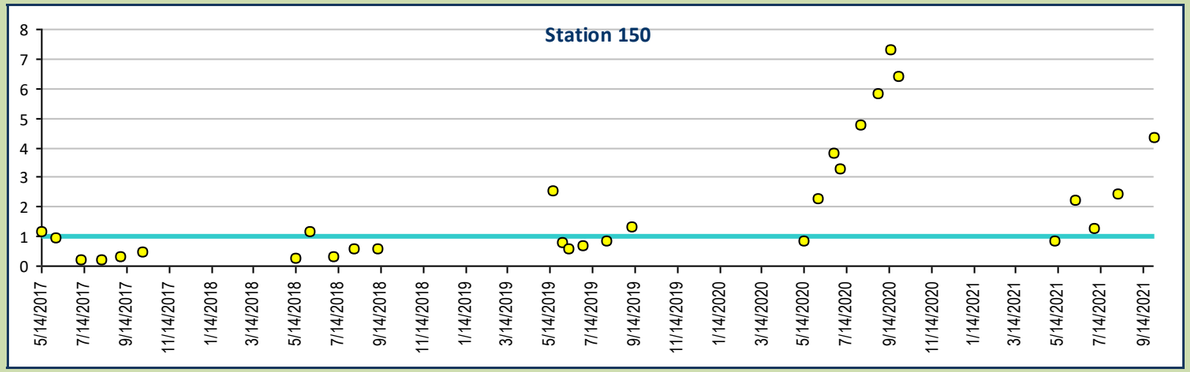
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

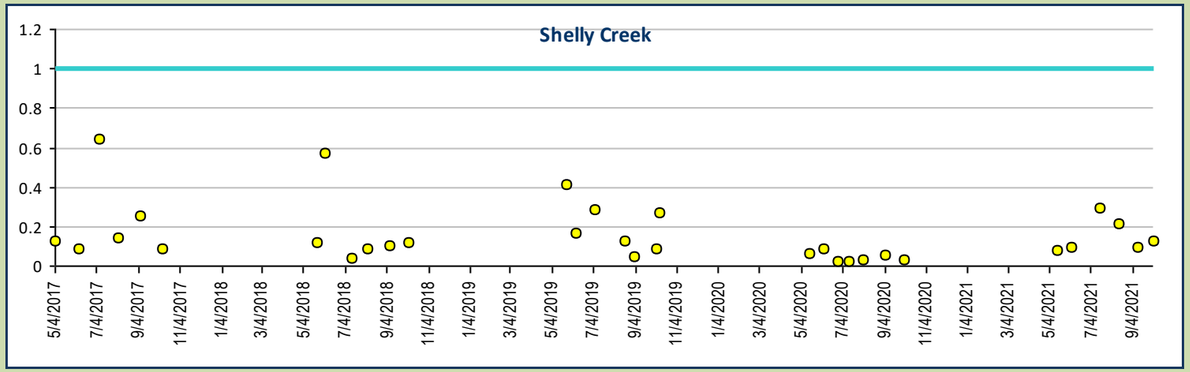
Iron, Total Recoverable, units mg/L

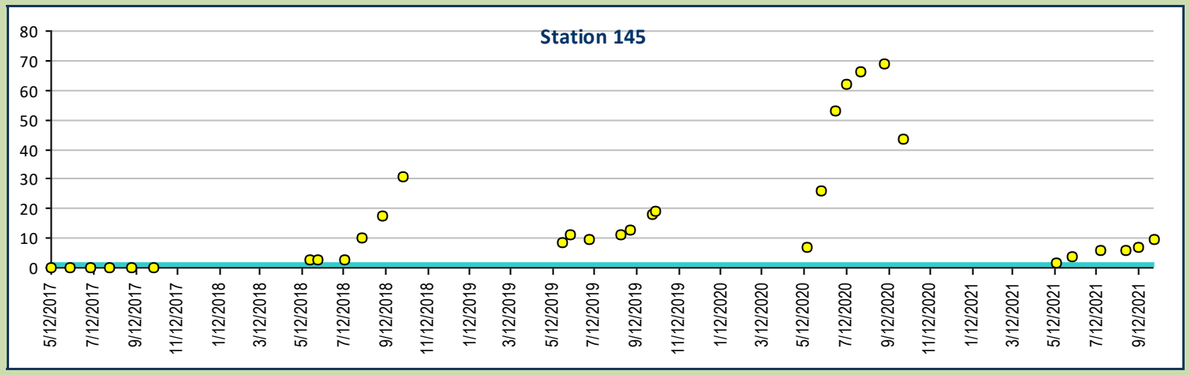
Aquatic Life - Fresh Water Chronic WQS mg/L

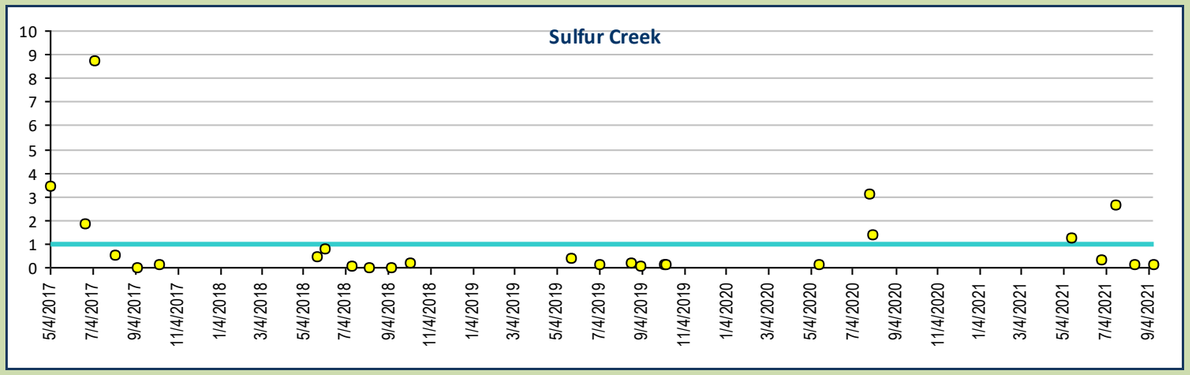
1.0 mg/L

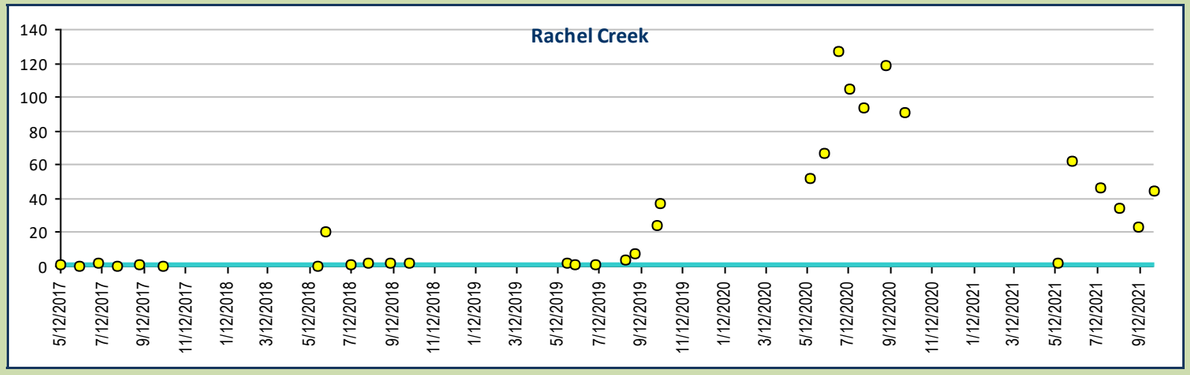


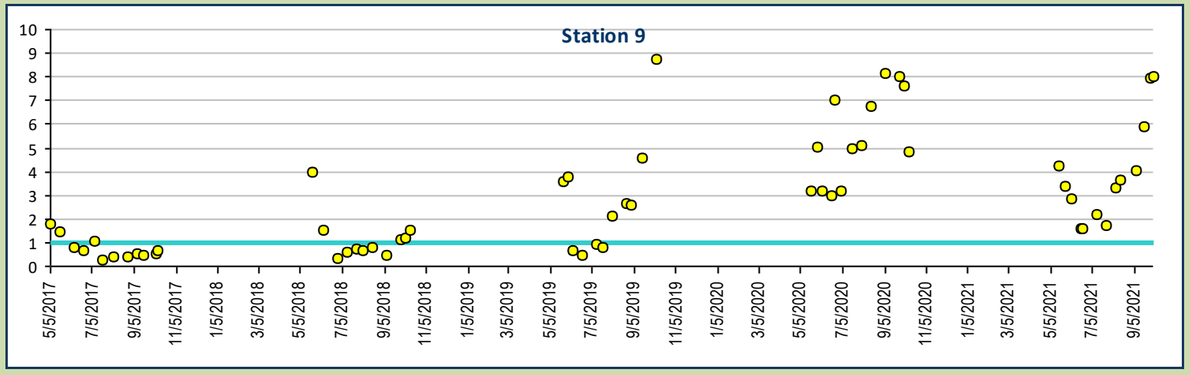








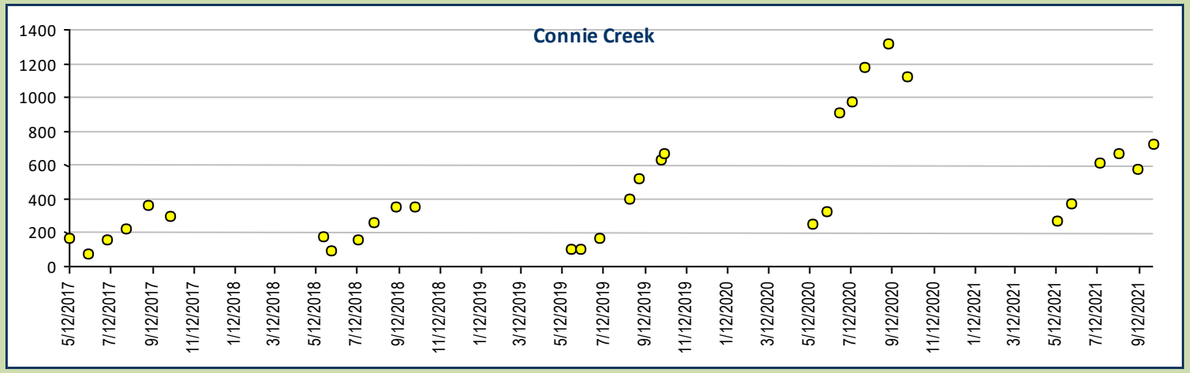


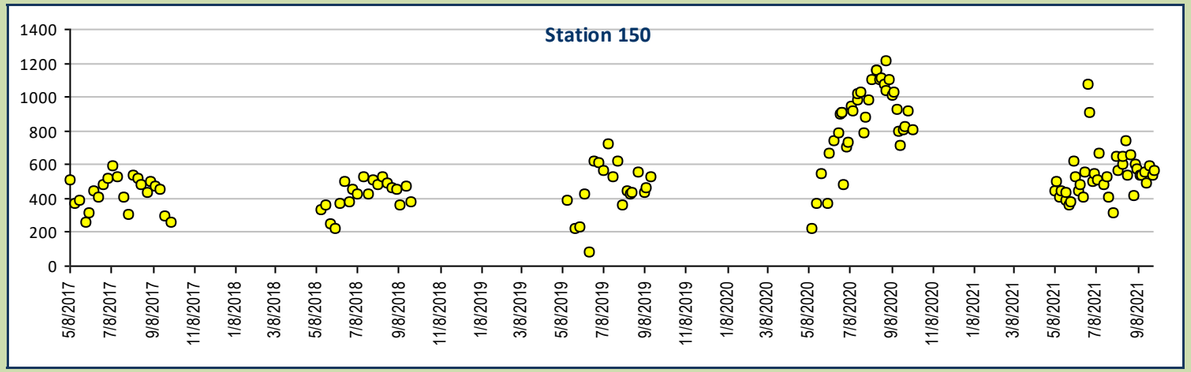


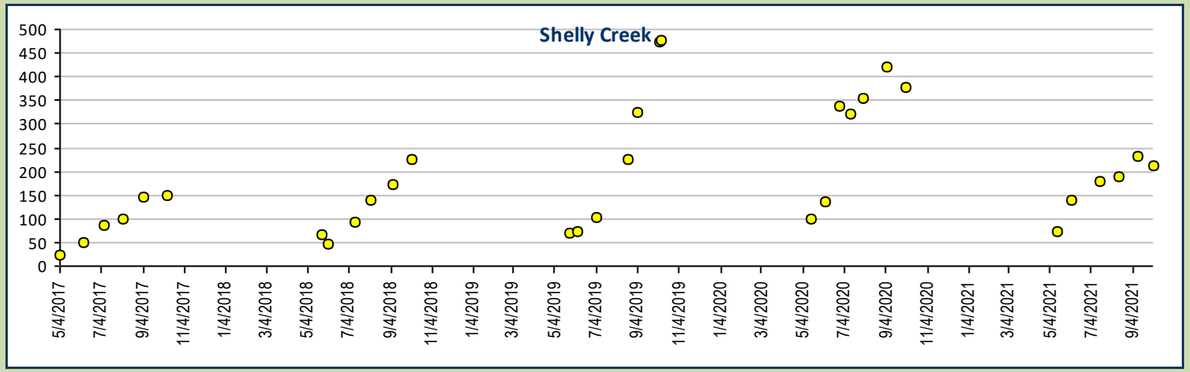
RED DOG MINE

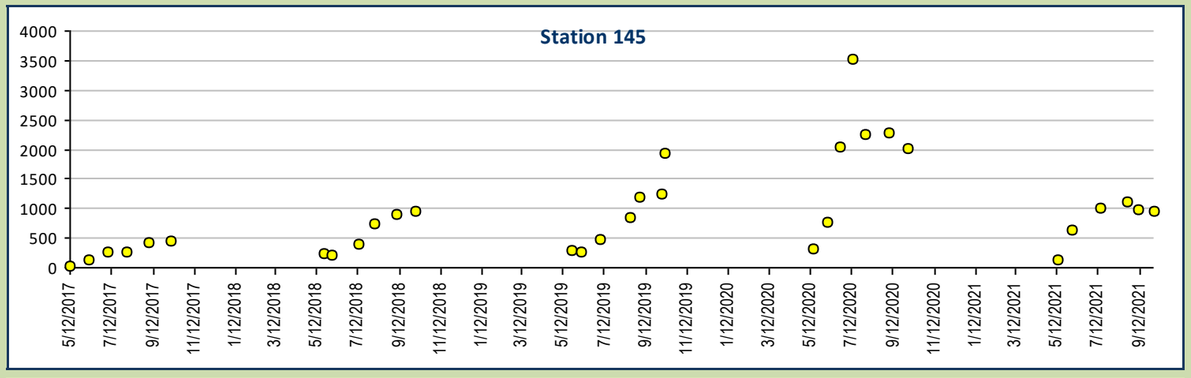
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

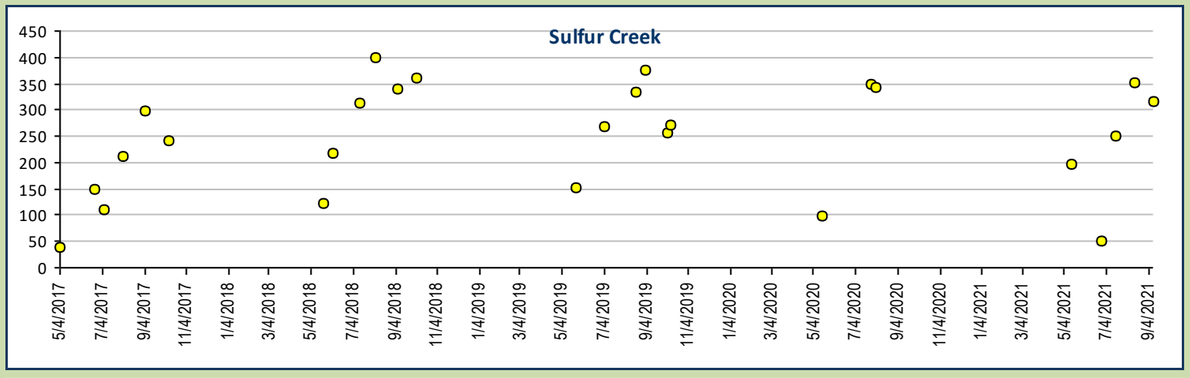
Conductivity, units uS/cm

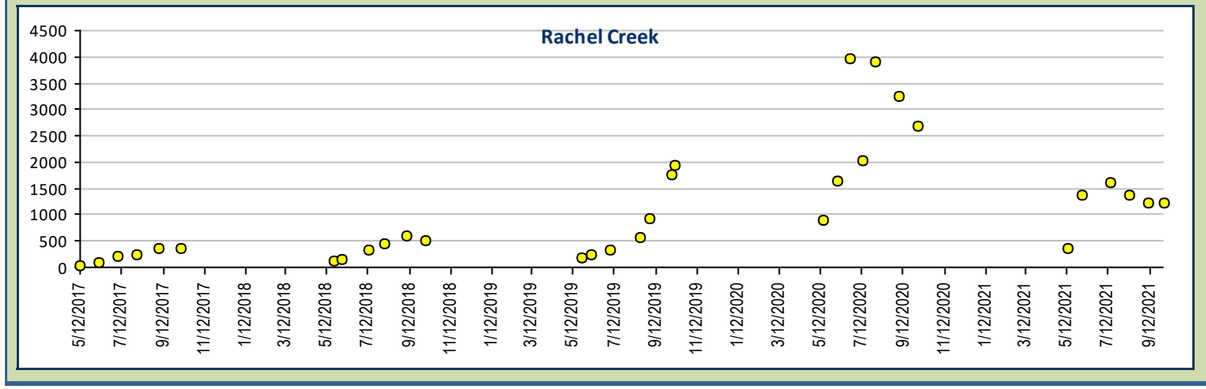


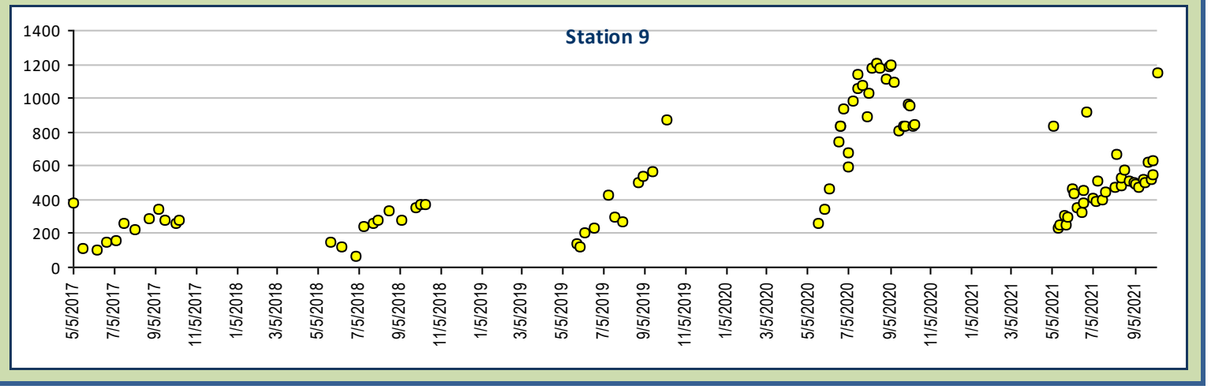












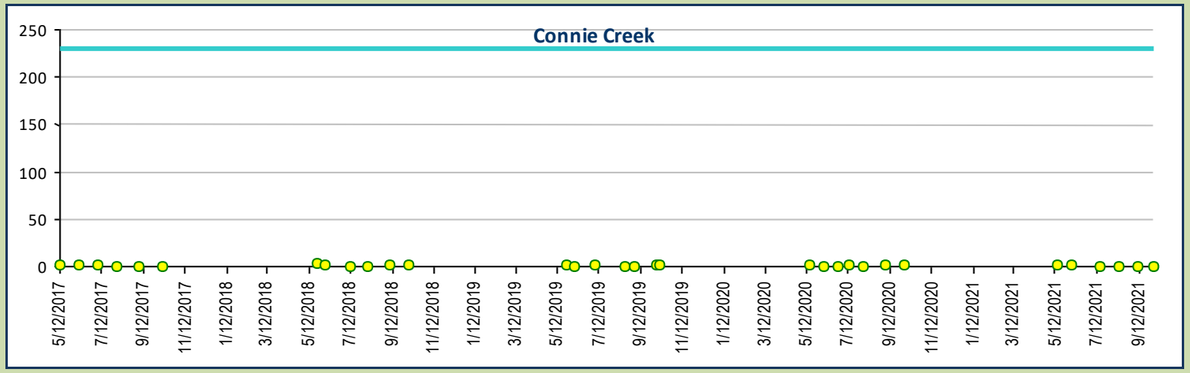
RED DOG MINE

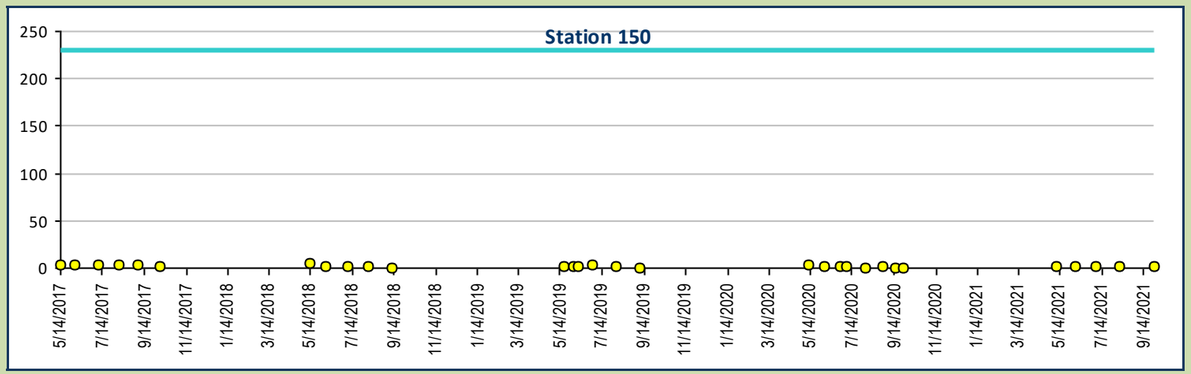
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

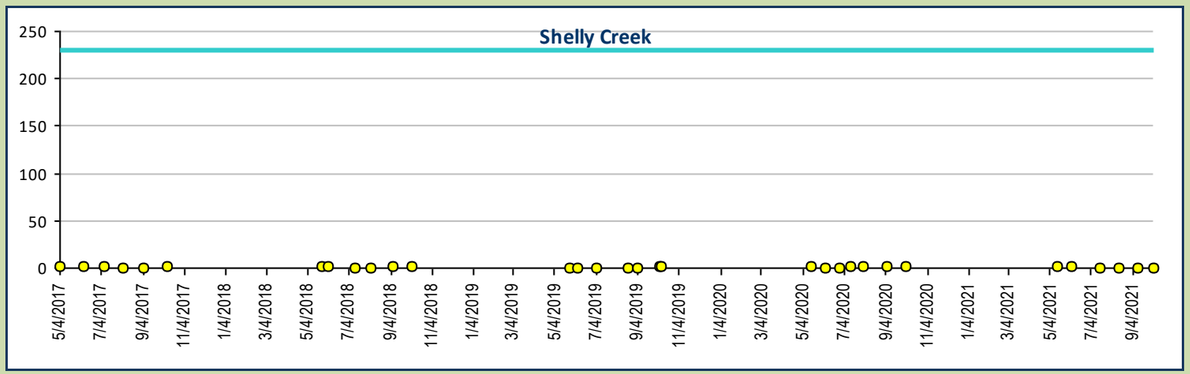
Chloride, Total Recoverable, units mg/L

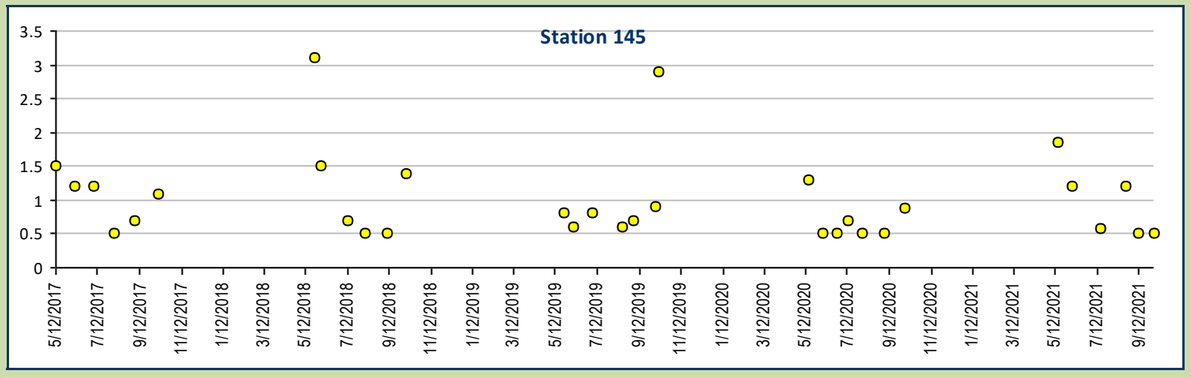
Aquatic Life - Fresh Water Chronic WQS mg/L

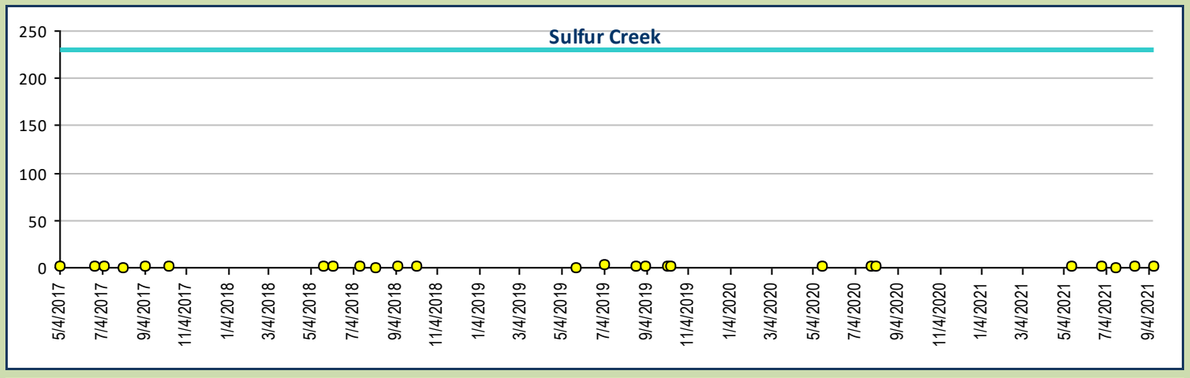
230 mg/L

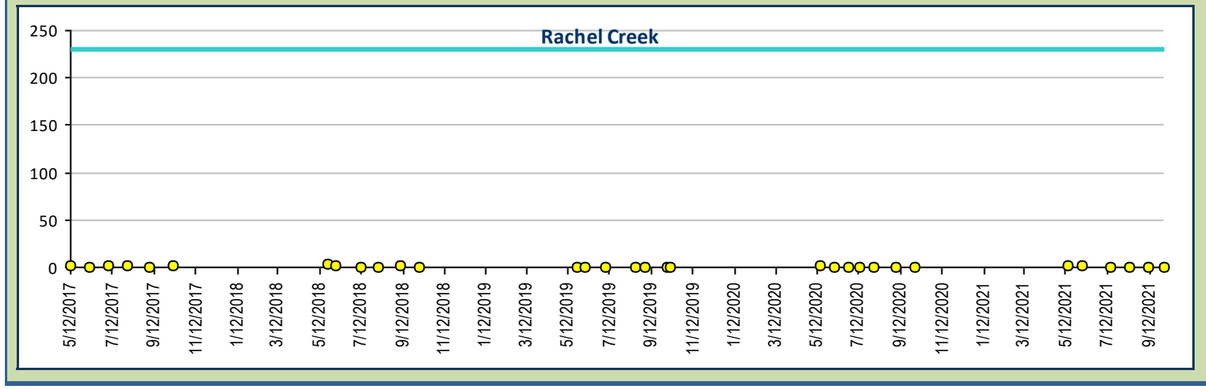


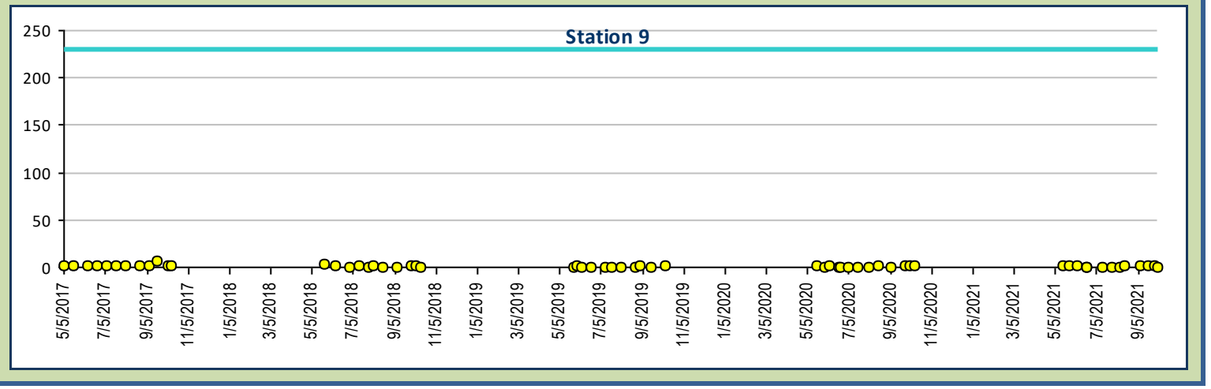












RED DOG MINE

Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

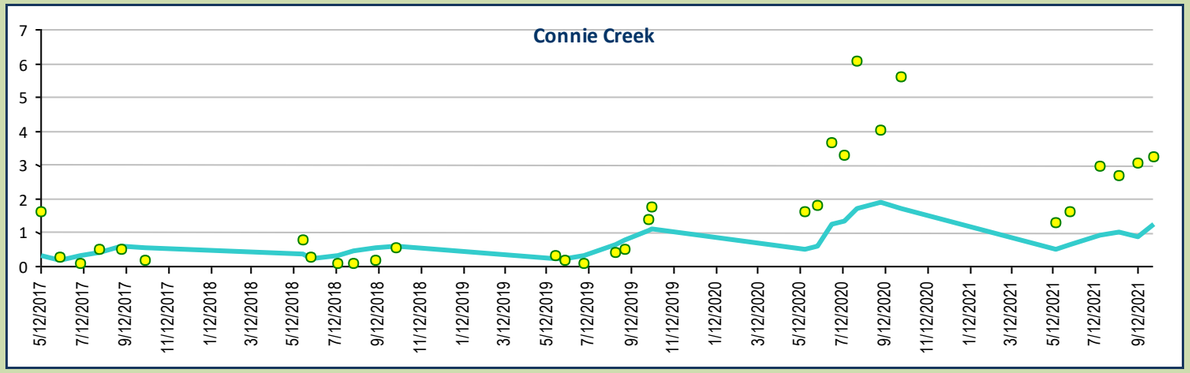
Cadmium, Total Recoverable, units ug/L

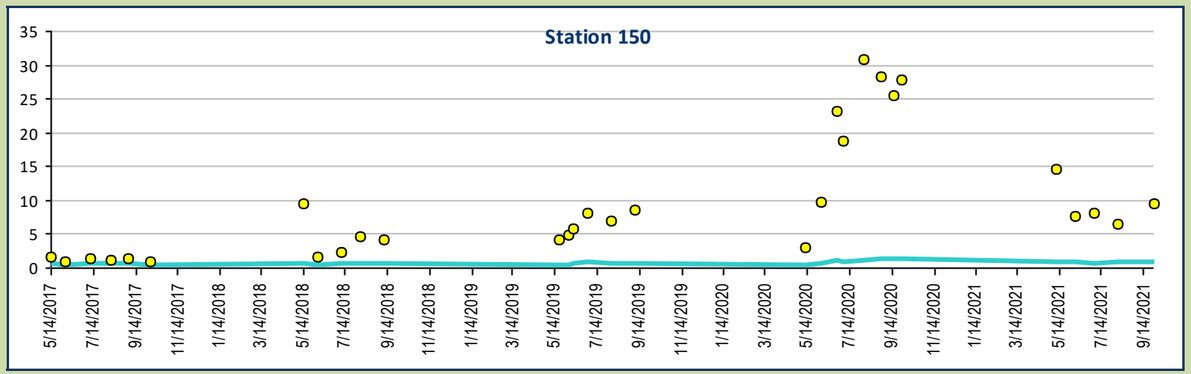
Aquatic Life - Fresh Water Chronic WQS ug/L

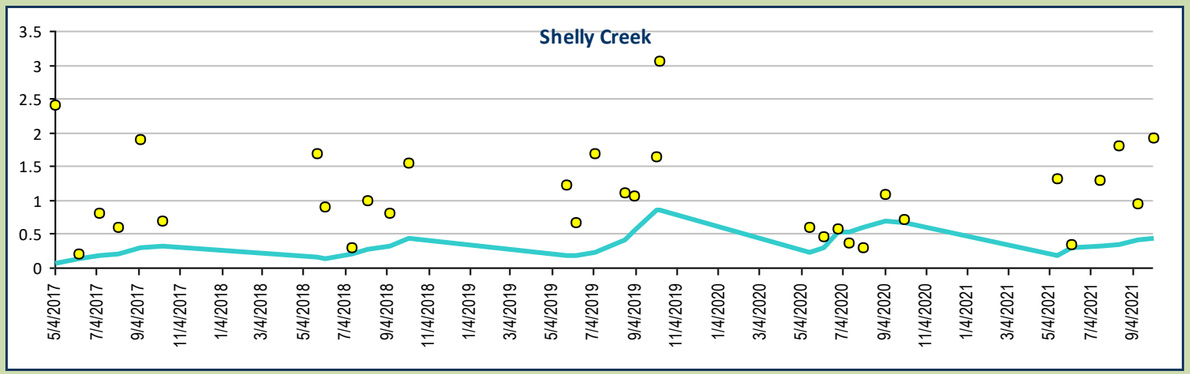
Hardness Dependent Calculation

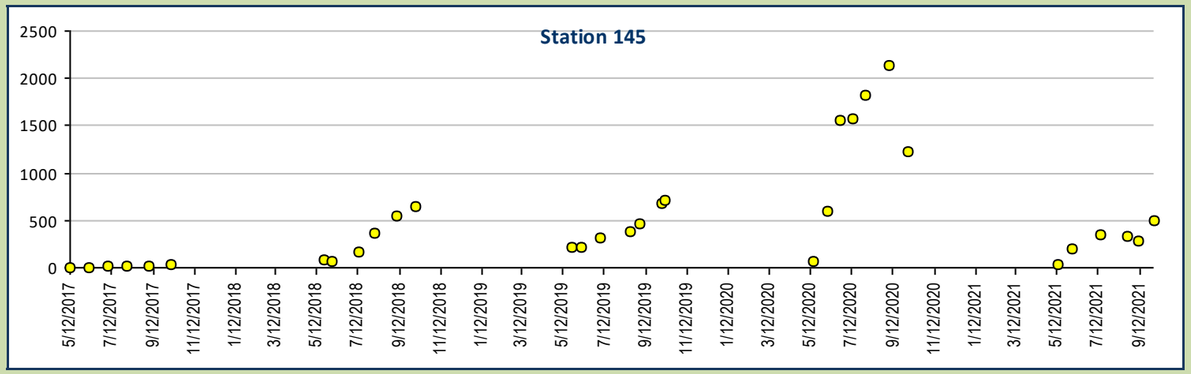
=EXP(0.7409*(LN(calc *hardness))-4.719)

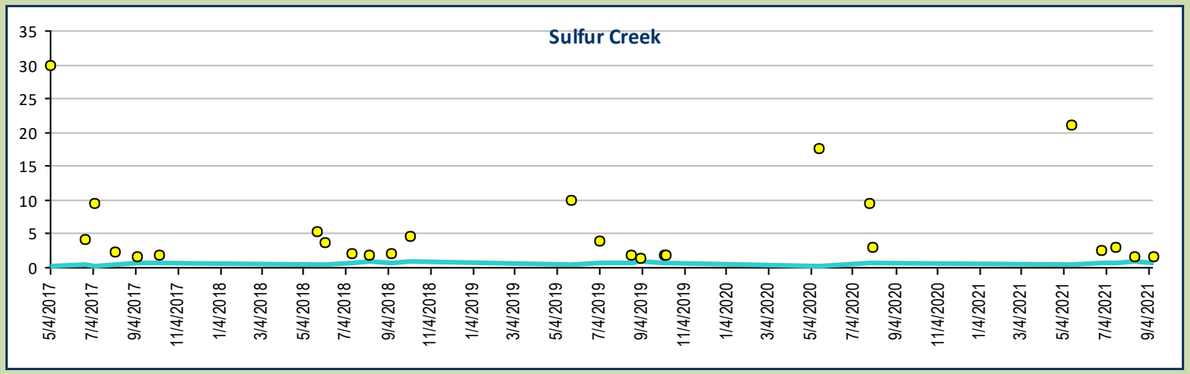
* Calculated using Standard Methods 2340B

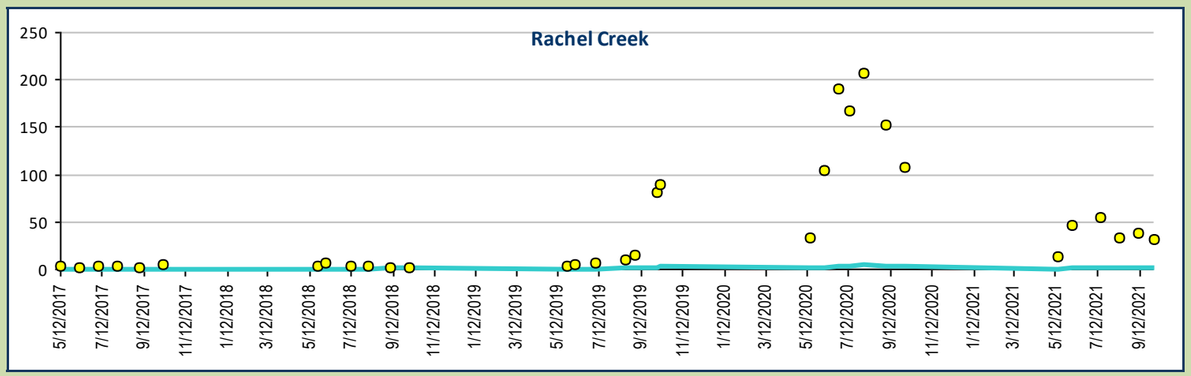


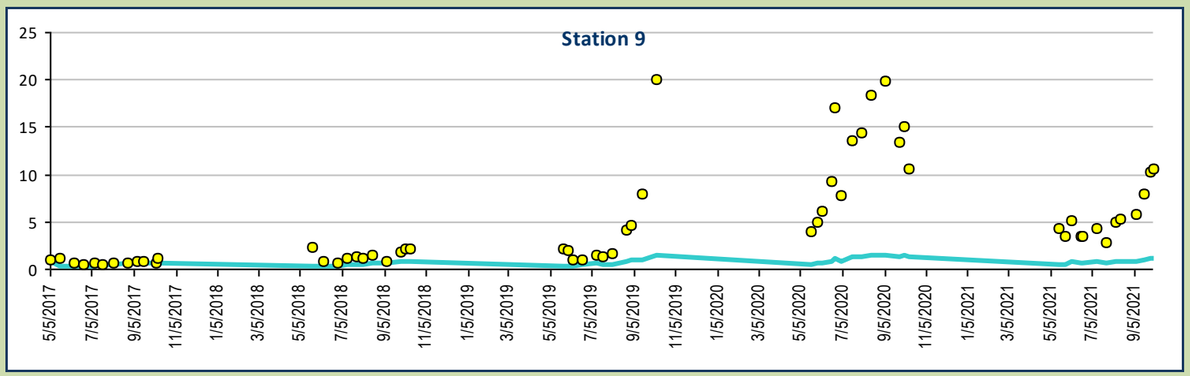








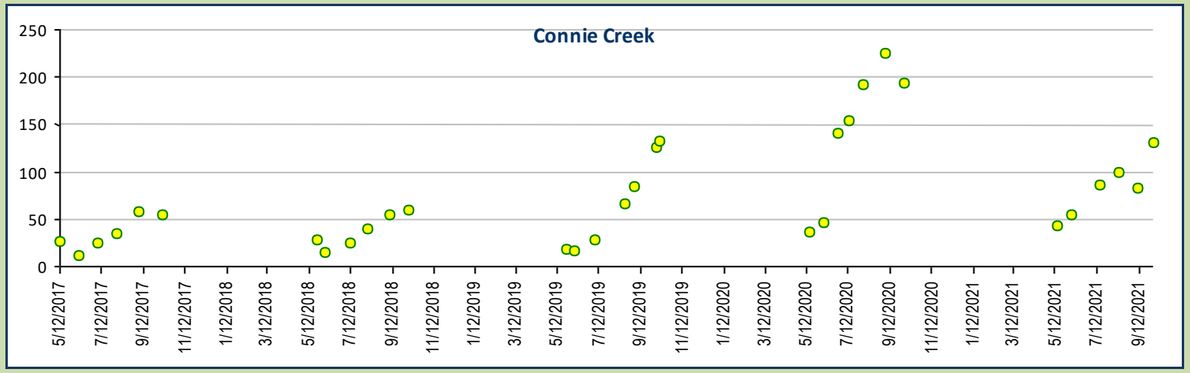


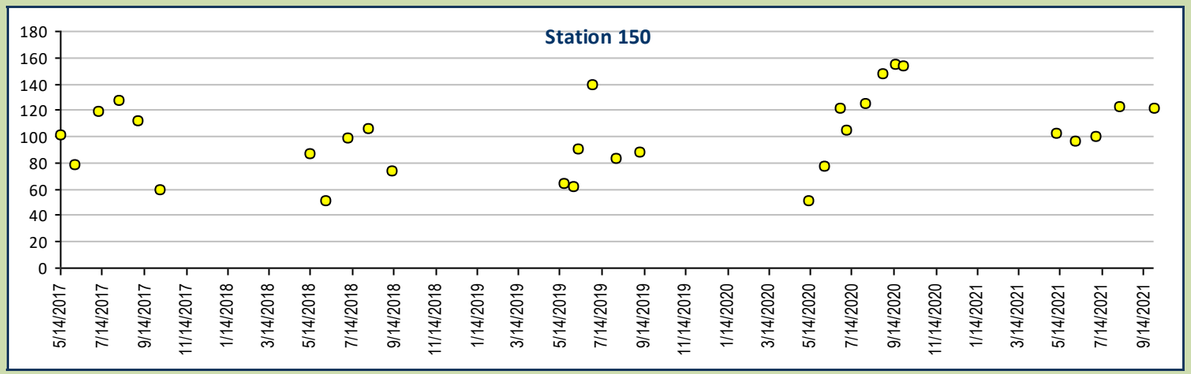


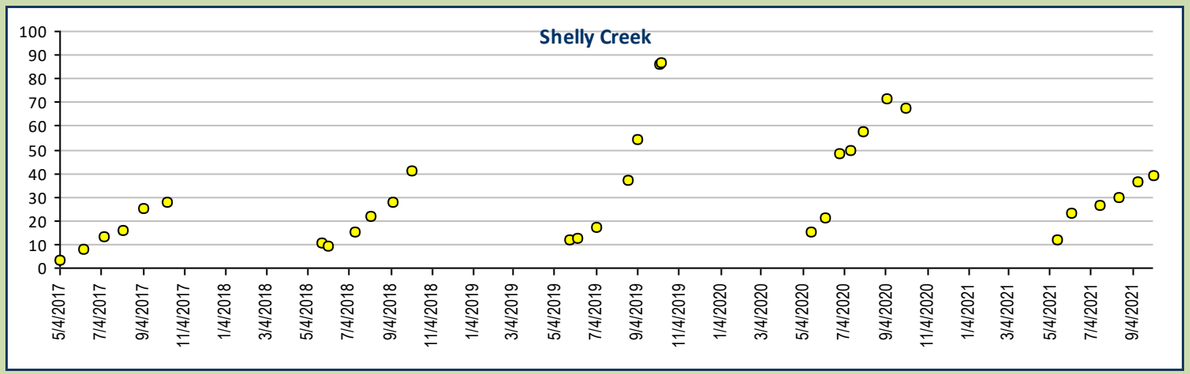
RED DOG MINE

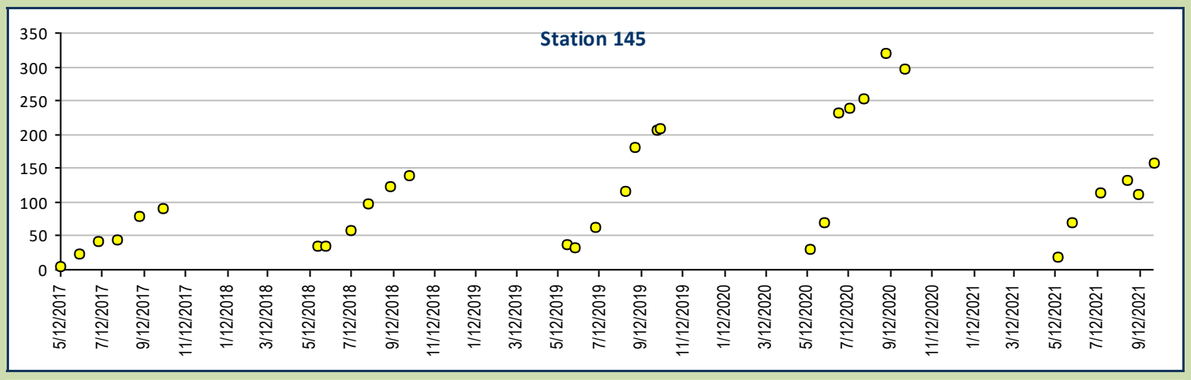
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

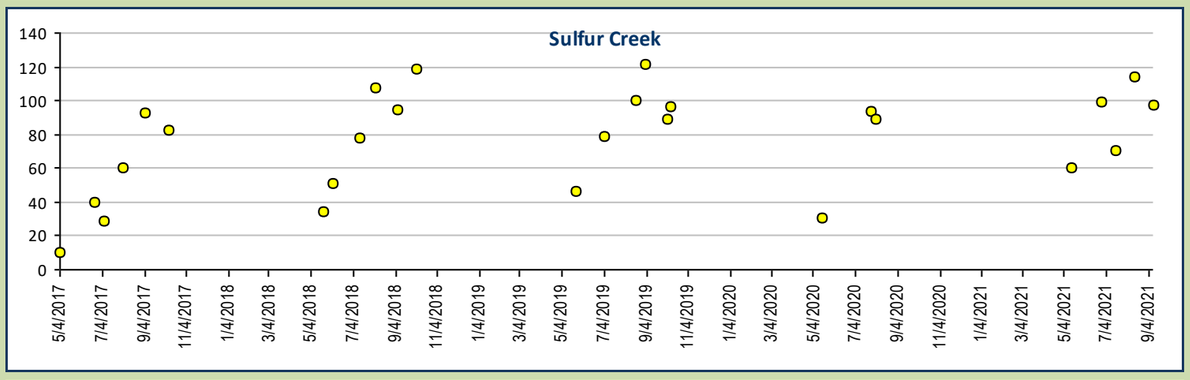
Calcium, Total recoverable, units mg/L

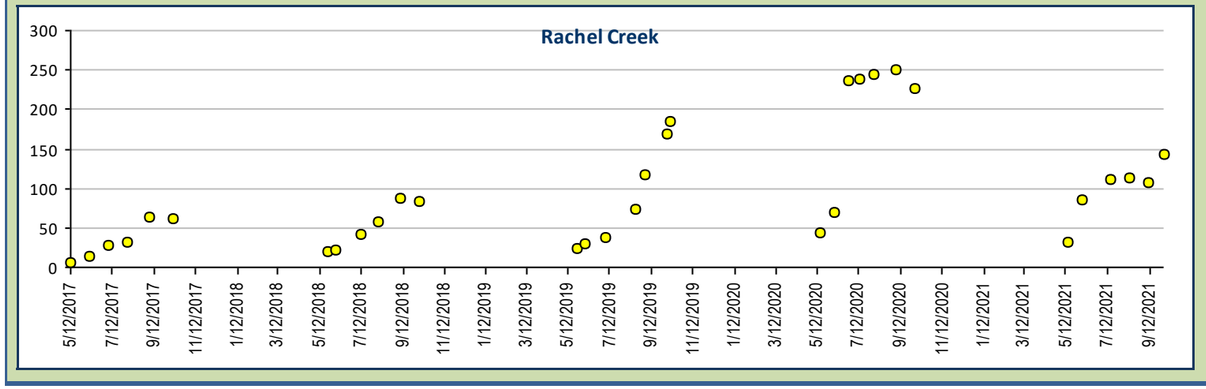


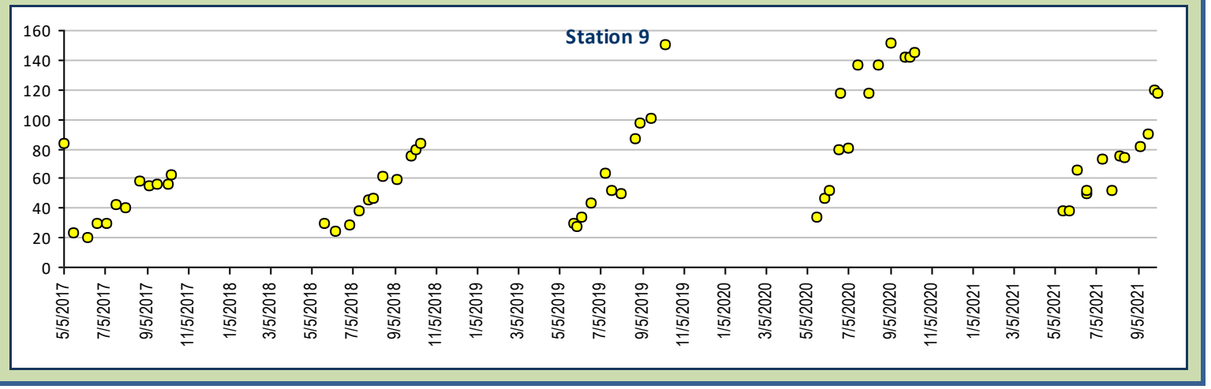












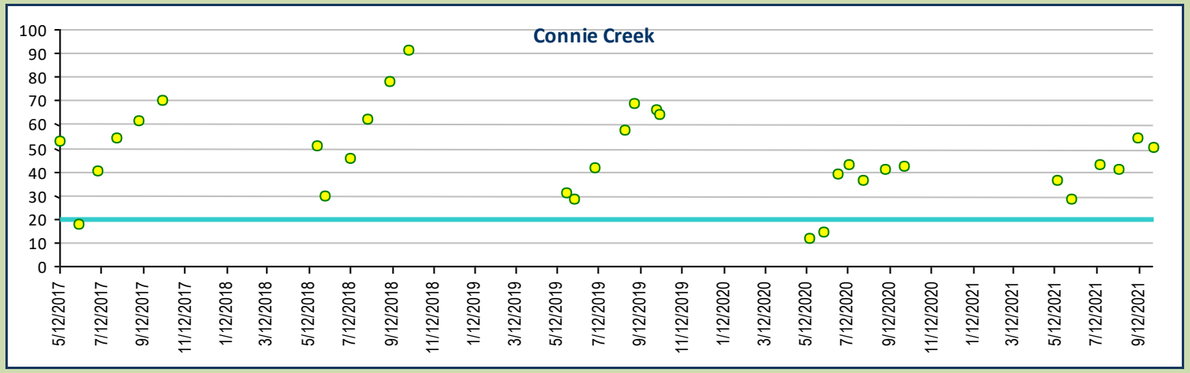
RED DOG MINE

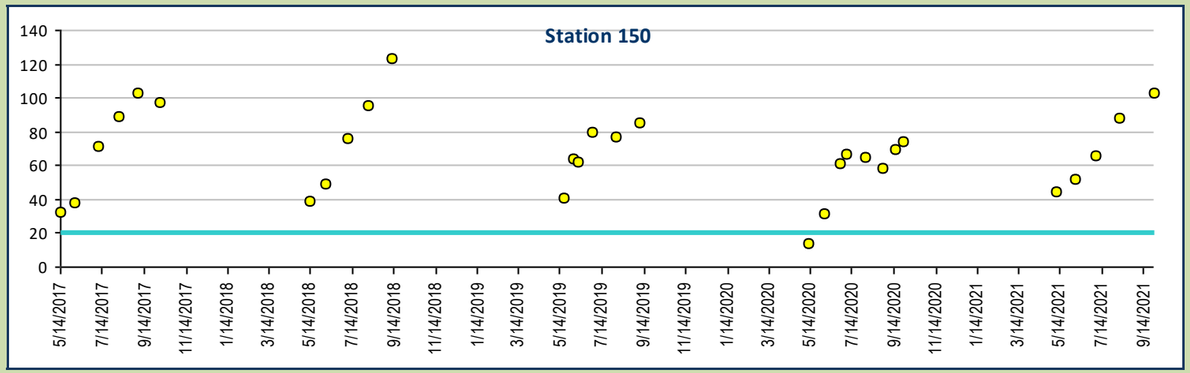
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

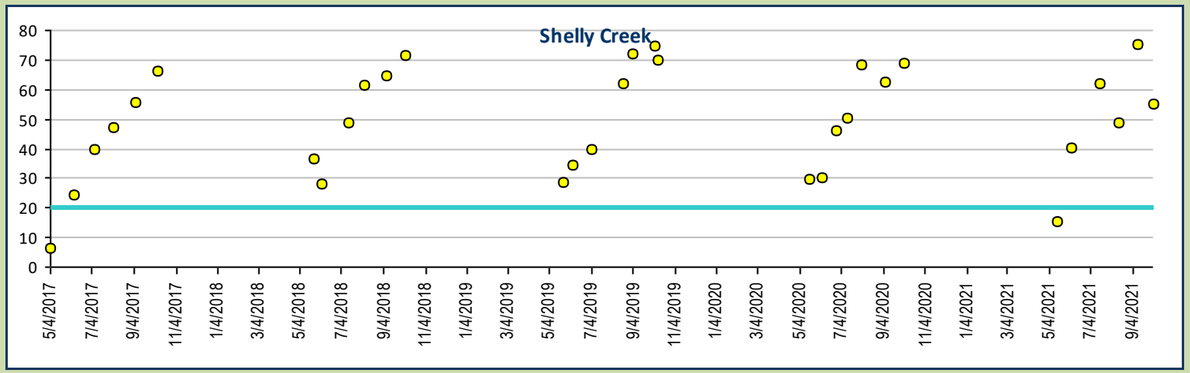
Alkalinity as CaCO3, units mg/L

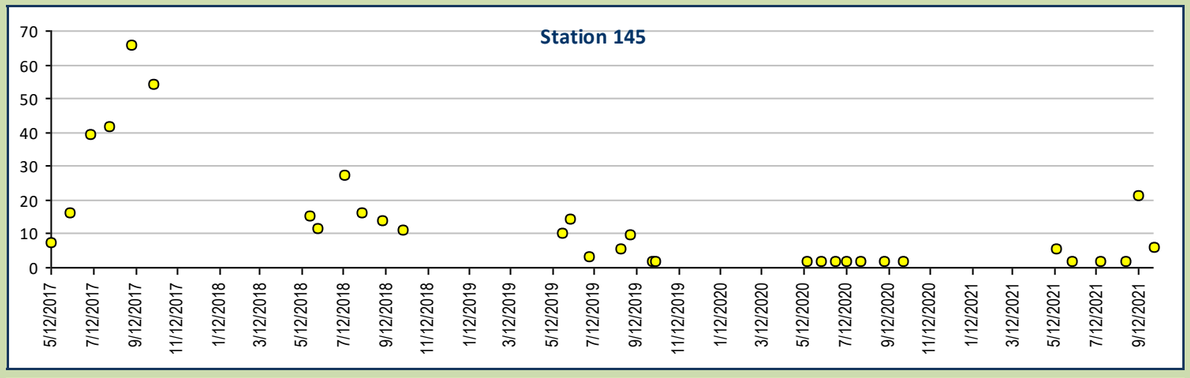
Aquatic Life - Fresh Water Chronic WQS mg/L

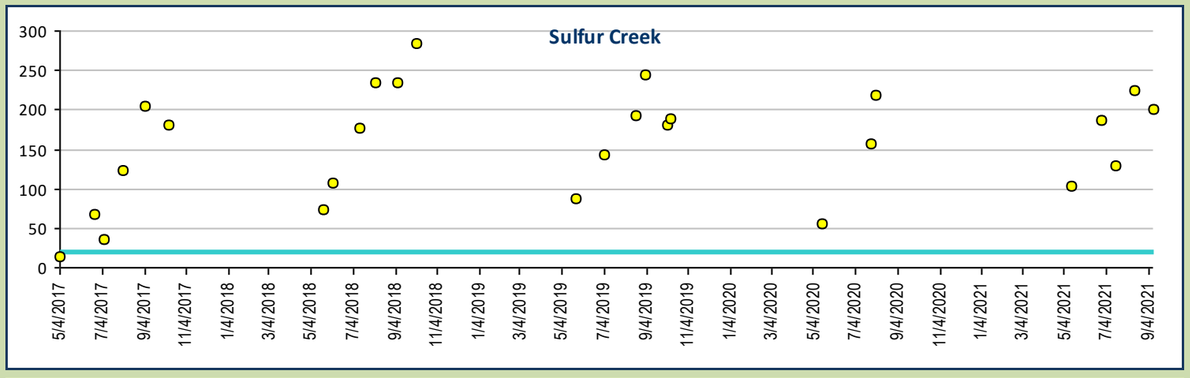
20 mg/L minimum

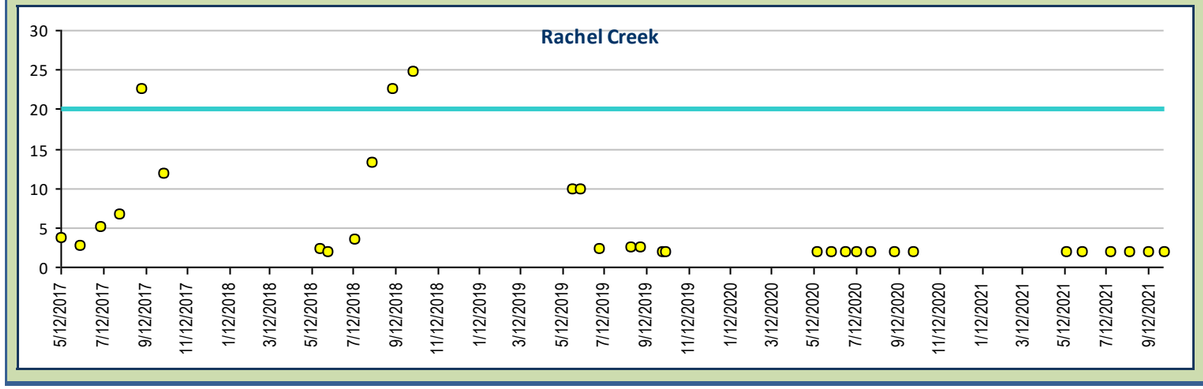


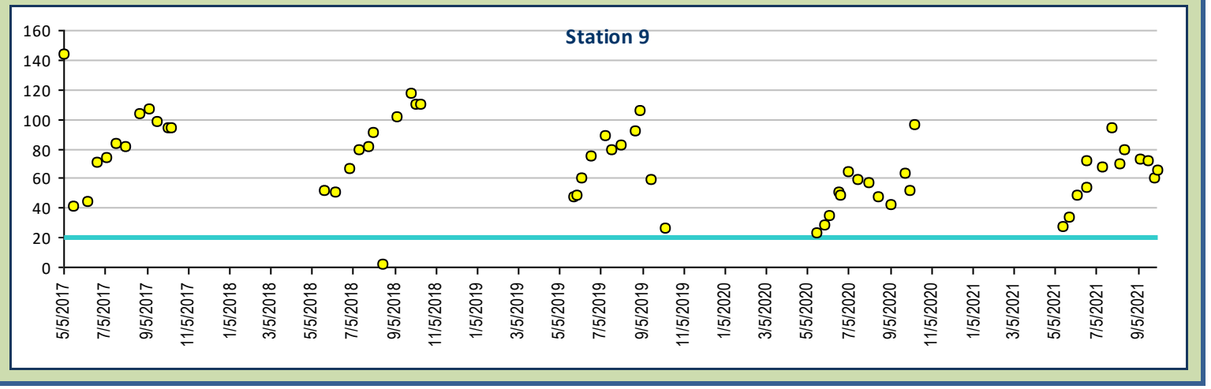












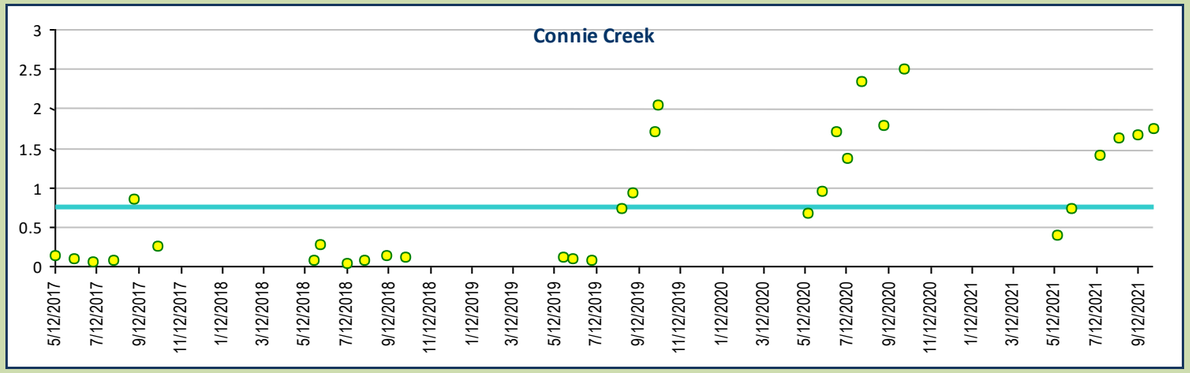
RED DOG MINE

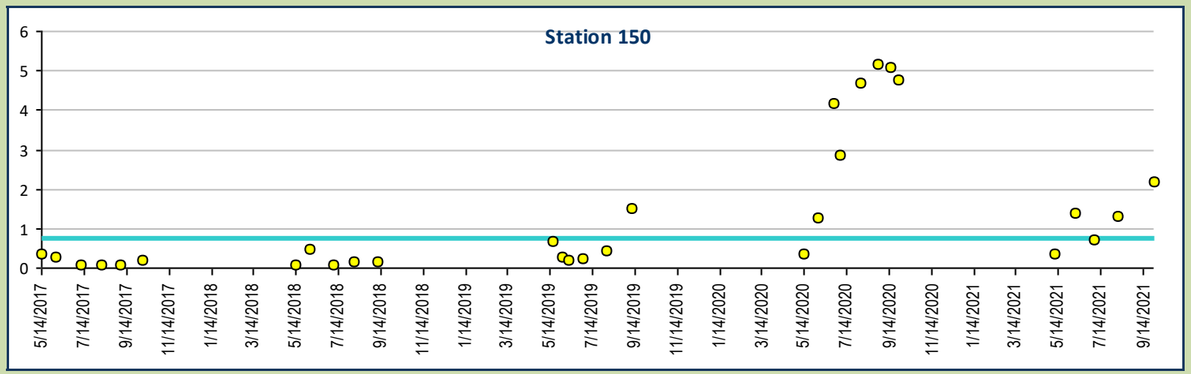
Water Monitoring Mine Drainage
Water Quality Profile I , 5-Year Trend Charts

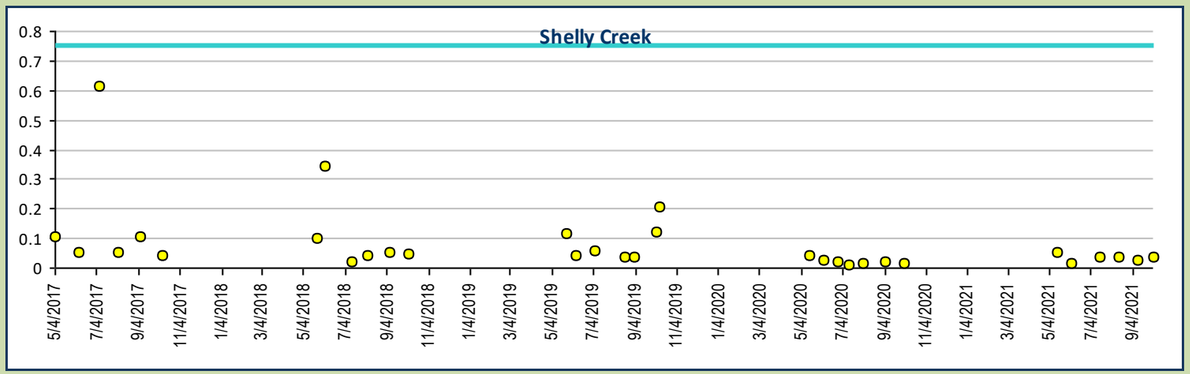
Aluminum, Total recoverable, units mg/L

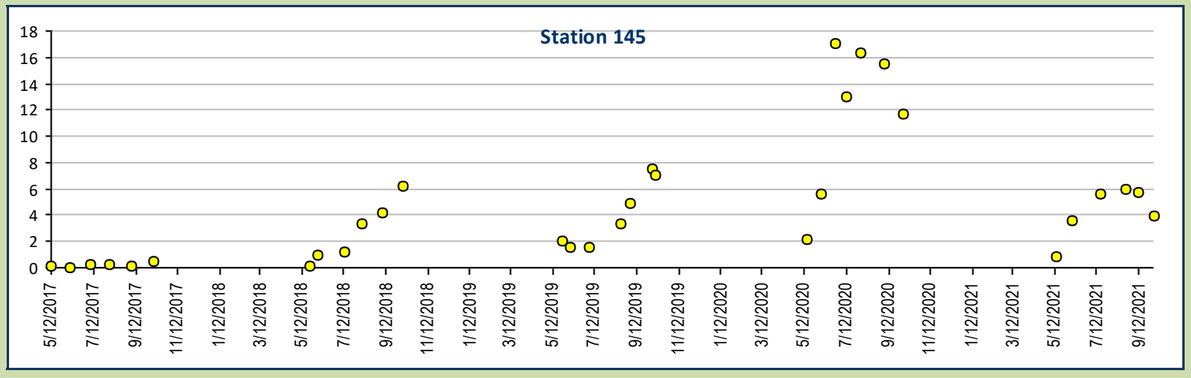
Aquatic Life - Fresh Water Chronic WQS mg/L

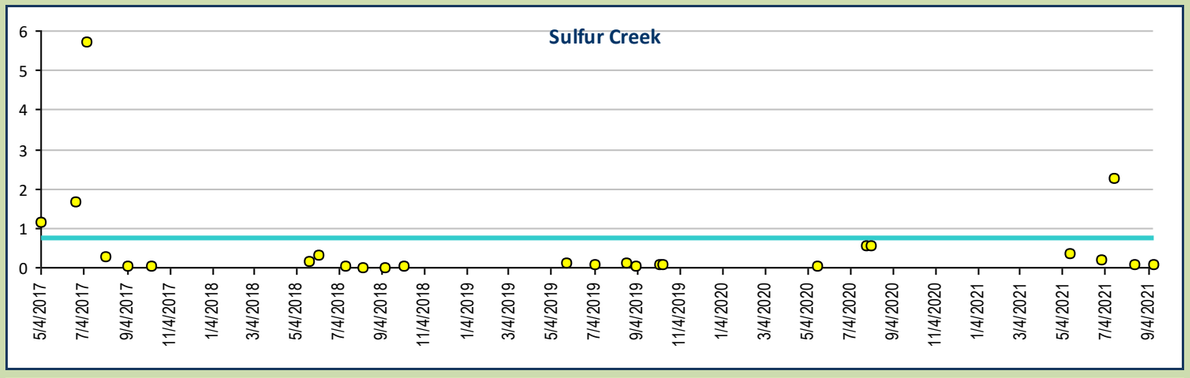
If pH > 7 and hardness > 50. then WQS = 0.75mg/l

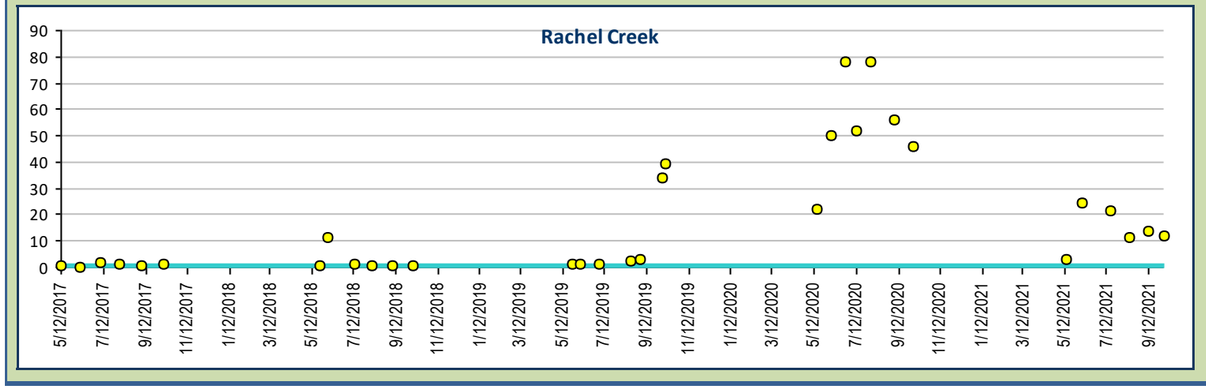


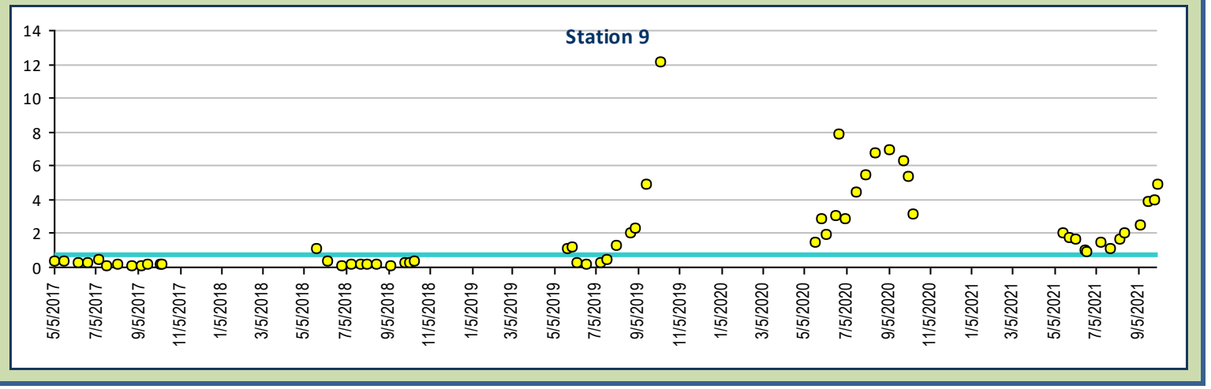












Appendix E: Water Quality Profile I Charts – Bons Creek Monitoring Stations

RED DOG MINE

Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

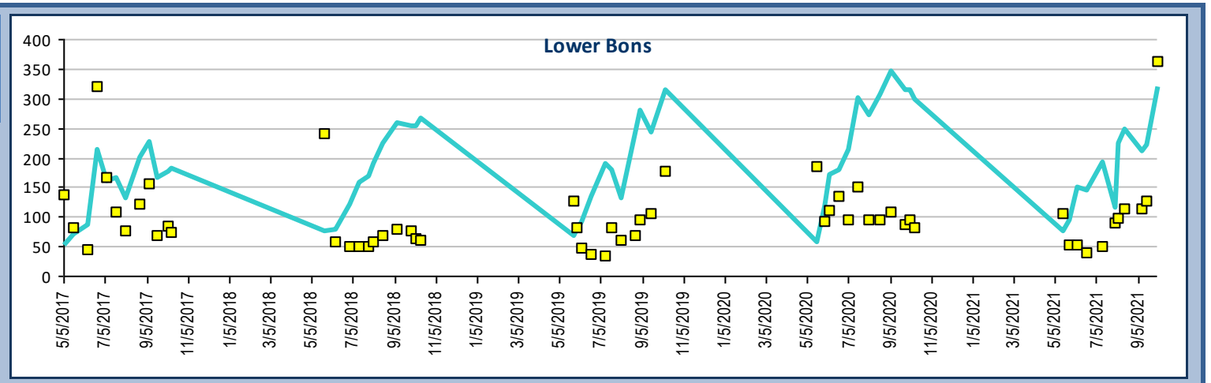
Zinc, Total Recoverable, units ug/L

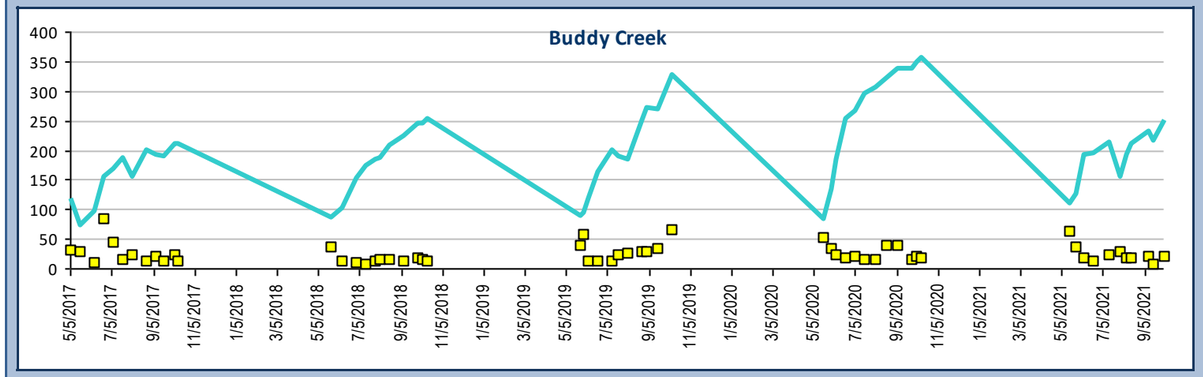
Aquatic Life - Fresh Water Acute WQS ug/L

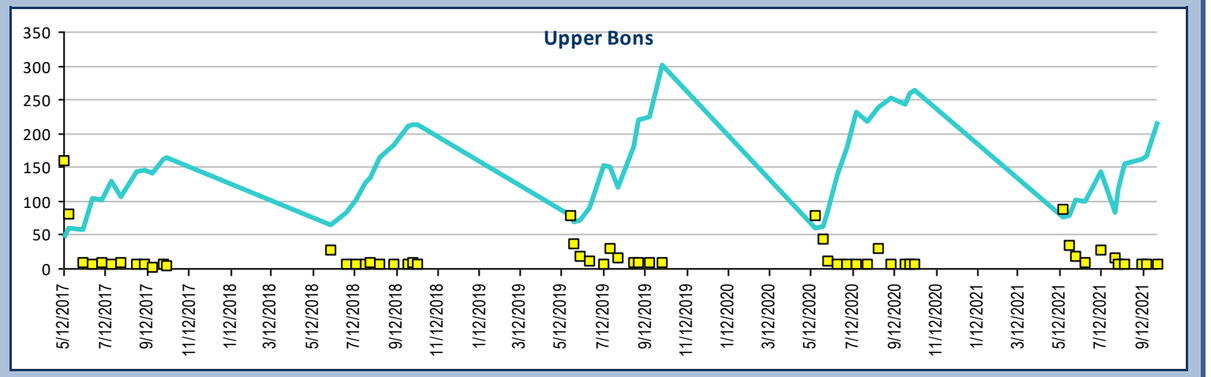
Hardness Dependent Calculation

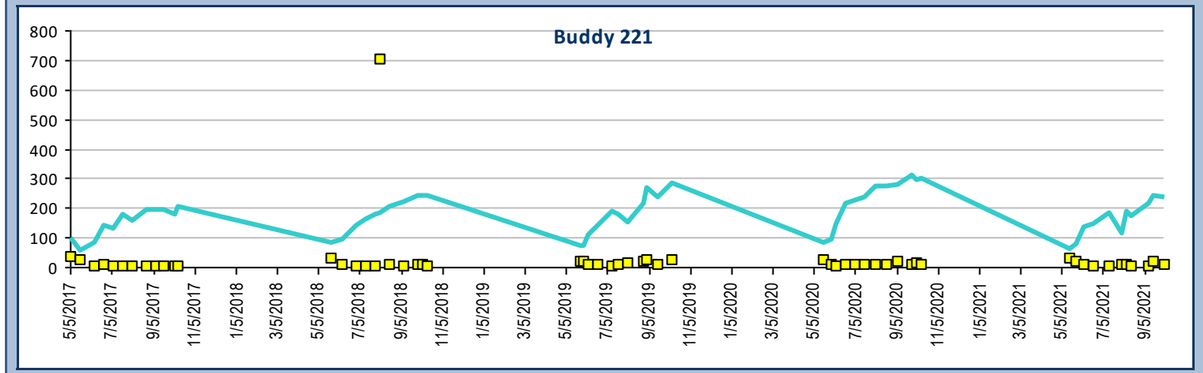
=EXP(0.8473*(LN(*hardness))+0.884)

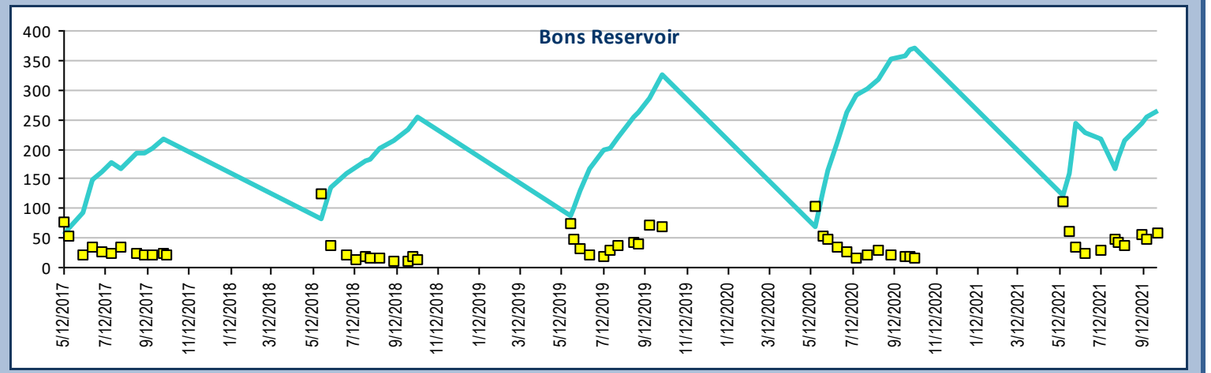
* Calculated using Standard Methods 2340B

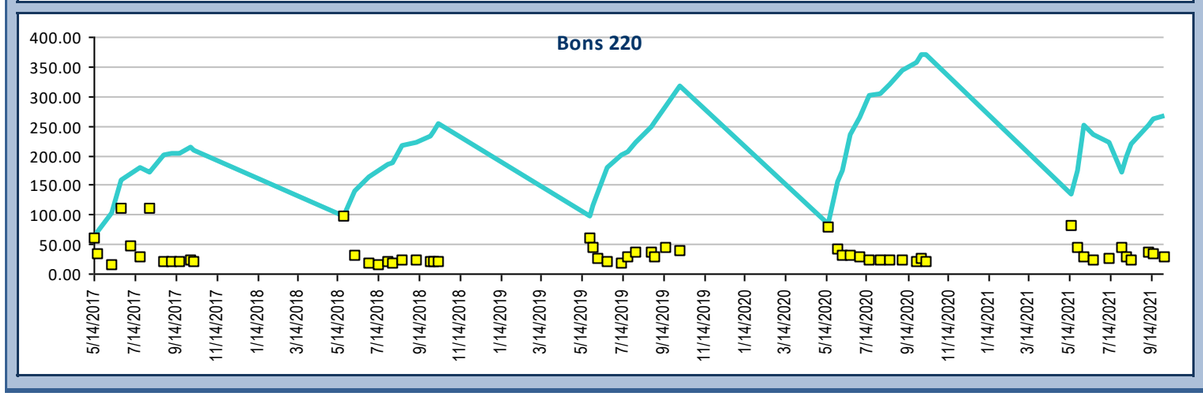


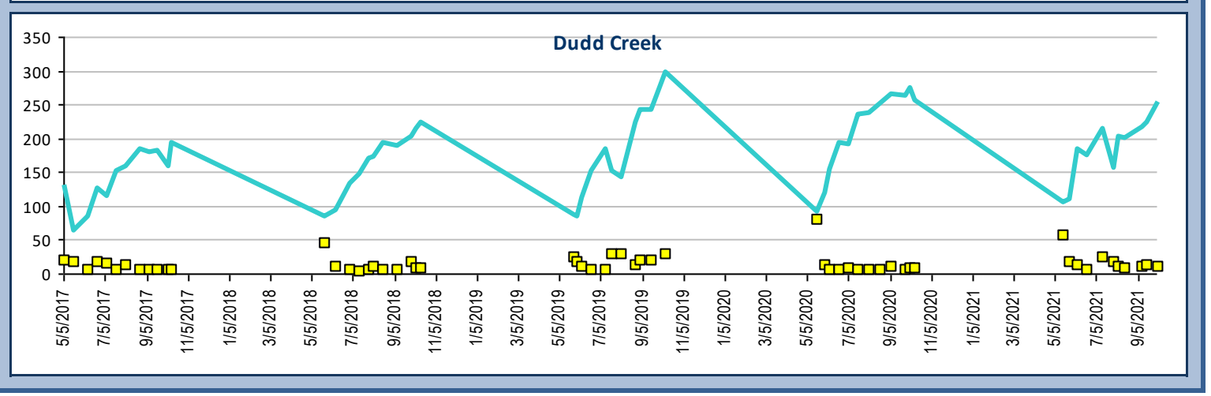








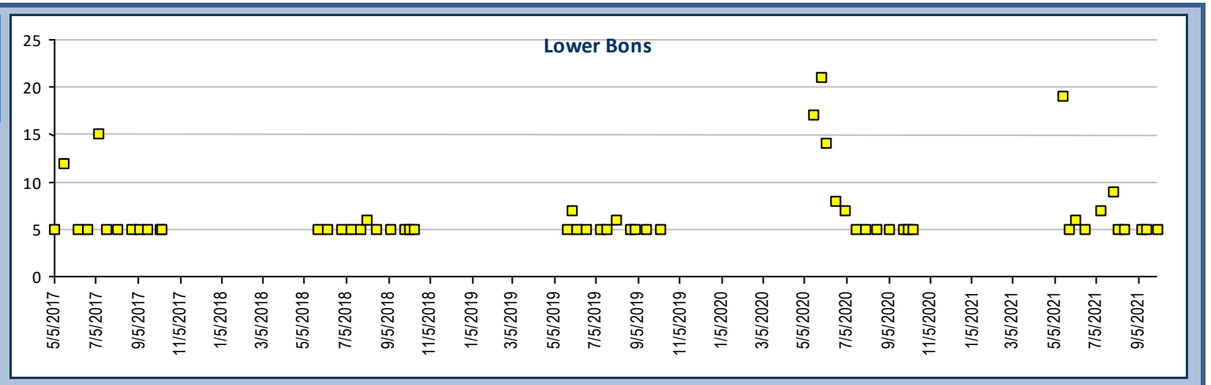


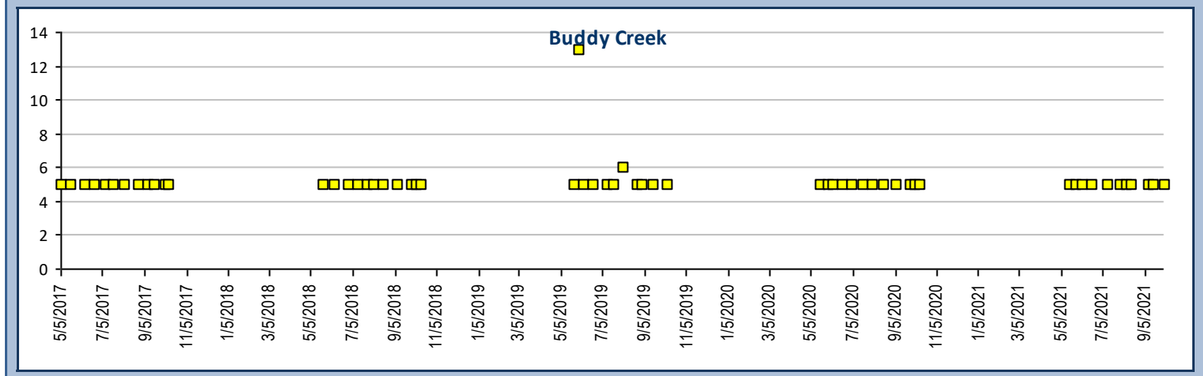


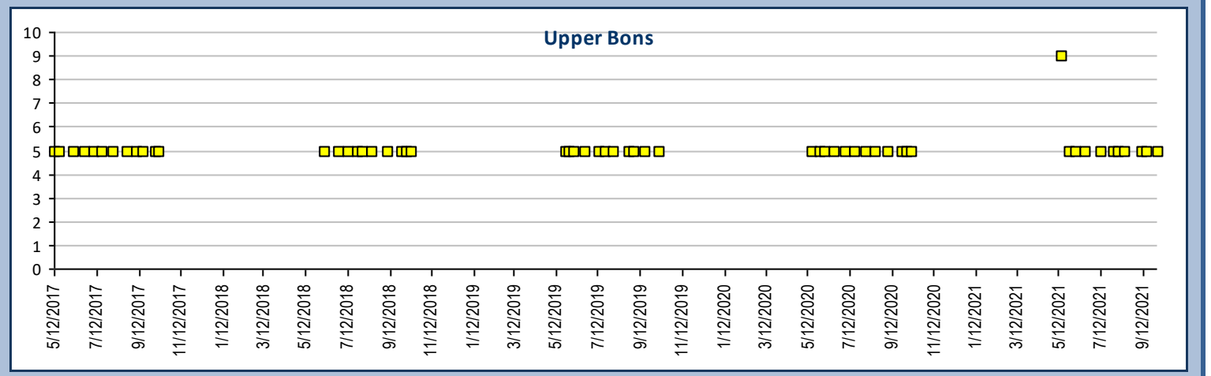
RED DOG MINE

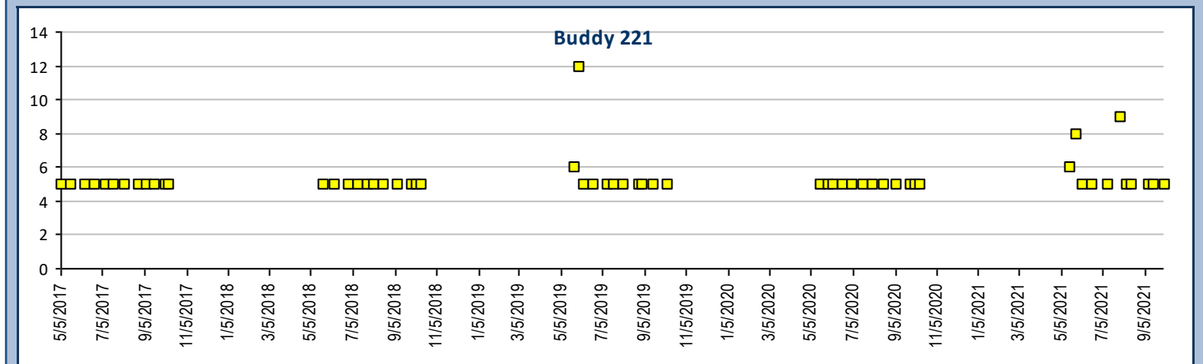
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

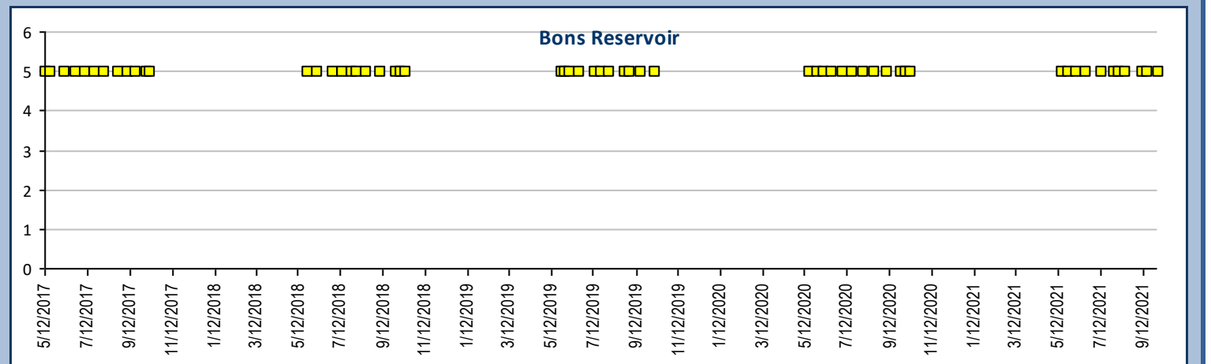
Total Suspended Solids, units mg/L

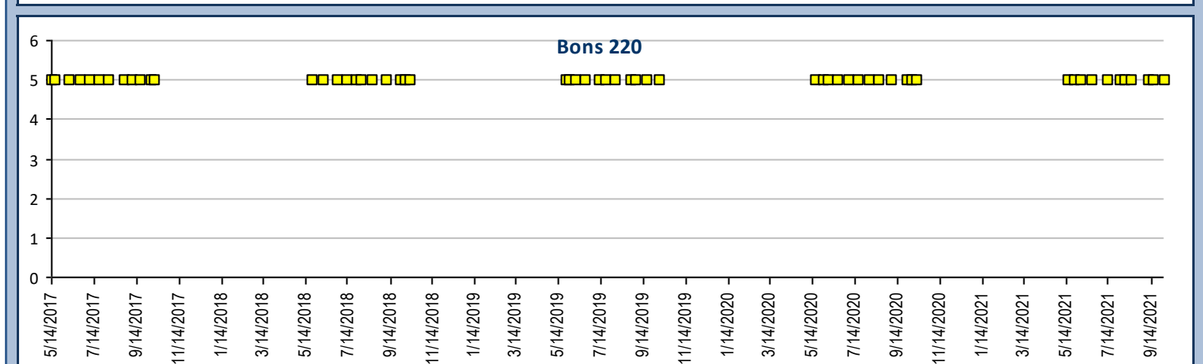


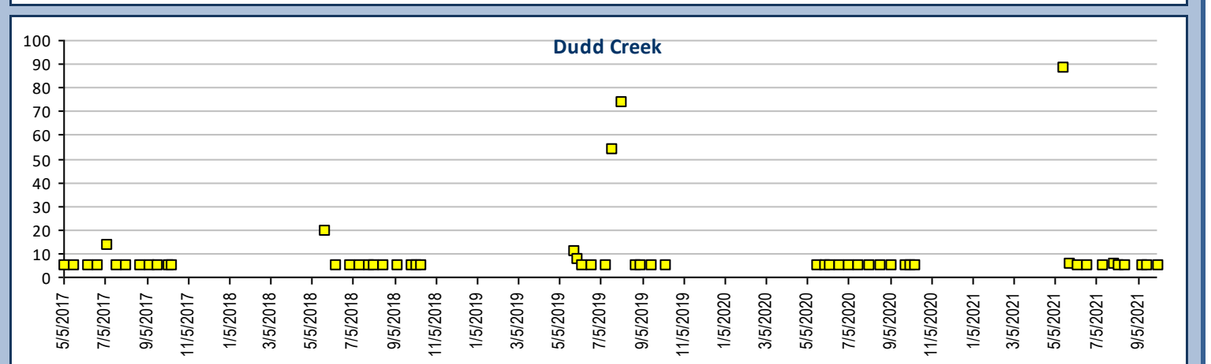












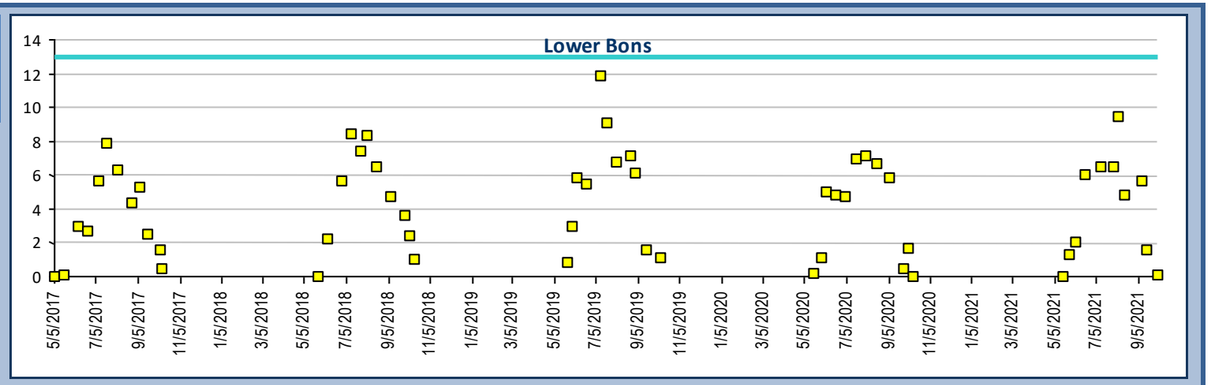
RED DOG MINE

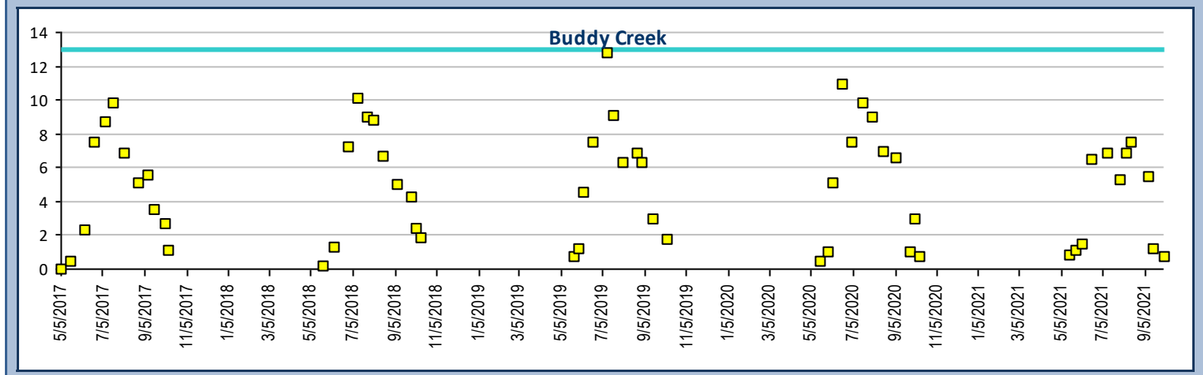
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

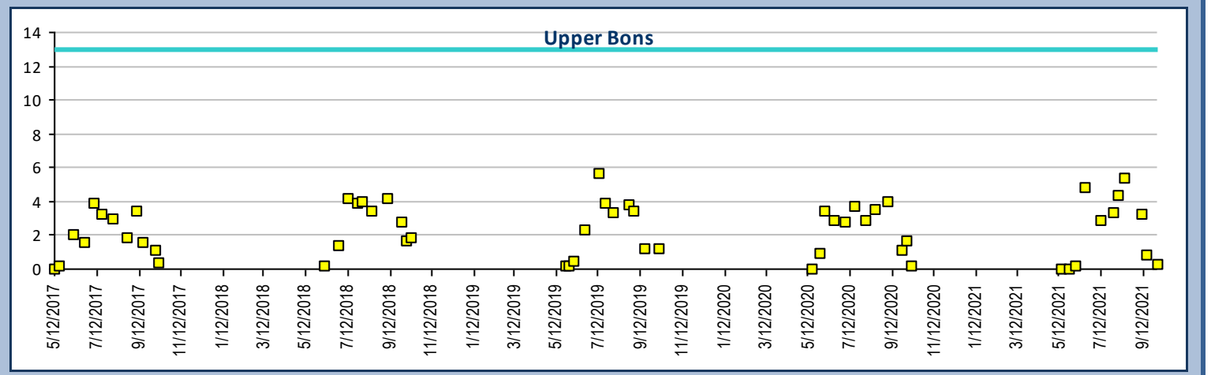
Temperature Field, units Celsius

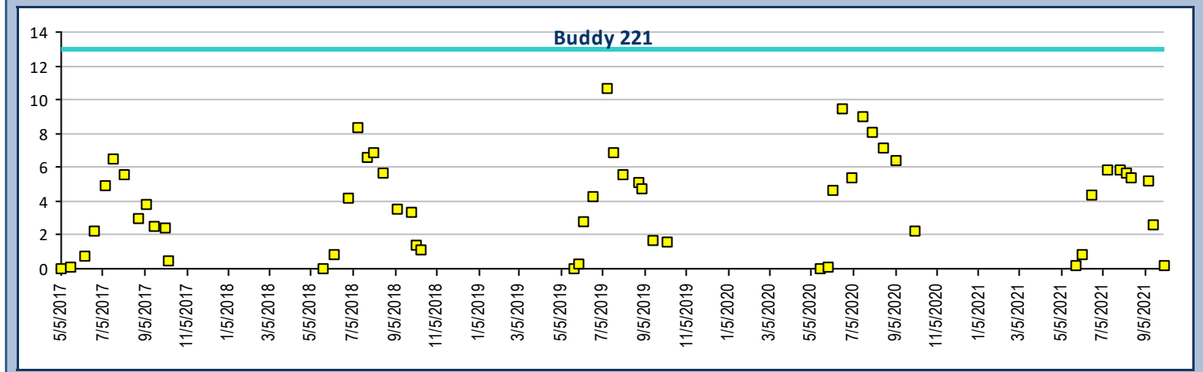
Site Specific WQS mg/L

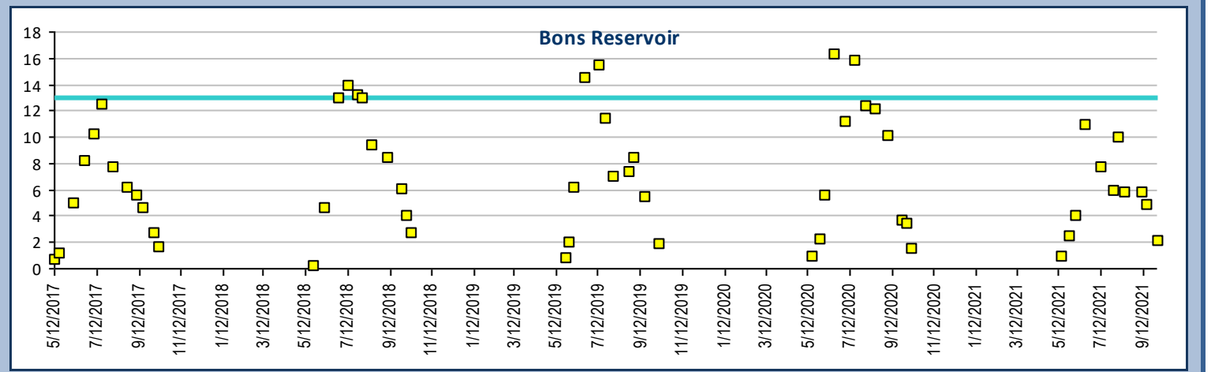
13 Celsius

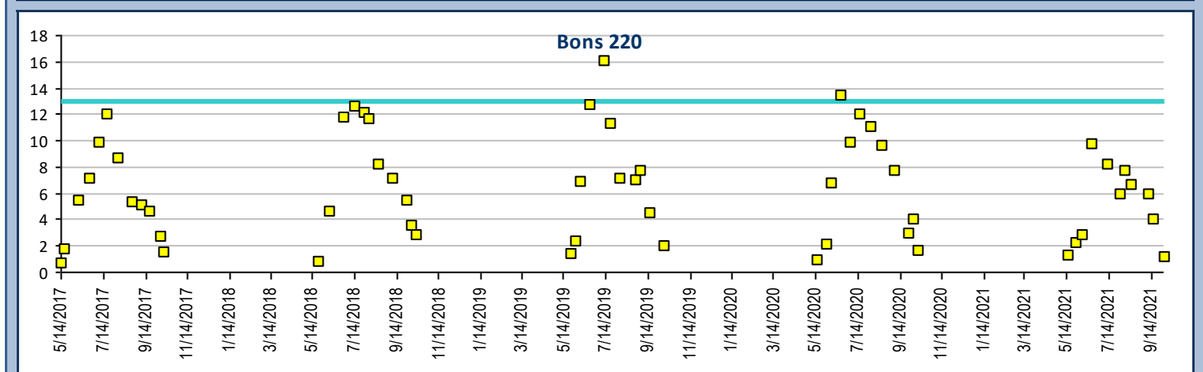


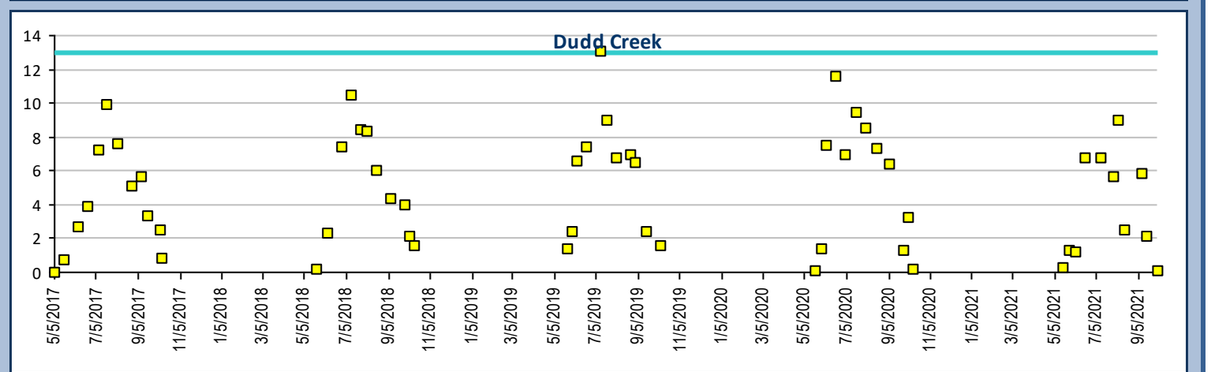












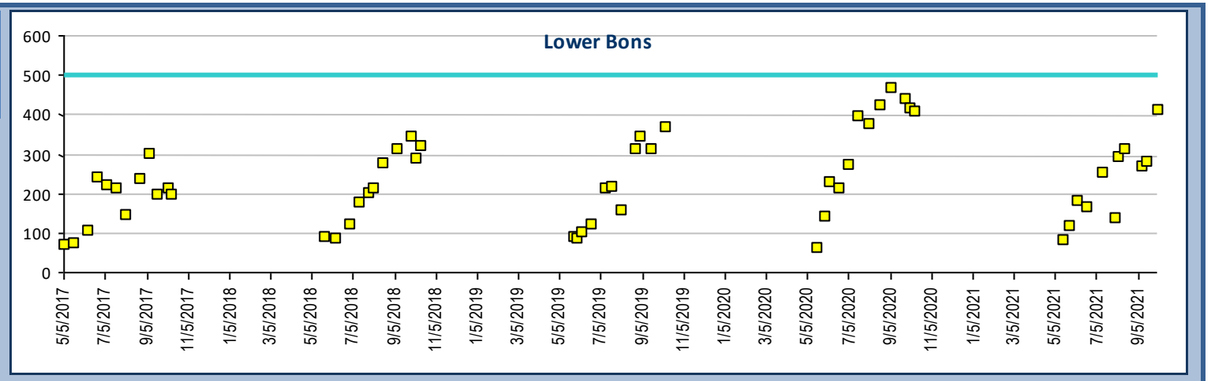
RED DOG MINE

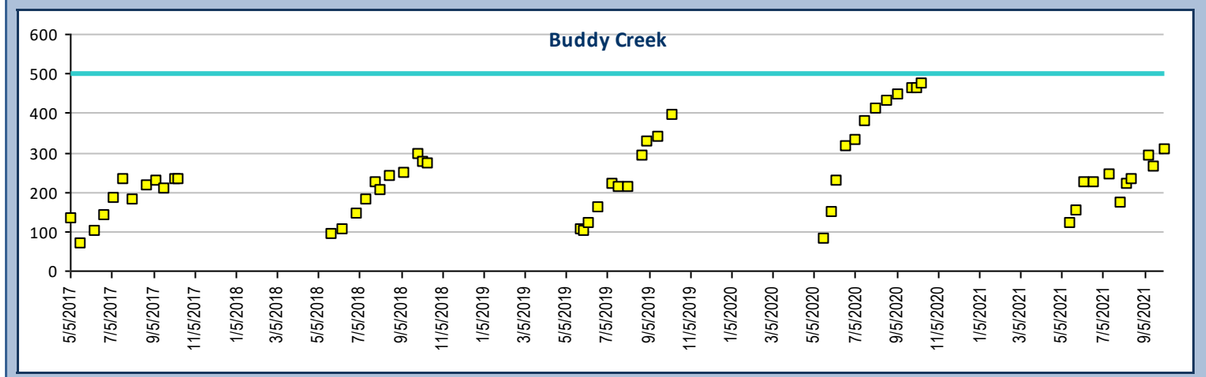
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

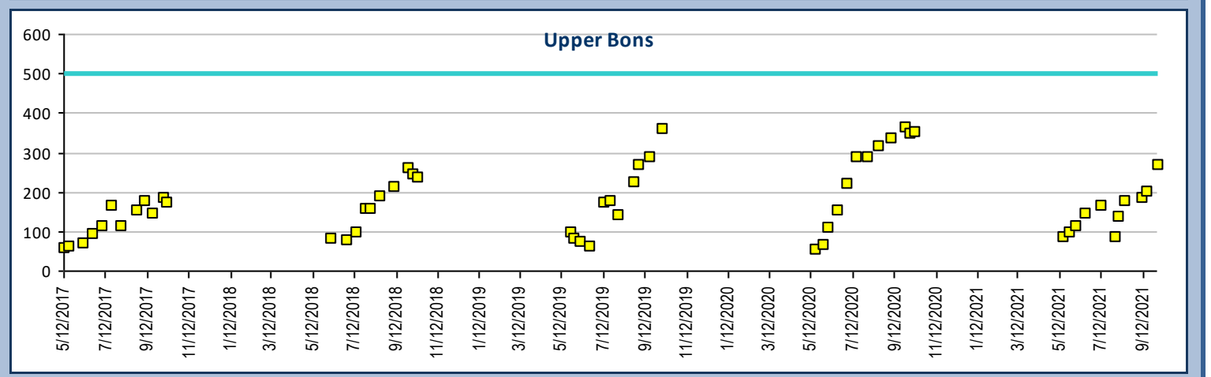
Total Dissolved Solids, units mg/L

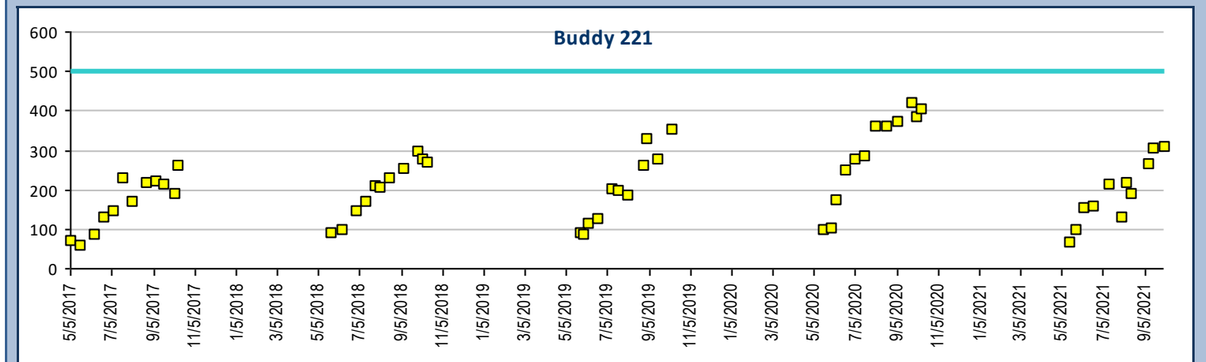
Site Specific WQS mg/L

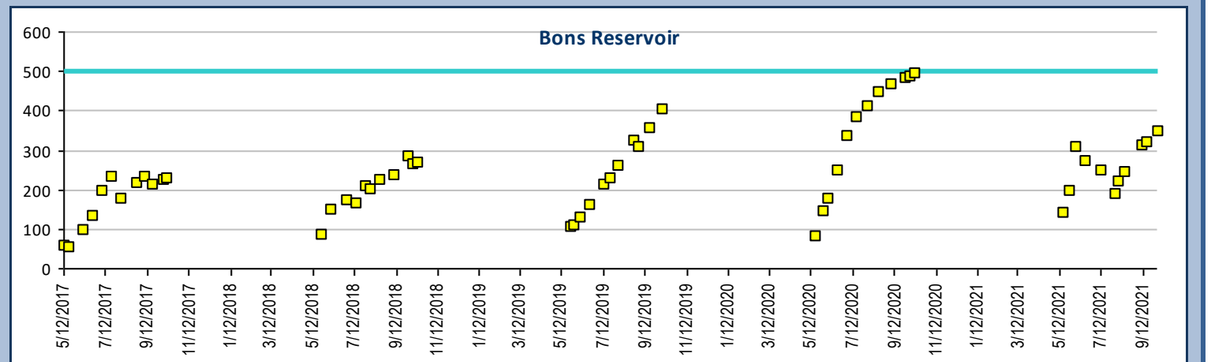
500 mg/L

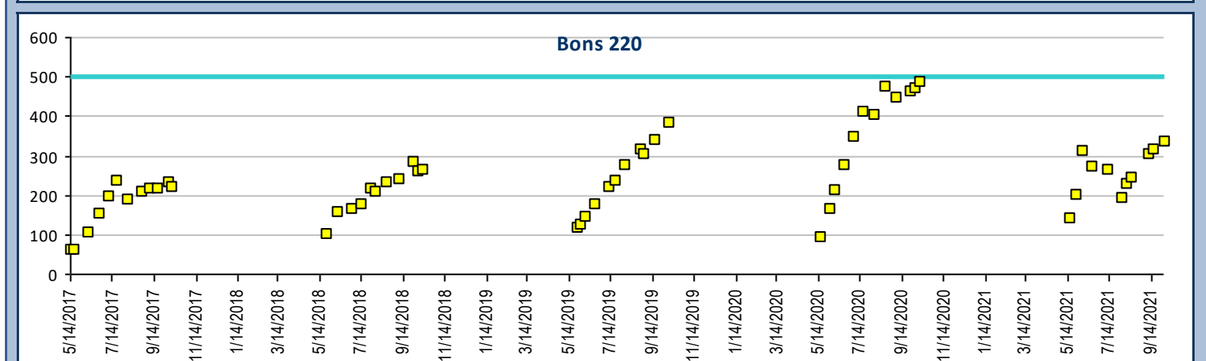


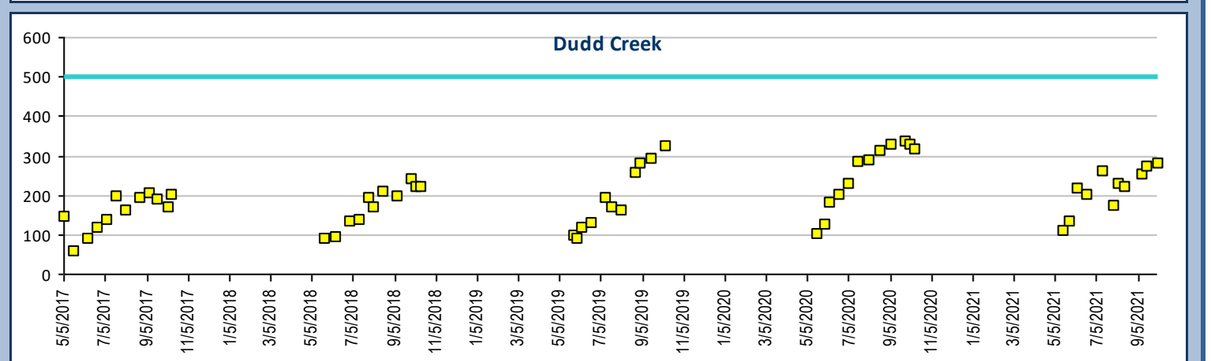








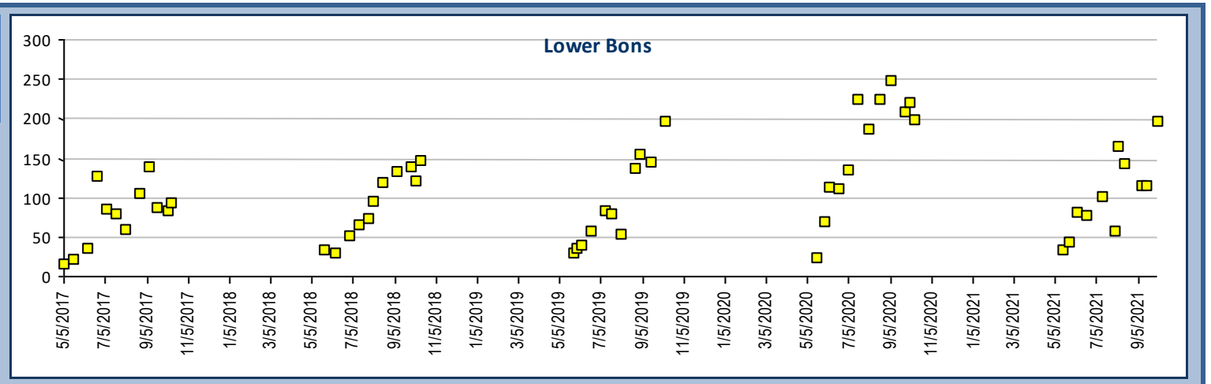


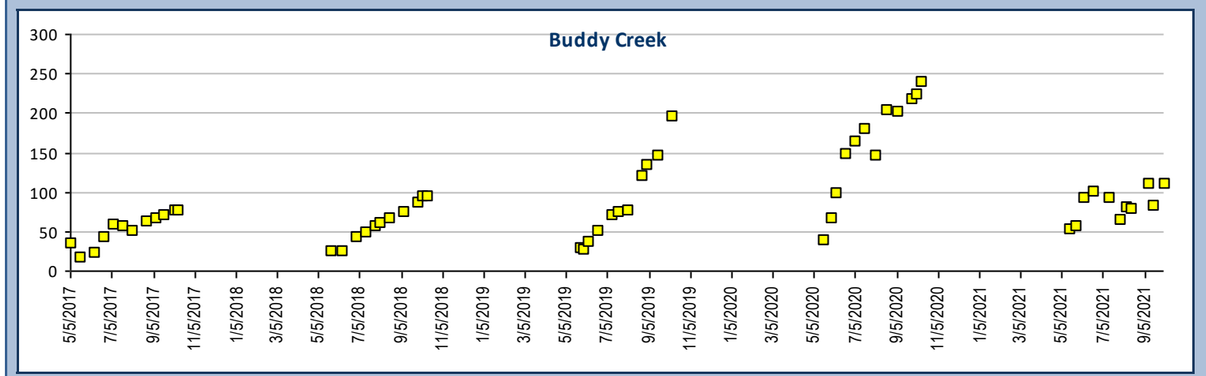


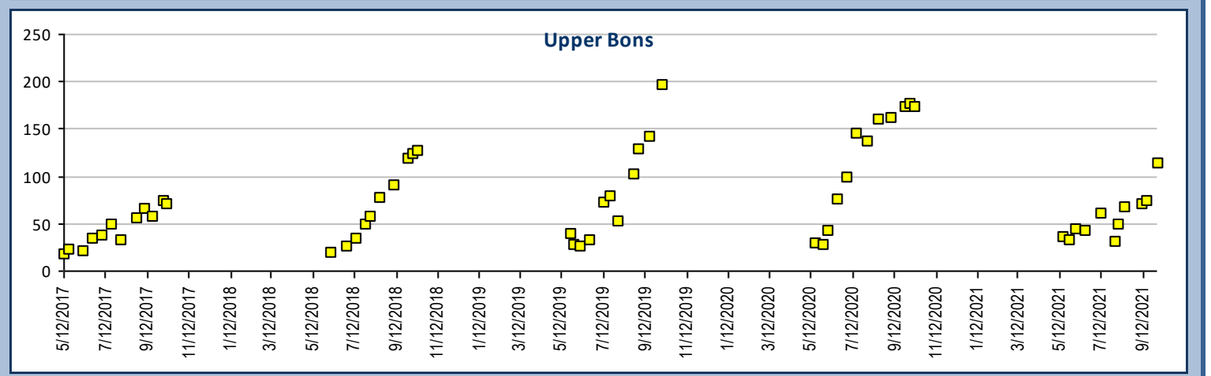
RED DOG MINE

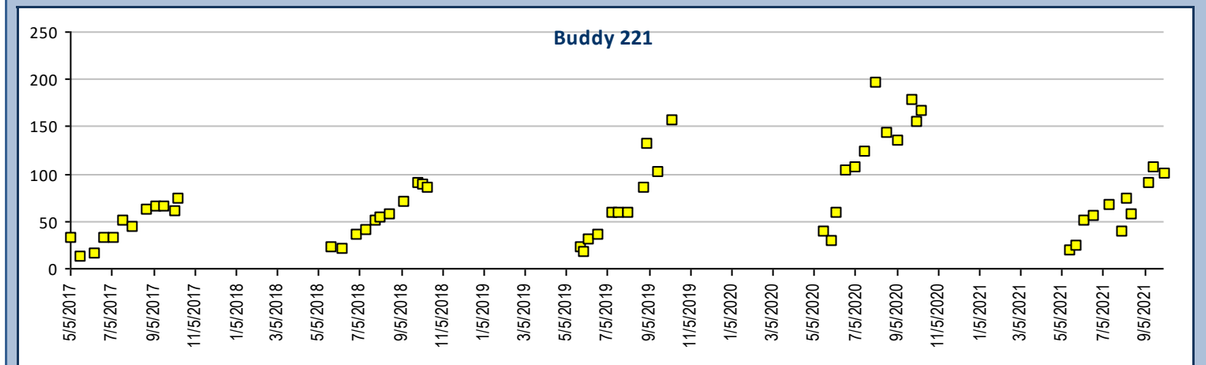
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

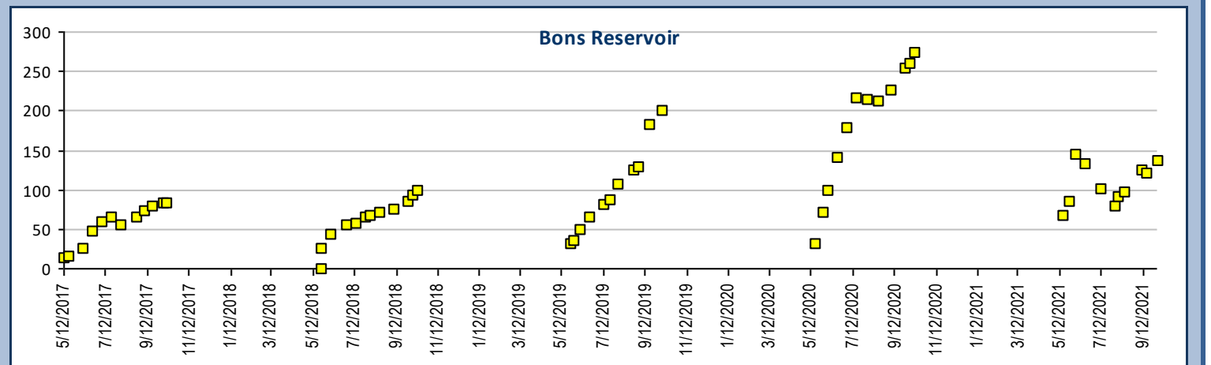
Sulfate, Total recoverable, units mg/L

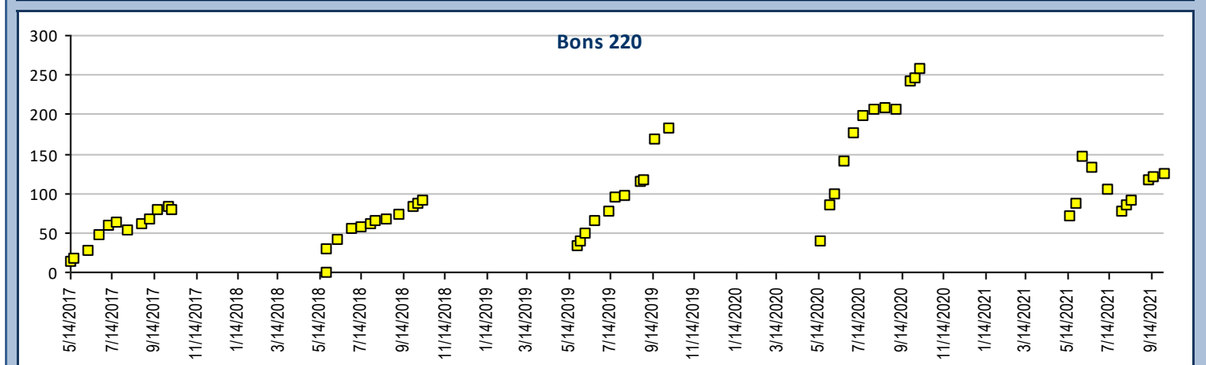


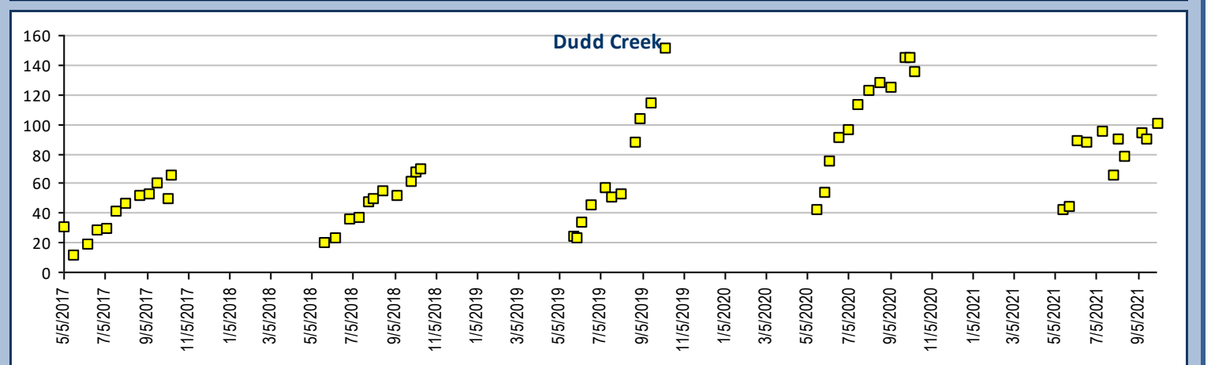












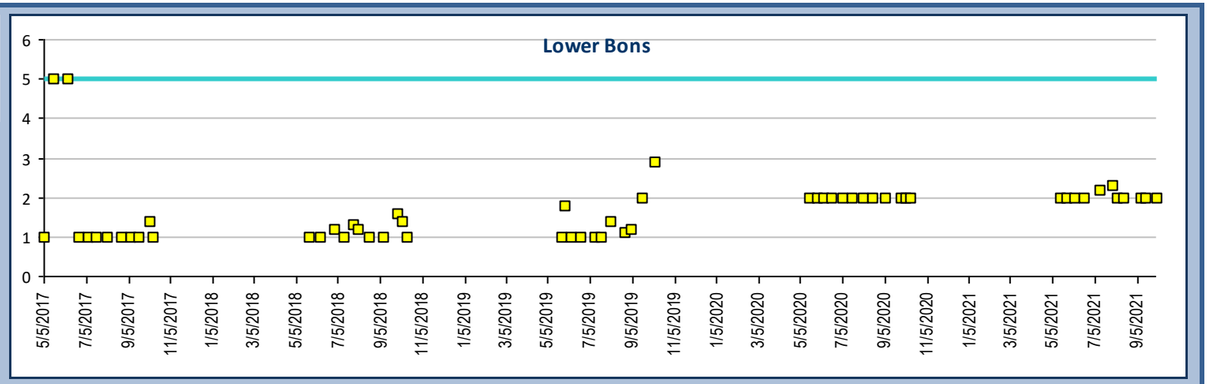
RED DOG MINE

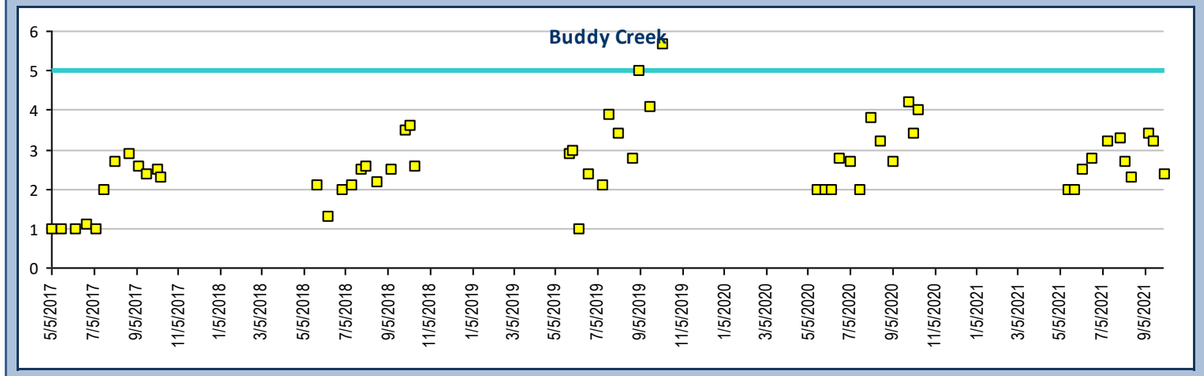
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

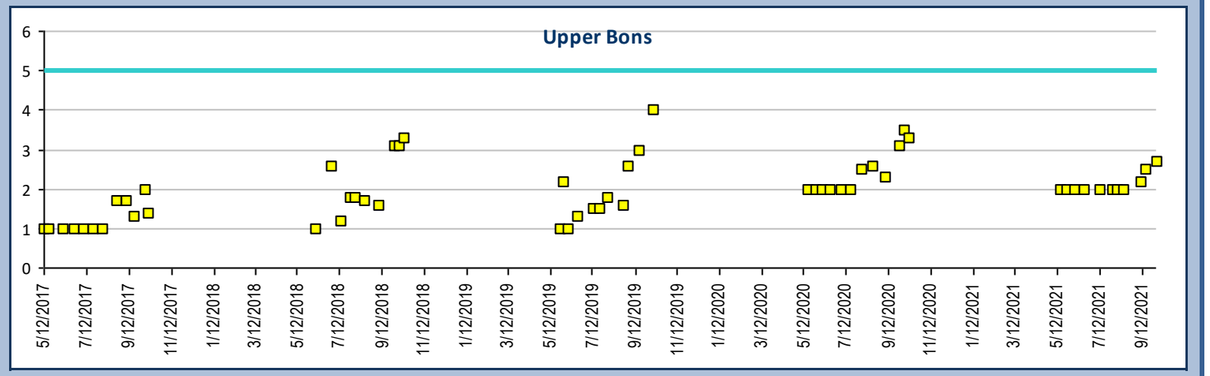
Selenium, Total Recoverable, units ug/L

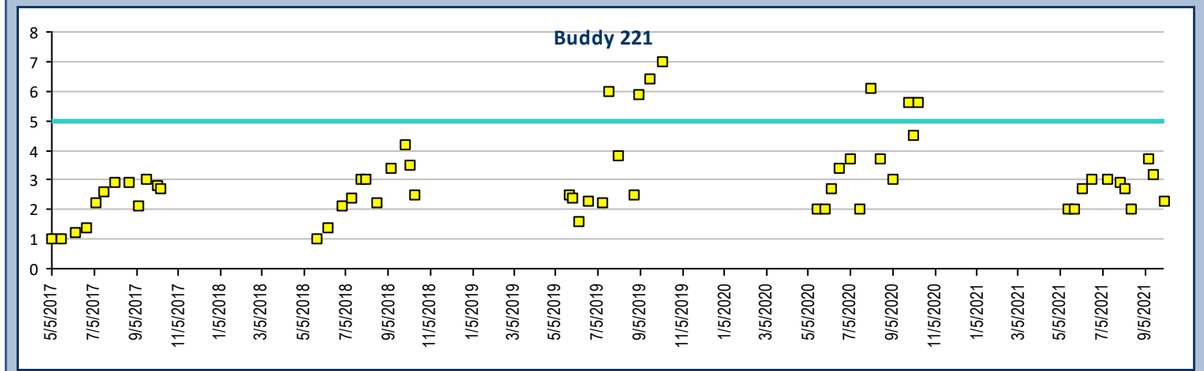
Aquatic Life - Fresh Water Chronic WQS ug/L

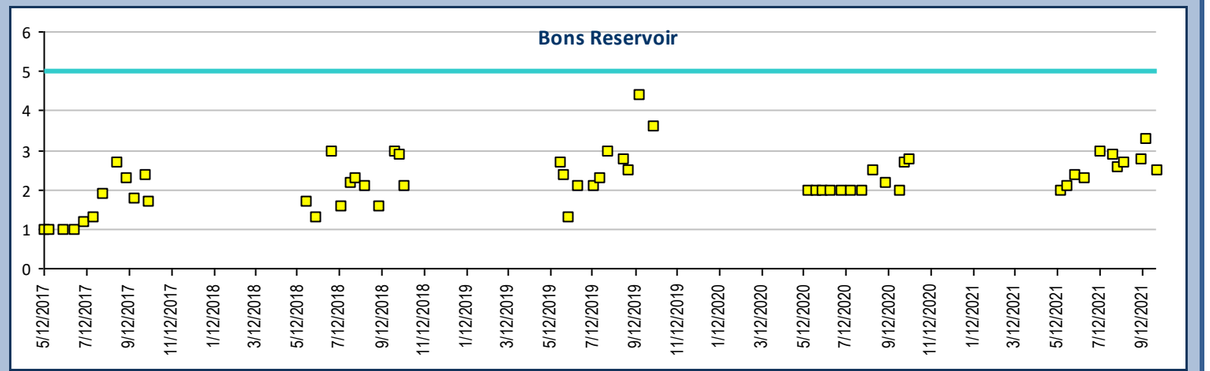
5 ug/L

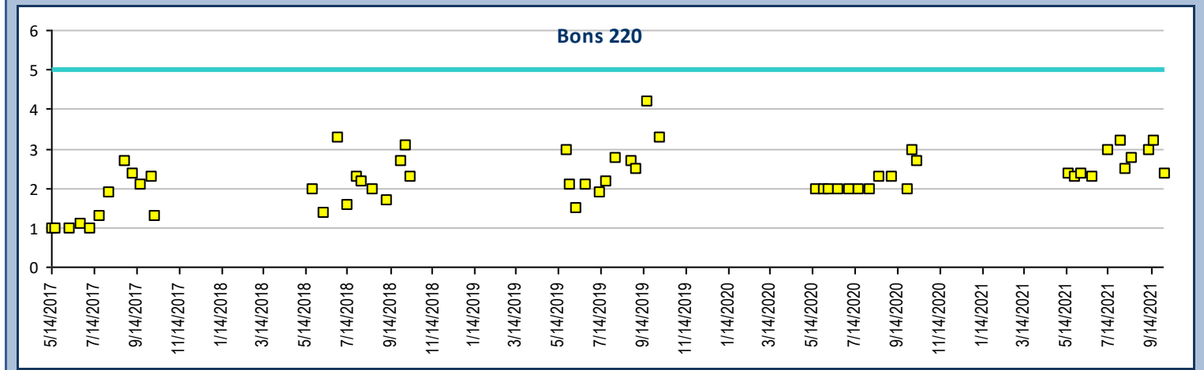


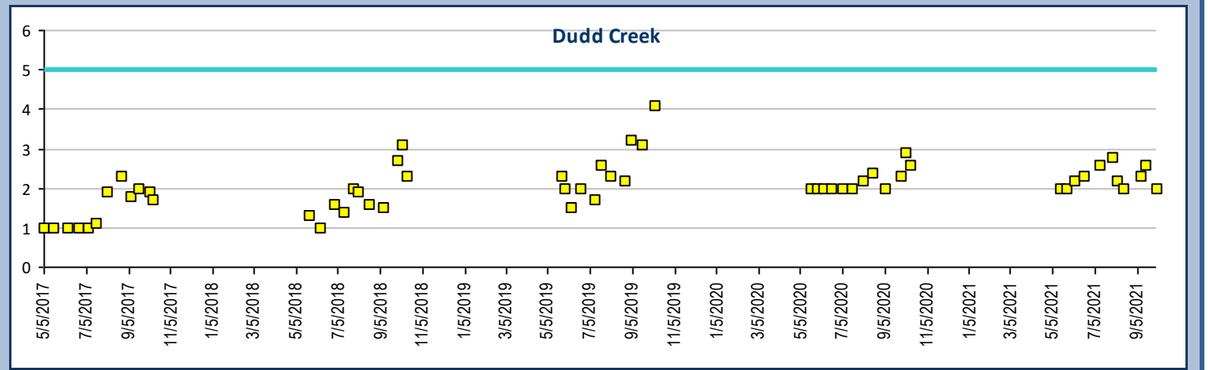










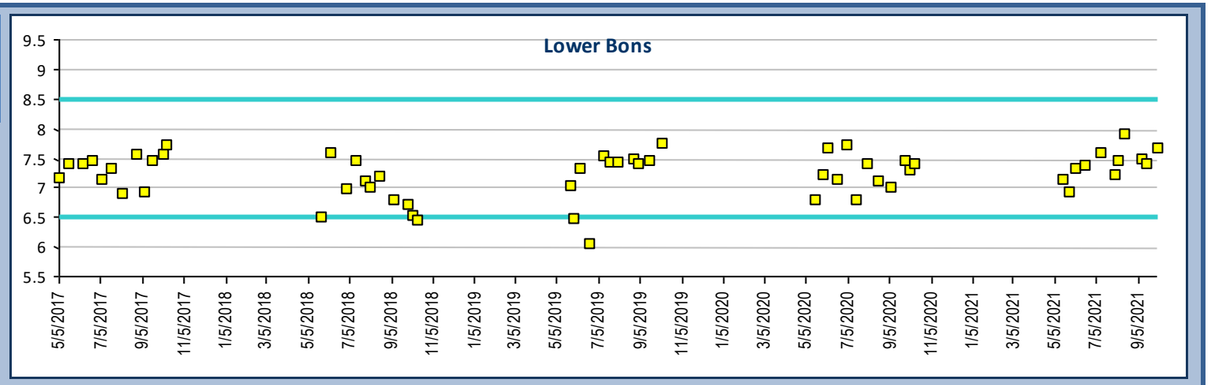


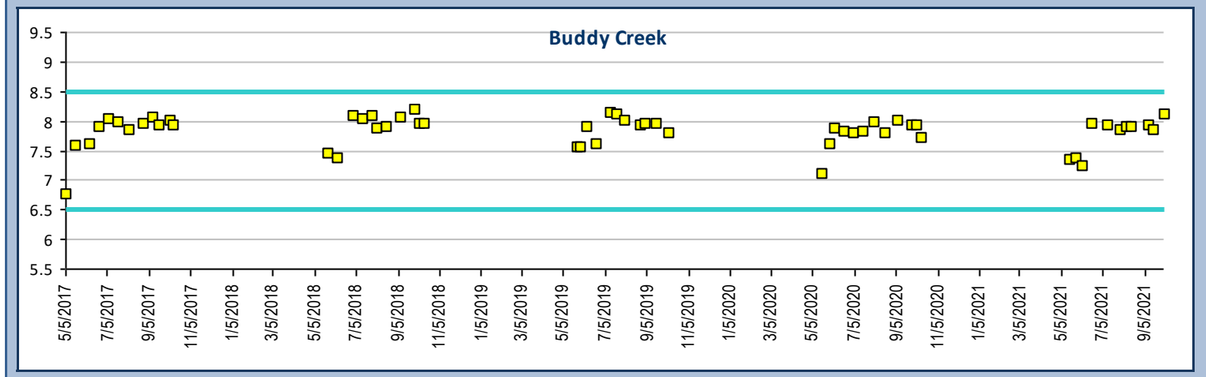
RED DOG MINE

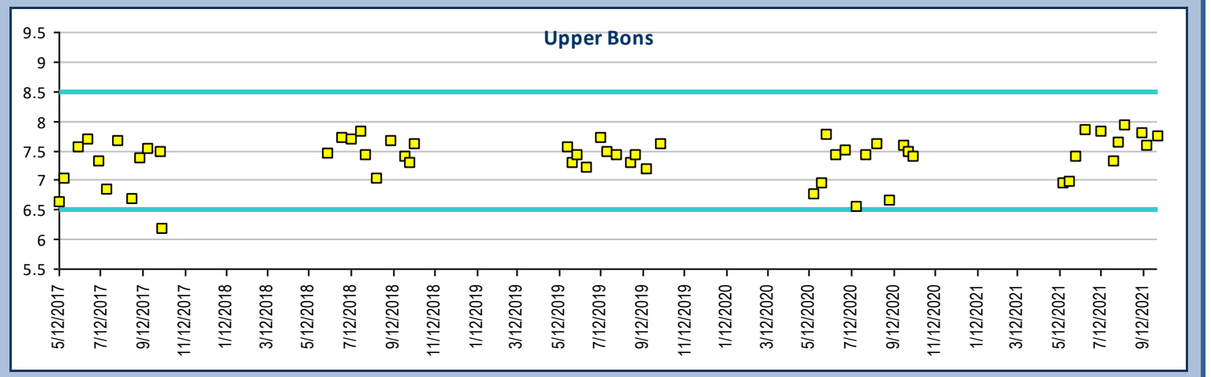
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

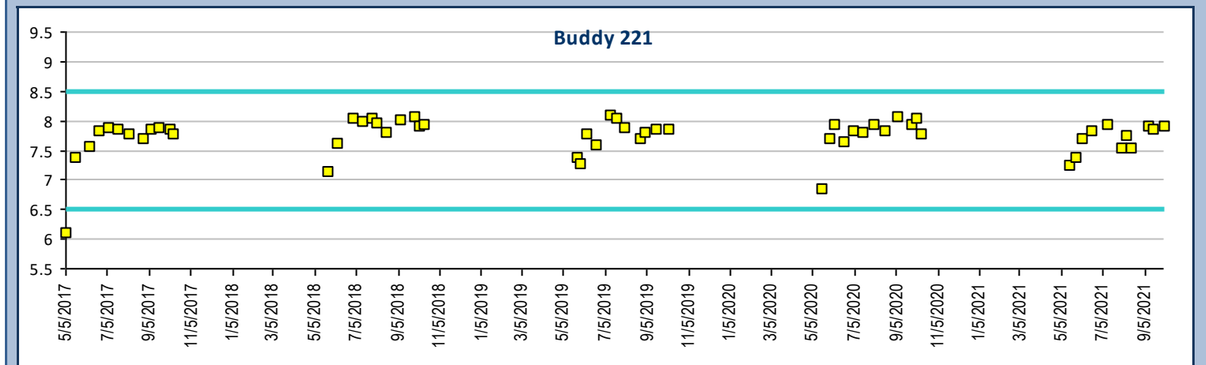
pH

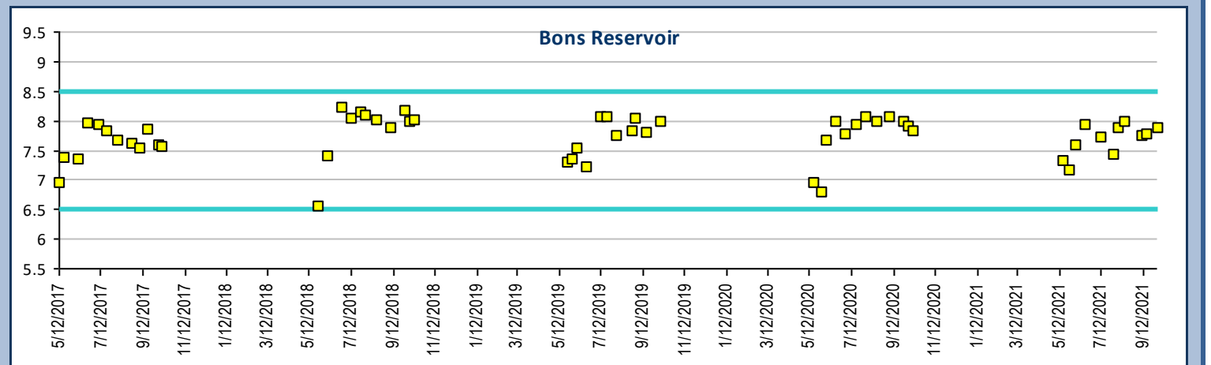
Site Specific WQS between 6.5 and 8.5

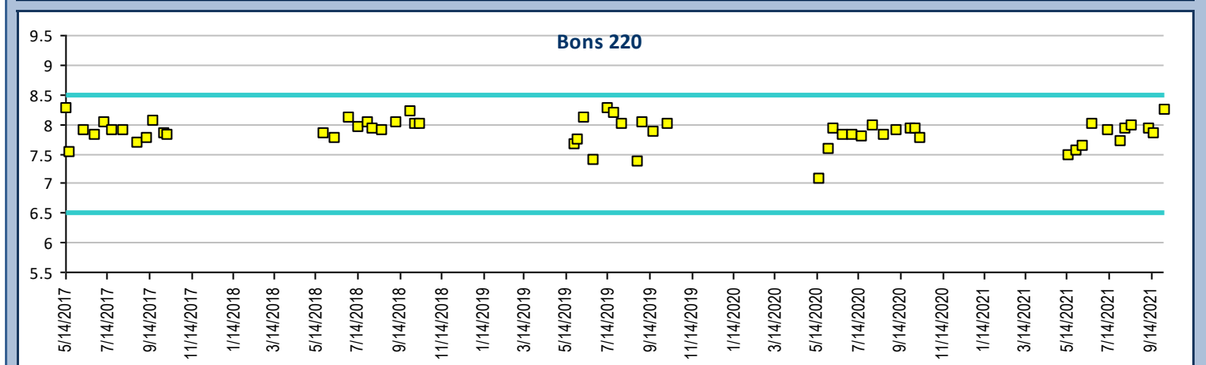


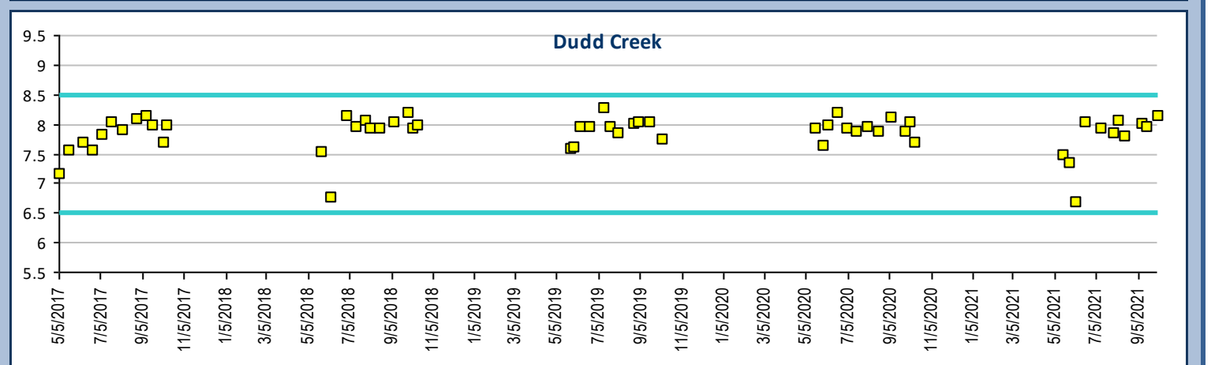












Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

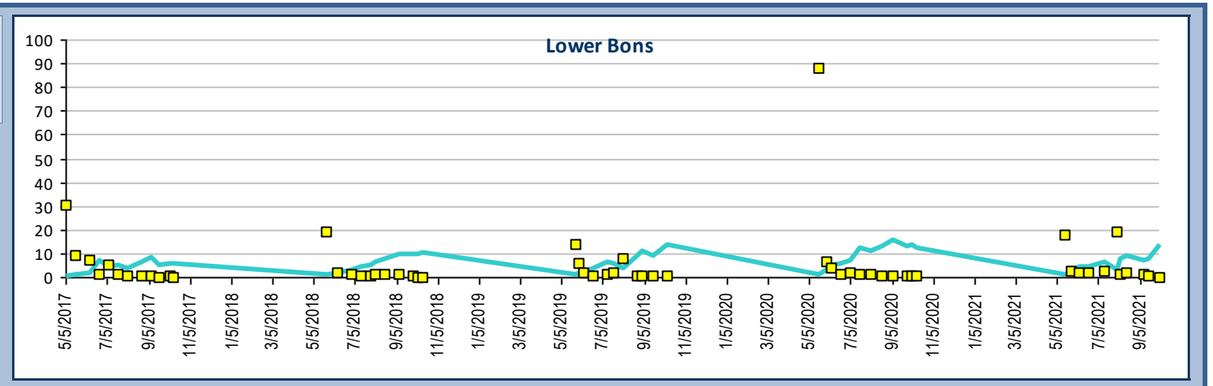
Lead, Total recoverable, units ug/L

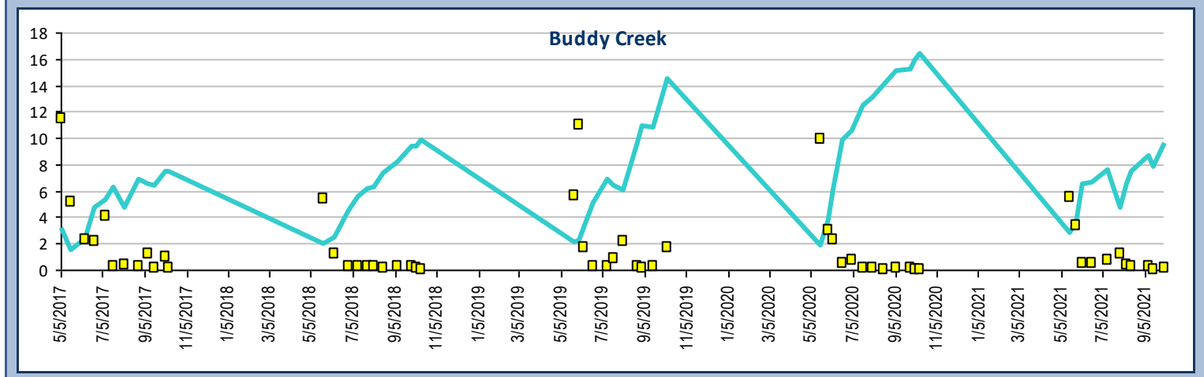
Aquatic Life - Fresh Water Chronic WQS ug/L

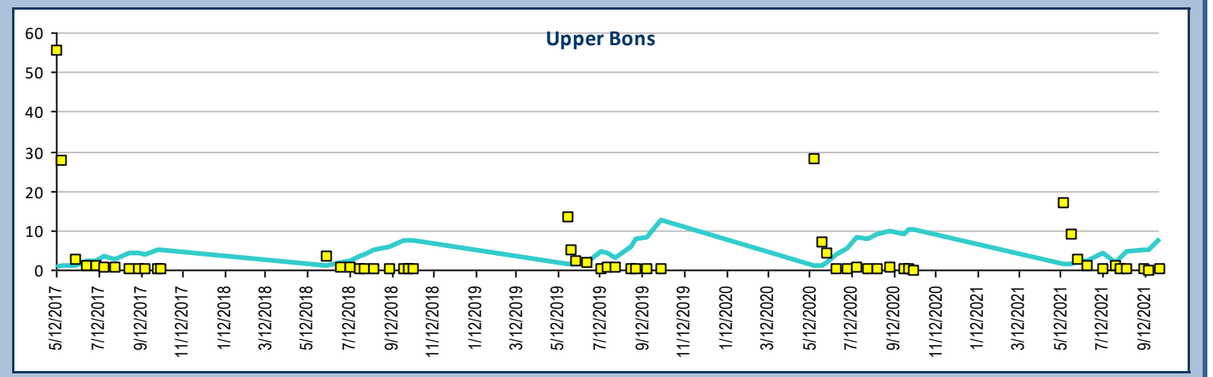
Hardness Dependent Calculation

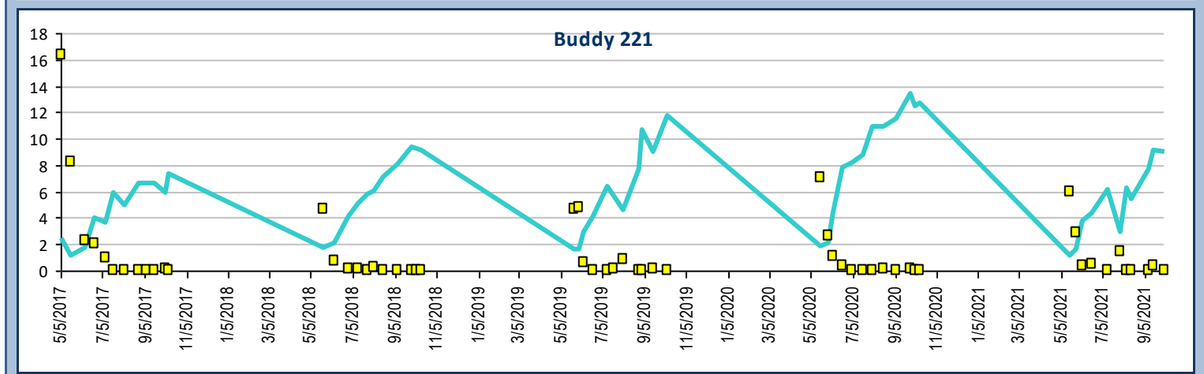
=EXP(1.273*(LN(calc *hardness))-4.705)

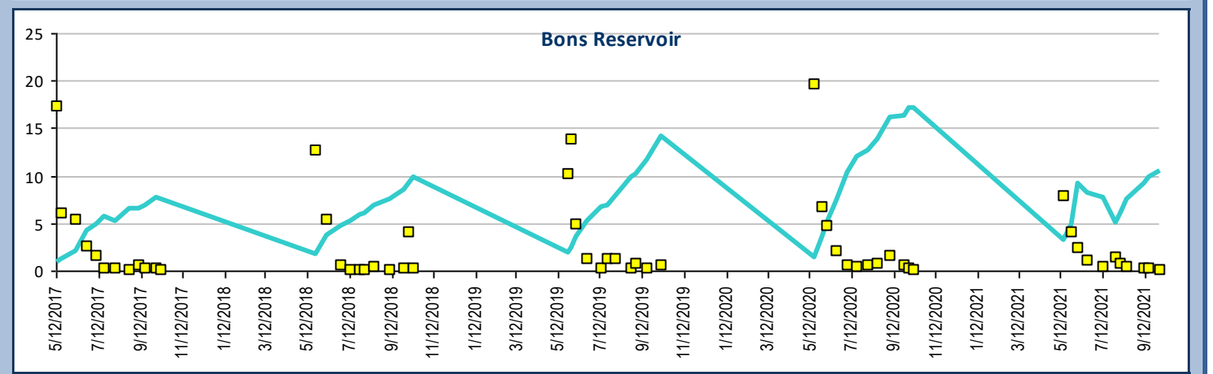
* Calculated using Standard Methods 2340B

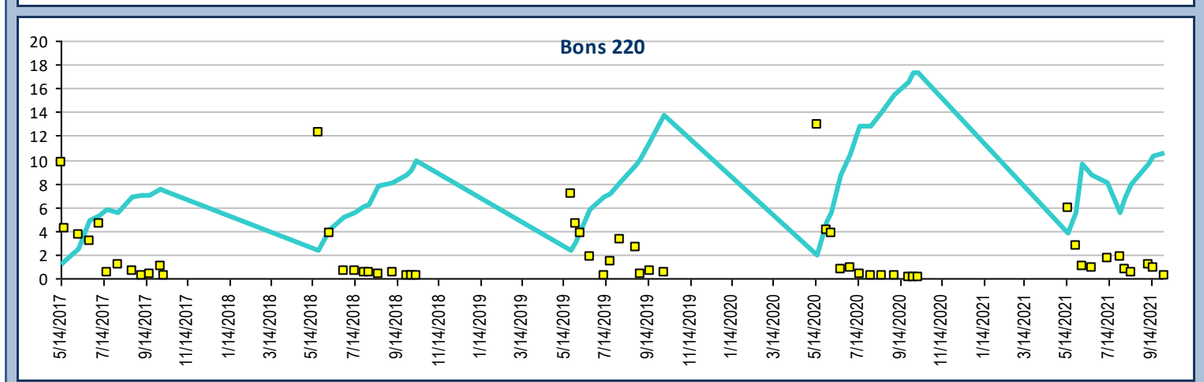


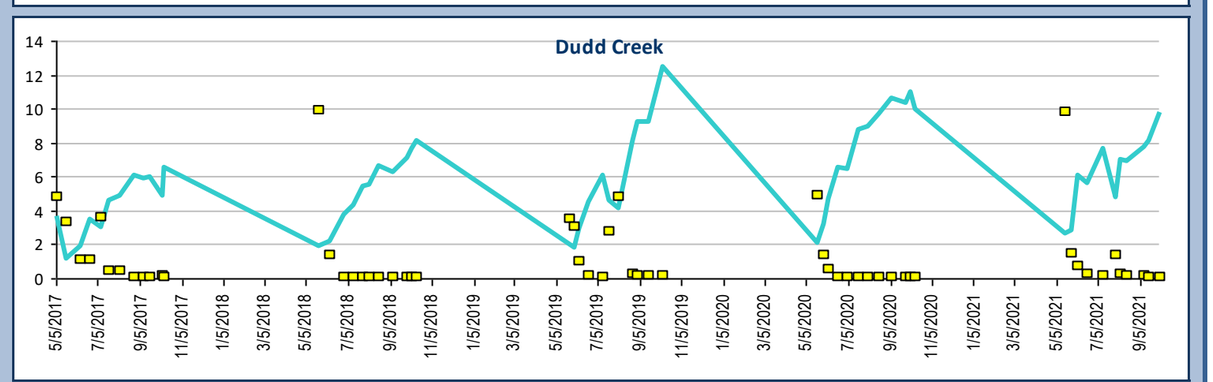








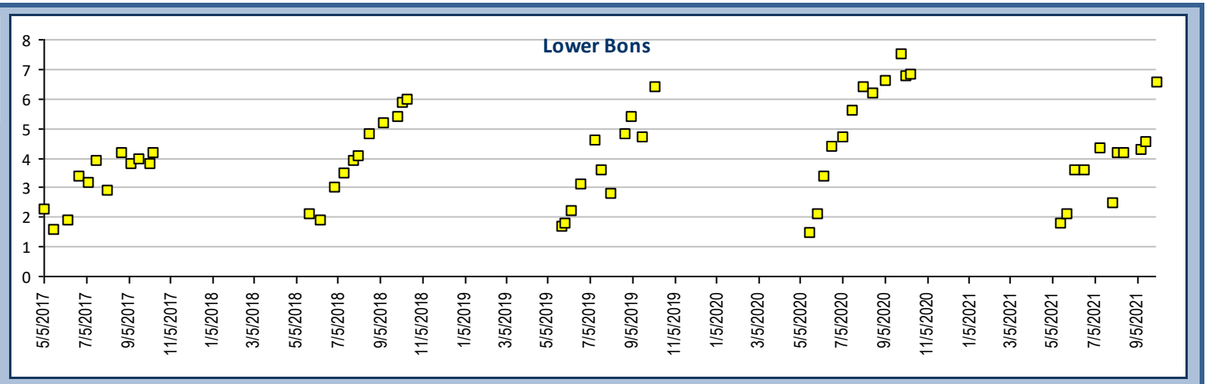


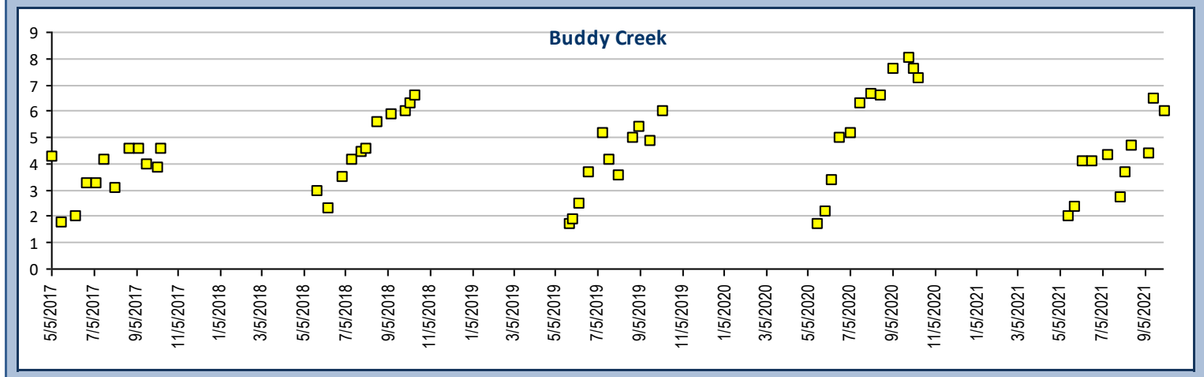


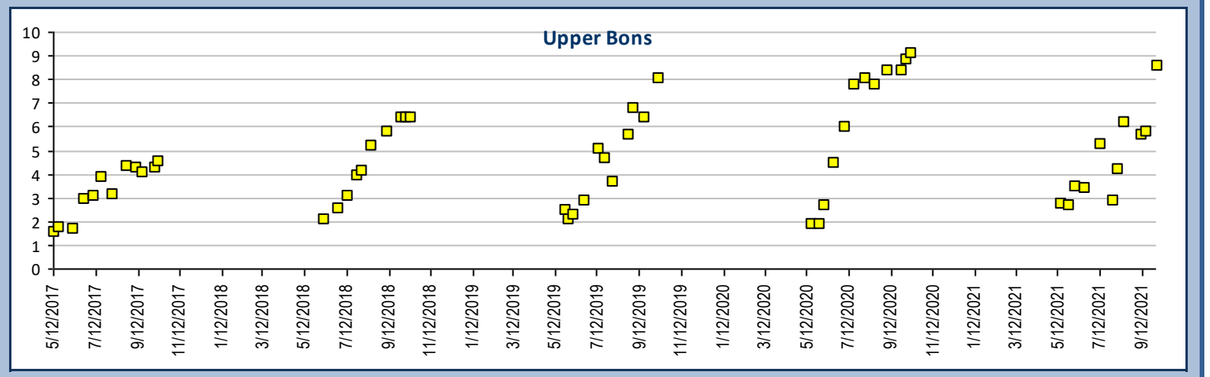
RED DOG MINE

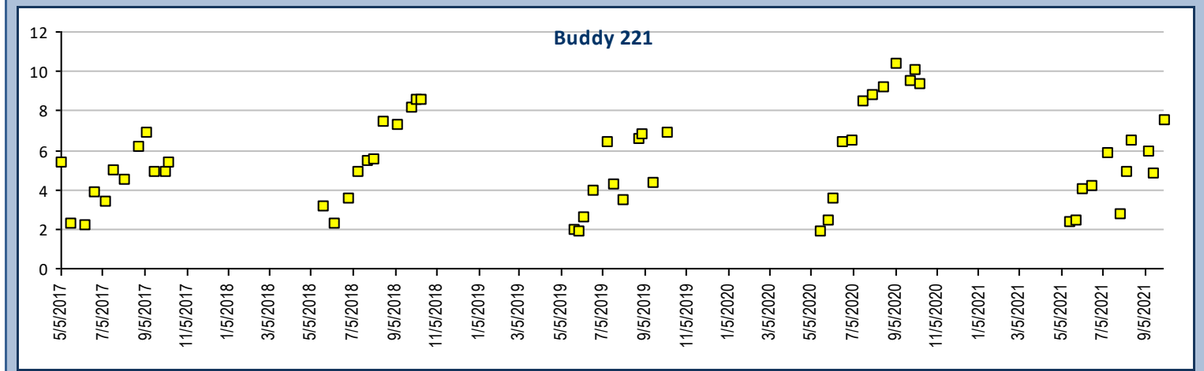
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

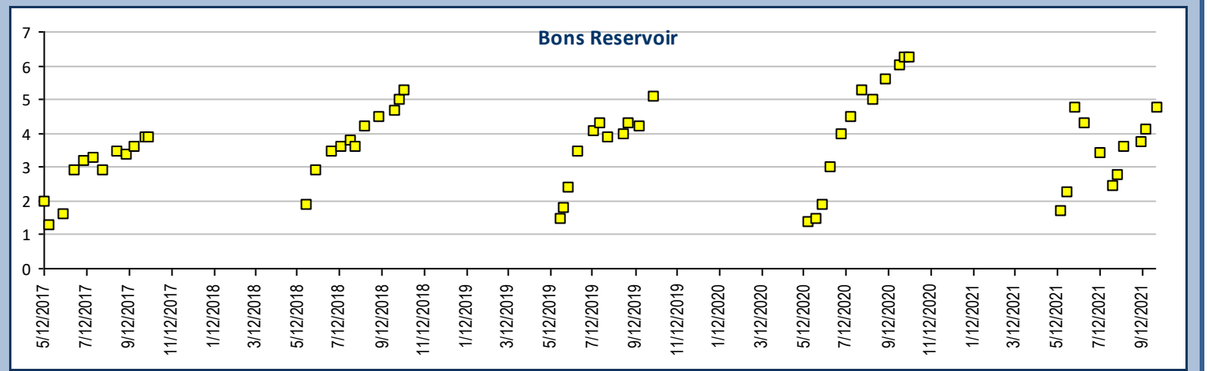
Sodium, Total Recoverable, units mg/L

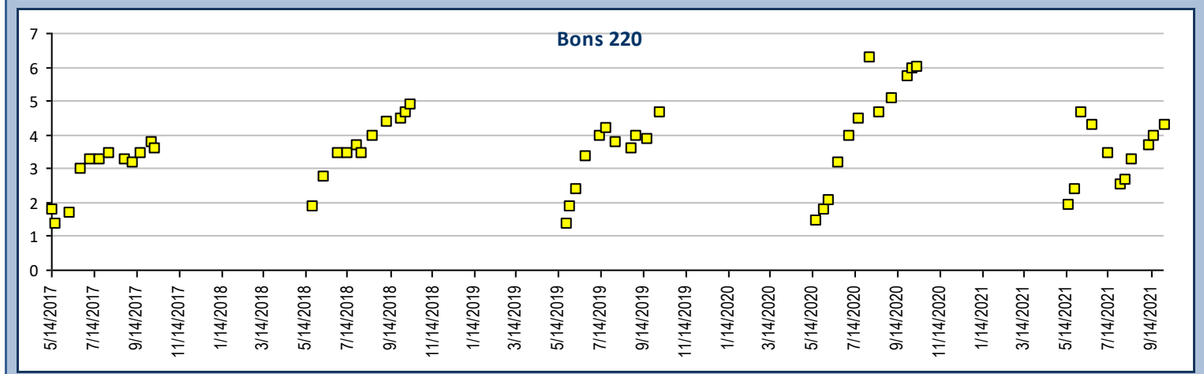


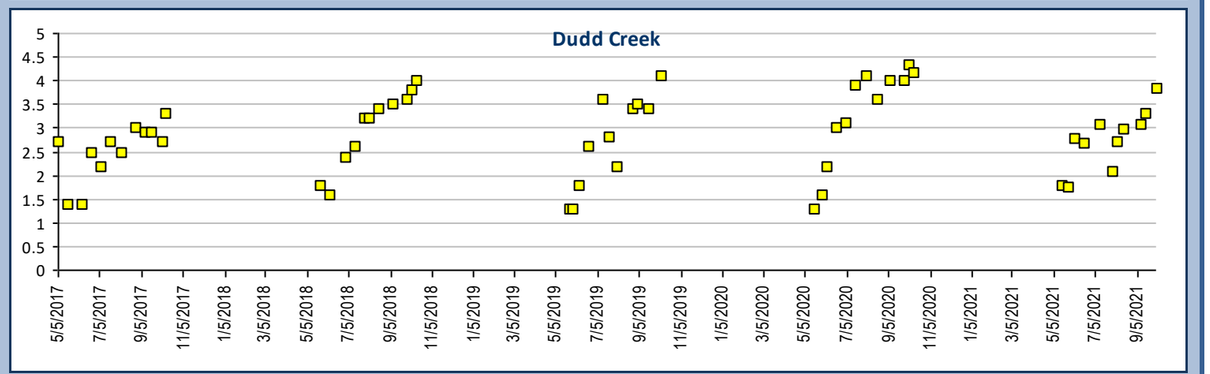








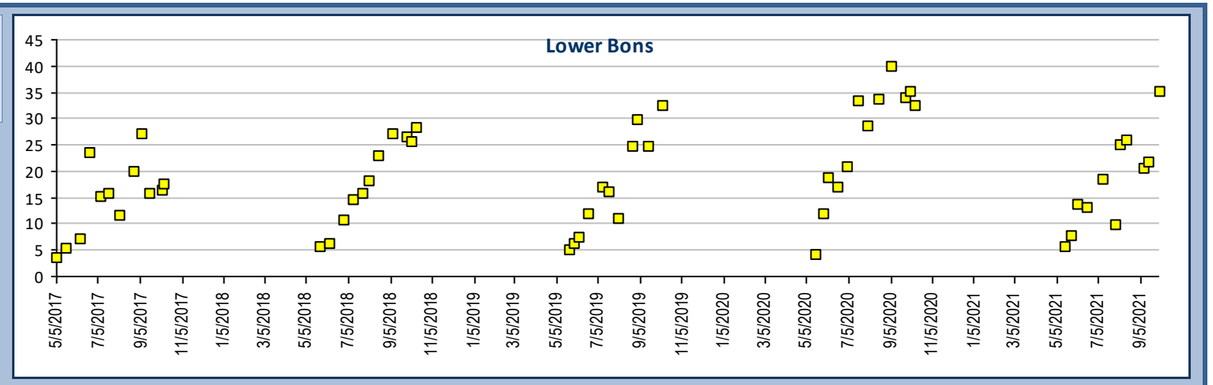


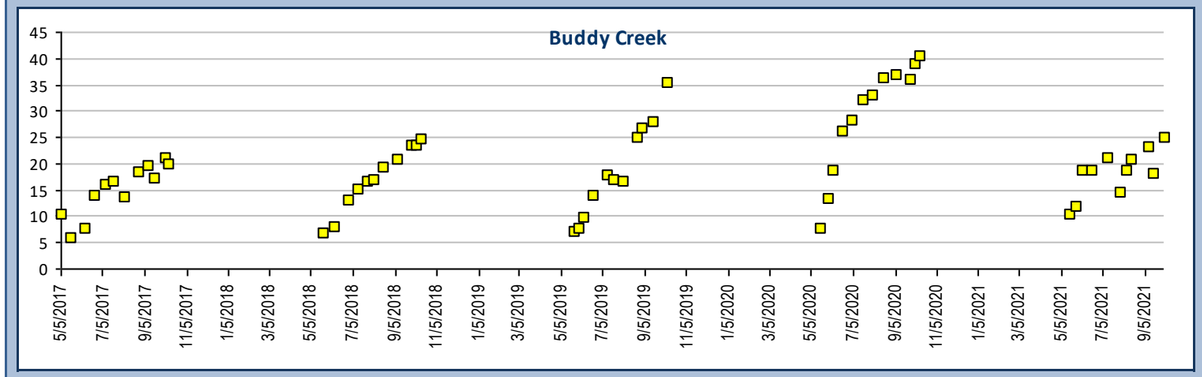


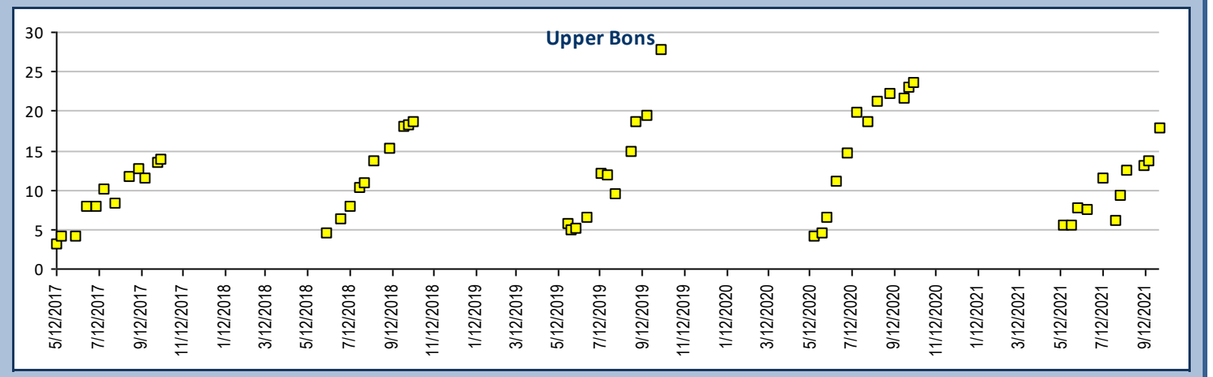
RED DOG MINE

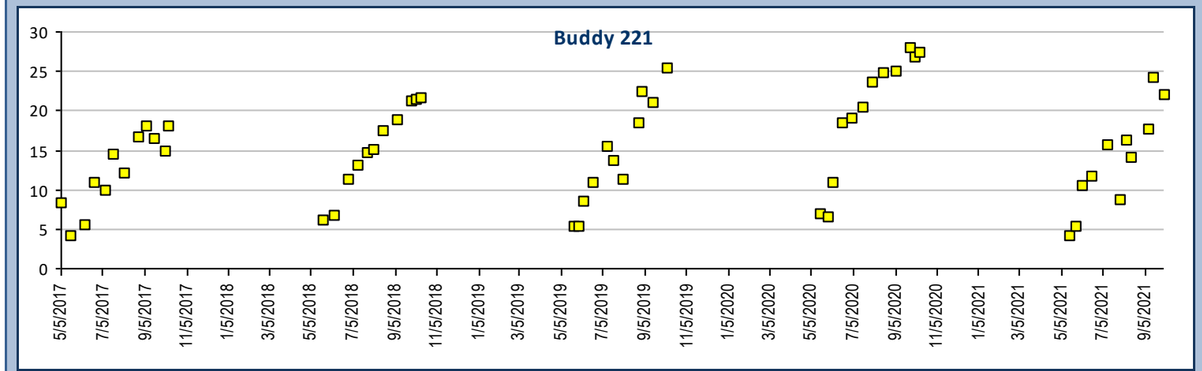
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

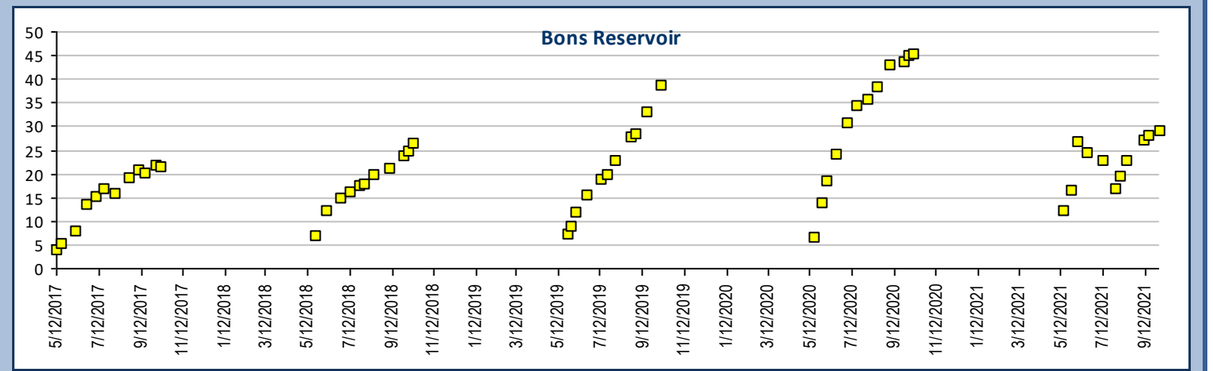
Magnesium, Total Recoverable, units mg/L

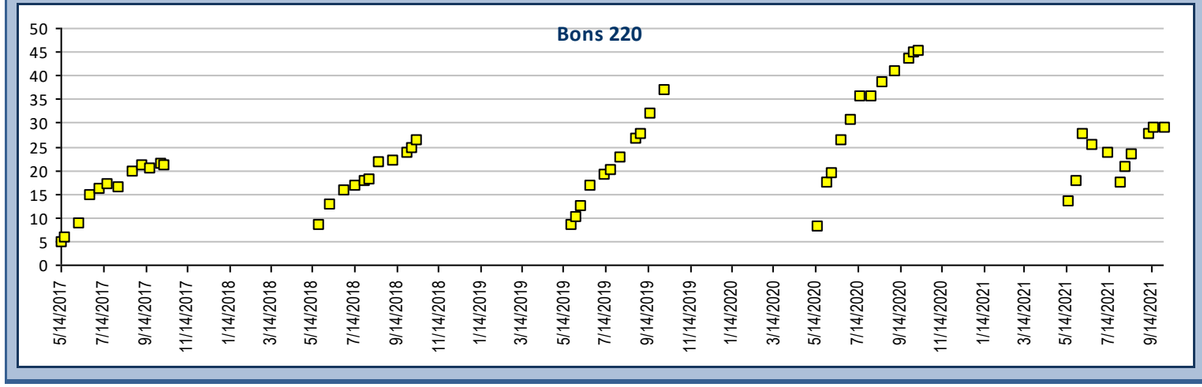


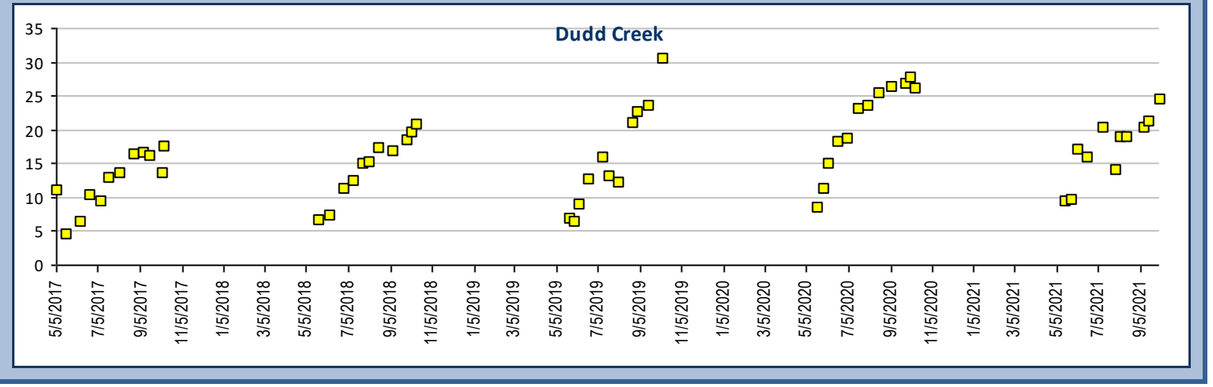








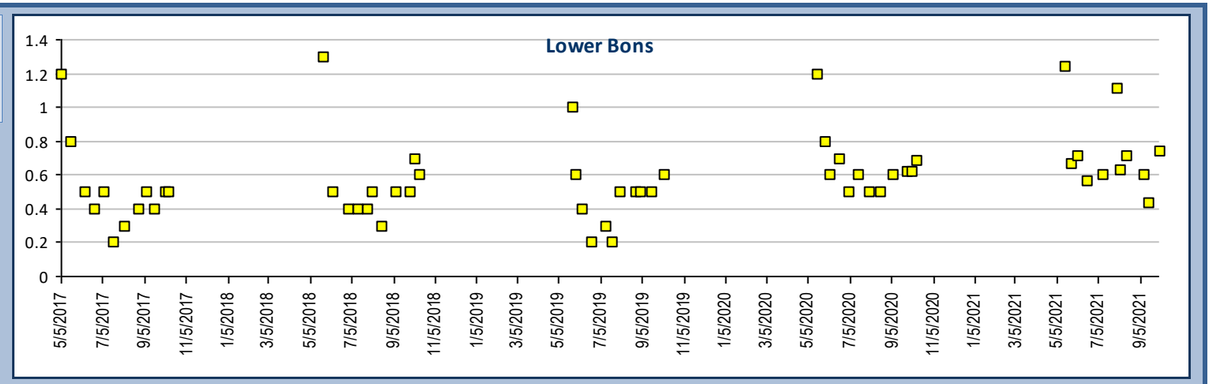


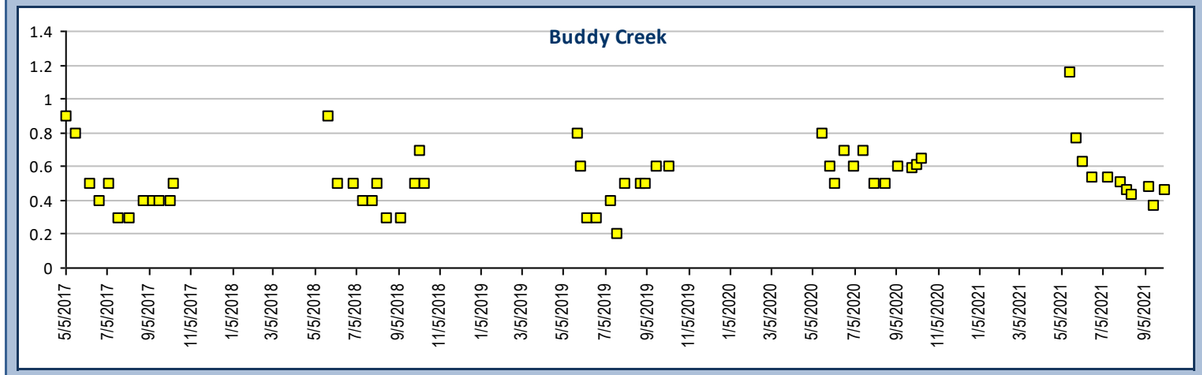


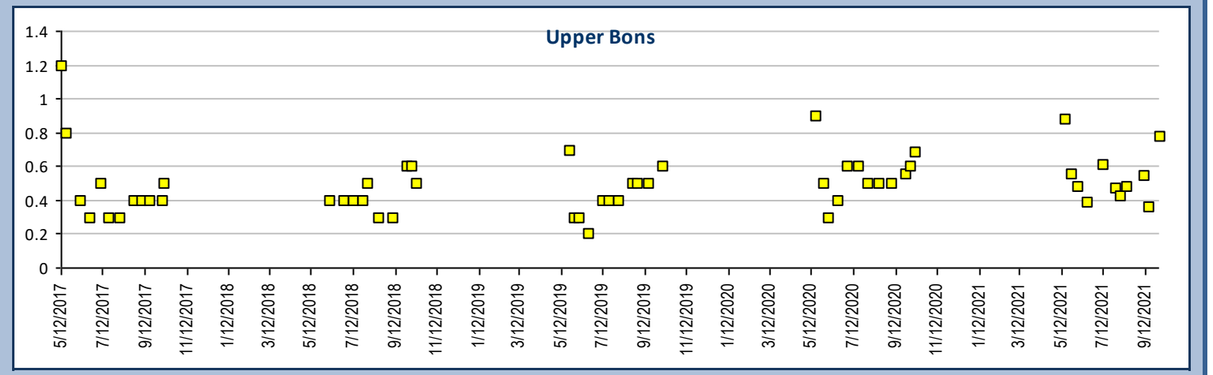
RED DOG MINE

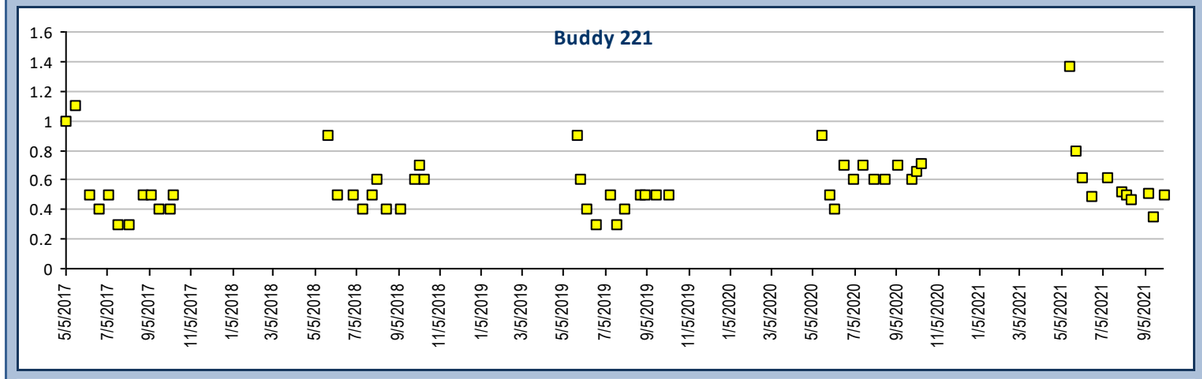
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

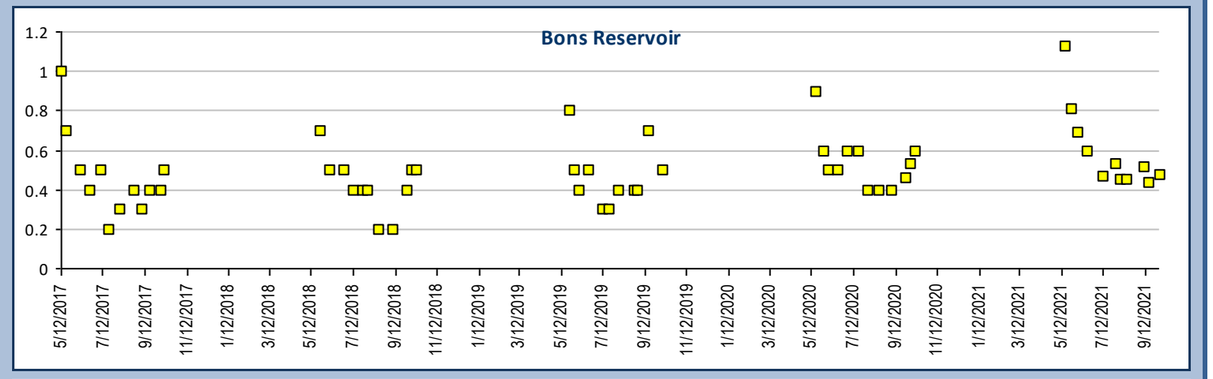
Potassium, Total Recoverable, units mg/L

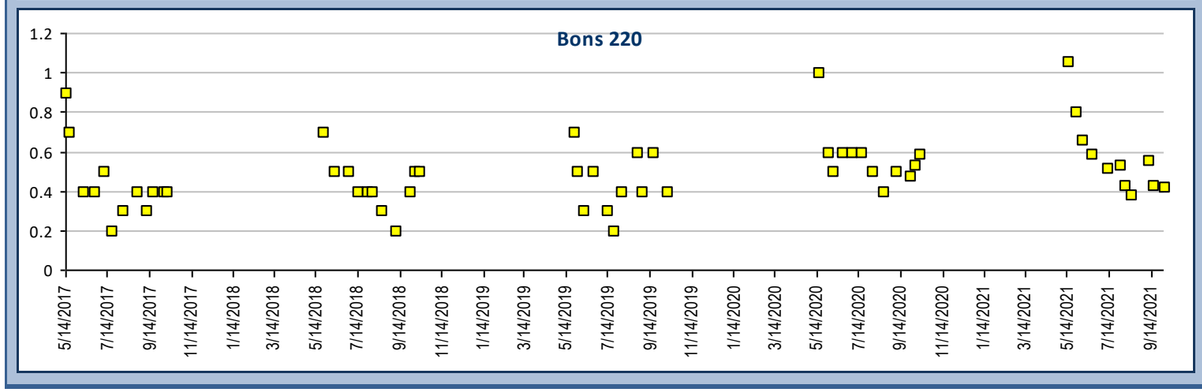


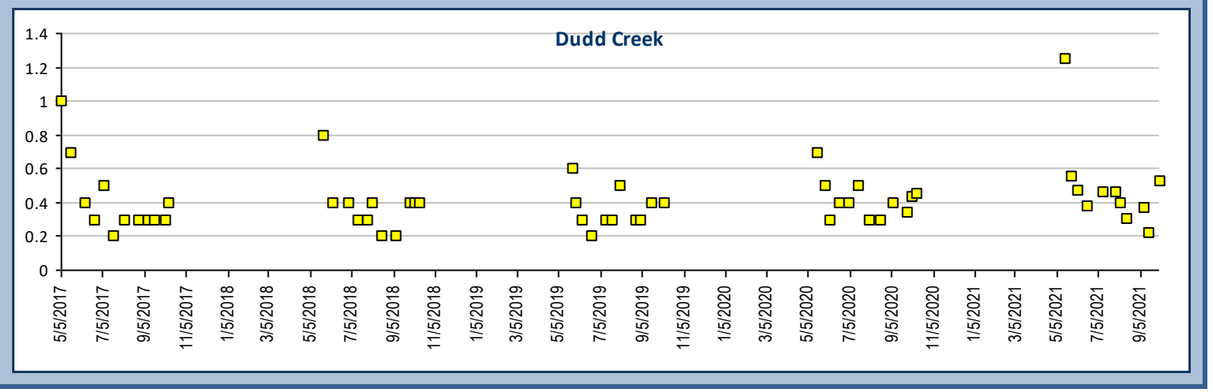








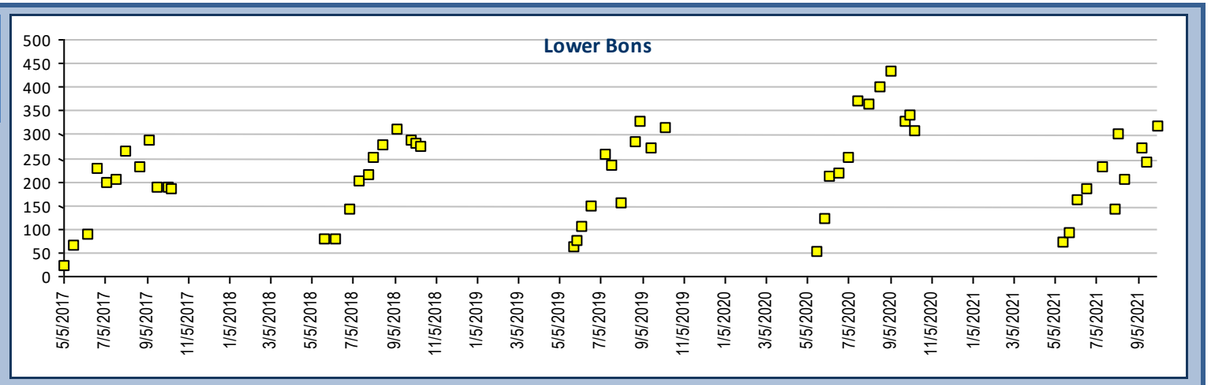


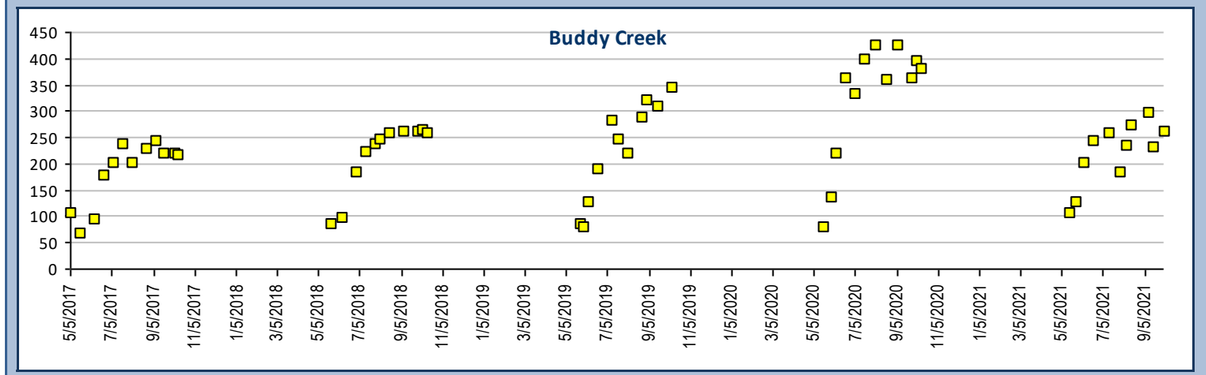


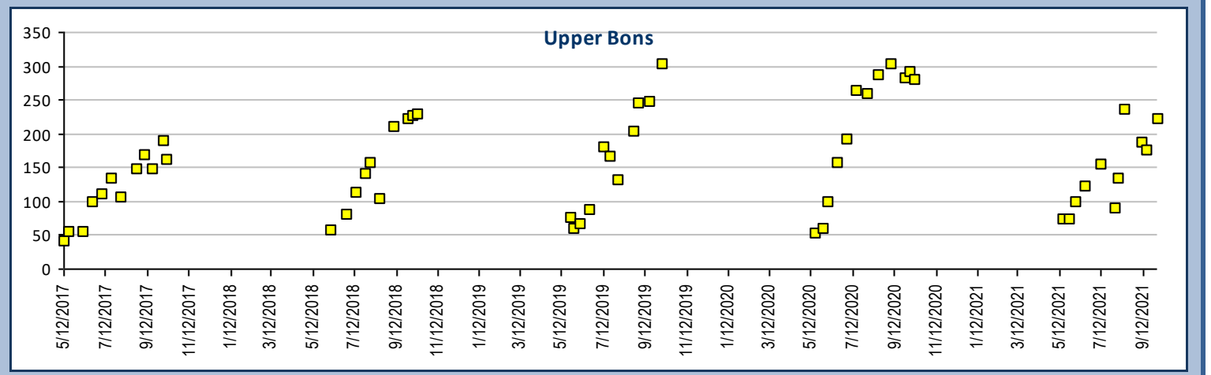
RED DOG MINE

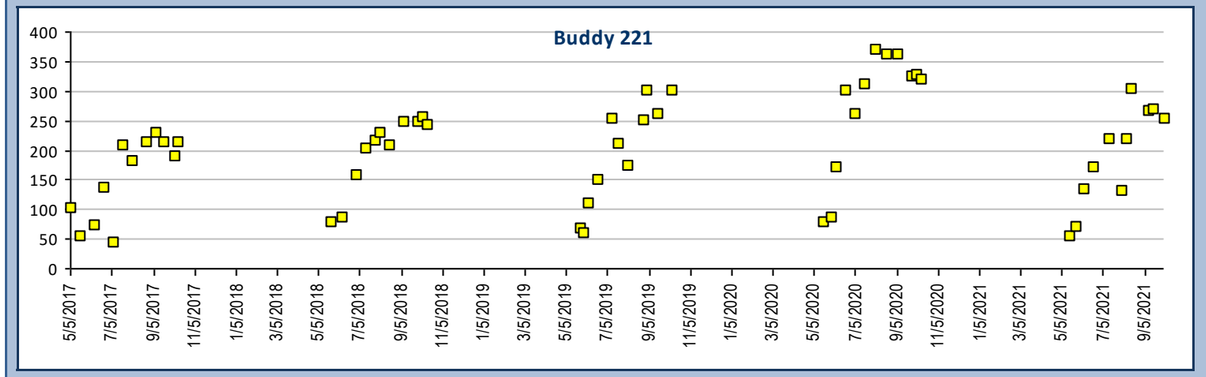
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

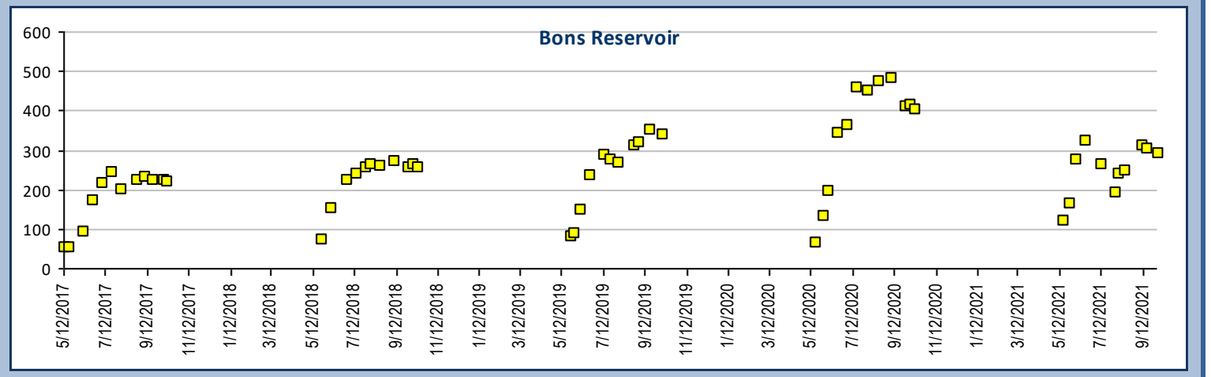
Conductivity, units uS/cm

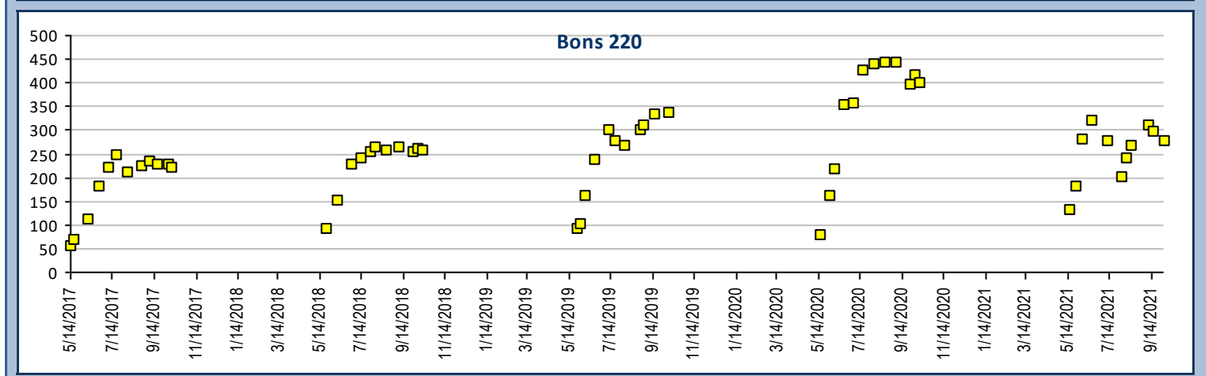


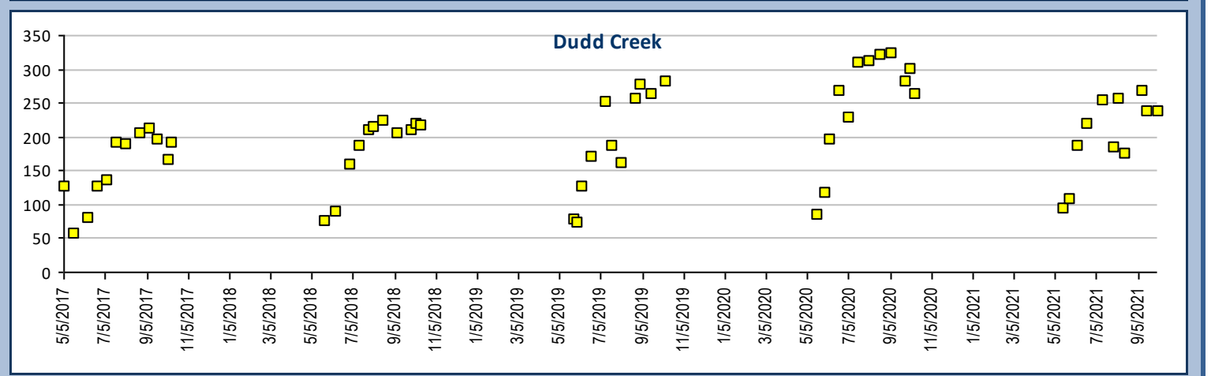












RED DOG MINE

Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

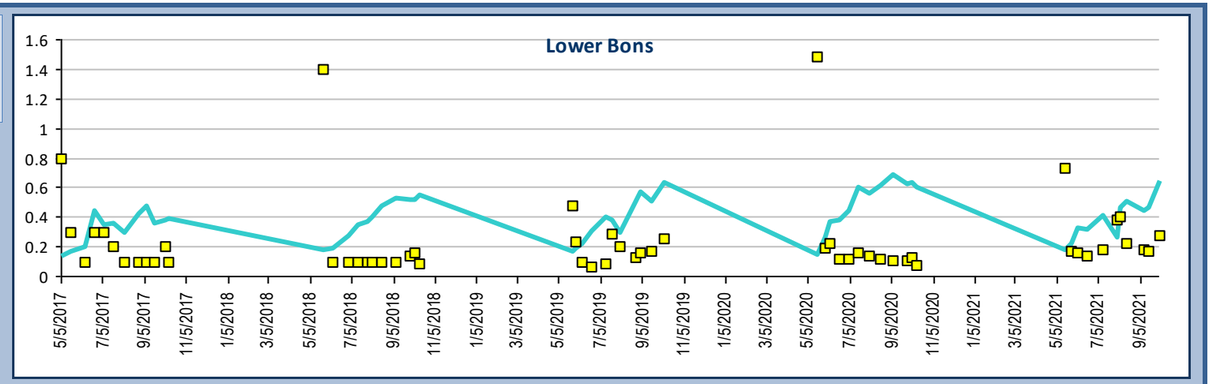
Cadmium, Total Recoverable, units ug/L

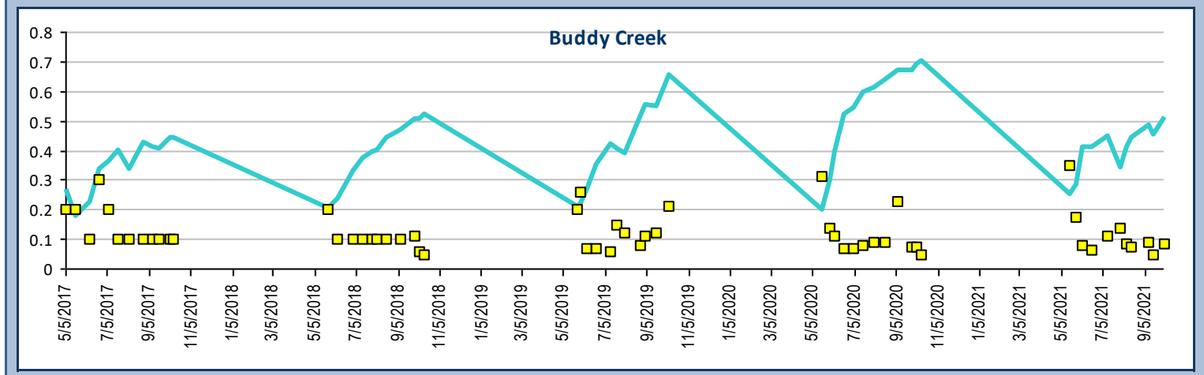
Aquatic Life - Fresh Water Chronic WQS ug/L

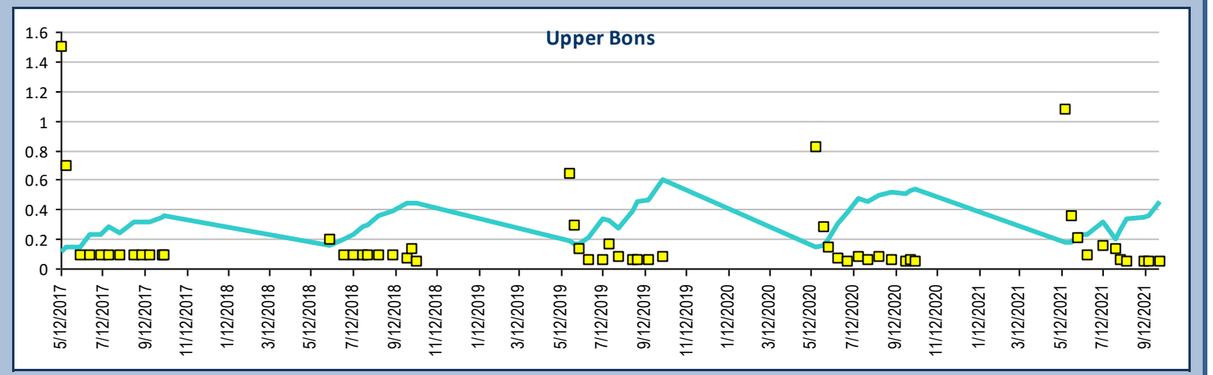
Hardness Dependent Calculation

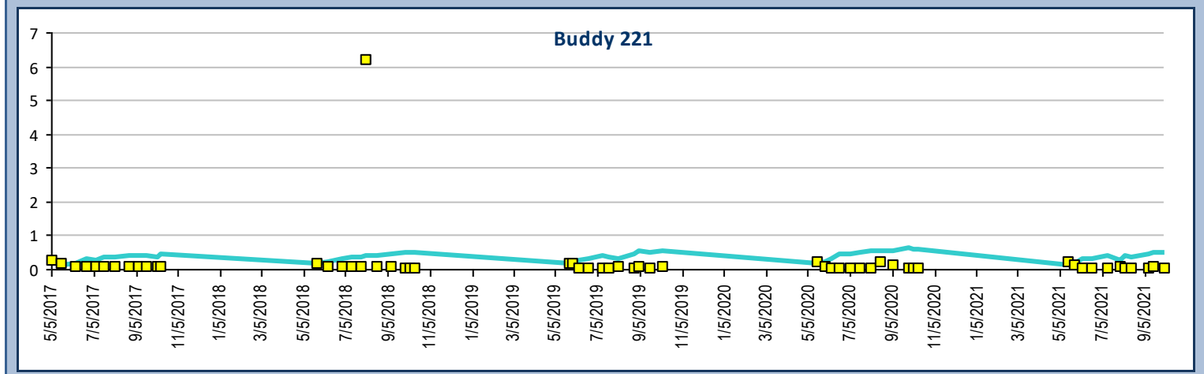
=EXP(0.7409*(LN(calc *hardness))-4.719)

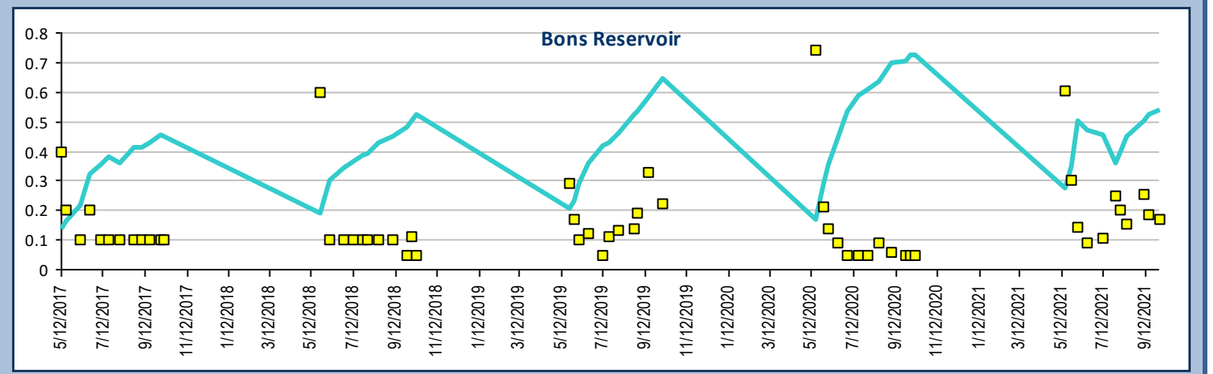
* Calculated using Standard Methods 2340B

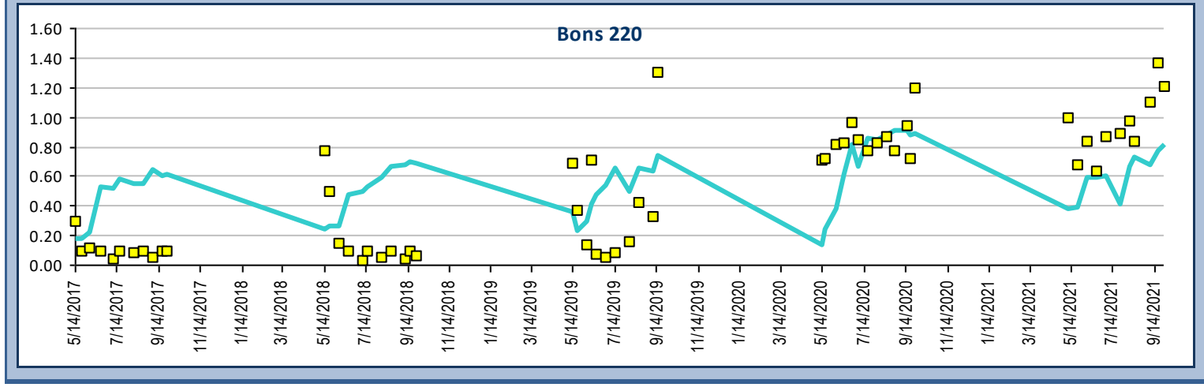


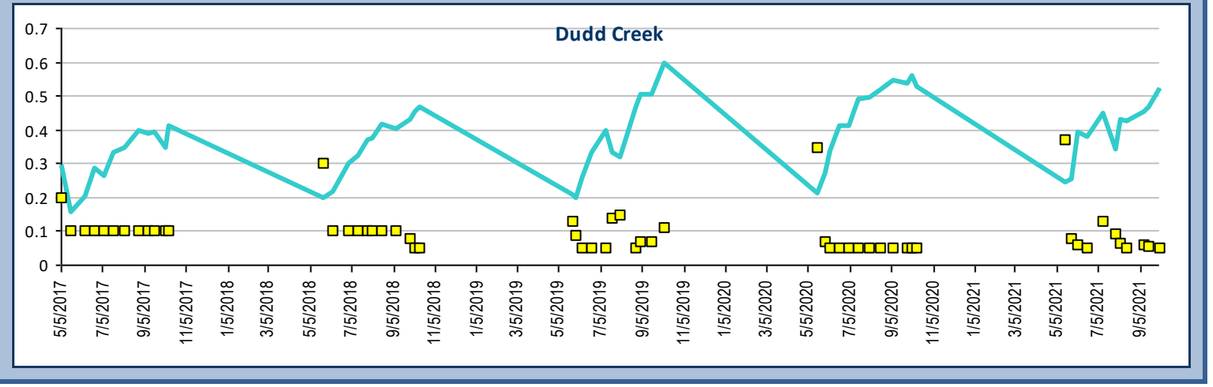








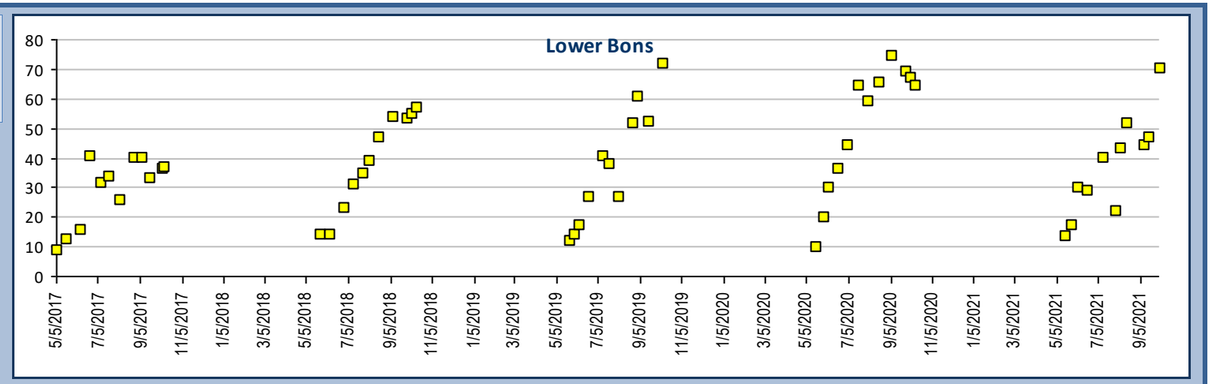


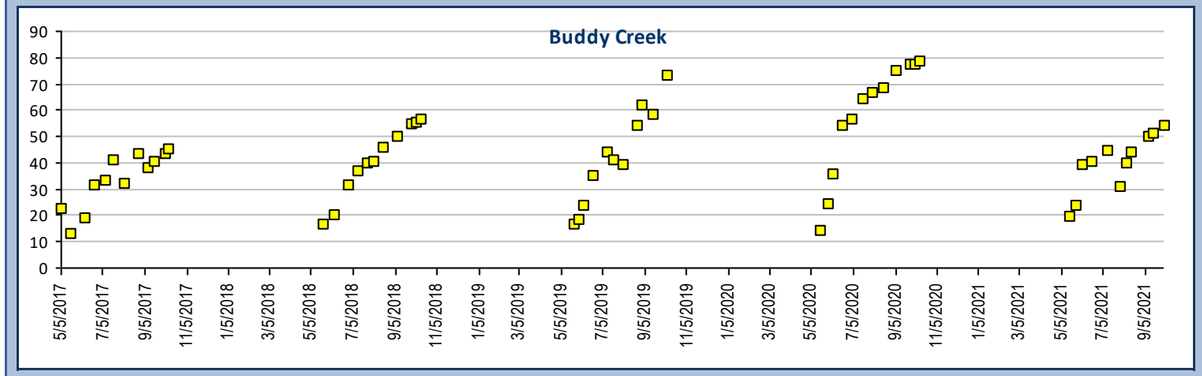


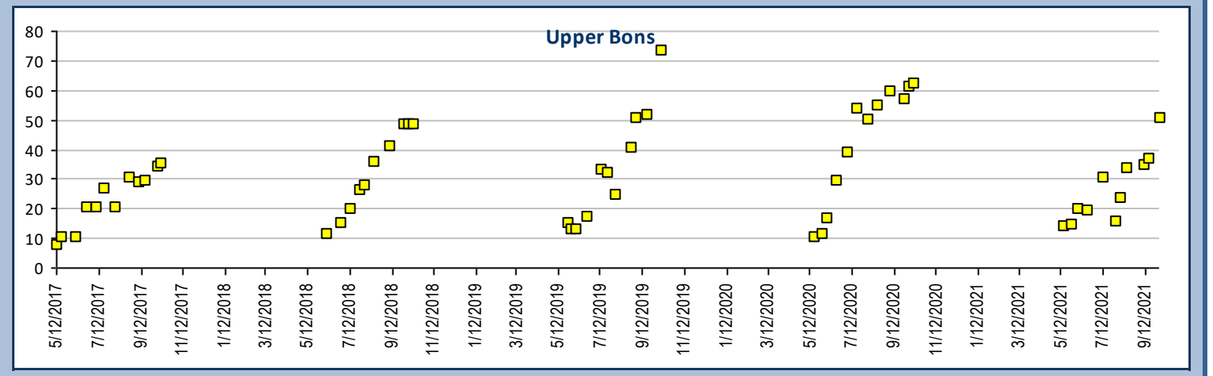
RED DOG MINE

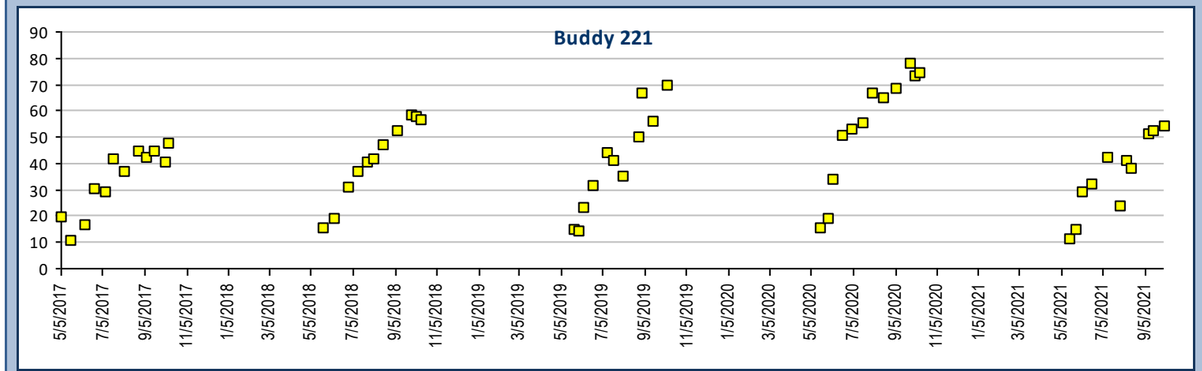
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

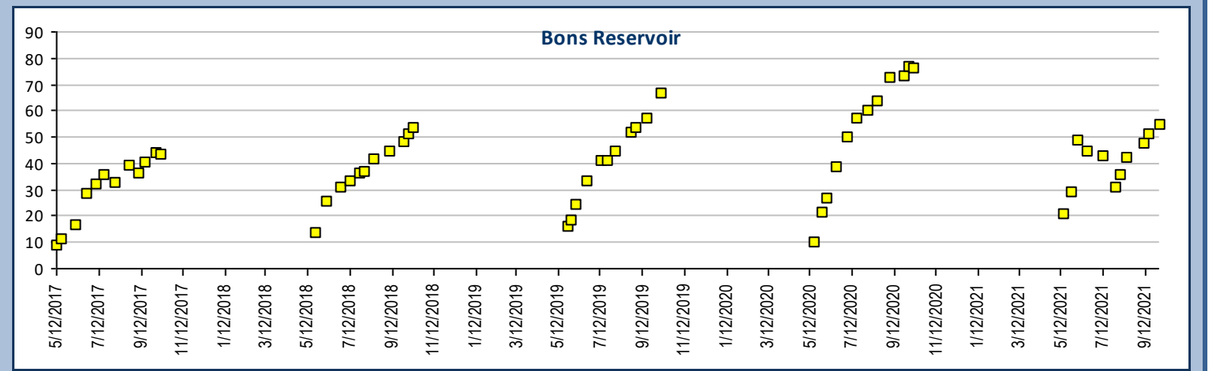
Calcium, Total Recoverable, units mg/L

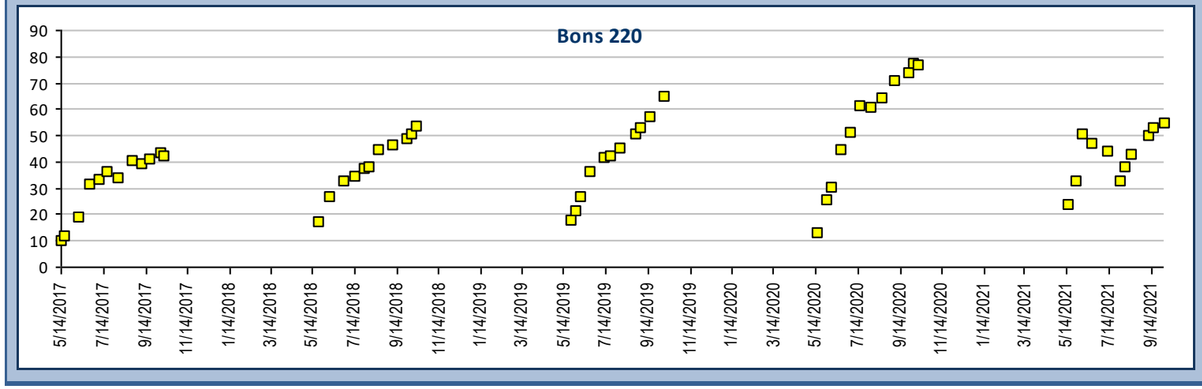


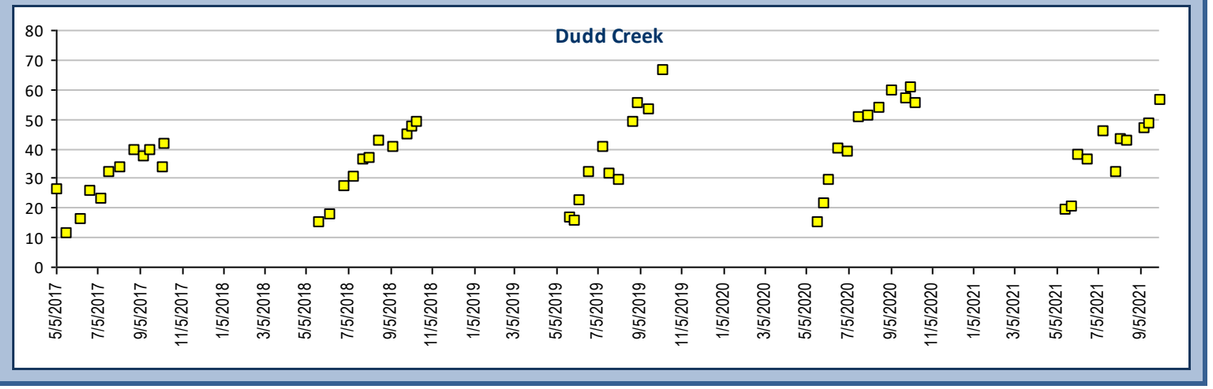












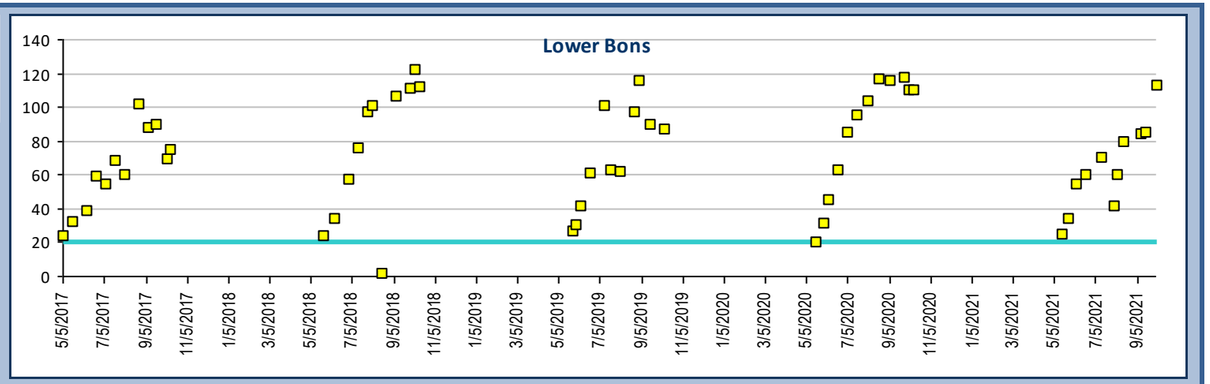
RED DOG MINE

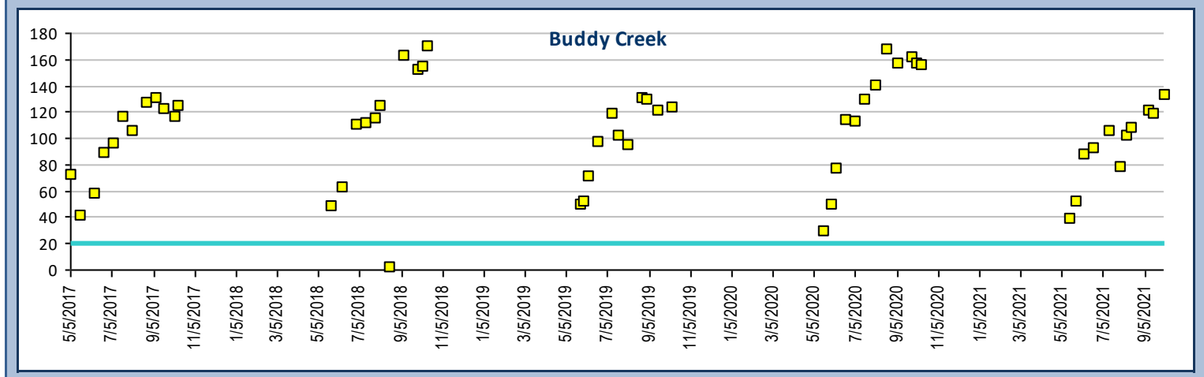
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

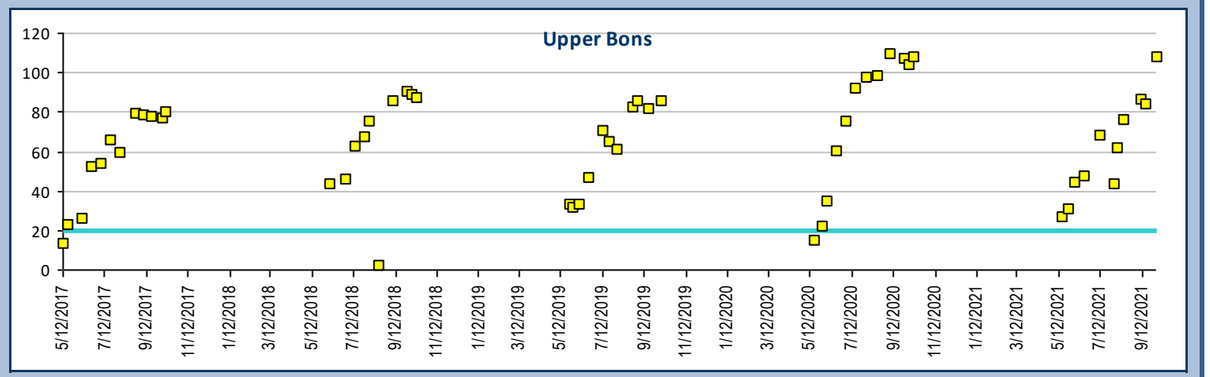
Alkalinity (as CaCO3), units mg/L

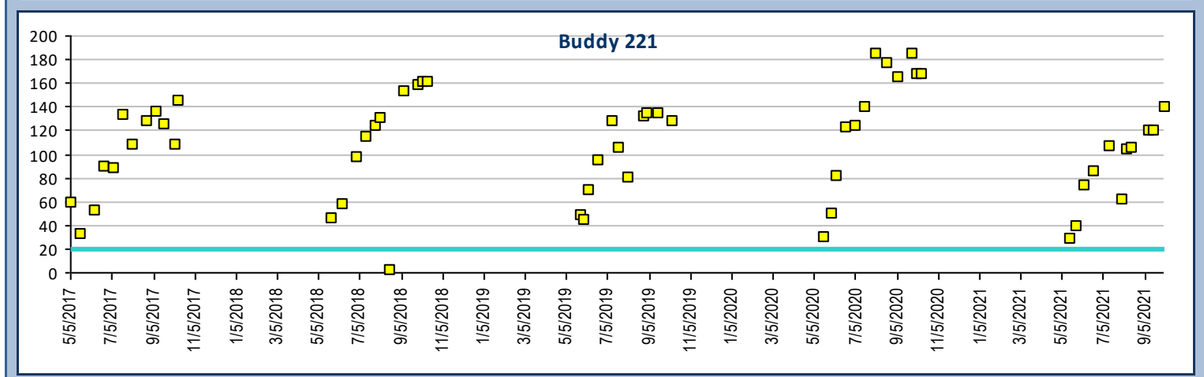
Aquatic Life - Fresh Water Chronic WQS mg/L

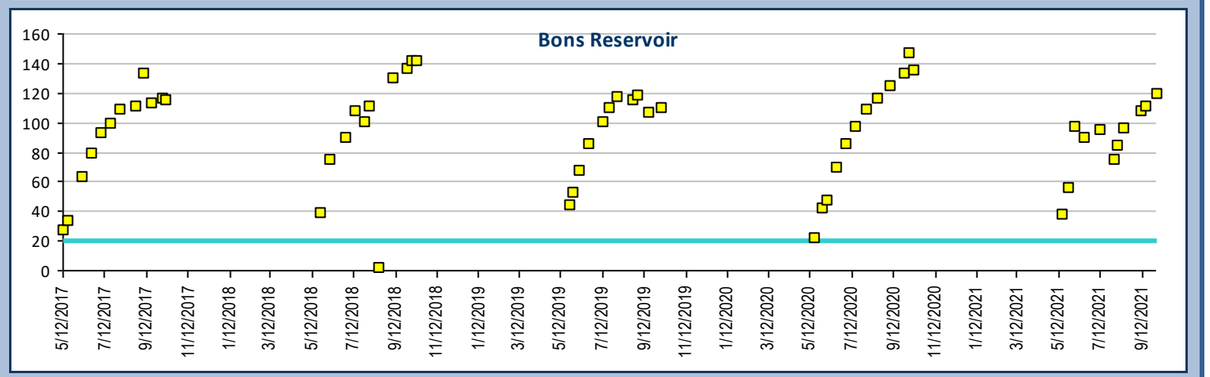
20 mg/L minimum

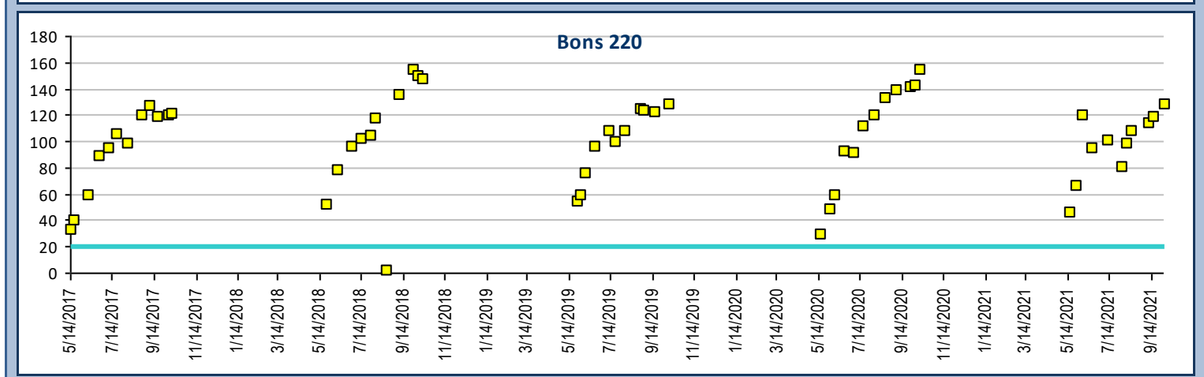


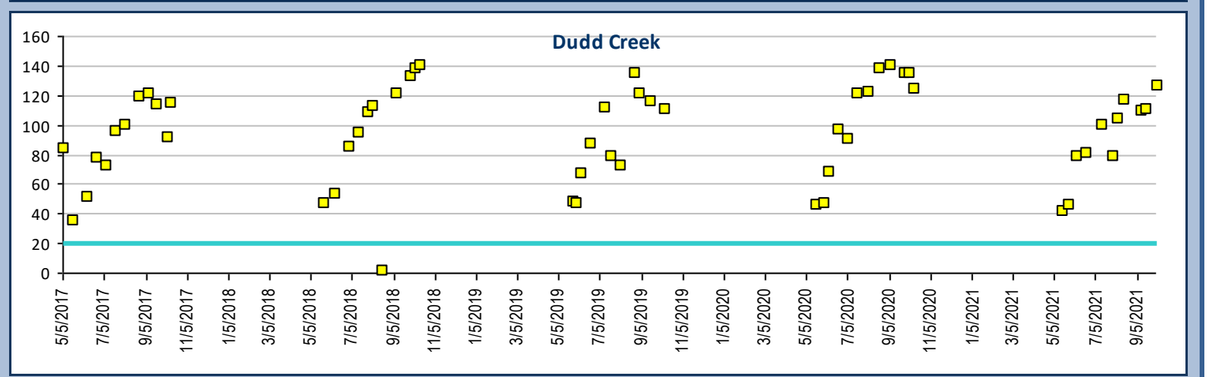












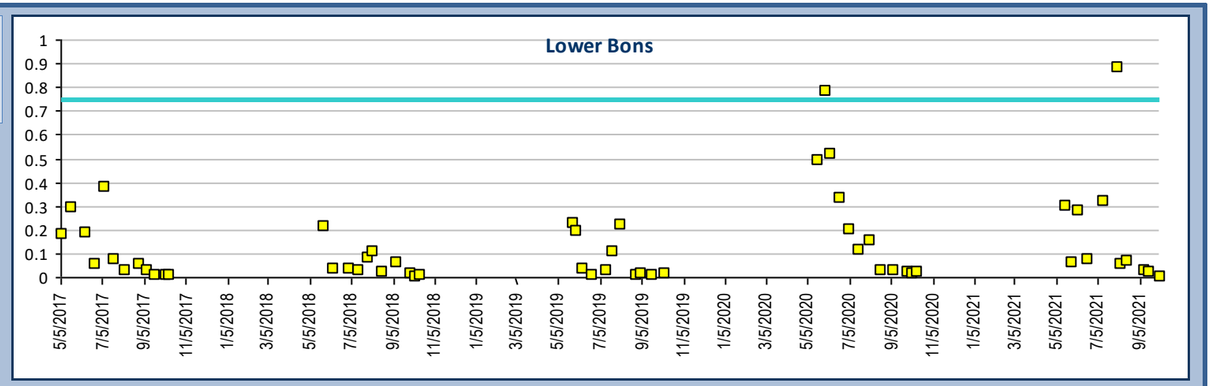
RED DOG MINE

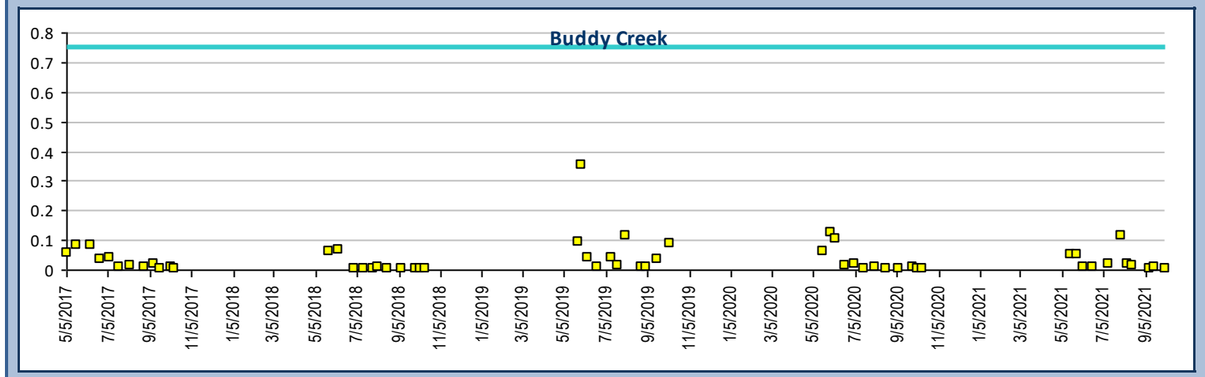
Water Monitoring Bons Creek Drainage
Water Quality Profile I , 5-Year Trend Charts

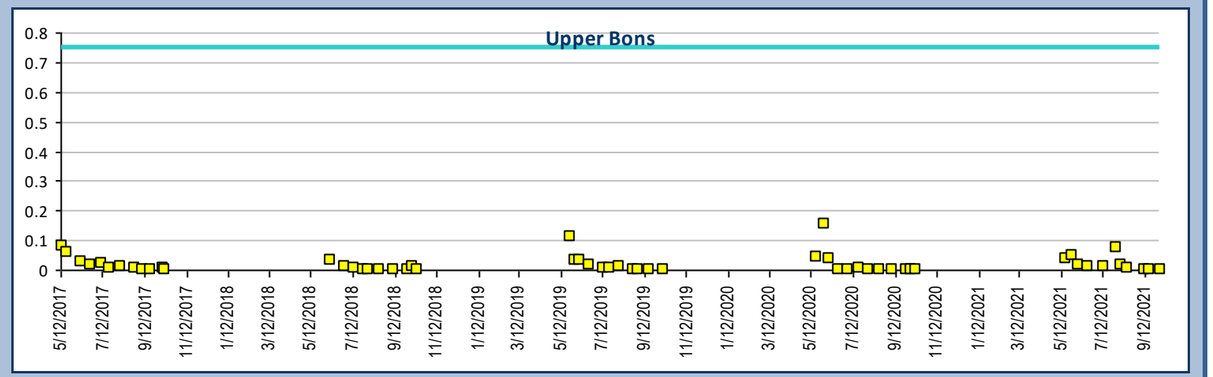
Aluminum, Total Recoverable, units mg/L

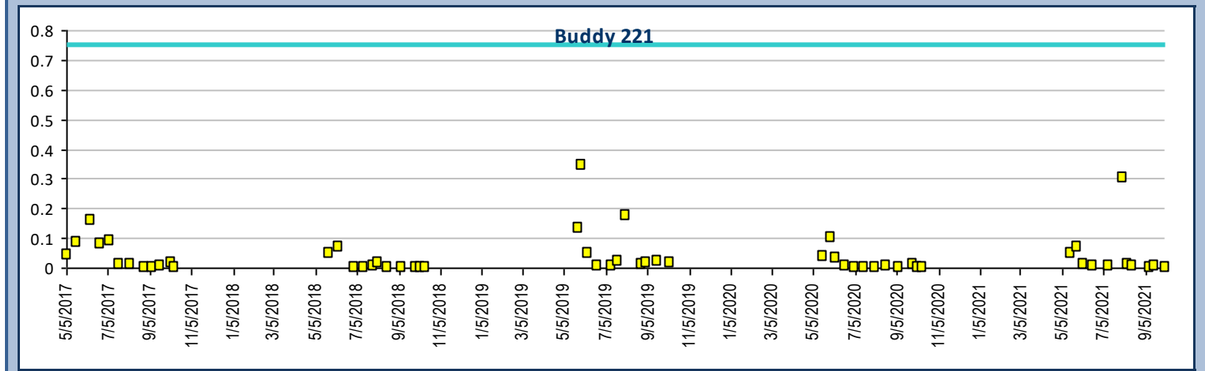
Aquatic Life - Fresh Water Chronic WQS mg/L

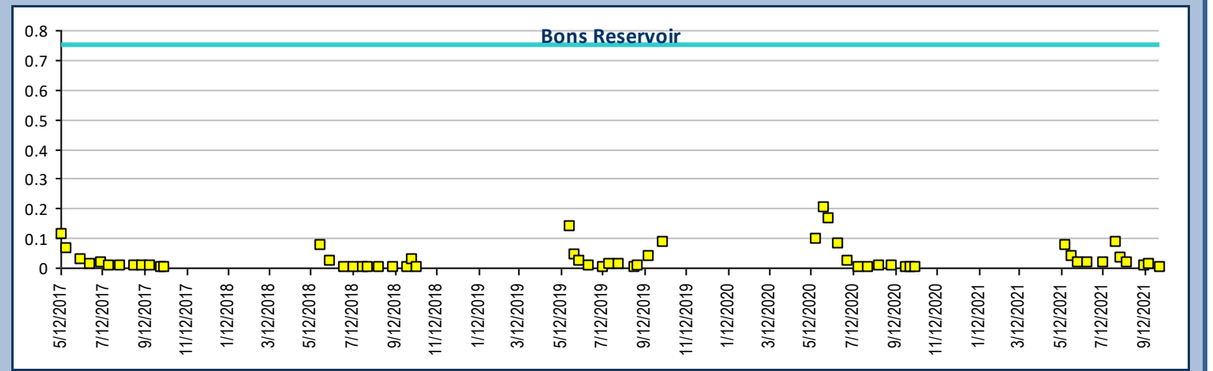
If pH > 7 and hardness > 50. then WQS = 0.75mg/l

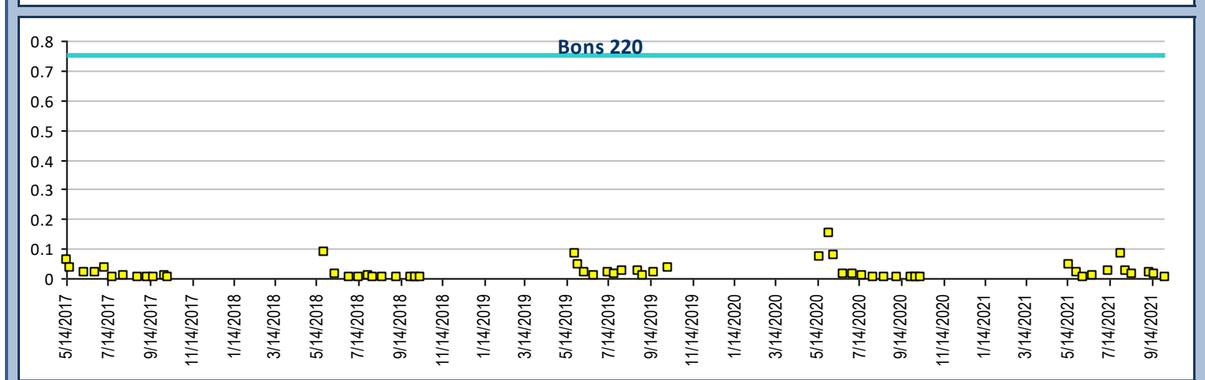


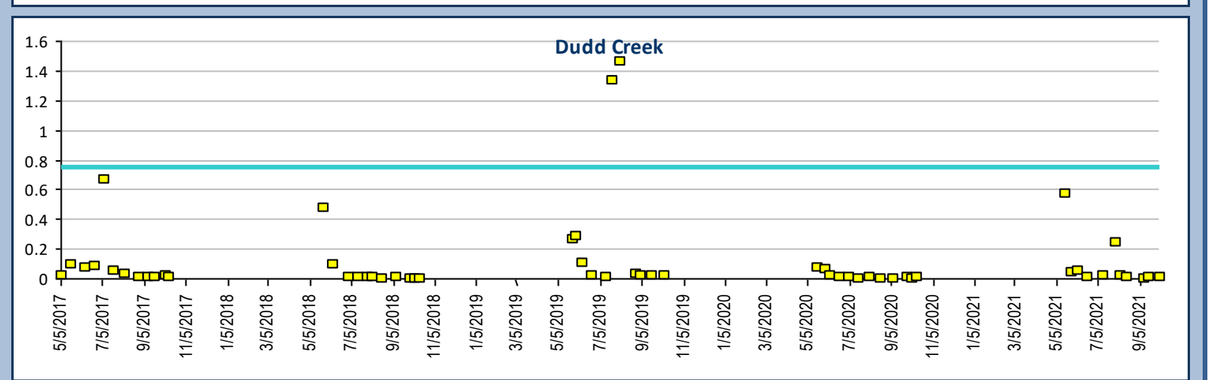






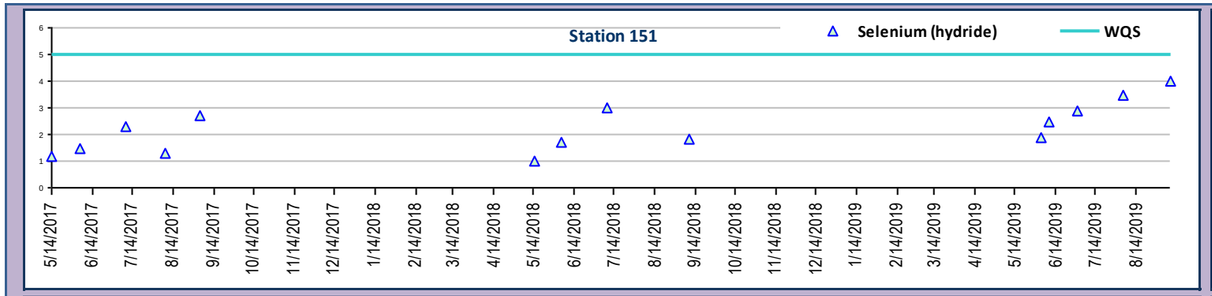


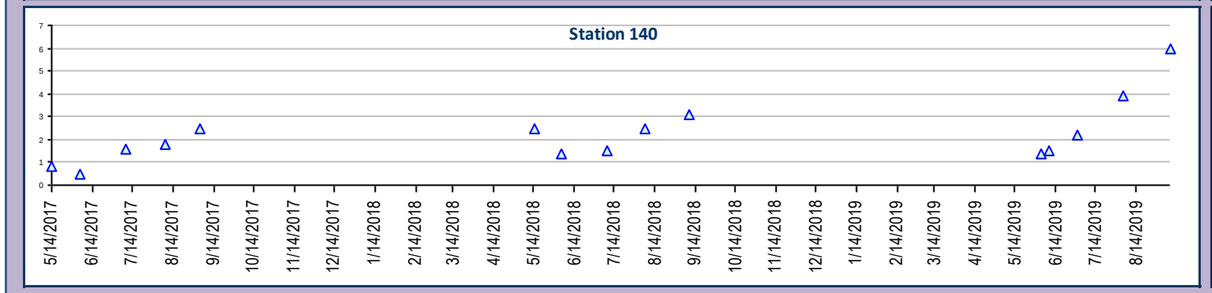


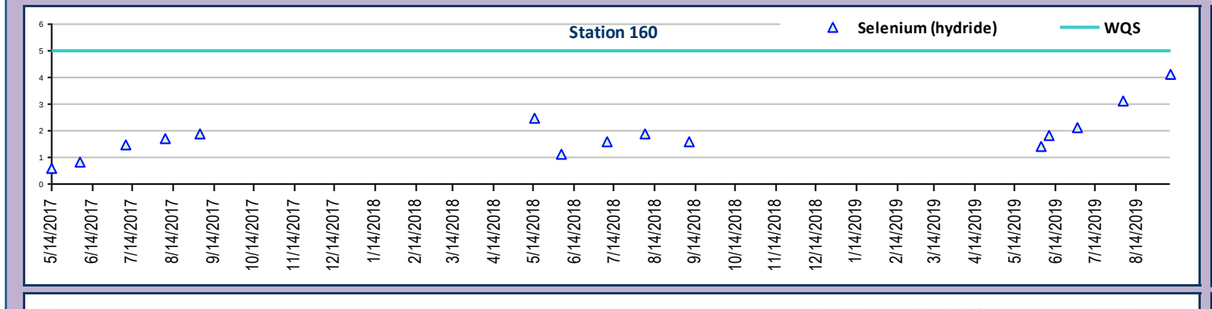


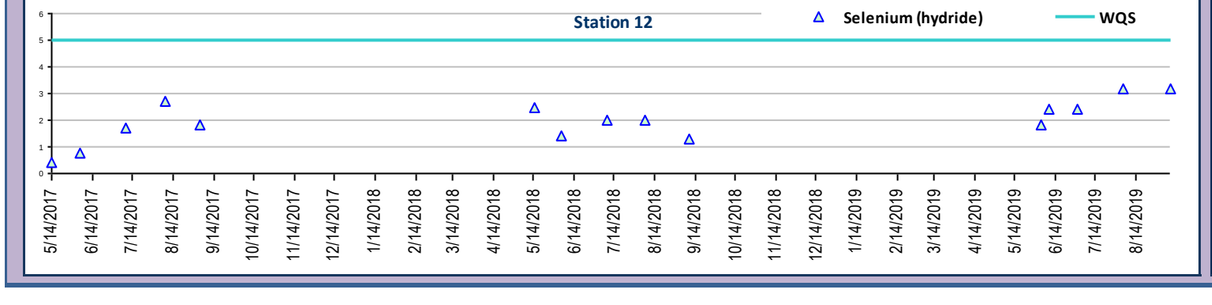
Appendix F: APDES Monitoring Station Trend Charts

APDES Stations : Selenium, units, ug/l - 5 Year Trend

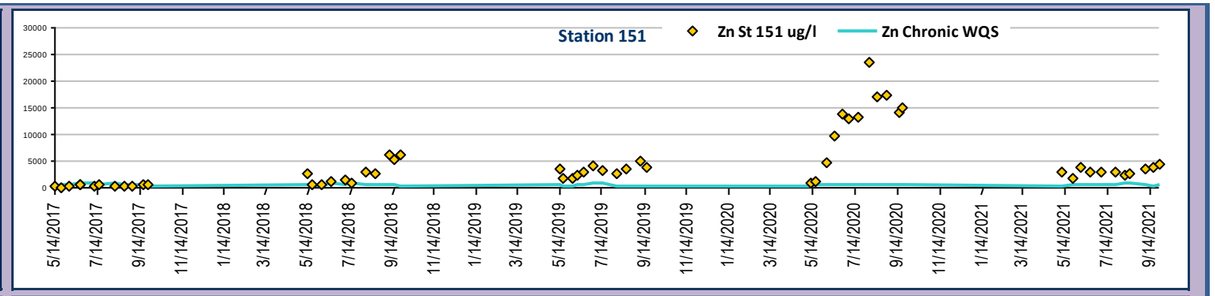


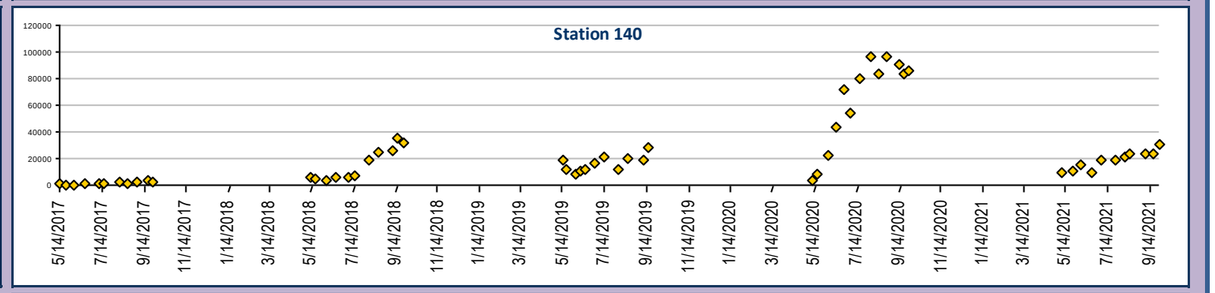


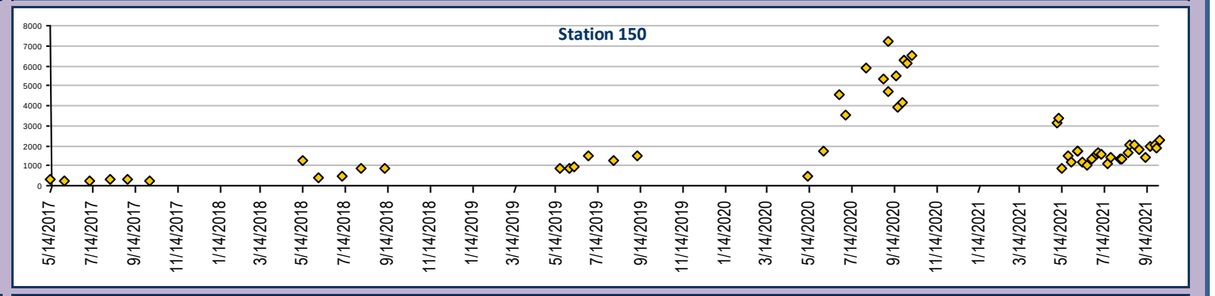


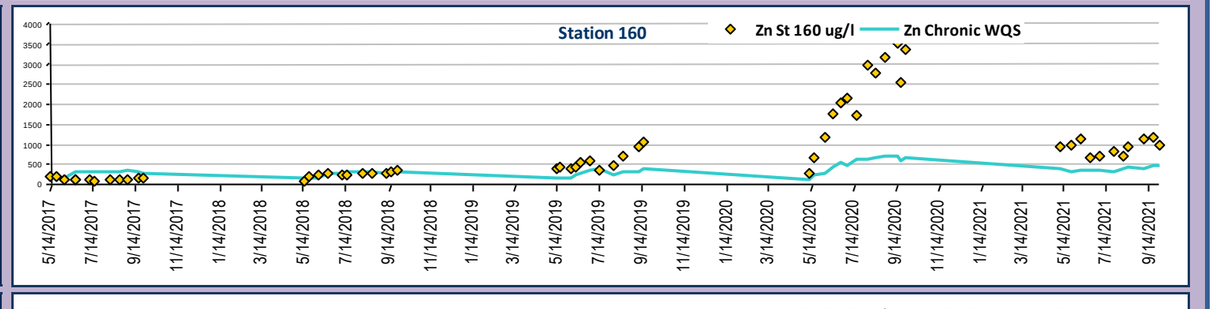


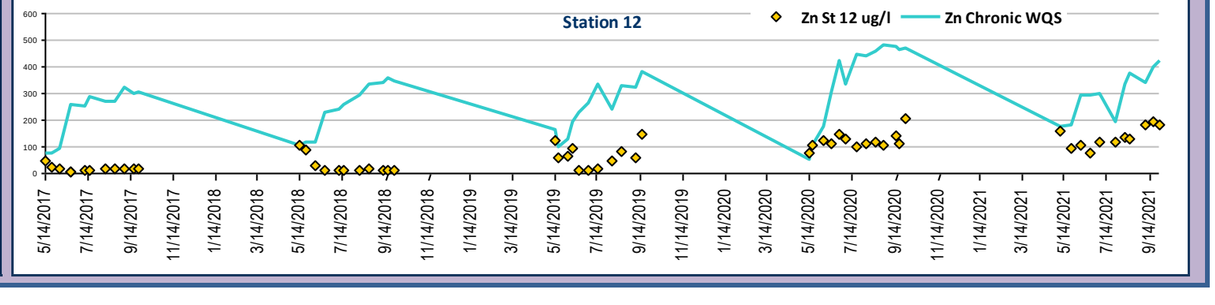
APDES Stations : Zinc, Total, units ug/l - 5 Year Trend



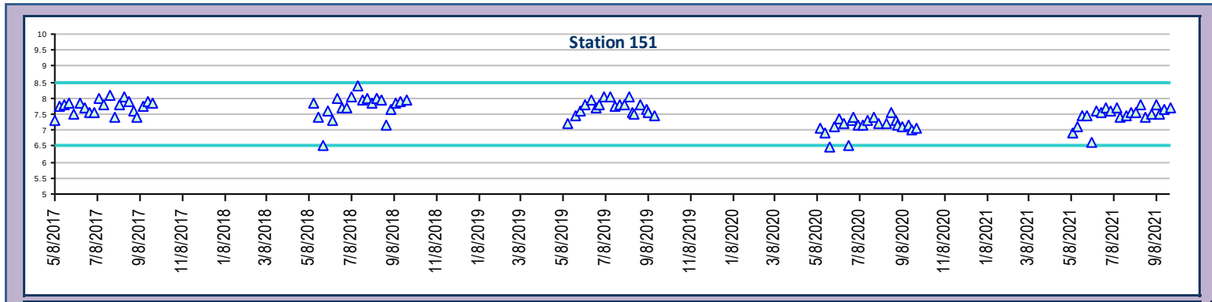


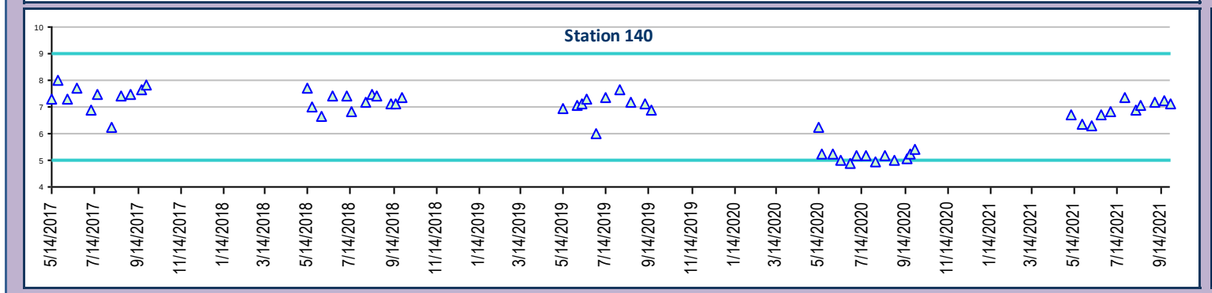


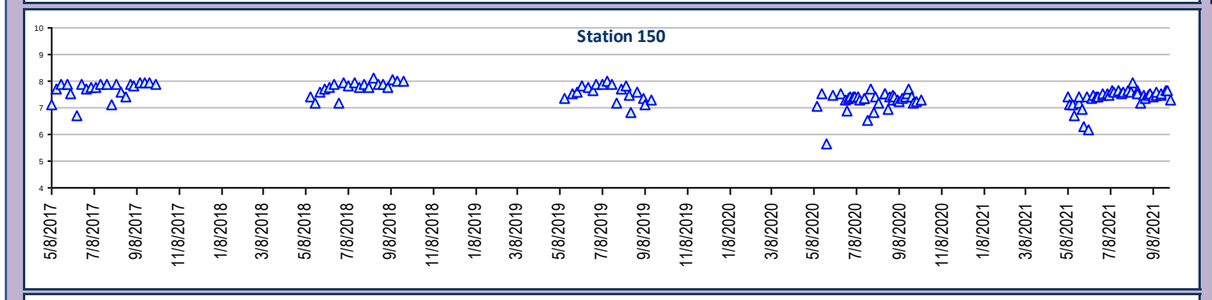


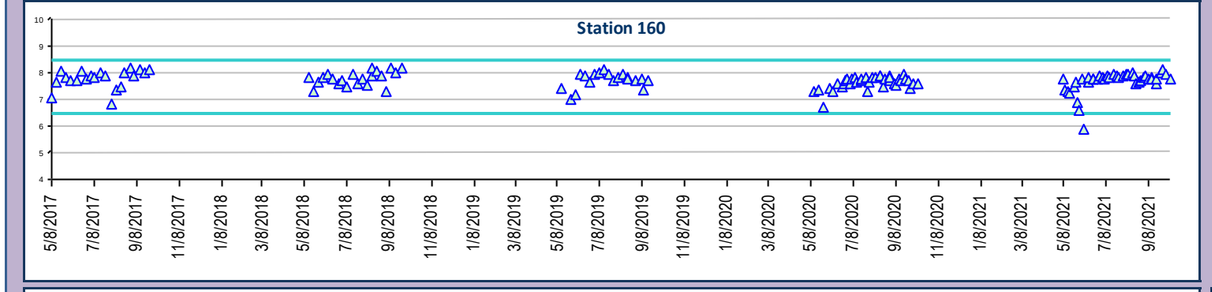


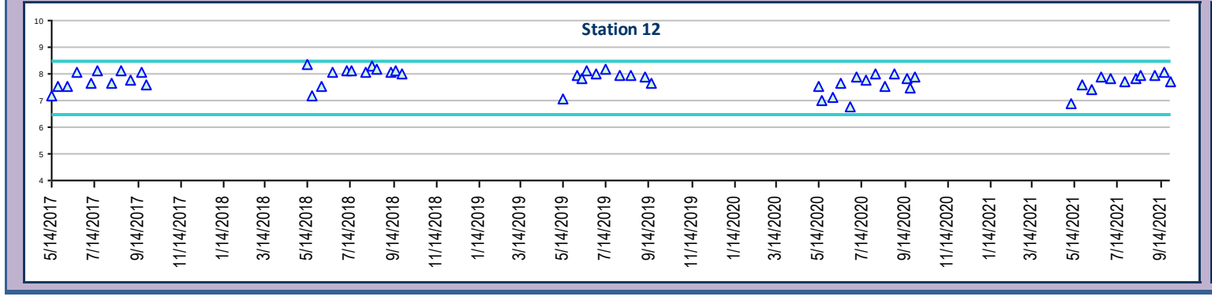
APDES Stations : pH, units - 5 Year Trend



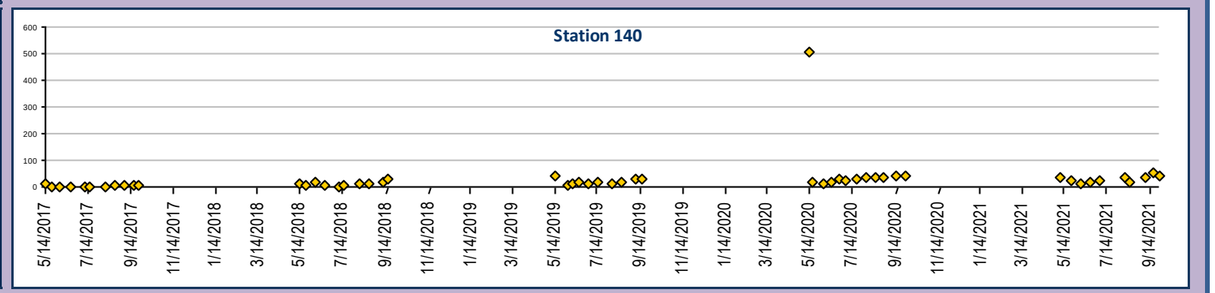


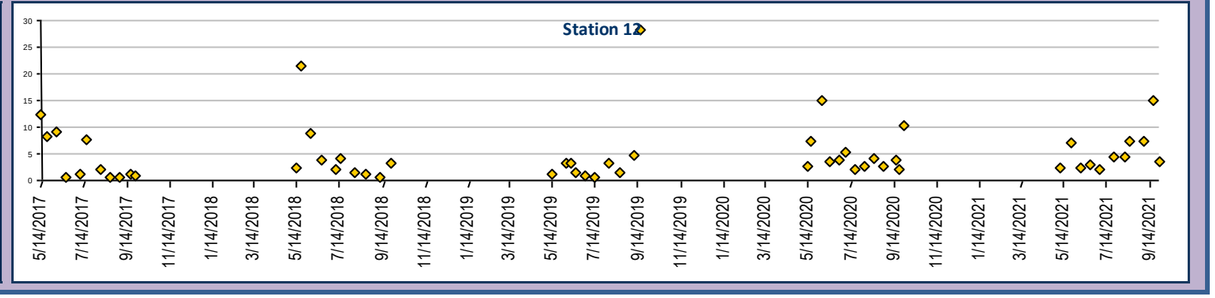




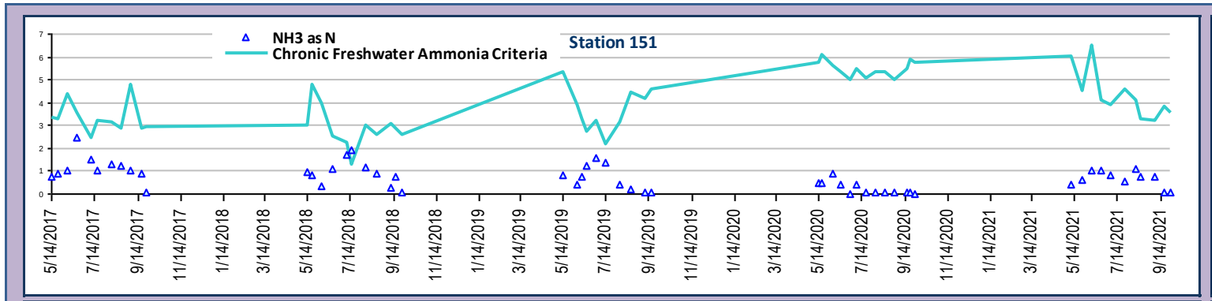


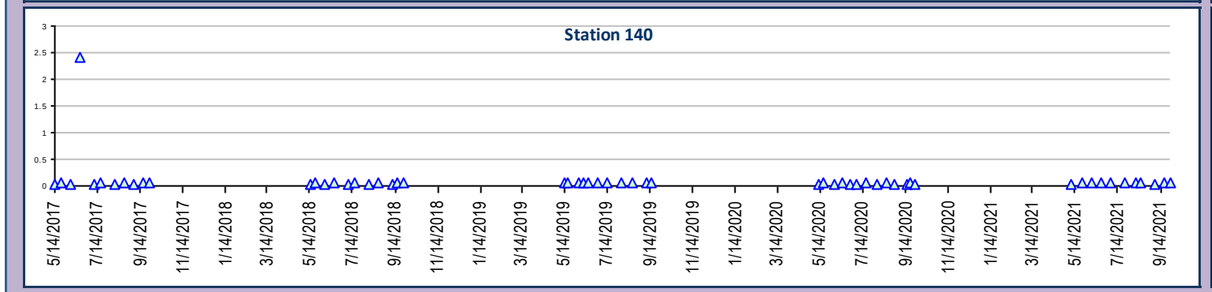
APDES Stations : Turbidity, Total, units NTU - 5 Year Trend

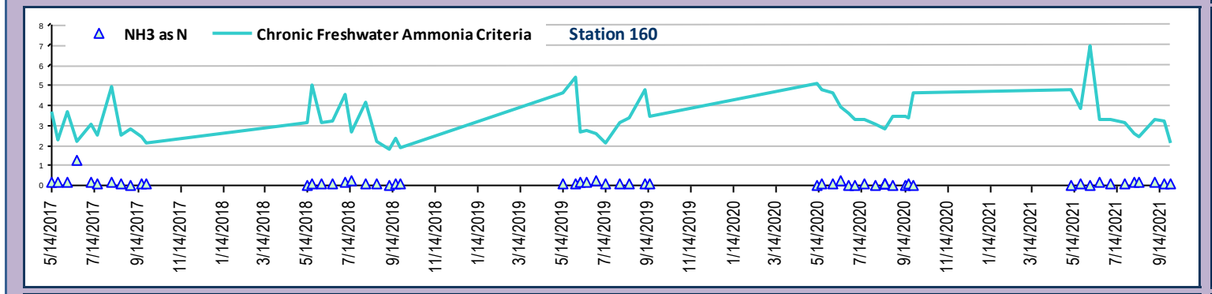


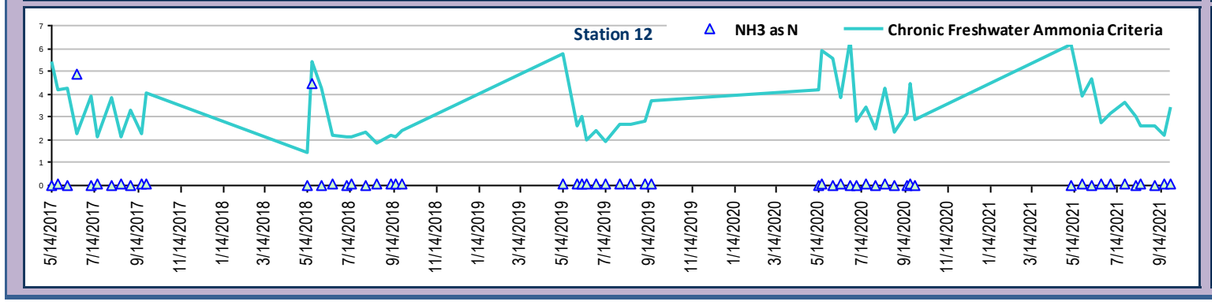


APDES Stations : NH3-N, Total, units mg/l - 5 Year Trend

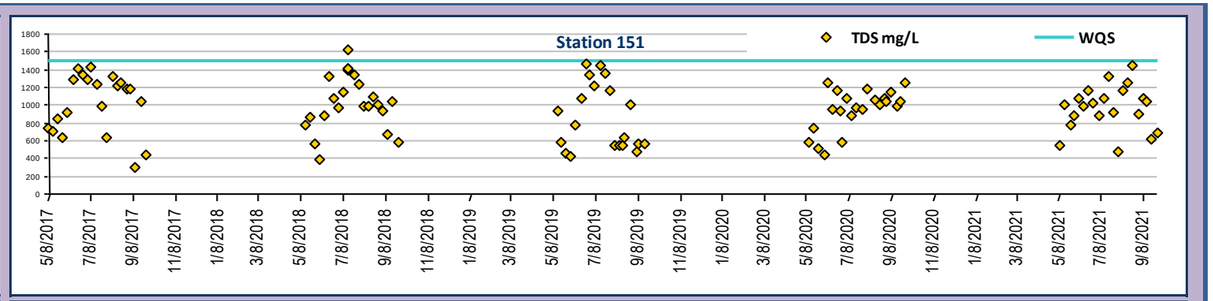


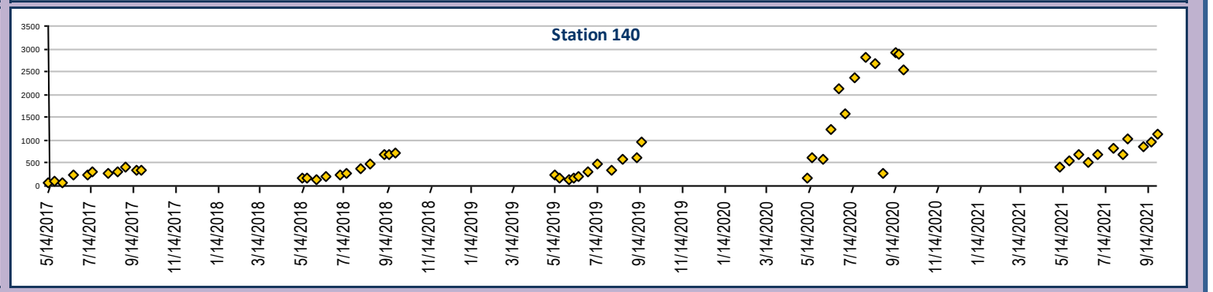


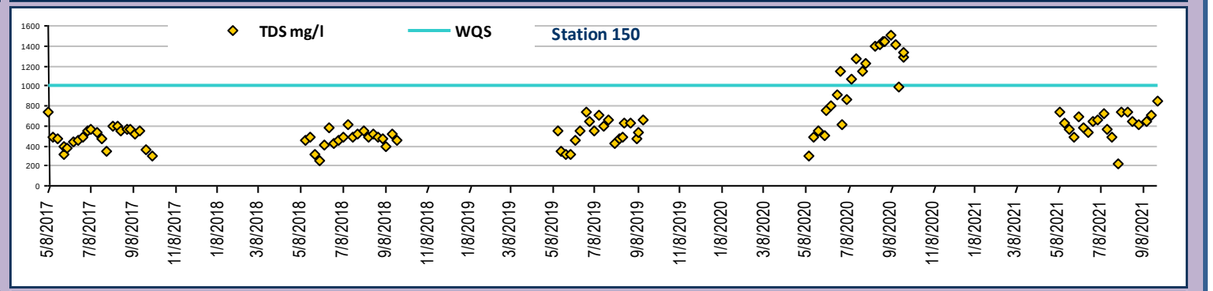


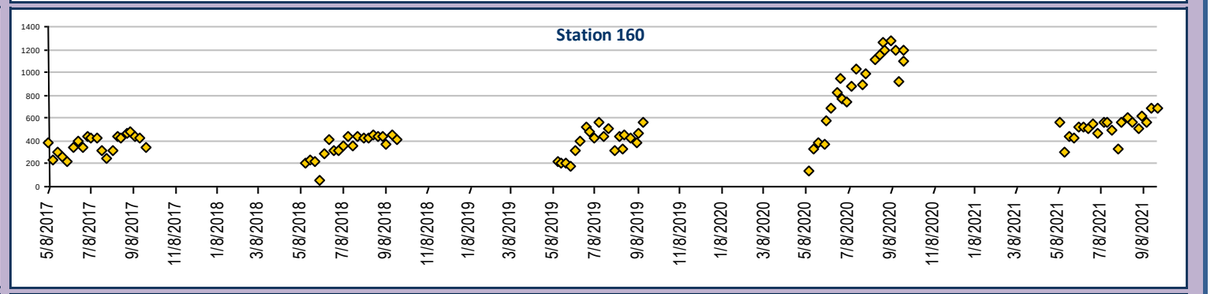


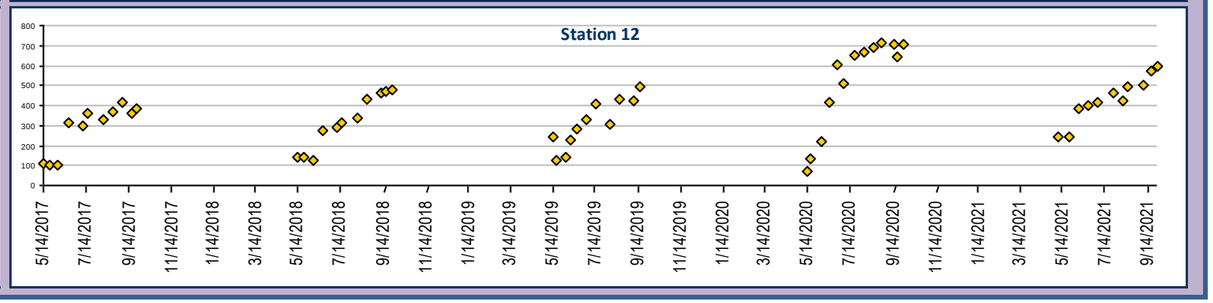
APDES Stations : TDS, units mg/l - 5 Year Trend



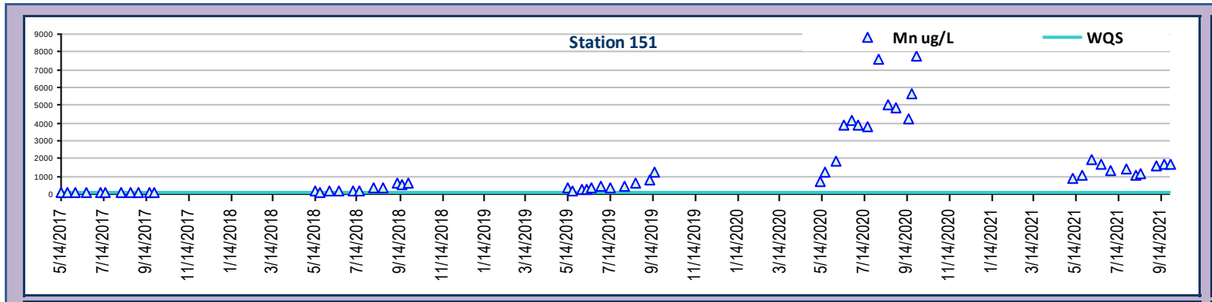


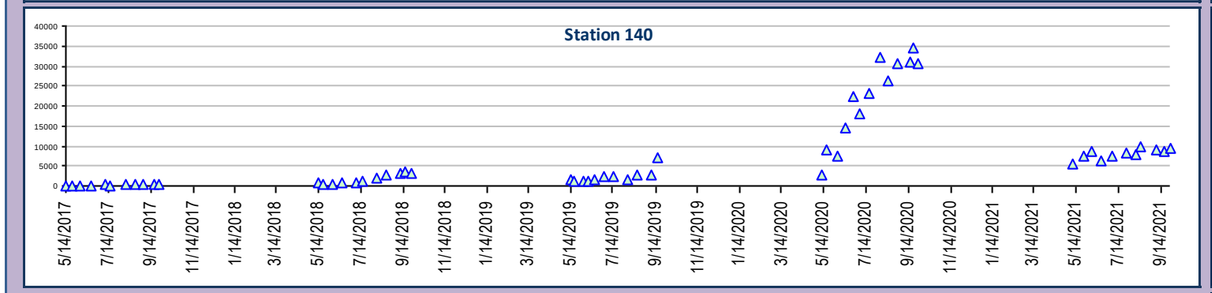


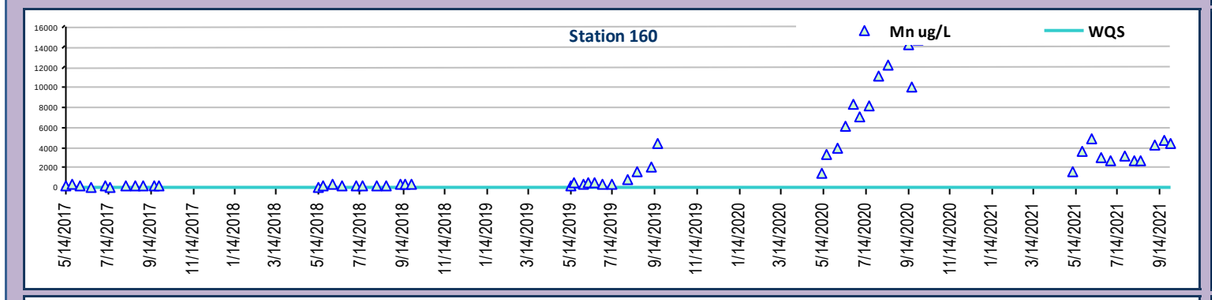


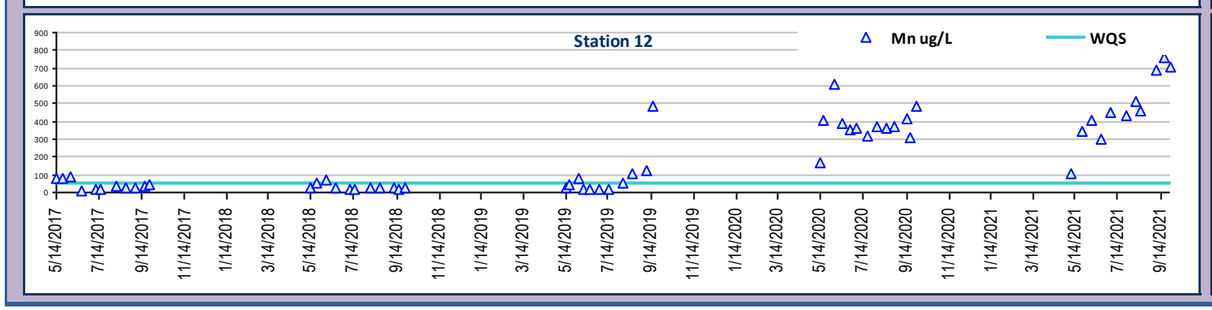


APDES Stations : Manganese, Total, units ug/L - 5 Year Trend



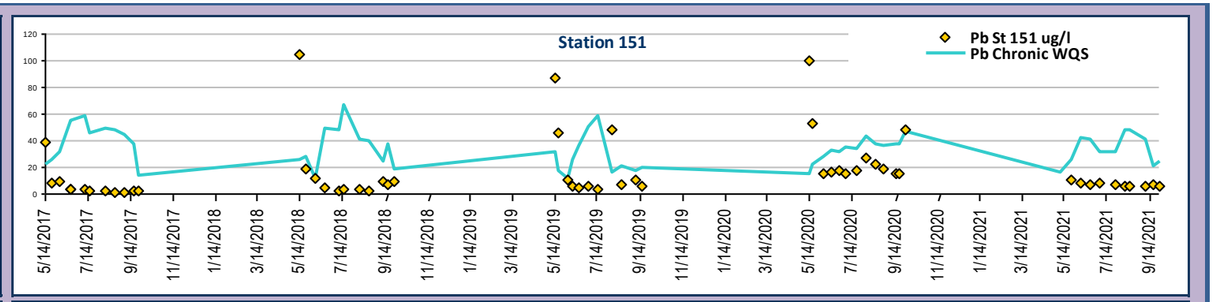


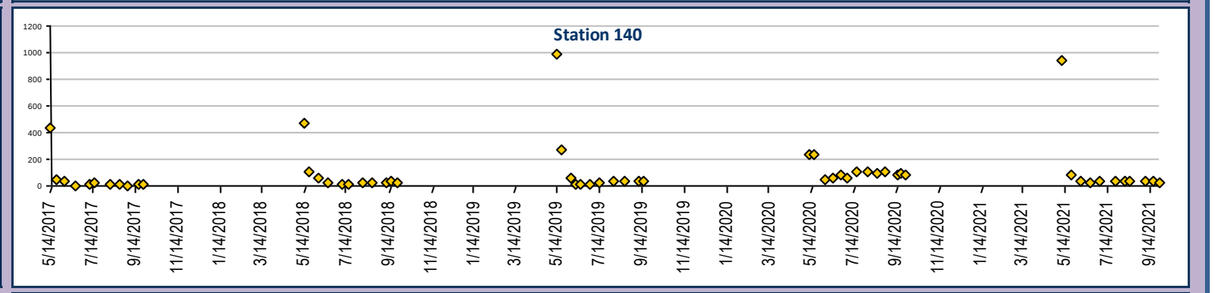


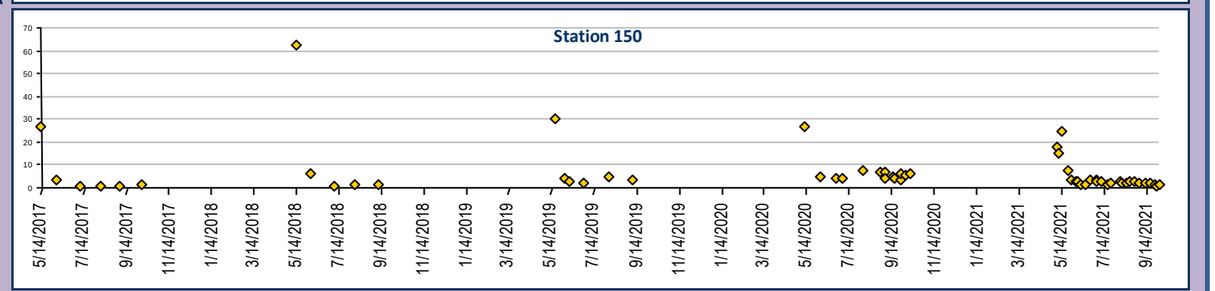


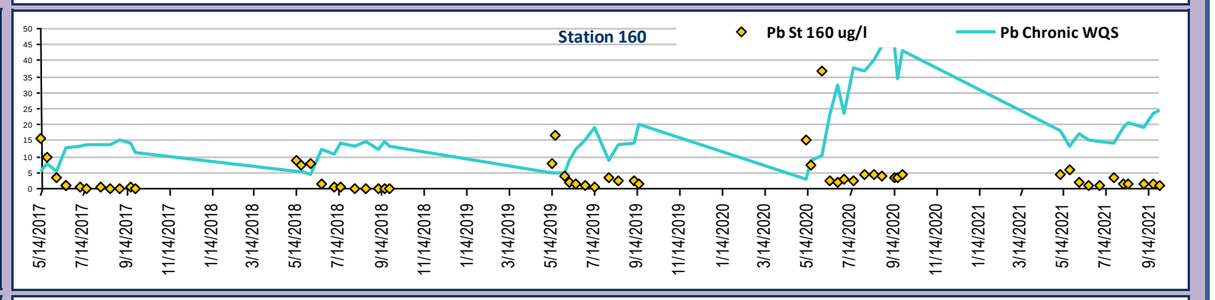
APDES Stations : Lead, Total, units, ug/L - 5 Year Trend

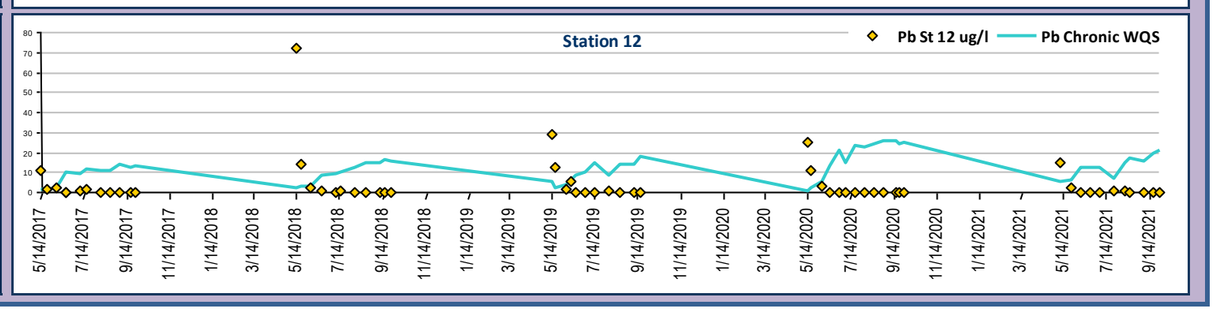
Teck



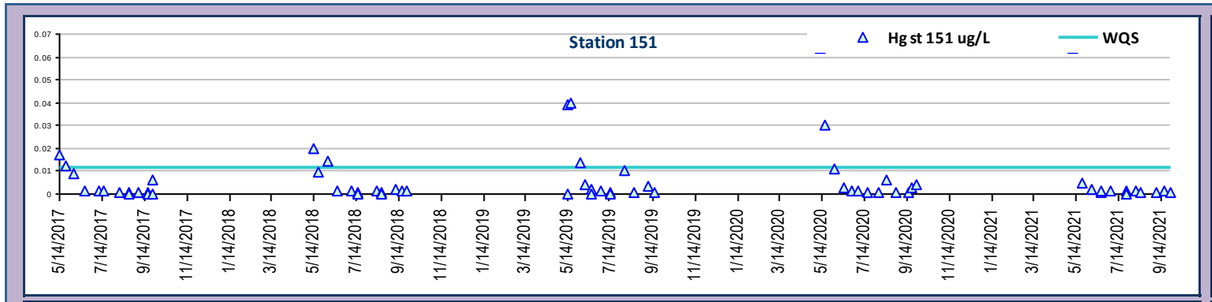


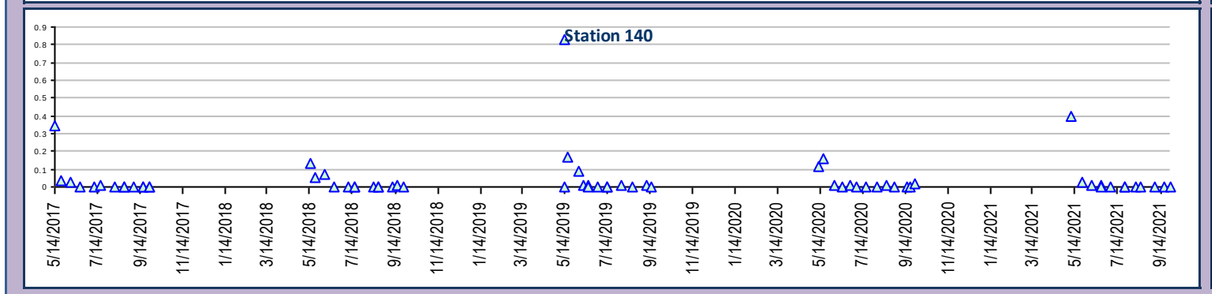




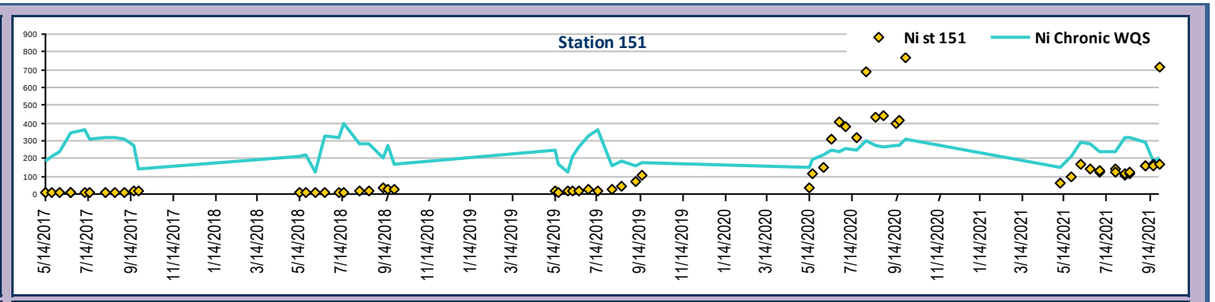


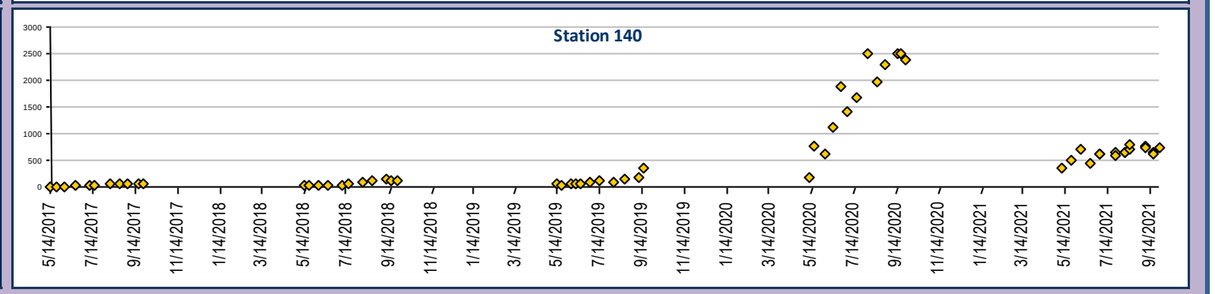
APDES Stations : Mercury, Total, units ug/L - 5 Year Trend

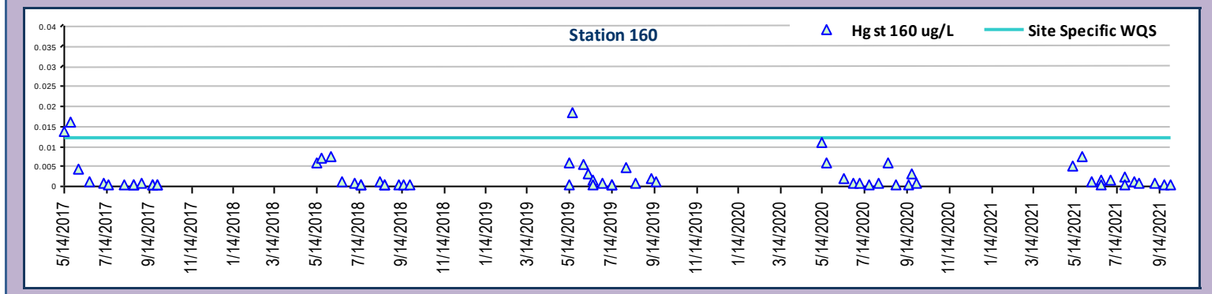


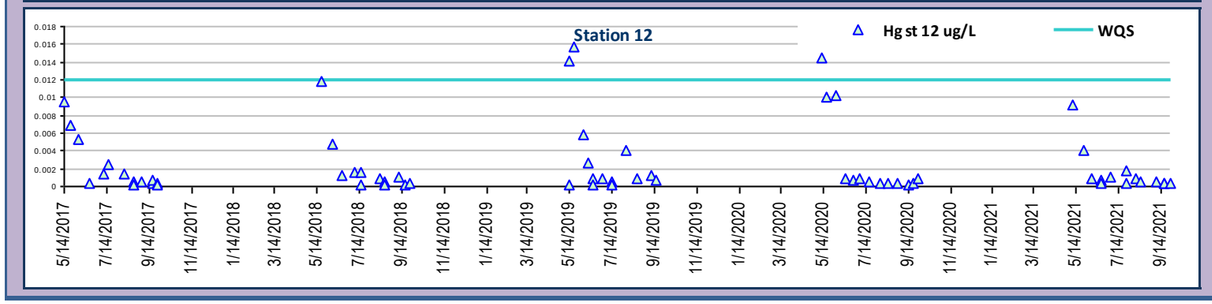


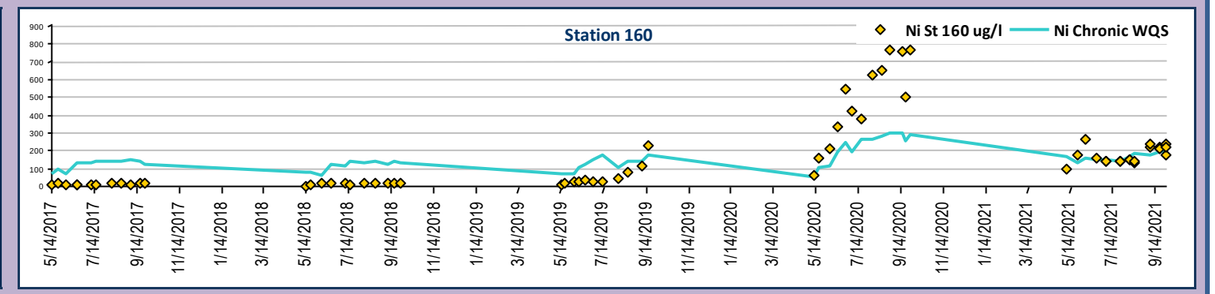
APDES Stations : Nickel, Total, units, ug/L - 5 Year Trend

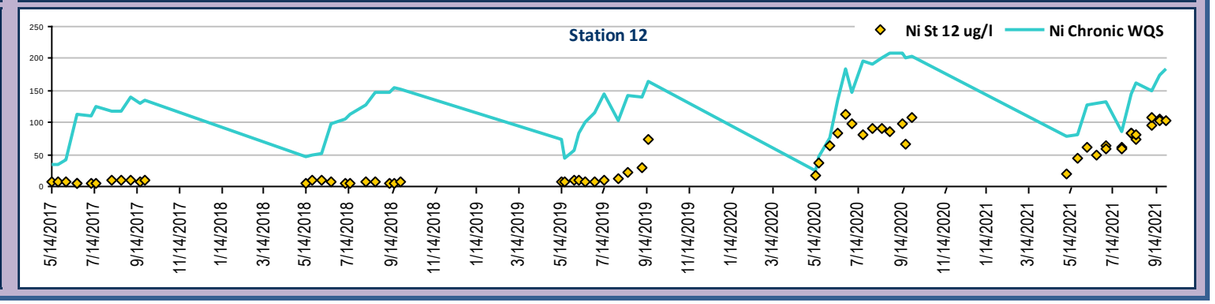




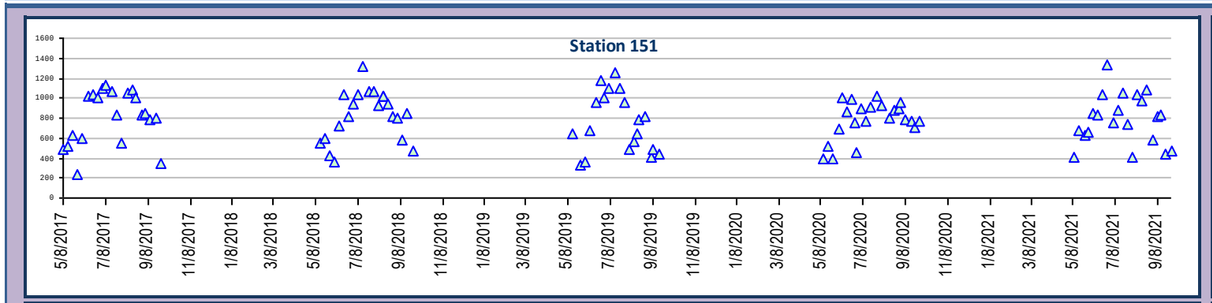


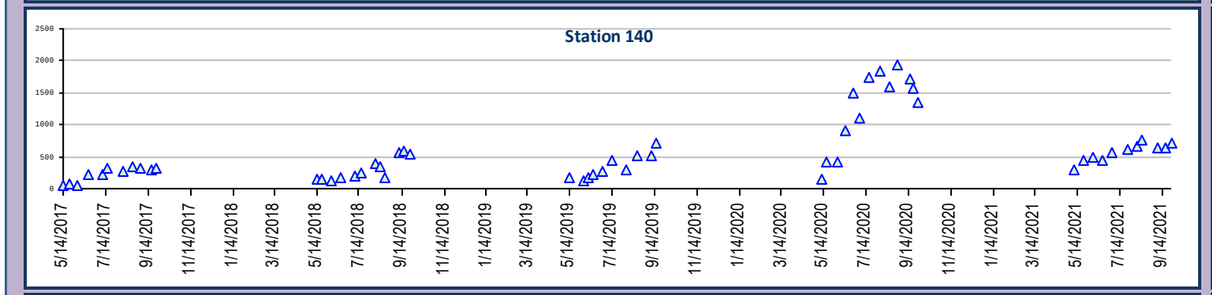


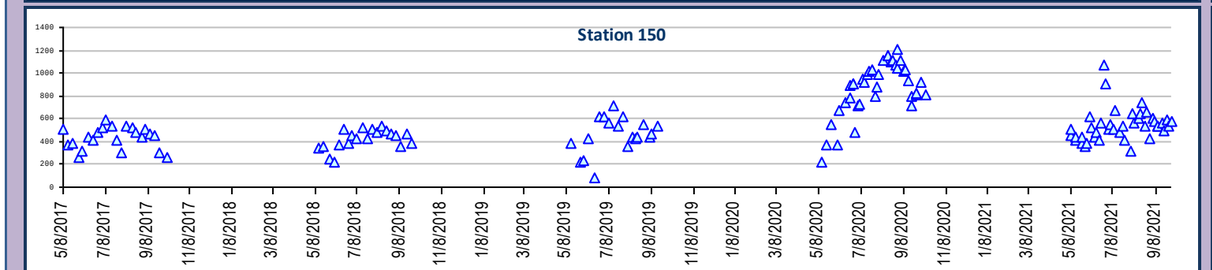


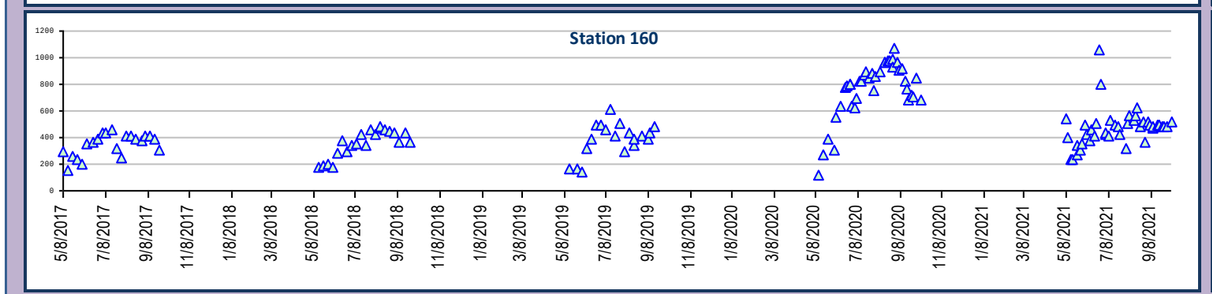


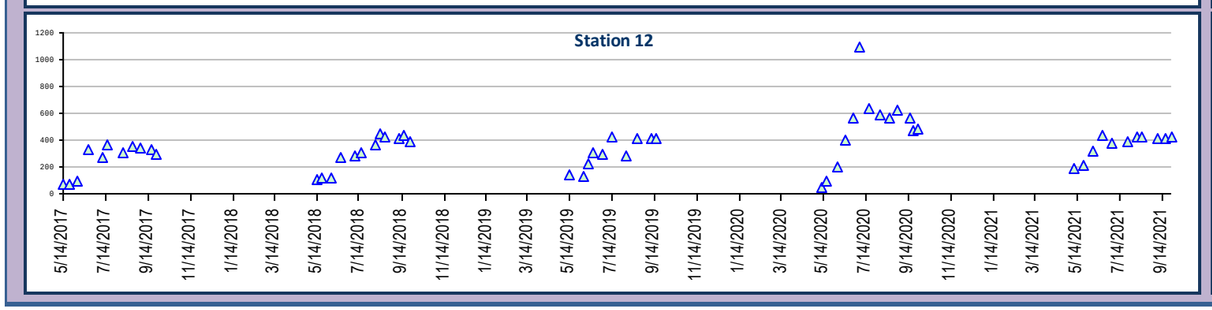
APDES Stations : Conductivity, Total, units uS/cm - 5 Year Trend



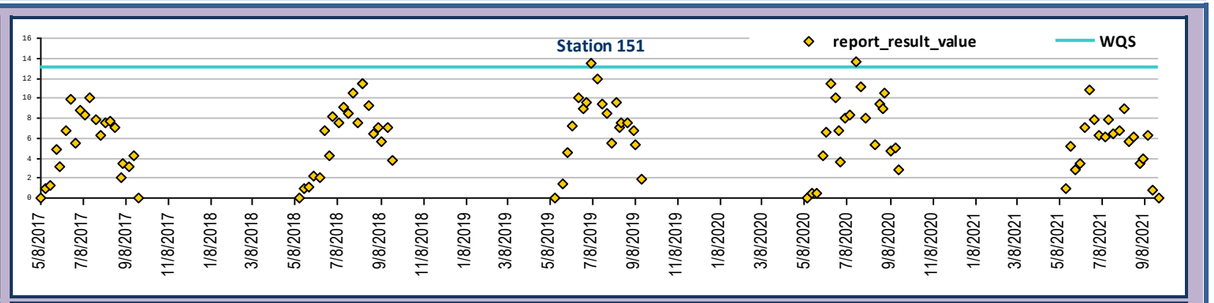


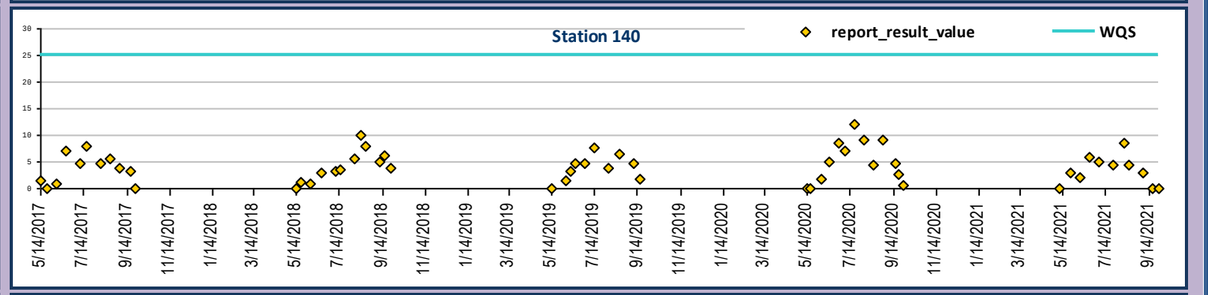


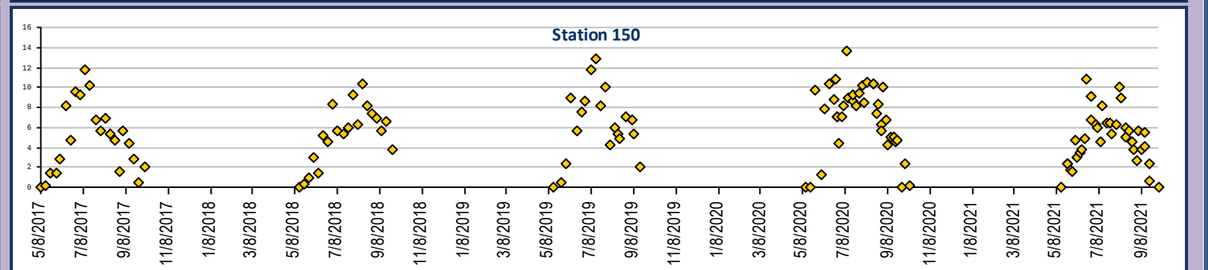


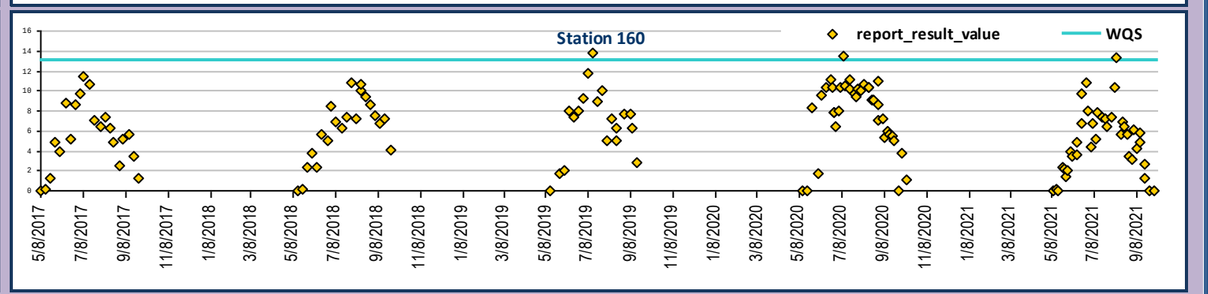


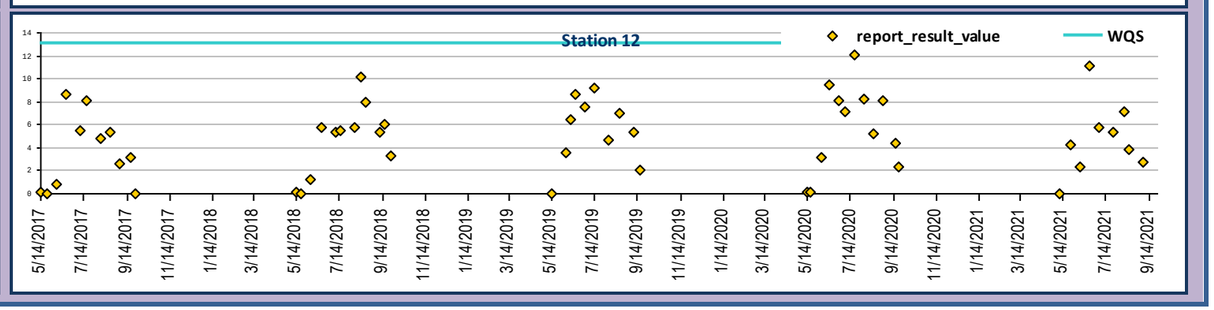
APDES Stations : Temperature, units Celsius - 5 Year Trend



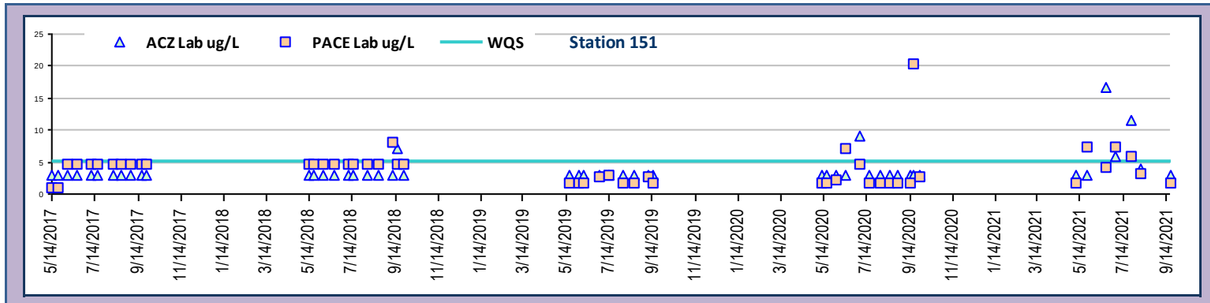




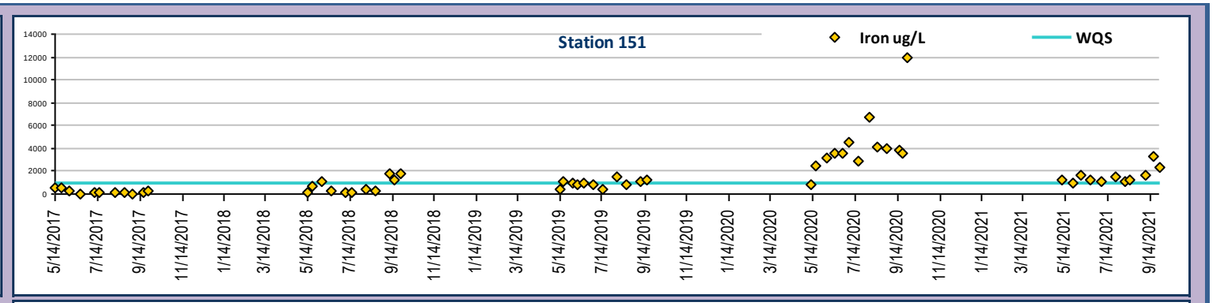


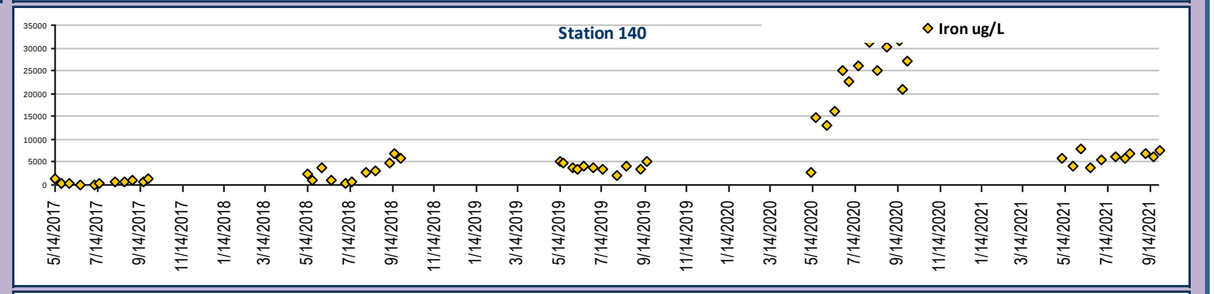


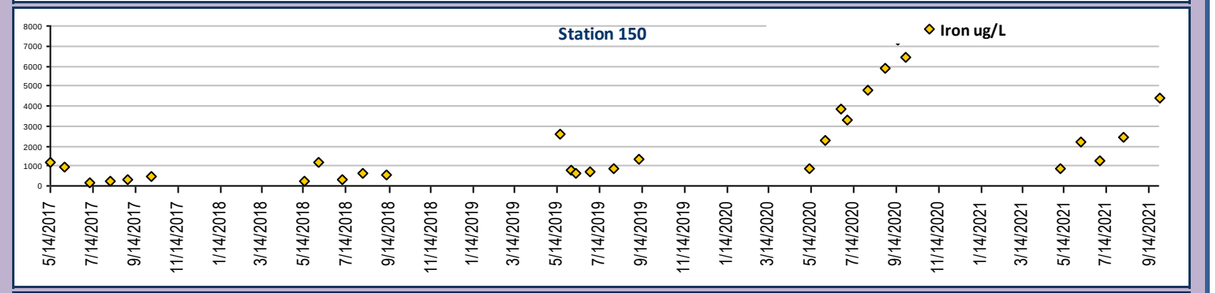
APDES Stations : Cyanide, WAD, units ug/L - 5 Year Trend

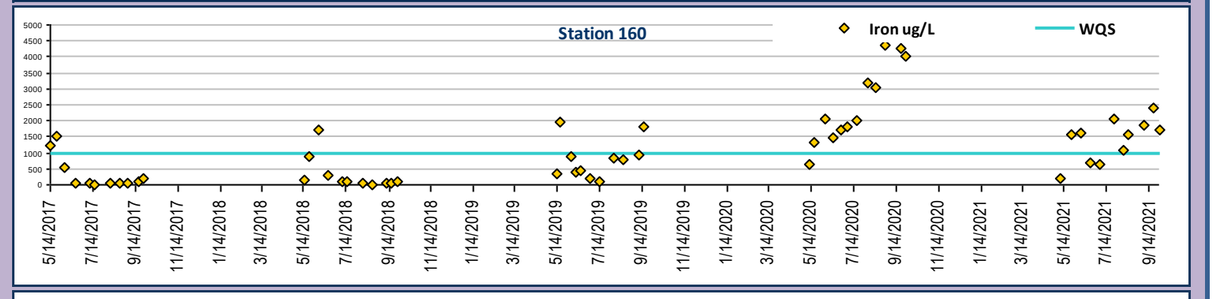


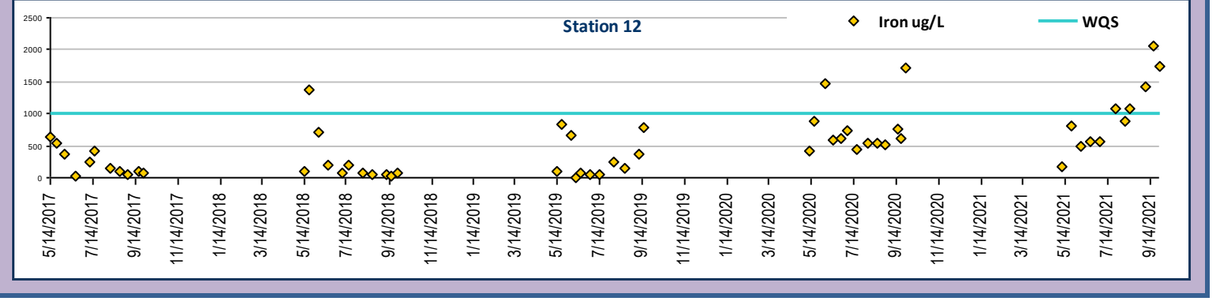
APDES Stations : Iron, Total, units, ug/L - 5 Year Trend



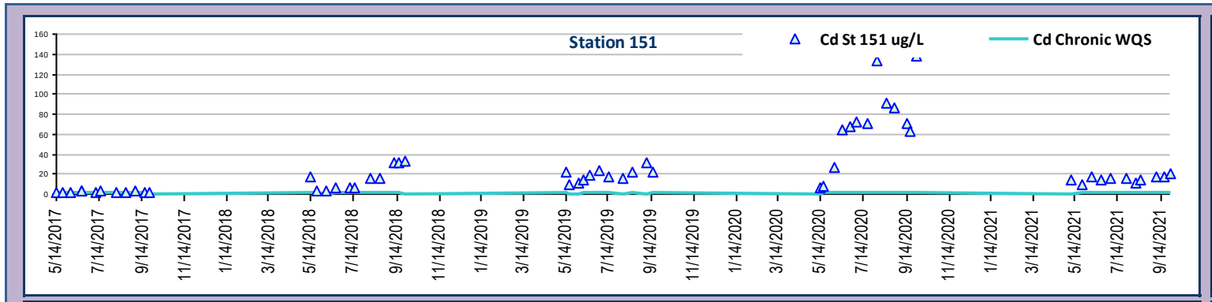


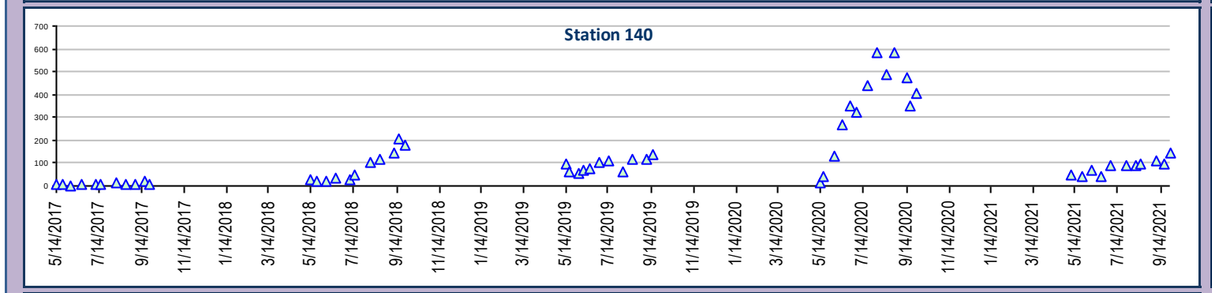


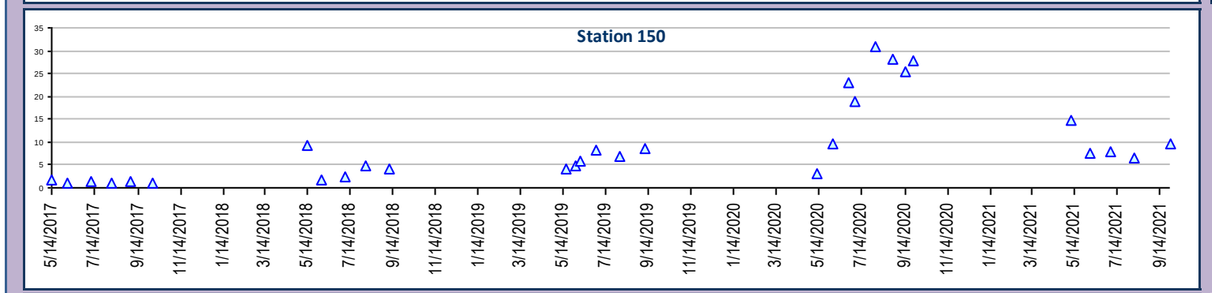


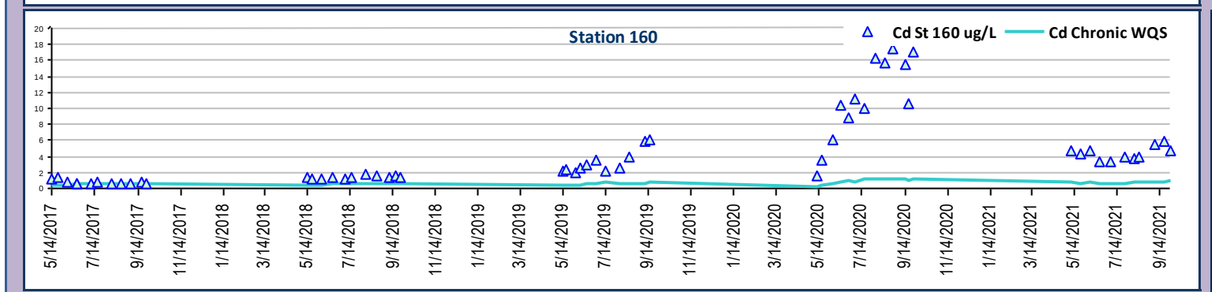


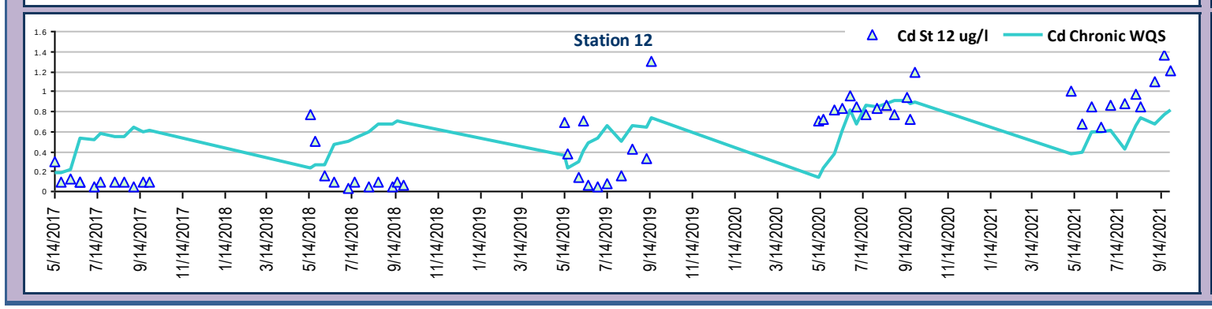
APDES Stations : Cadmium, Total, units ug/L - 5 Year Trend



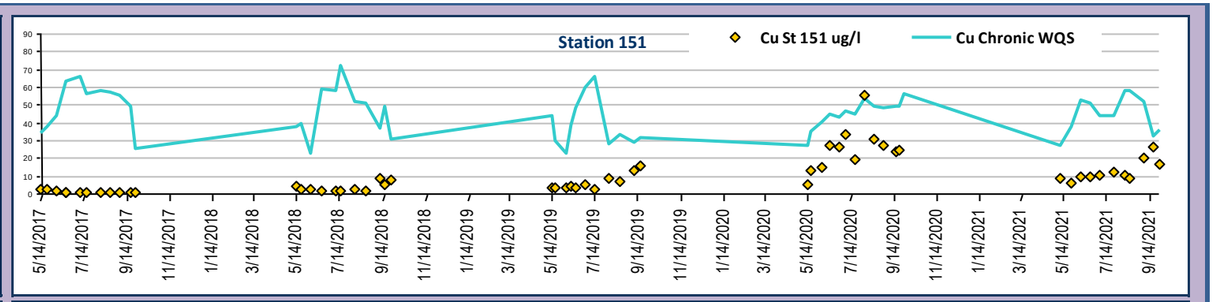


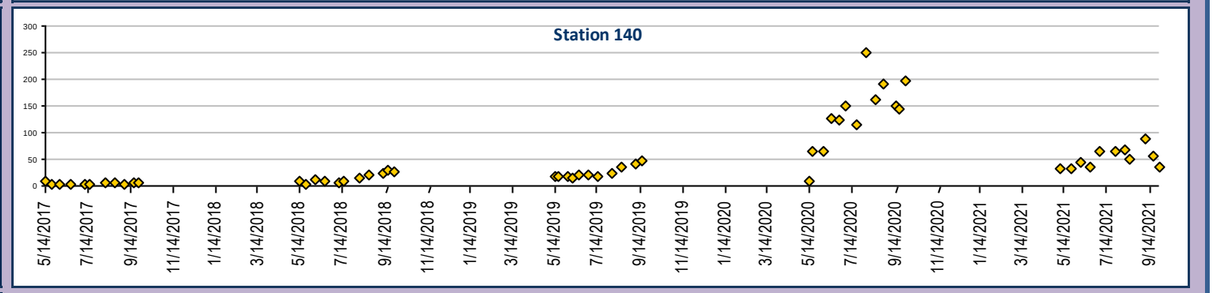


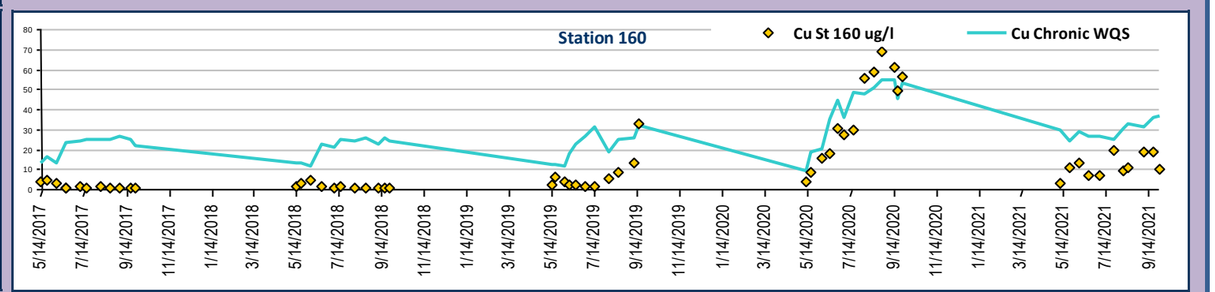


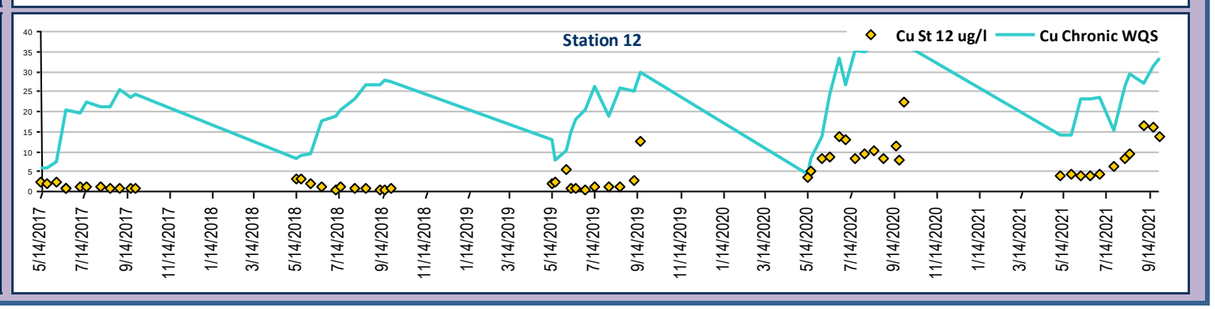


APDES Stations : Copper, Total, units, ug/L - 5 Year Trend

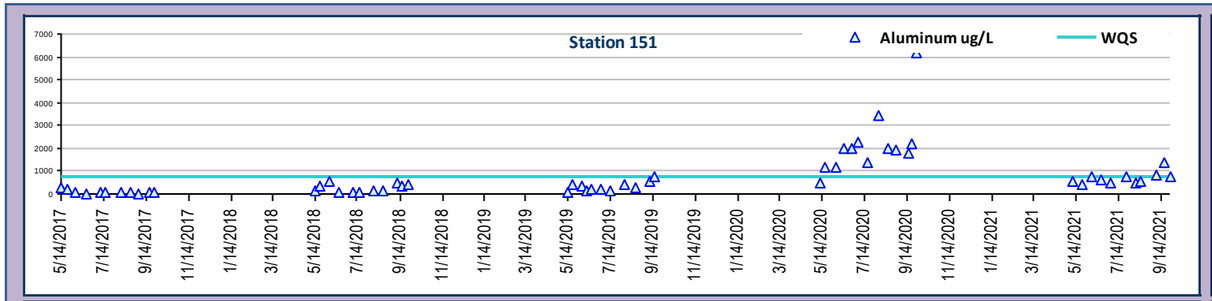


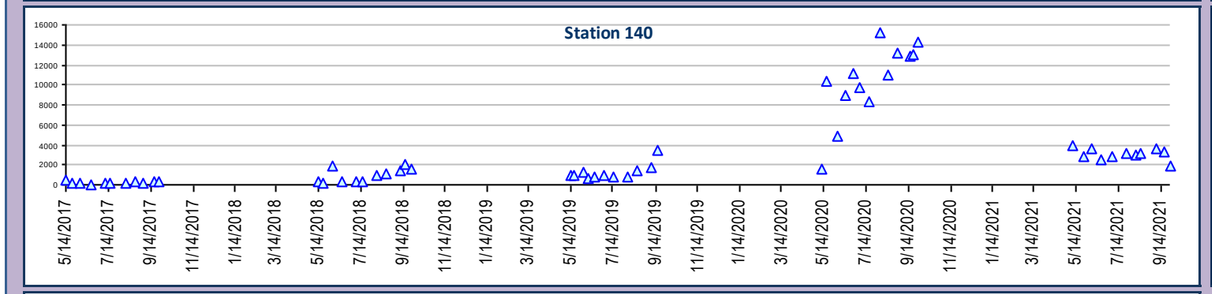


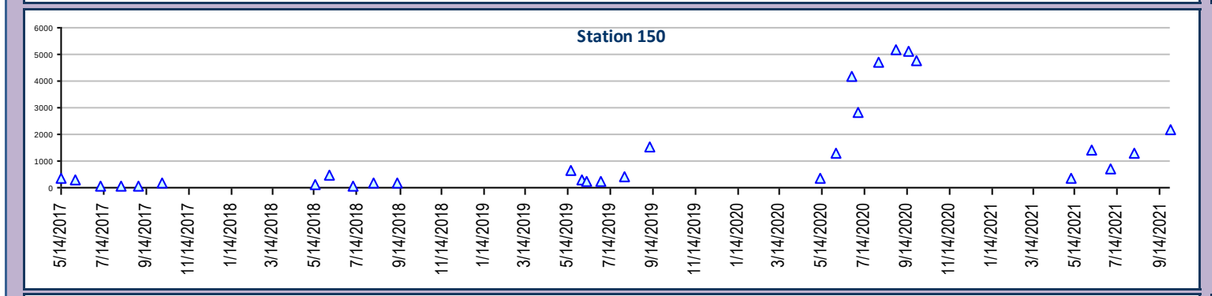


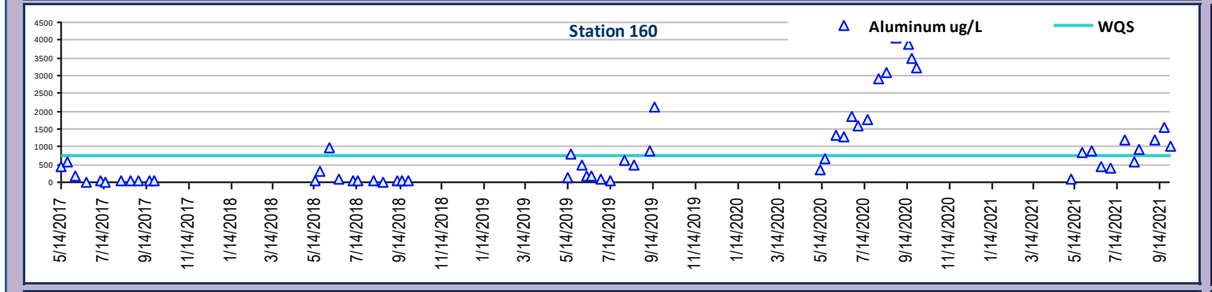


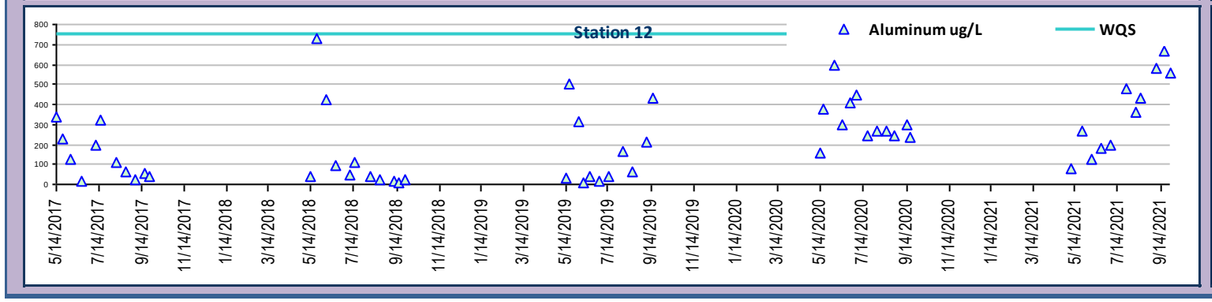
APDES Stations : Aluminum, Total, units ug/L - 5 Year Trend



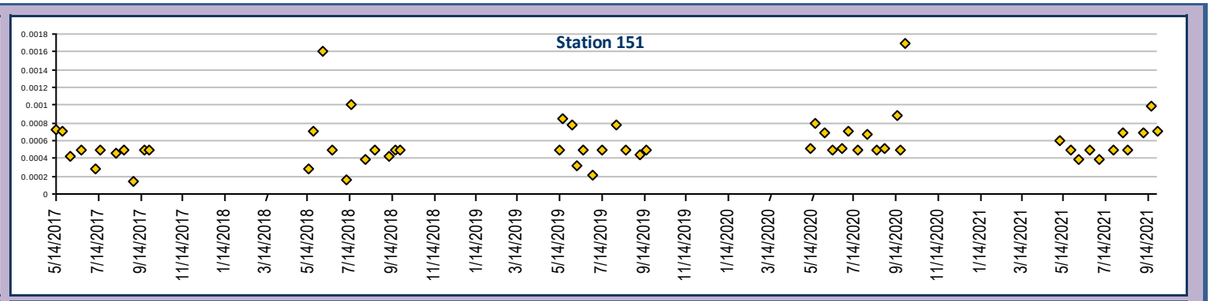


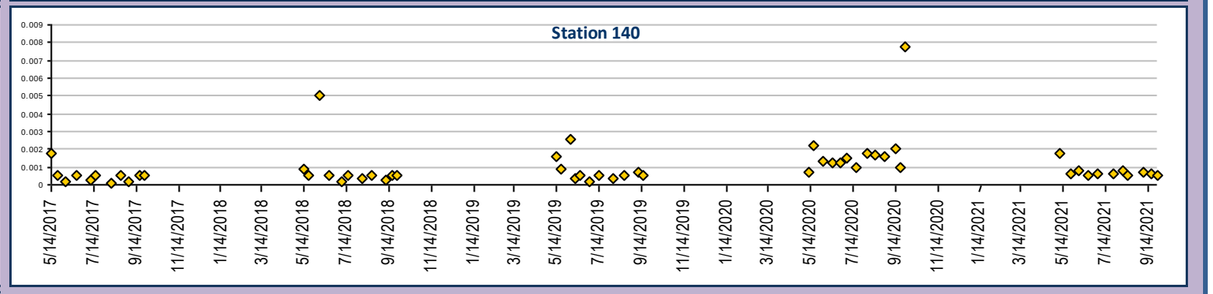


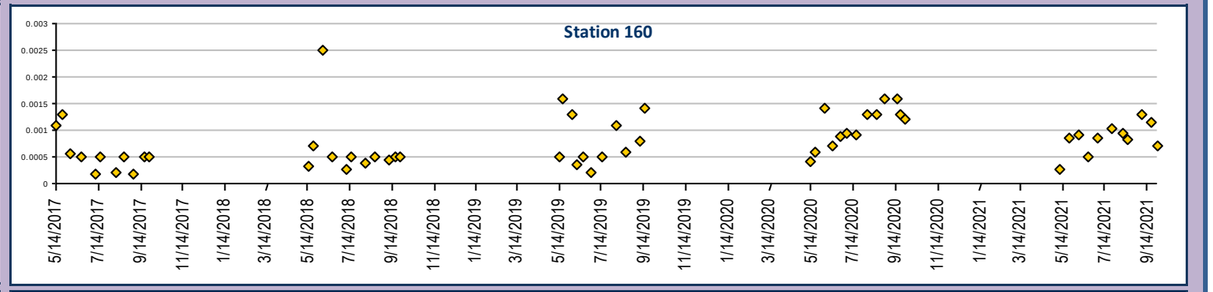


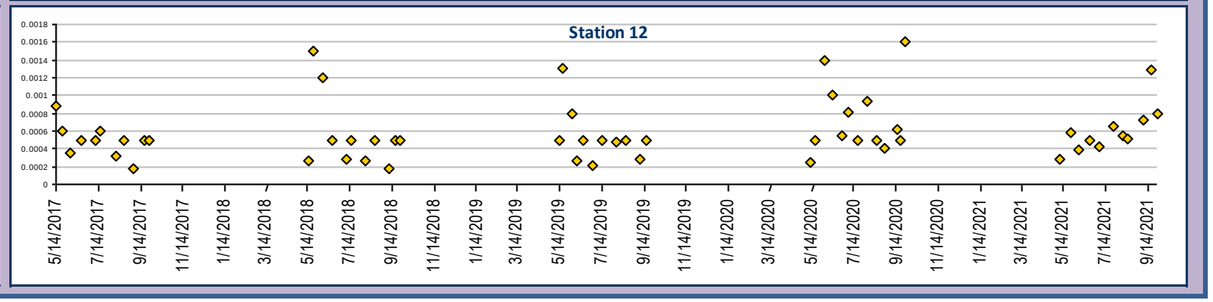


APDES Stations : Chromium, Total, units mg/L - 5 Year Trend









Appendix G: Waste Rock Management Summary Reports

Quarterly Waste Rock Production Report

Teck

Production Month **October 2021**

Waste Type: Construction Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Okpikruak				
Placed Location				
MS-15	601	0.20%	4.05%	0.10%
Placed Location				
incinerator	5,986	0.20%	4.05%	0.10%
Formation: Siksikpuk				
Placed Location				
incinerator	51,152	0.20%	4.05%	0.10%
Placed Location				
PAC Dump	950	0.20%	4.05%	0.10%
Waste Type Subtotal	**58,689**			

Waste Type: Cover Material	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Kayak				
Placed Location				
Cover Dump 2	81,908	0.10%	1.68%	0.09%
Formation: Kivalina				
Placed Location				
Cover Dump 2	213,320	0.09%	1.98%	0.08%
Waste Type Subtotal	**295,228**			

Waste Type: Most Reactive Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Ikalukrok				
Placed Location				
Main Pit Dump 5	7,752	6.78%	24.75%	2.54%
Placed Location				
Main Pit Dump 3	3,372	6.24%	13.79%	2.27%
Placed Location				
Main pit dump 4	30,073	2.87%	4.82%	0.81%
Formation: Okpikruak				
Placed Location				
Main pit dump 4	90,433	0.09%	5.47%	0.08%
Formation: Siksikpuk				
Placed Location				
Main Pit Dump 5	5,525	0.10%	6.70%	0.00%
Placed Location				
Main pit dump 4	5,113	2.10%	5.00%	1.00%
Waste Type Subtotal	**142,268**			

Waste Type: Other Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Ikalukrok				
Placed Location				
Main pit dump 4	20,492	1.60%	3.71%	0.42%
Formation: Okpikruak				
Placed Location				
Main pit dump 4	445	0.23%	5.05%	0.08%
Placed Location				
Main Pit Dump 5	22,138	0.22%	4.67%	0.09%
Formation: Siksikpuk				

Placed Location					
Main pit dump 4	130,840	0.36%	3.93%	0.20%
Placed Location					
Main Pit Dump 5	88,191	0.20%	4.05%	0.10%
Waste Type Subtotal	**262,106**			
Total tonnes for month	**758,291**			

Production Month **November 2021**

Waste Type: Cover Material	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Kayak				
Placed Location				
Cover Dump 2	195,622	0.10%	1.57%	0.09%
Formation: Kivalina				
Placed Location				
Cover Dump 2	329,975	0.11%	1.98%	0.09%
Placed Location				
Cover Dump	80,262	0.11%	2.08%	0.09%
Waste Type Subtotal	**605,859**			

Waste Type: Most Reactive Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Ikalukrok				
Placed Location				
Main Pit Dump 3	1,269	6.37%	16.75%	1.60%
Placed Location				
Main pit dump 4	11,665	6.78%	15.16%	1.82%
Placed Location				
Main Pit Dump 5	7,594	6.45%	15.77%	1.80%
Formation: Okpikruak				
Placed Location				
Main Pit Dump 3	31,121	0.09%	5.47%	0.08%
Placed Location				
Main pit dump 4	108,386	0.09%	5.47%	0.08%
Placed Location				
Main Pit Dump 5	42,703	0.09%	5.47%	0.08%
Waste Type Subtotal	**202,738**			

Waste Type: Other Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Kayak				
Placed Location				
Main pit dump 4	240	2.63%	2.23%	1.70%
Formation: Kivalina				
Placed Location				
Main pit dump 4	27,796	0.18%	2.52%	0.11%
Formation: Okpikruak				
Placed Location				
Main pit dump 4	12,456	0.10%	4.72%	0.08%
Formation: Siksikpuk				
Placed Location				
Main pit dump 4	18,398	0.85%	3.39%	0.51%
Placed Location				
Main Pit Dump 5	1,022	0.54%	1.71%	0.08%
Waste Type Subtotal	**59,912**			
Total tonnes for month	**868,509**			

Production Month **December 2021**

Waste Type: Cover Material	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Kivalina				
Placed Location				
Cover Dump	7,707	0.10%	2.20%	0.09%
Placed Location				
Cover Dump 2	254,932	0.10%	1.86%	0.09%
Waste Type Subtotal	**262,639**			
Waste Type: Most Reactive Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Ikalukrok				
Placed Location				
Main pit dump 4	25,819	6.12%	7.43%	6.73%
Formation: Okpikruak				
Placed Location				
Main pit dump 4	14,138	0.09%	5.47%	0.08%
Formation: Siksikpuk				
Placed Location				
Main pit dump 4	4,721	0.57%	5.36%	0.30%
Waste Type Subtotal	**44,678**			
Waste Type: Other Waste	**Tonnes**	**Avg Zn%**	**Avg Fe%**	**Avg Pb%**
Formation: Ikalukrok				
Placed Location				
Main pit dump 4	19,390	0.83%	2.52%	0.44%
Formation: Kivalina				
Placed Location				
Main pit dump 4	10,475	0.33%	2.96%	0.17%
Formation: Siksikpuk				
Placed Location				
Main pit dump 4	262,123	0.10%	4.07%	0.08%
Waste Type Subtotal	**291,988**			
Total tonnes for month	**599,305**			

Total Waste Rock tonnes for period **2,226,105**

Waste Rock Cover Material Monitoring Report

Teck

	Date Stockpiled	Waste Rock Type	Tonnes	Formation	Zinc_%	Stockpile Code
October 2021						
	10/4/2021	Cover Material	9,752	Kayak	0.09	COV2
	10/8/2021	Cover Material	16,071	Kayak	0.09	COV2
	10/9/2021	Cover Material	3,403	Kayak	0.09	COV2
	10/10/2021	Cover Material	2,211	Kivalina	0.10	COV2
	10/10/2021	Cover Material	9,066	Kayak	0.09	COV2
	10/11/2021	Cover Material	23,690	Kivalina	0.09	COV2
	10/12/2021	Cover Material	7,892	Kivalina	0.09	COV2
	10/13/2021	Cover Material	1,257	Kivalina	0.09	COV2
	10/14/2021	Cover Material	7,906	Kivalina	0.09	COV2
	10/15/2021	Cover Material	5,357	Kivalina	0.09	COV2
	10/16/2021	Cover Material	21,729	Kivalina	0.09	COV2
	10/16/2021	Cover Material	22,601	Kivalina	0.09	COV2
	10/17/2021	Cover Material	15,934	Kivalina	0.09	COV2
	10/17/2021	Cover Material	6,522	Kivalina	0.10	COV2
	10/18/2021	Cover Material	12,025	Kivalina	0.09	COV2
	10/18/2021	Cover Material	4,962	Kivalina	0.10	COV2
	10/19/2021	Cover Material	12,051	Kivalina	0.09	COV2
	10/19/2021	Cover Material	6,505	Kivalina	0.10	COV2
	10/20/2021	Cover Material	14,355	Kivalina	0.09	COV2
	10/20/2021	Cover Material	483	Kivalina	0.10	COV2
	10/21/2021	Cover Material	1,756	Kivalina	0.09	COV2
	10/27/2021	Cover Material	8,244	Kivalina	0.09	COV2
	10/28/2021	Cover Material	9,565	Kivalina	0.09	COV2
	10/28/2021	Cover Material	4,352	Kayak	0.10	COV2
	10/29/2021	Cover Material	21,648	Kivalina	0.09	COV2
	10/30/2021	Cover Material	2,140	Kivalina	0.09	COV2
	10/30/2021	Cover Material	17,813	Kayak	0.10	COV2
	10/31/2021	Cover Material	4,487	Kivalina	0.09	COV2
	10/31/2021	Cover Material	21,451	Kayak	0.10	COV2
November 2021						
	11/1/2021	Cover Material	10,847	Kayak	0.10	COV2
	11/1/2021	Cover Material	16,151	Kivalina	0.09	COV2
	11/2/2021	Cover Material	23,441	Kivalina	0.09	COV2
	11/2/2021	Cover Material	18,499	Kayak	0.10	COV2
	11/3/2021	Cover Material	1,643	Kivalina	0.10	COV2

Date Stockpiled	Waste Rock Type	Tonnes	Formation	Zinc_%	Stockpile Code
11/3/2021	Cover Material	5,343	Kivalina	0.09	COV2
11/3/2021	Cover Material	14,624	Kayak	0.10	COV2
11/4/2021	Cover Material	16,985	Kayak	0.10	COV2
11/5/2021	Cover Material	480	Kayak	0.10	COV2
11/6/2021	Cover Material	2,188	Kayak	0.10	COV2
11/7/2021	Cover Material	11,323	Kayak	0.10	COV2
11/9/2021	Cover Material	6,908	Kayak	0.10	COV2
11/10/2021	Cover Material	23,191	Kayak	0.10	COV2
11/11/2021	Cover Material	15,300	Kayak	0.10	COV2
11/12/2021	Cover Material	21,654	Kayak	0.10	COV2
11/13/2021	Cover Material	23,023	Kayak	0.10	COV2
11/14/2021	Cover Material	10,095	Kayak	0.10	COV2
11/15/2021	Cover Material	1,599	Kayak	0.10	COV2
11/15/2021	Cover Material	12,140	Kivalina	0.11	COV2
11/16/2021	Cover Material	25,427	Kivalina	0.11	COV2
11/17/2021	Cover Material	6,153	Kayak	0.10	COV2
11/17/2021	Cover Material	14,575	Kivalina	0.11	COV2
11/18/2021	Cover Material	30,095	Kivalina	0.11	COV2
11/18/2021	Cover Material	12,753	Kayak	0.10	COV2
11/19/2021	Cover Material	29,834	Kivalina	0.11	COV2
11/20/2021	Cover Material	24,273	Kivalina	0.11	COV2
11/21/2021	Cover Material	6,379	Kivalina	0.11	COV
11/21/2021	Cover Material	22,316	Kivalina	0.11	COV2
11/22/2021	Cover Material	12,096	Kivalina	0.11	COV
11/22/2021	Cover Material	10,823	Kivalina	0.11	COV2
11/23/2021	Cover Material	2,927	Kivalina	0.11	COV
11/23/2021	Cover Material	21,315	Kivalina	0.11	COV2
11/24/2021	Cover Material	21,607	Kivalina	0.11	COV2
11/25/2021	Cover Material	2,322	Kivalina	0.10	COV2
11/25/2021	Cover Material	6,322	Kivalina	0.11	COV
11/25/2021	Cover Material	9,067	Kivalina	0.10	COV
11/26/2021	Cover Material	11,121	Kivalina	0.11	COV
11/26/2021	Cover Material	1,680	Kivalina	0.11	COV2
11/27/2021	Cover Material	160	Kivalina	0.10	COV
11/27/2021	Cover Material	3,721	Kivalina	0.11	COV
11/27/2021	Cover Material	16,557	Kivalina	0.11	COV2
11/28/2021	Cover Material	10,487	Kivalina	0.11	COV2
11/28/2021	Cover Material	7,755	Kivalina	0.11	COV
11/28/2021	Cover Material	5,243	Kivalina	0.10	COV
11/28/2021	Cover Material	6,286	Kivalina	0.10	COV2

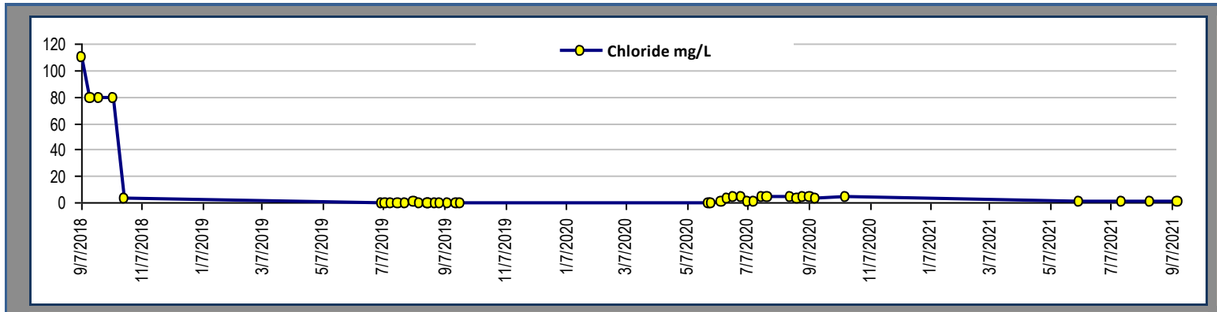
	Date Stockpiled	Waste Rock Type	Tonnes	Formation	Zinc_%	Stockpile Code
	11/29/2021	Cover Material	9,808	Kivalina	0.11	COV2
	11/29/2021	Cover Material	9,421	Kivalina	0.10	COV2
	11/29/2021	Cover Material	10,036	Kivalina	0.11	COV
	11/30/2021	Cover Material	5,435	Kivalina	0.11	COV
	11/30/2021	Cover Material	14,431	Kivalina	0.10	COV2
December 2021						
	12/1/2021	Cover Material	26,175	Kivalina	0.10	COV2
	12/2/2021	Cover Material	26,254	Kivalina	0.10	COV2
	12/3/2021	Cover Material	10,816	Kivalina	0.10	COV2
	12/4/2021	Cover Material	10,373	Kivalina	0.10	COV2
	12/5/2021	Cover Material	6,552	Kivalina	0.10	COV2
	12/7/2021	Cover Material	16,946	Kivalina	0.10	COV2
	12/8/2021	Cover Material	21,934	Kivalina	0.10	COV2
	12/10/2021	Cover Material	4,271	Kivalina	0.10	COV2
	12/11/2021	Cover Material	3,111	Kivalina	0.10	COV
	12/11/2021	Cover Material	6,627	Kivalina	0.10	COV2
	12/12/2021	Cover Material	3,849	Kivalina	0.10	COV
	12/12/2021	Cover Material	1,056	Kivalina	0.10	COV2
	12/13/2021	Cover Material	747	Kivalina	0.10	COV
	12/13/2021	Cover Material	17,005	Kivalina	0.10	COV2
	12/14/2021	Cover Material	23,595	Kivalina	0.10	COV2
	12/15/2021	Cover Material	22,138	Kivalina	0.10	COV2
	12/16/2021	Cover Material	27,668	Kivalina	0.10	COV2
	12/17/2021	Cover Material	20,441	Kivalina	0.10	COV2
	12/18/2021	Cover Material	5,444	Kivalina	0.10	COV2
	12/31/2021	Cover Material	7,637	Kivalina	0.09	COV2
		Total	**1,163,726**			

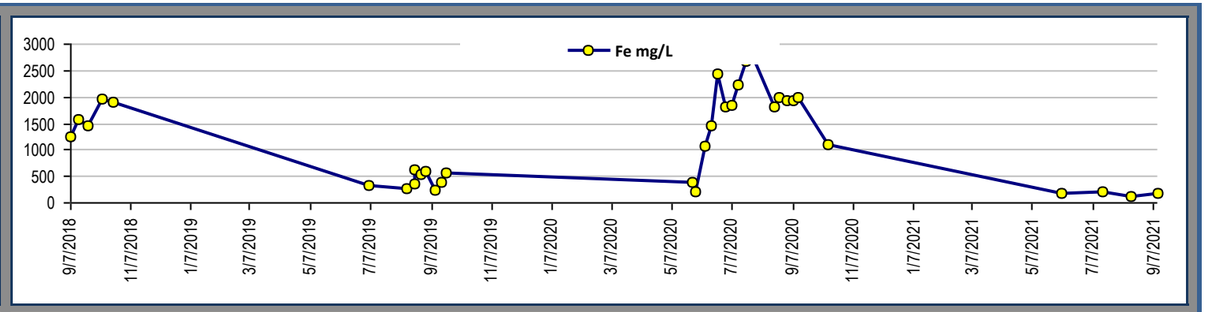
Appendix H: Risk Management Plan (pending 2nd quarter)

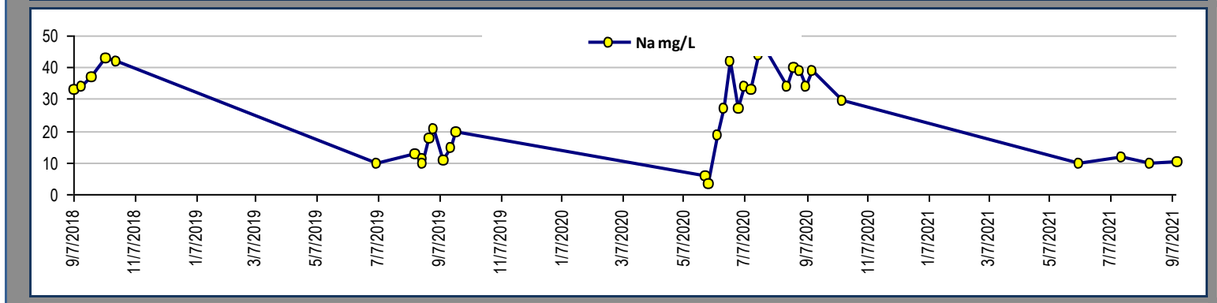
Appendix I: Kaviqsaaq Diversion – Profile I Trend Charts

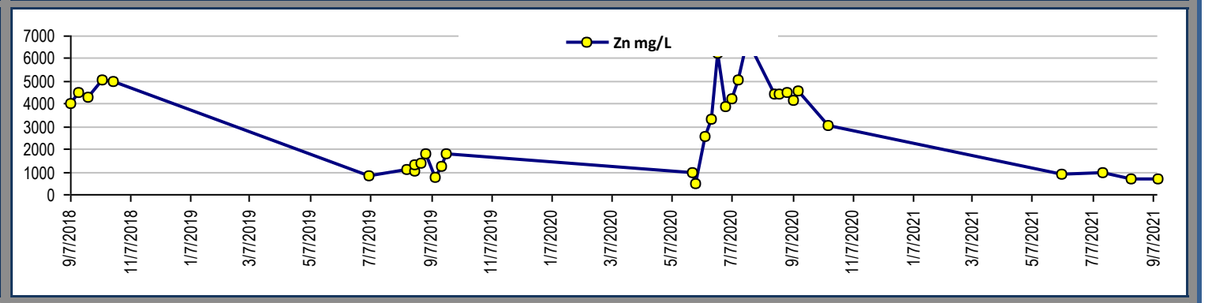
Kaviqsaaq Diversion - Profile I: Total

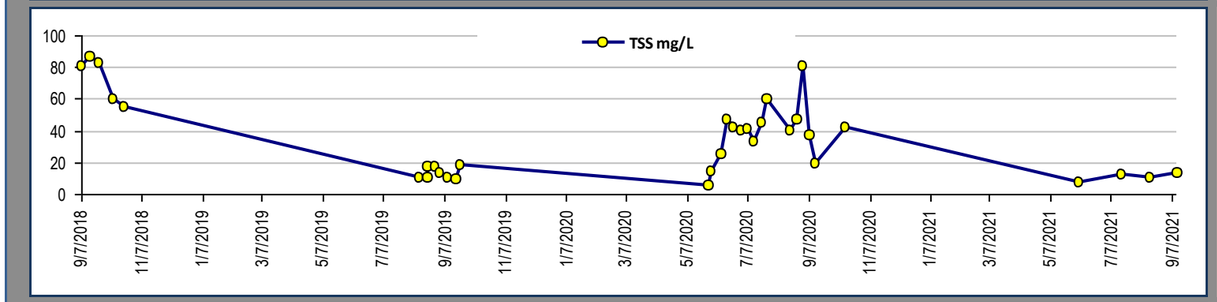
Teck

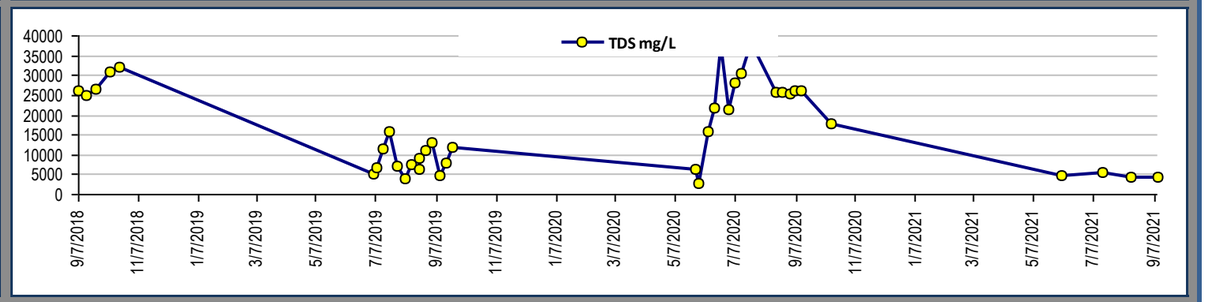


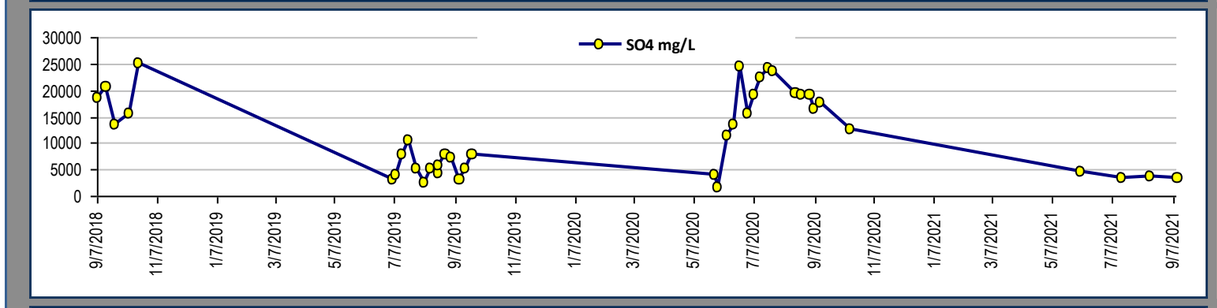


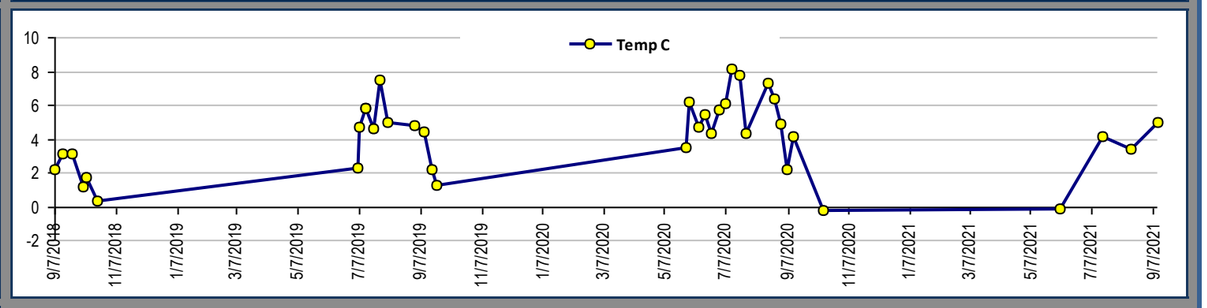


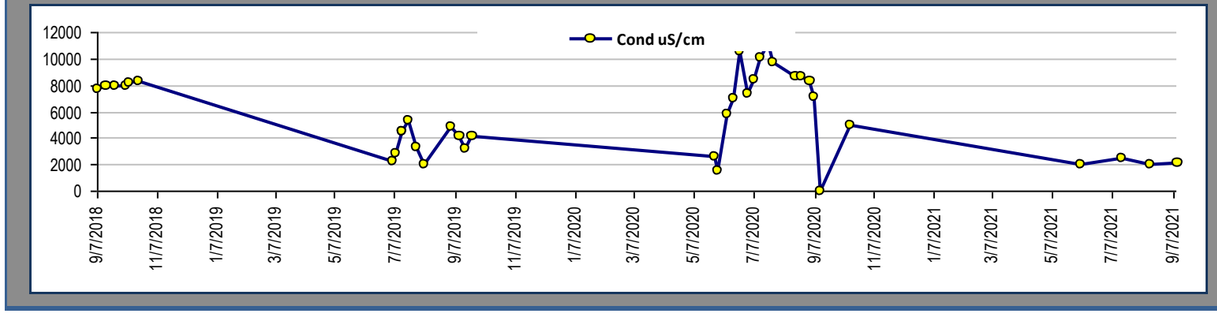






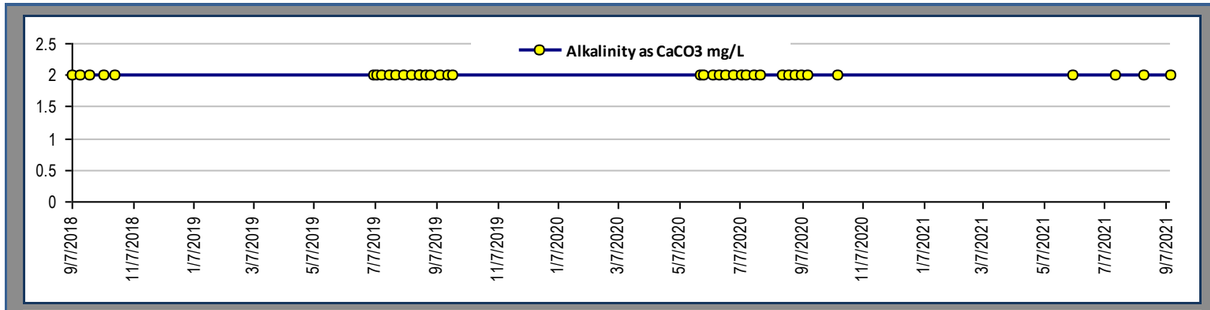


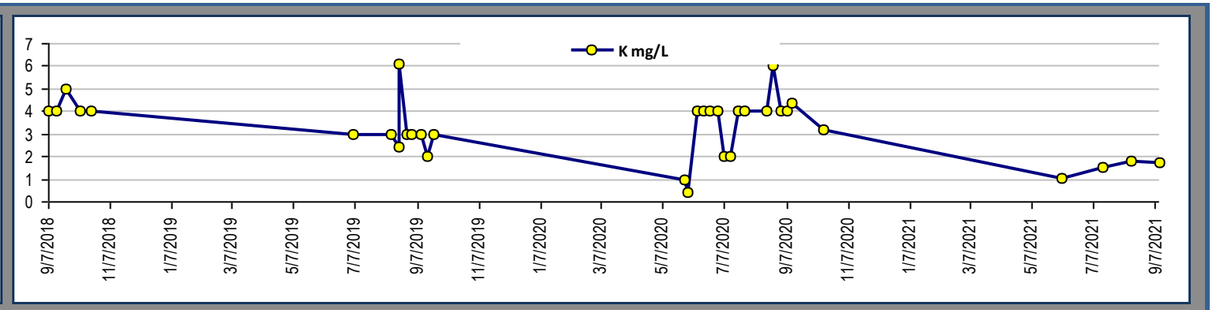


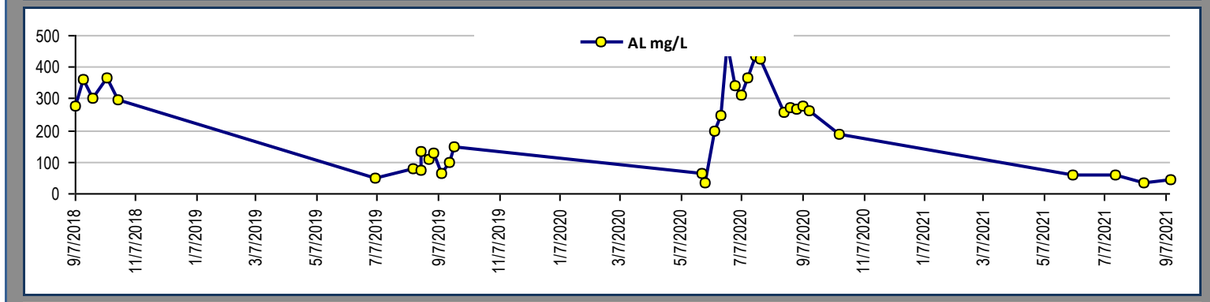


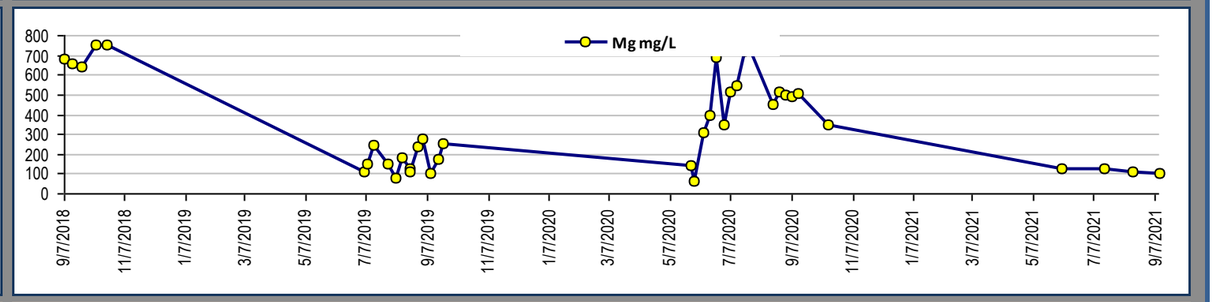
Kaviqsaaq Diversion - Profile I: Total

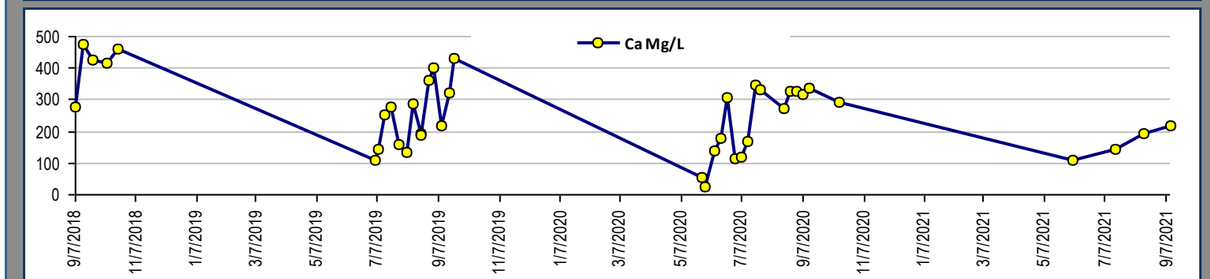
Teck

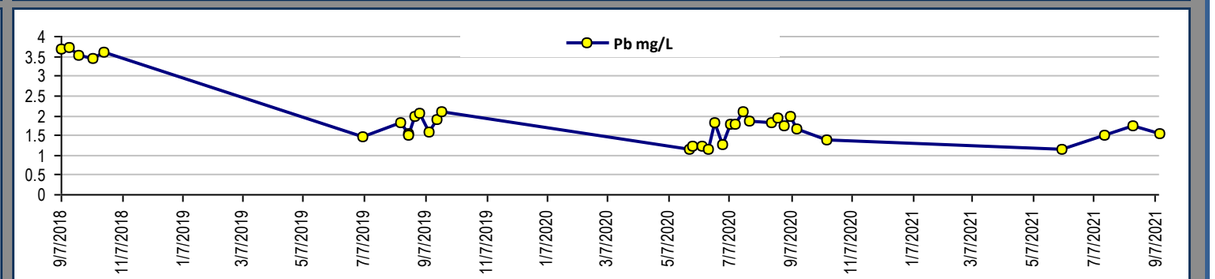


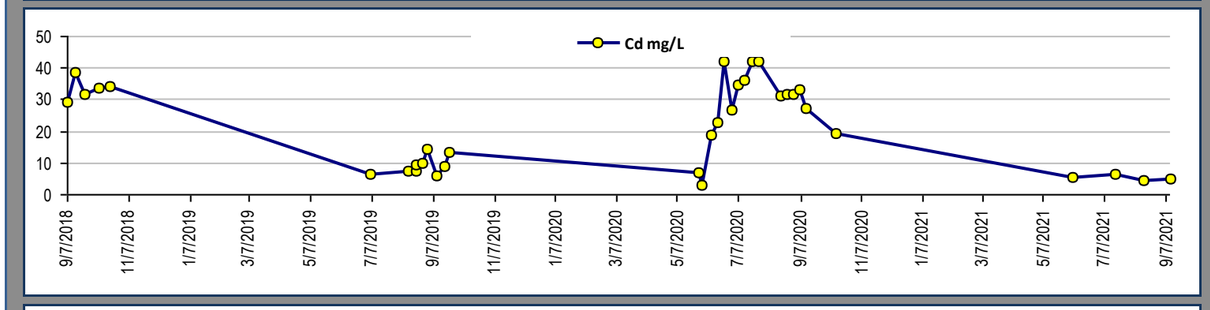


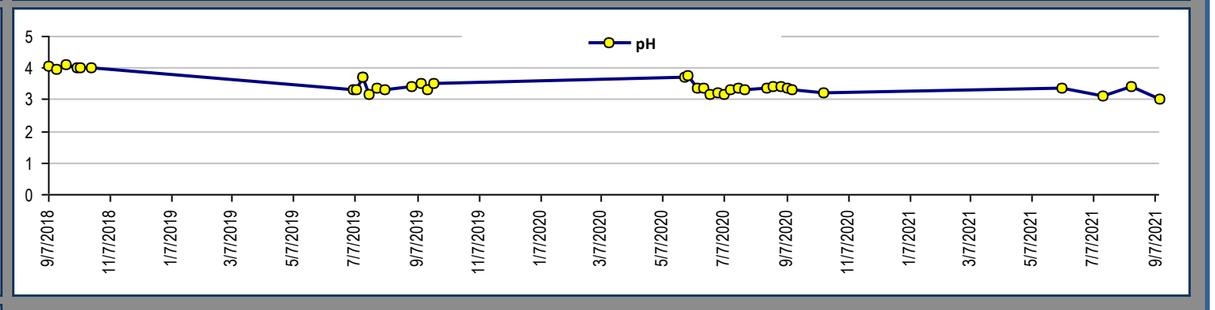


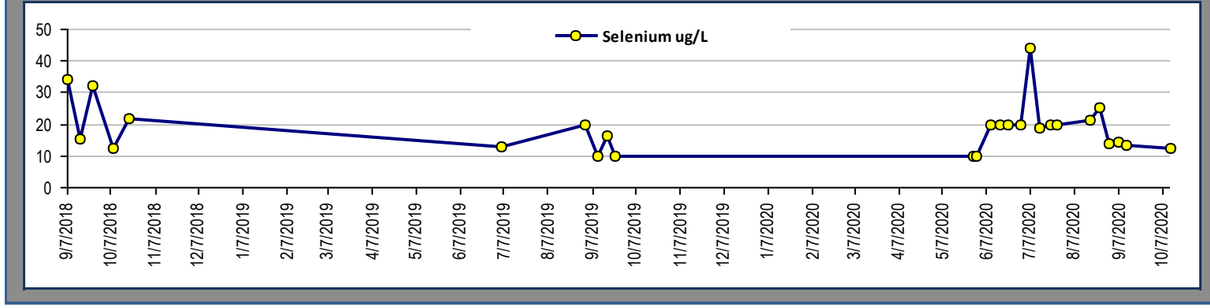








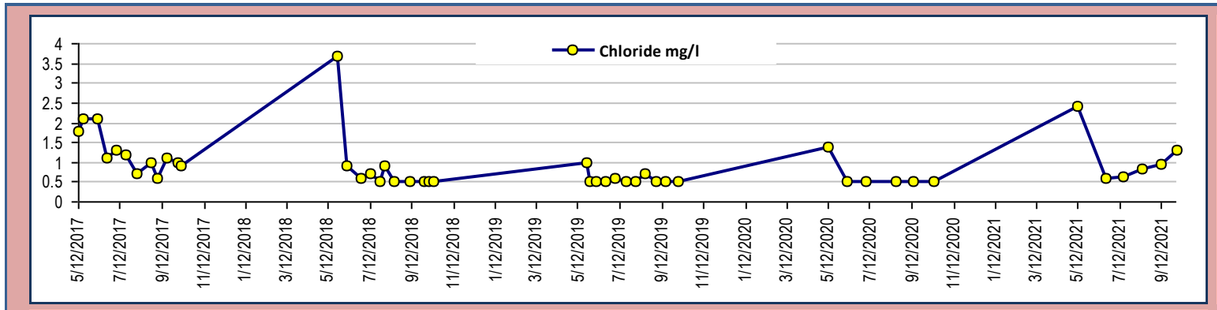


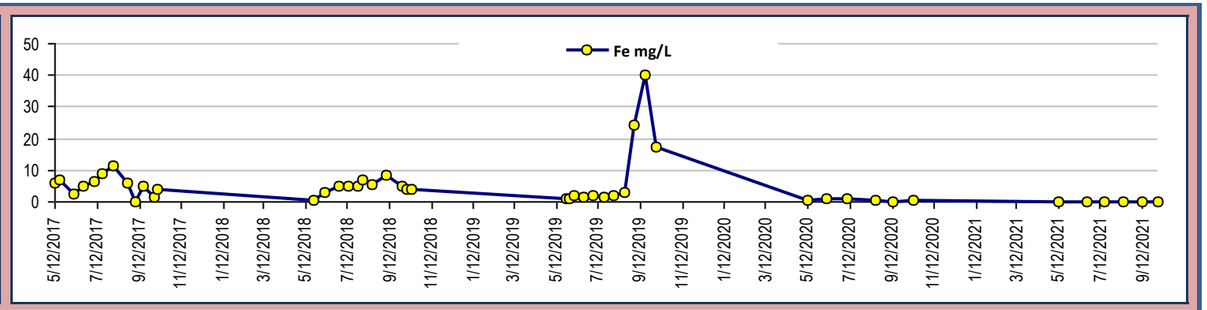


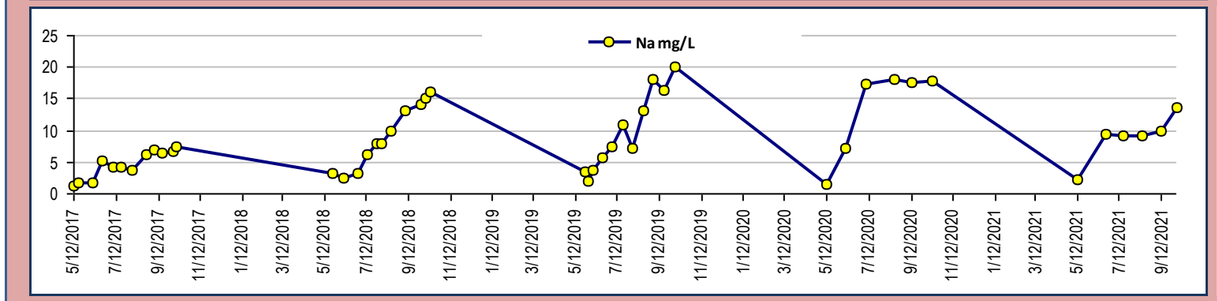
Appendix J: Hill top Diversion Profile II Trend Charts

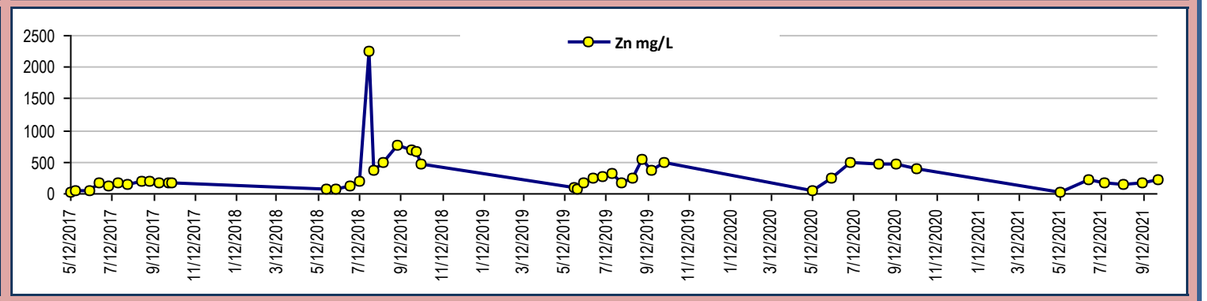
Hill Top Diversion - Prifile II: Dissolved

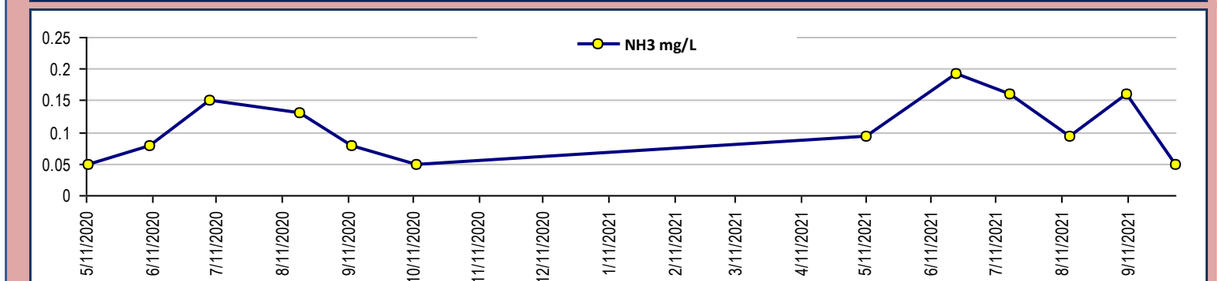
Teck

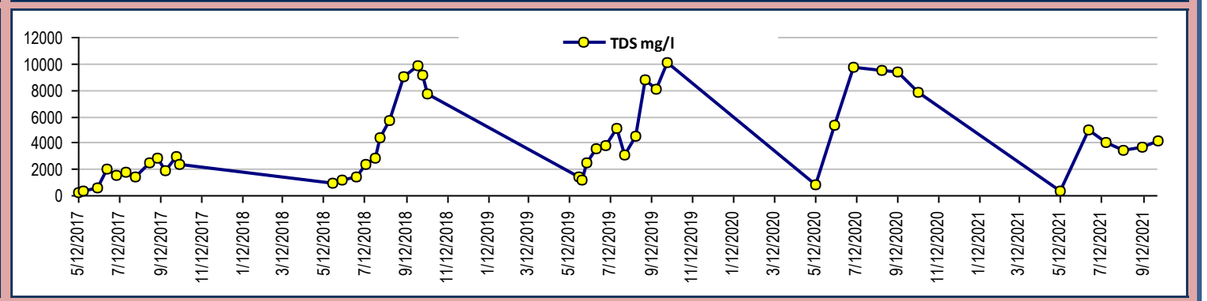


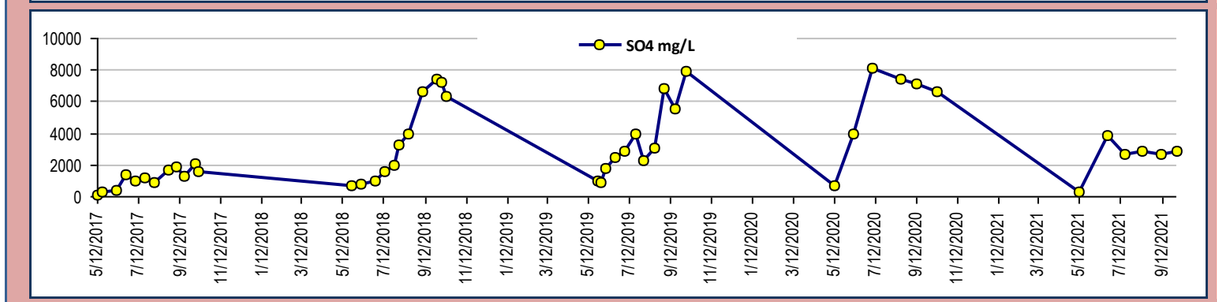


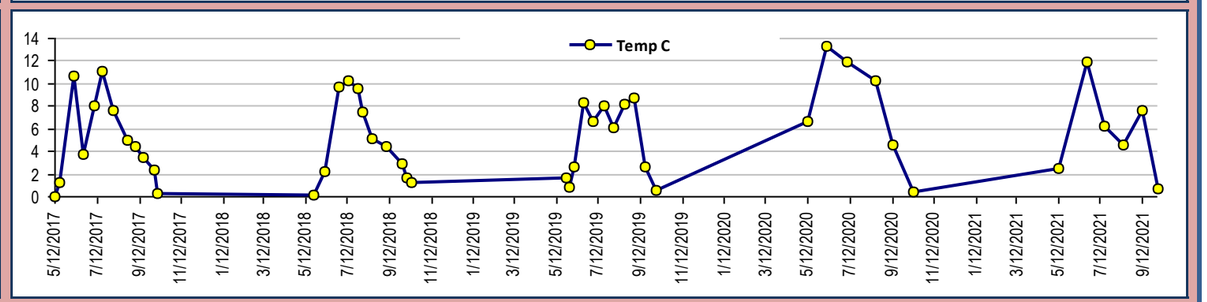


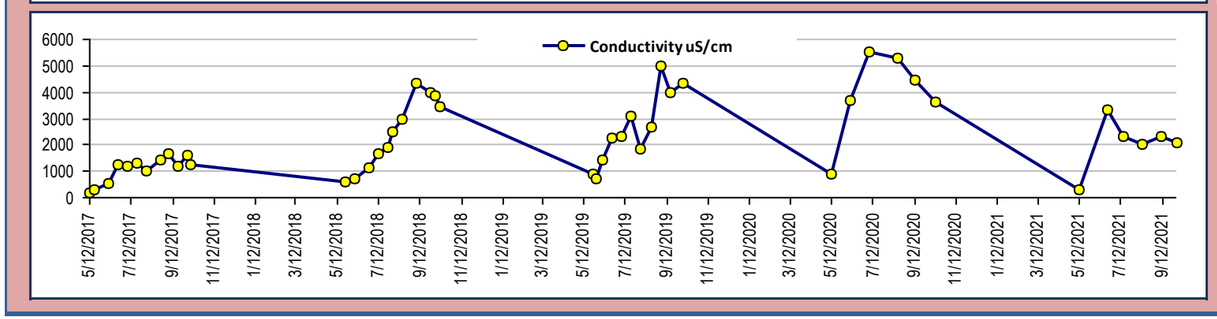




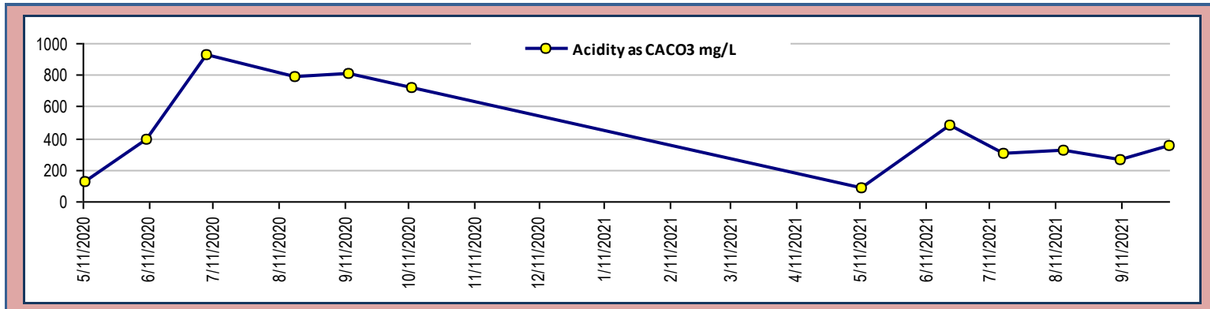


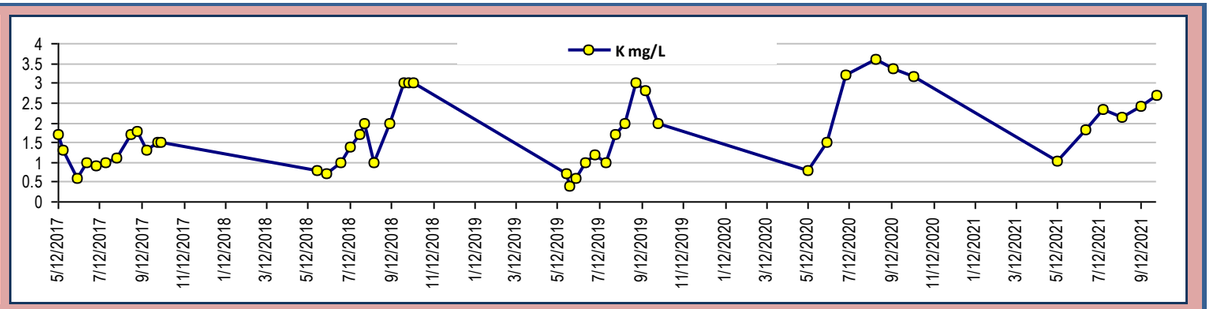


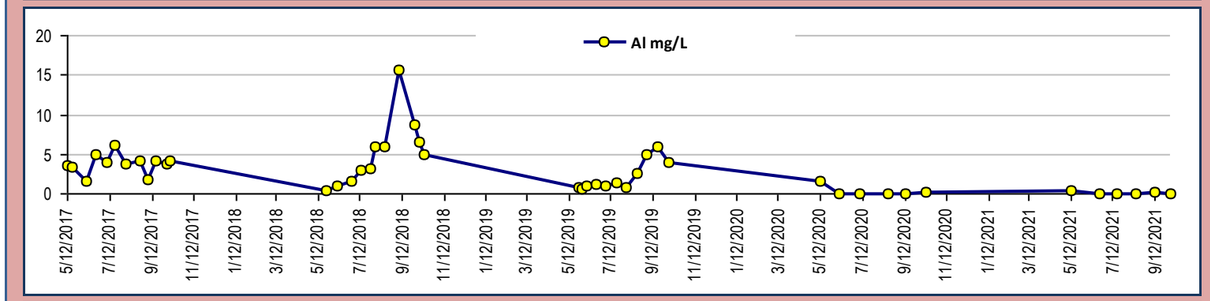


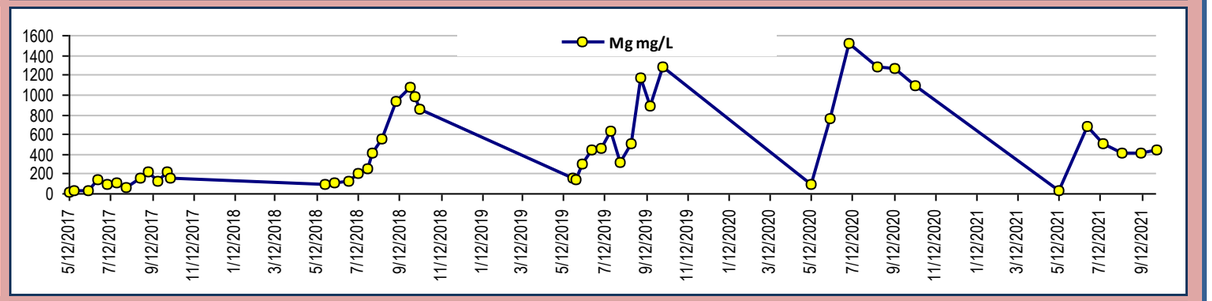


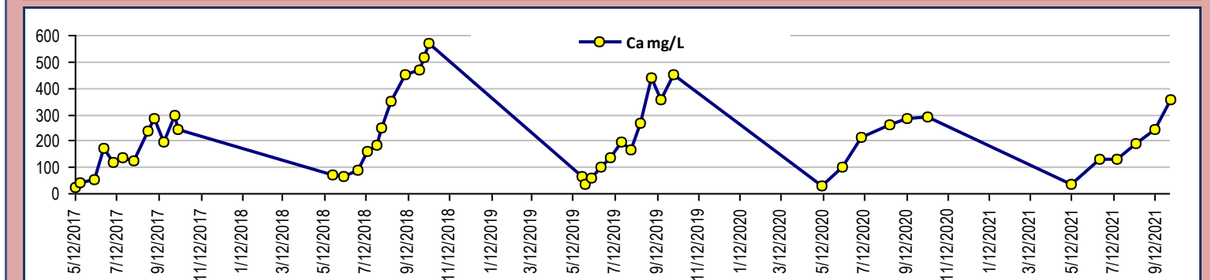
Hill Top Diversion - Profile II: Dissolved

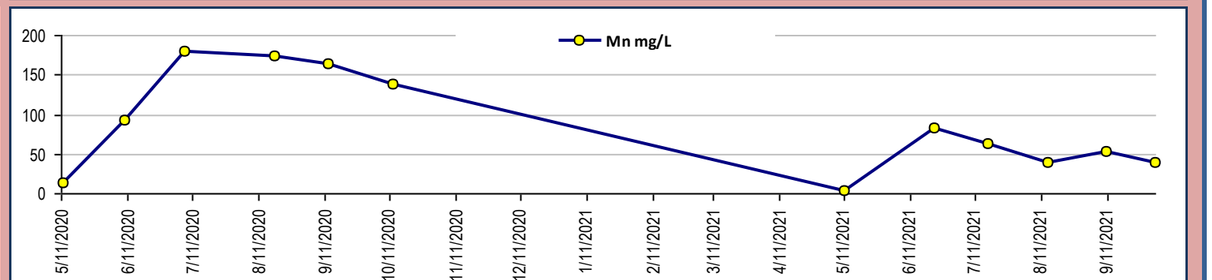


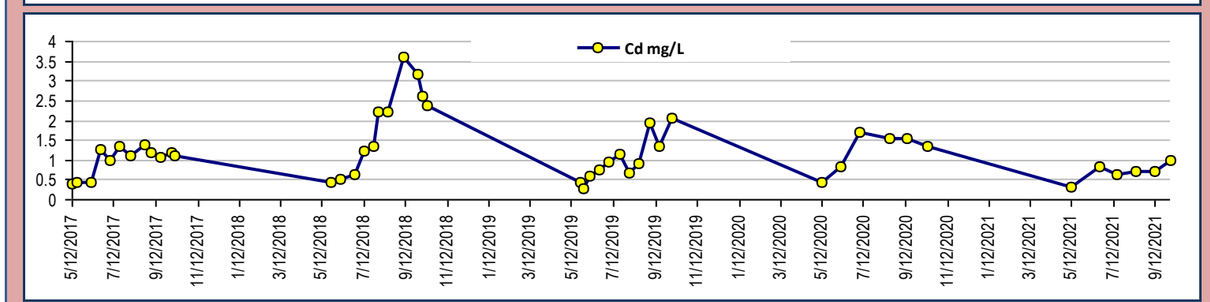


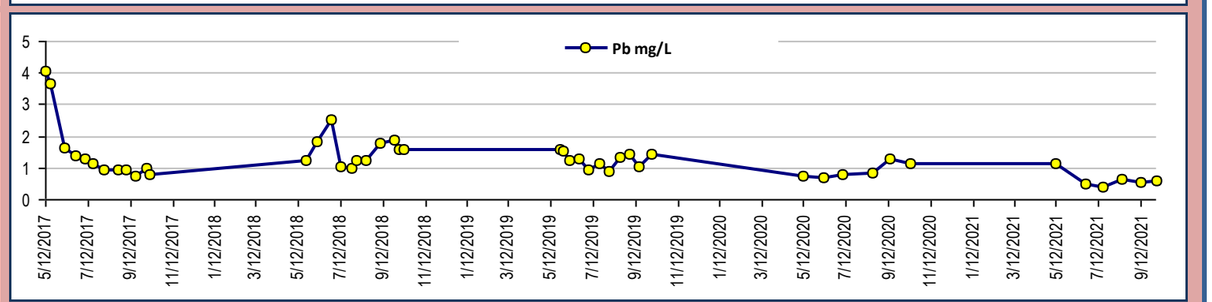


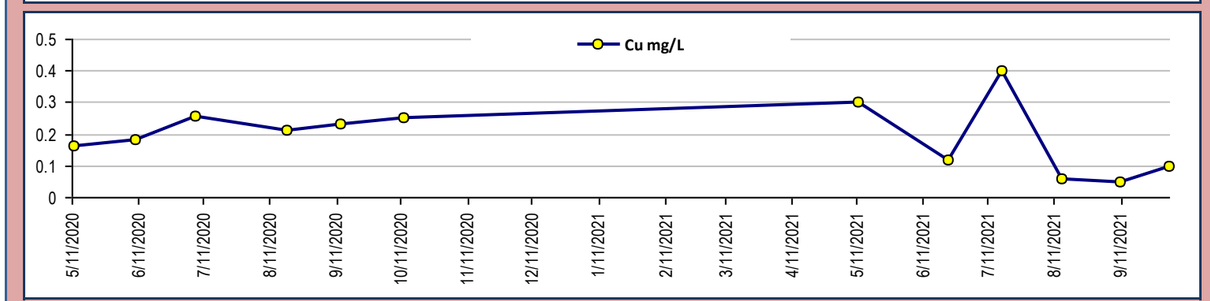


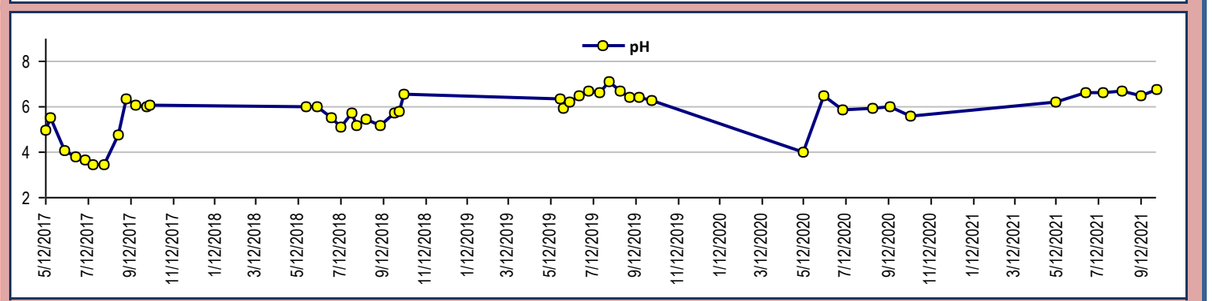








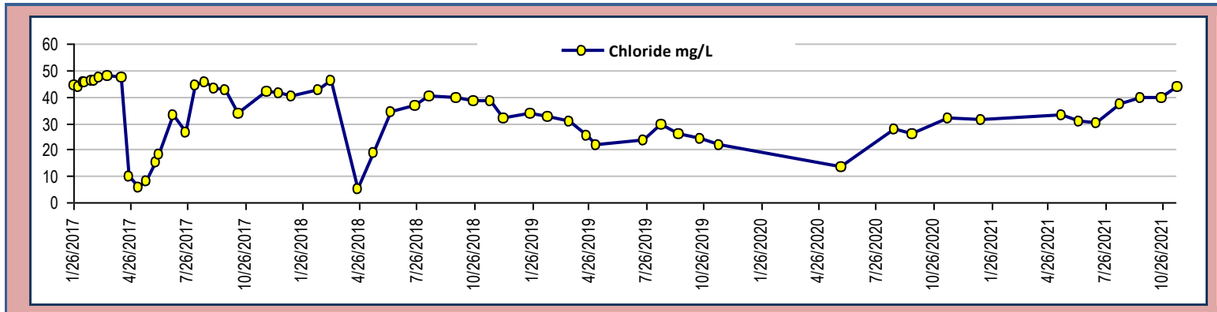


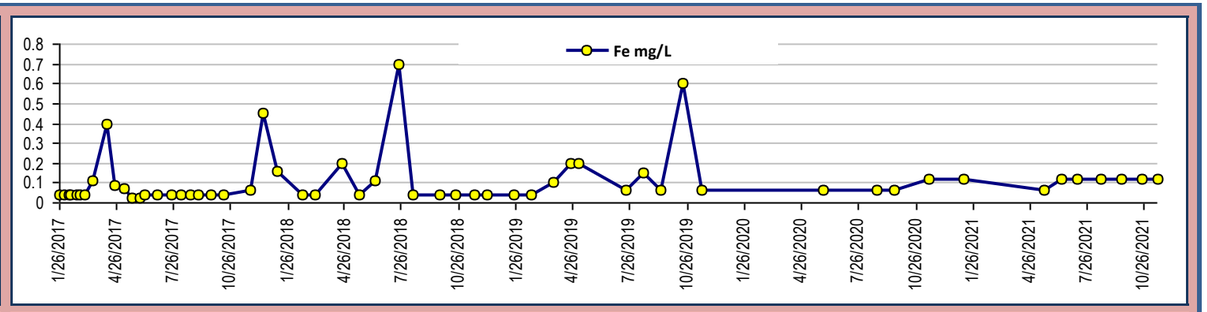


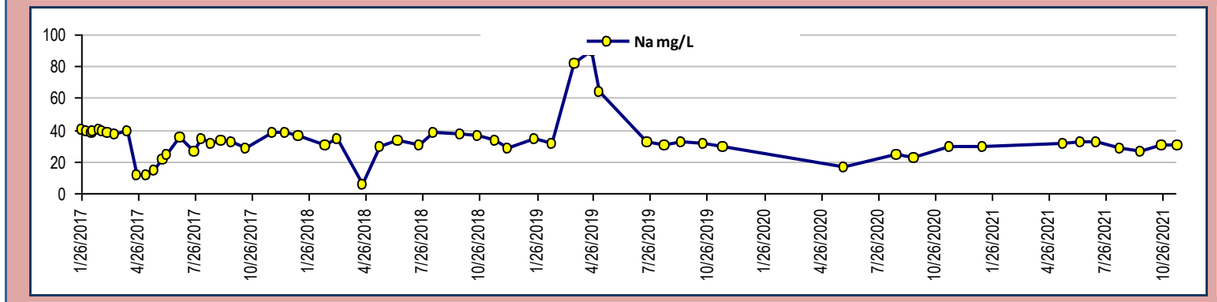
Appendix K: Mill Pad Collection Profile II Trend Charts

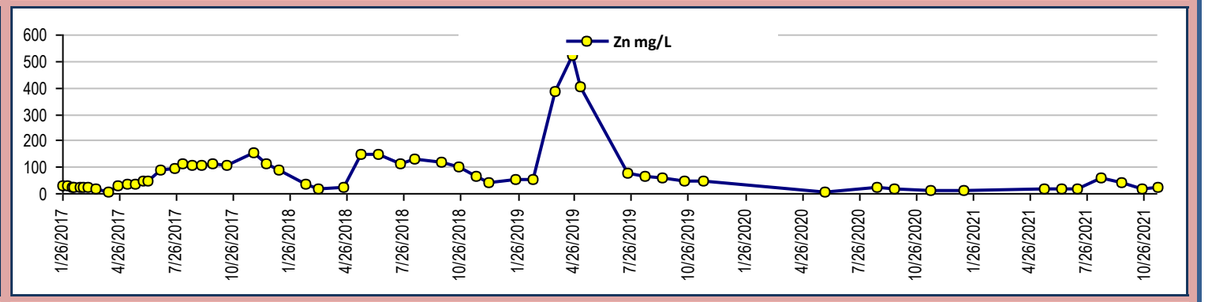
Mill Pad Runoff - Profile II: Dissolved

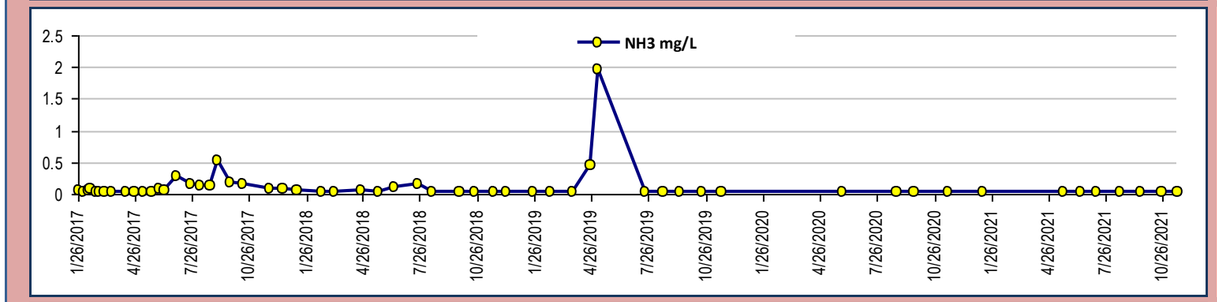
Teck

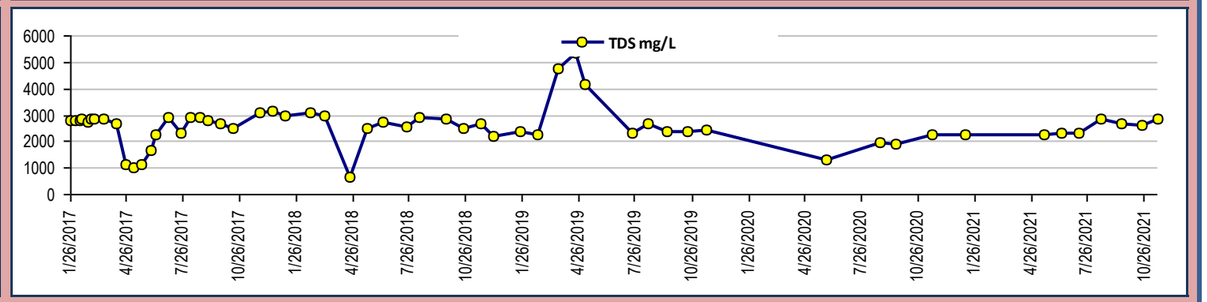


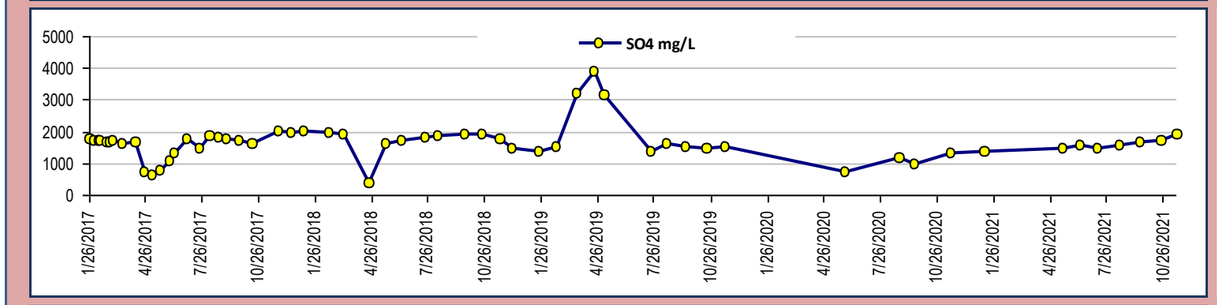


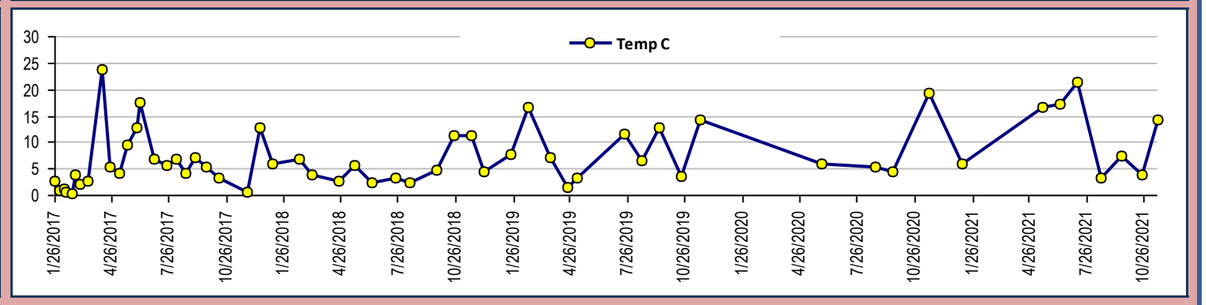


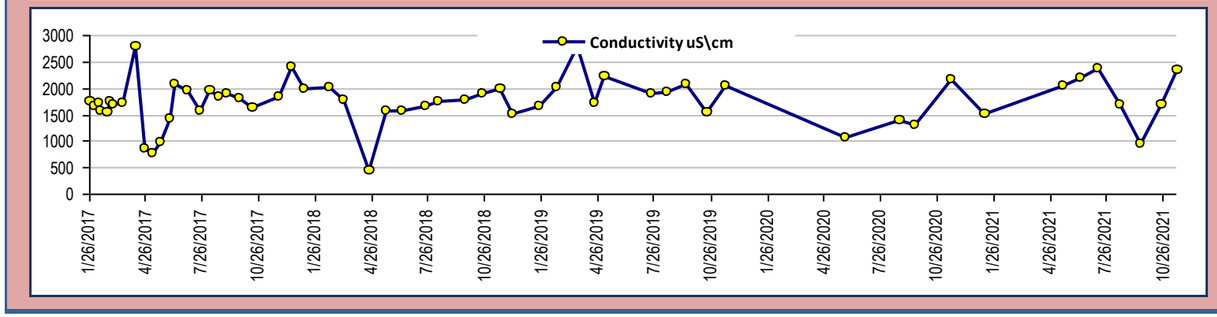












Mill Pad Runoff - Profile II: Dissolved

Teck