MONITORING REPORT FOR 2022

CLARK FORK RIVER OPERABLE UNIT

prepared for

Montana Department of Environmental Quality
Waste Management and Remediation Division
Federal Superfund and Construction Bureau
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Helena, MT 59620-0901

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U.S. Environmental Protection Agency
Federal Building
10 West 15th Street | Helena, MT 59626

July 2023

RESPEC

MONITORING REPORT FOR 2022

CLARK FORK RIVER OPERABLE UNIT

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EXECUTIVE SUMMARY

This performance monitoring program evaluates progress of remedial actions in the Clark Fork River Operable Unit (CFROU) of the Milltown Reservoir/Clark Fork River Superfund site toward meeting performance goals or identified reference values. Environmental media monitored in 2022 included surface water, instream sediment, periphyton, macroinvertebrates, vegetation, and birds. This report summarizes results of data collected for each of these environmental media and evaluates progress toward attainment of performance goals or in relation to reference values as of 2022.

Environmental damages to the upper Clark Fork River were summarized in the Record of Decision (ROD) for the Clark Fork River Operable Unit. Contamination occurred due to heavy metals originating from historic mining, milling, and smelting processes associated with operations in Butte and Anaconda. Metal contaminants accumulated in the Clark Fork River streambanks and floodplain over a period of at least 100 years. The primary sources of contamination were tailings and contaminated sediments mixed with soils in the streambanks and floodplains, which eroded during high streamflow events and entered the river and other surface waters. In addition to erosion, heavy metals leached directly into groundwater, and eventually to surface water, from contaminated sediments and tailings. These contaminant transport pathways resulted in impacts to terrestrial and aquatic life along the Clark Fork River.

The Montana Department of Environmental Quality (DEQ), as lead agency and in consultation with the U.S. Environmental Protection Agency (USEPA) and the National Park Service, oversees, manages, coordinates, designs, and implements remedial actions for the Clark Fork River site. DEQ coordinates with the Natural Resource Damage Program (NRDP) of the Montana Department of Justice for implementation and integration of restoration components to supplement the remedial actions. DEQ coordinates with the National Park Service to implement remedial actions on the Grant-Kohrs Ranch.

Data collected in 2022 represents the 13th year of monitoring in the CFROU. Monitoring under this program was first conducted in the spring of 2010 by DEQ and RESPEC personnel prior to initiation of any remedial actions within the CFROU. Since 2010, some monitoring sites have been added to the monitoring program in Clark Fork River tributaries. In addition, this monitoring program has been coordinated with long-term monitoring by the U.S. Geological Survey (USGS) to complement data collected by the USGS and minimize data duplication by each program. Monitoring methods and quality assurance protocols guiding collection and analysis of the data described in this report are summarized in the project sampling and analysis plan (SAP) and the project quality assurance project plan (QAPP).

The CFROU monitoring network for surface water, sediment, and some aquatic biota (macroinvertebrates and periphyton) included nine sample sites in 2022: six mainstem sites and three tributary sites. Not all sites were sampled for each environmental medium or for each

analyte of each medium (e.g., one surface water sites were only sampled for mercury and methylmercury rather than the full suite of analytes).

Surface water and instream sediment monitoring was primarily intended to describe concentrations of metal contaminants of concern (COCs; arsenic, cadmium, copper, lead, and zinc). For surface water, additional data was collected including nutrient and common ion concentrations, and other field parameters (e.g., pH). Surface water samples were collected during each calendar quarter. Sediment samples were collected during the first (late winter) and third (late summer) quarter sample periods. Macroinvertebrate and periphyton samples were collected during the summer (third quarter). Bird monitoring data was collected by GoBirdMontana LLC during the second quarter and vegetation monitoring was conducted during the third quarter.

At most sites, including the tributaries (Silver Bow Creek, Warm Springs Creek, and Flint Creek), streamflows during the spring were low compared to the long-term median as cold weather delayed the onset of the spring freshet. Once snowmelt began, peak freshet streamflows were at or above the median at all sites. All sites also had a prolonged period of late summer low flows which were well below the median.

In 2022, exceedances of surface water performance goals in the Clark Fork River mainstem sites occurred at similar rates to prior years. Sample exceedance rates were 50 percent for arsenic, 15 percent for lead, and 10 percent for cadmium. No samples exceeded performance goals for copper or zinc. Since 2010, arsenic has consistently been the COC which has most frequently exceeded surface water performance goals and 2022 was typical of past exceedance rates, despite a reduced rate in 2020 and 2021. Tributary monitoring results indicate that Silver Bow Creek, which filters through the Warm Springs Ponds complex, has been an arsenic source to the Clark Fork River. Flint Creek has consistently been demonstrated as a source of lead and mercury contamination.

Exceedances of the more restrictive reference value for sediment COC concentrations (the "Threshold Effect Concentration"; TEC) occurred in all 2022 CFROU mainstem and tributary samples for all COCs. Exceedances of the more lenient reference value (the "Probable Effect Concentration"; PEC) were also quite common for all COCs, but there were some samples which were below the PEC. Specifically, cadmium in three Q1 mainstem samples and both Warm Springs Creek samples; lead in one Q1 mainstem sample and both Warm Springs Creek samples; and zinc in both Warm Springs Creek samples. Despite the high rate of exceedances, there is some evidence that COC concentrations may be declining through time in certain mainstem sites, particularly at the near Galen and Williams-Tavenner Bridge sites. The remedy has been completed in Phases 1 and 2 (upstream from the near Galen site) and Phases 15 and 16 (upstream from the Williams-Tavenner Bridge site).

Results of periphyton bioindices as applied to samples collected in the CFROU in 2022 indicated that all but one mainstem site and the Silver Bow Creek site had "excellent" overall biointegrity, and the other two sites had "good" overall biological integrity. Specific stressors identified by the various periphyton bioindices and metrics at specific sites included nutrients,

and fine sediment. Results indicated that nutrient impairment was 23-98 percent likely in the mainstem, 94 percent likely in Silver Bow Creek, and 17 percent likely in Warm Springs Creek. Sediment impairment was somewhat less prevalent in comparison, although still more likely than not at most sites.

Macroinvertebrate samples collected in the CFROU in 2022 were evaluated in relation to a suite of bioindices. Bioindex results indicated that all but two sites were "moderately" impaired based on the Montana Valley and Foothill Prairies bioindex and the other two were "mildly" impaired. All sites were classified as "impaired" according to the Observed/Expected bioindex and Hilsenhoff Biotic Index. The impairment classifications were best for the Metals Tolerance Index which classified two sites as unimpaired and the other five sites as "mildly" impaired.

Vegetation monitoring occurred in Phase 1 of the CFROU in 2022. Monitoring in this phase represented Year-7 (post-remedy) conditions and focused on ground cover (including that from noxious weeds) and canopy cover. Results indicated that ground cover and canopy cover are expanding over time in Phase 1 and the species assemblage is changing toward a more desirable plant assemblage. Although ground cover did not meet the Year-7 performance standard, ground cover increased by 10 percent between Year-5 and Year-7 and the extent of ground cover from desirable species increased as a proportion of total cover. Canopy cover, which has generally been low in prior monitoring periods throughout the CFROU, exceeded the Year-7 performance target. Noxious weeds were well controlled in Phase 1 in Year-7 with no noxious weeds observed in any of the monitoring sites sampled.

Birds were monitored in Phases 1 through 7 and in Phase 15 in 2022. Bird monitoring has been conducted annually since 2015. In 2022, a total of 169 samples (i.e., 10-minute point counts) were made and more than 16,000 birds were observed from 141 different species. Among phases, the greatest number of species were observed in Phase 7 (94 species). Since monitoring was initiated in 2015, 175 species (or 39 percent of all species known to occur in Montana) have been observed in the CFROU. Monitoring results for completed and in-progress remedial actions are encouraging for bird diversity. Overall, richness of riparian-dependent and riparian-obligate bird species has increased in each phase where remedial actions have been completed (Phases, 1, 2, 5, and 6), and in Phase 15 and 16 where remedial actions were most recently completed.

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1.0 INTRODUCTION

The Record of Decision (ROD) for the Clark Fork River Operable Unit (CFROU) identified a 120-mile section of the Clark Fork River as a distinct Superfund Operable Unit [USEPA, 2004]. The CFROU extends from the Silver Bow Creek and Warm Springs Creek confluence to the former Milltown Reservoir site at the Clark Fork River and Blackfoot River confluence (Figure 1-1). The CFROU was divided into three reaches based on physical features of the landscape, proximity to historic mining, and intensity of impacts, to evaluate the best application of remedy solutions. Figure 1-1 shows the extent of the CFROU (highlighted in yellow) and its three remedial reaches as defined by the ROD, along with surrounding operable units on the Clark Fork River and National Priorities List sites.

Historic mining, milling, and smelting activities in Butte and Anaconda resulted in heavy metal (cadmium, copper, lead, and zinc) and arsenic contamination in the floodplain soils and streambanks of the CFROU. Sources of metal contaminants of concern (COCs) in the CFROU are tailings mixed with soil within the historic 100-year floodplain (the primary source), contaminated surface water and shallow groundwater, contaminated instream sediments, and contaminants in irrigation ditches adjacent to the CFROU [USEPA, 2004]. In 2008, a consent decree was negotiated between the state of Montana, the U.S. Government, and the Atlantic Richfield Company for cleanup of the CFROU [Montana v. AR, 2008; U.S.A. v. AR, 2008]. The consent decree established that the state of Montana, through the Montana Department of Environmental Quality (DEQ), would serve as lead agency to develop and implement the remedial design, remedial actions, and operation and maintenance of the remedy for the CFROU [Montana v. AR, 2008; U.S.A. v. AR, 2008].

Specific remediation standards were established in the CFROU ROD for surface water, groundwater, and vegetation, but not for other environmental media [USEPA, 2004]. In lieu of specific standards, reference values have been adopted by DEQ for instream sediment, geomorphology, periphyton, macroinvertebrates, and fish. DEQ has established this monitoring program to assess the effectiveness of contaminant removal from remediation on attainment of remediation standards or reference values. Data is collected to describe abiotic (surface water, instream sediment, river geomorphology) and biotic (terrestrial vegetation, periphyton, aquatic macroinvertebrate, and fish) conditions in the CFROU to evaluate if remediation standards or reference values are met and evaluate if conditions are improving over time. Data collected in 2021 represents the twelfth year of data collected for this monitoring program, which began in 2010.

Remedial work to date has focused on Reach A, the most upstream section of the CFROU, which is closest to and most impacted by the contamination sources. This reach has been subdivided into several phases that encompass approximately one to two-mile sections of the Clark Fork River and its adjacent floodplain. Current progress in Reach A by remedial phase is depicted in Figure 1-2. Following sections provide brief details of remedial progress to date in each phase.

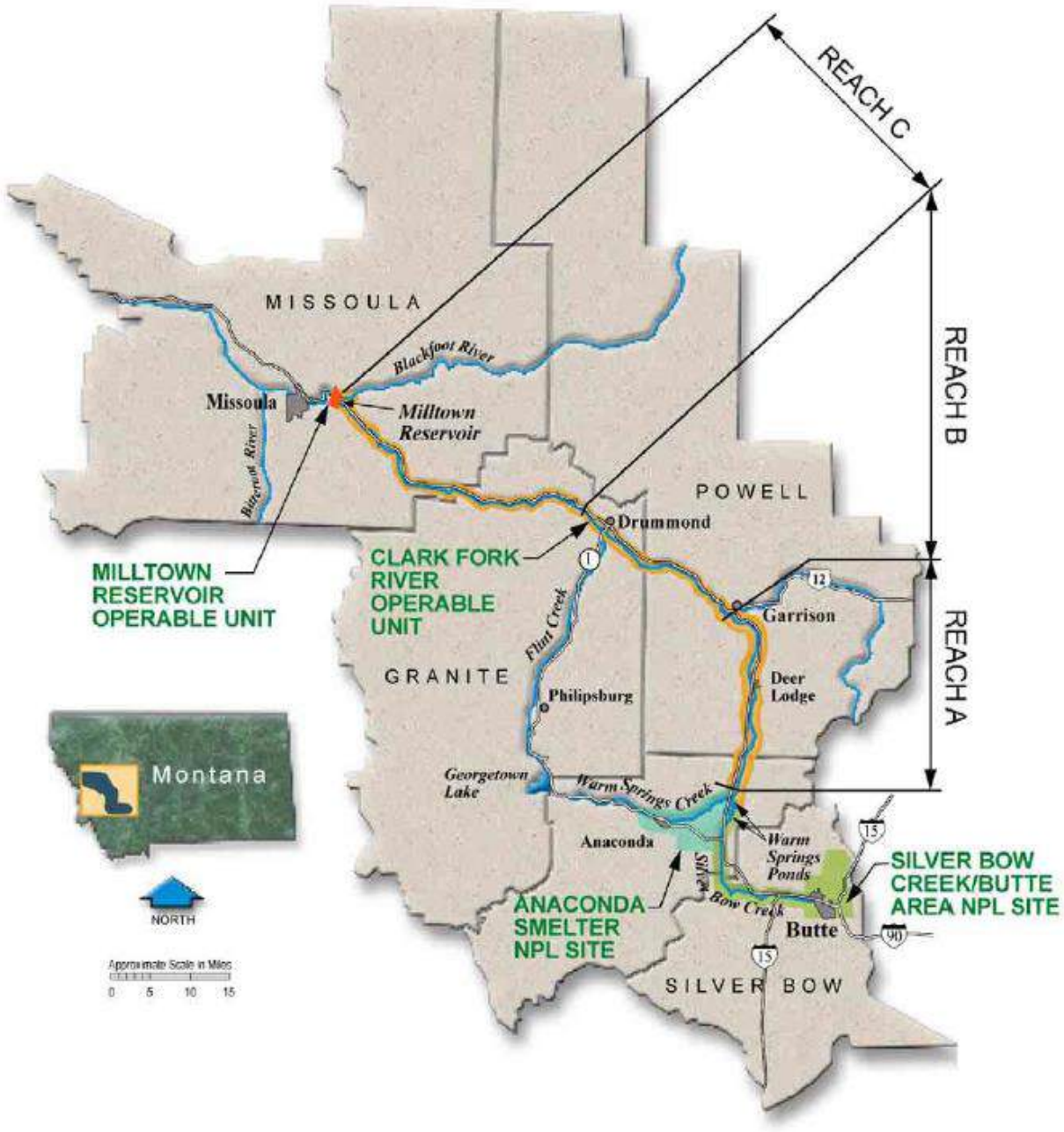


Figure 1-1. Remedial reaches of the Clark Fork River Operable Unit [USEPA, 2004].

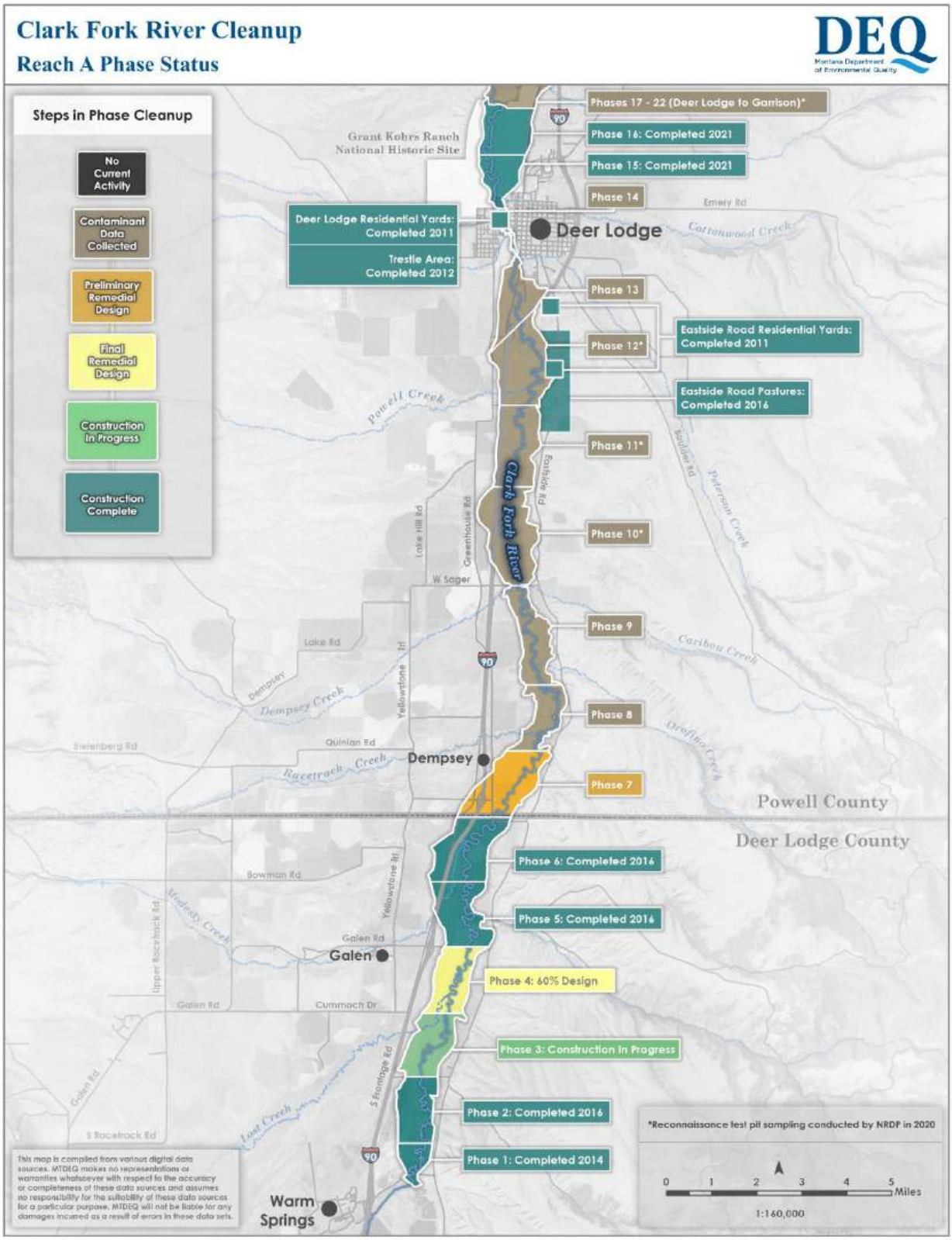


Figure 1-2. Status of remedial work in the Clark Fork River Operable Unit as of 2022.

1.1 Phase 1

Remediation activities in Phase 1 (Figure 1-3) of the CFROU began in 2013 and project construction was completed in spring 2014. Revegetation in Phase 1 was completed in fall 2014. Phase 1 consists of the upstream-most 1.6 river miles of the Clark Fork River, immediately downstream from the Warm Springs Creek and Silver Bow Creek confluence. In total, approximately 330,000 cubic yards of contaminated material was removed from a 60-acre project area.

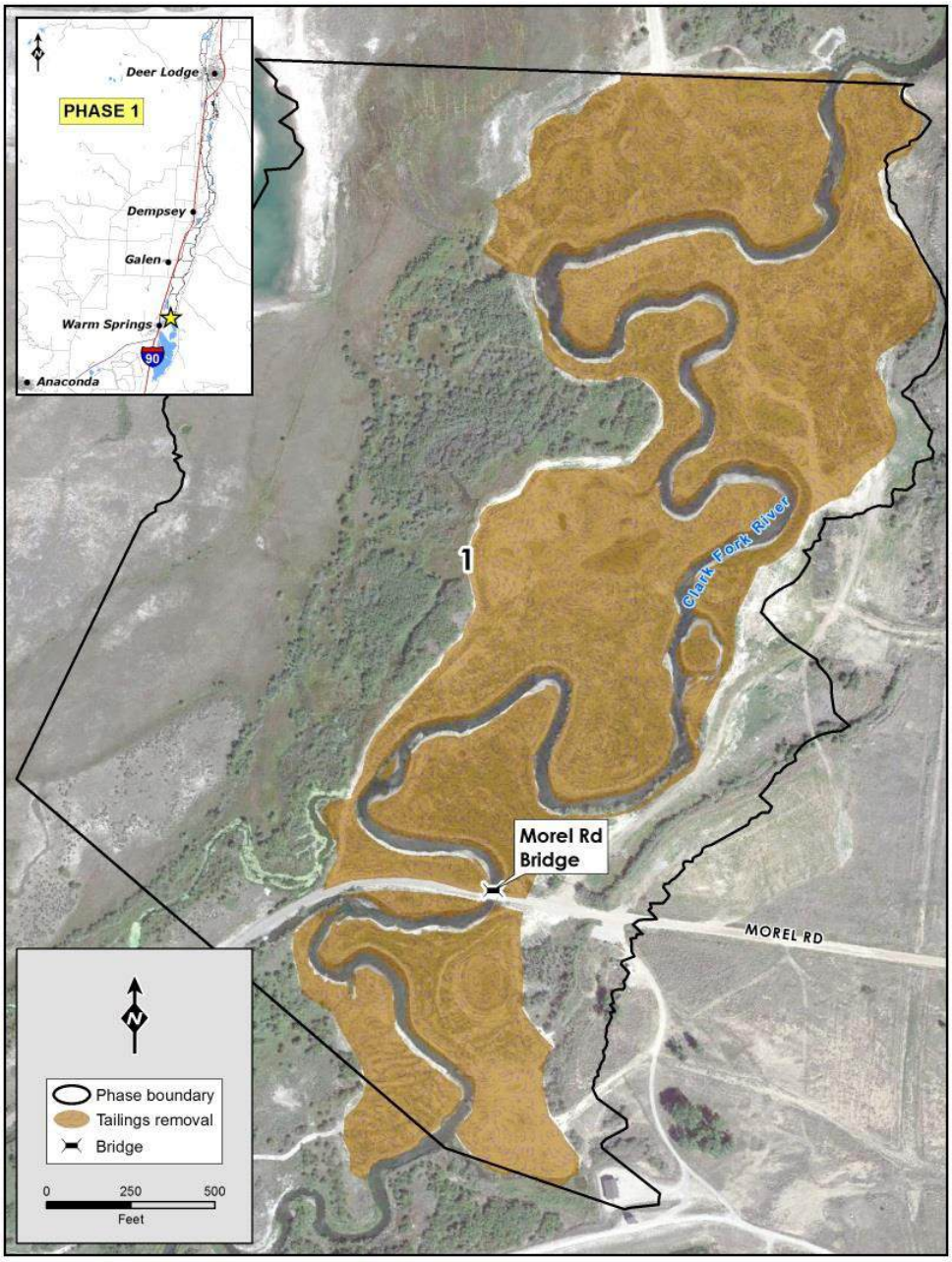


Figure 1-3. Phase 1 project area in the Clark Fork River Operable Unit.

1.2 Phase 2

Remediation of Phase 2 (Figure 1-4) began in the summer of 2015 and construction was in progress throughout the remainder of the year. Phase 2 consists of the riverbanks and floodplain along a 1.9 river mile section (88 acres) of the Clark Fork River, immediately downstream from Phase 1. Construction activities in Phase 2 were completed in 2016. Revegetation activities were also completed in fall 2016. The volume of contaminated material removed from Phase 2 was approximately 403,000 cubic yards.

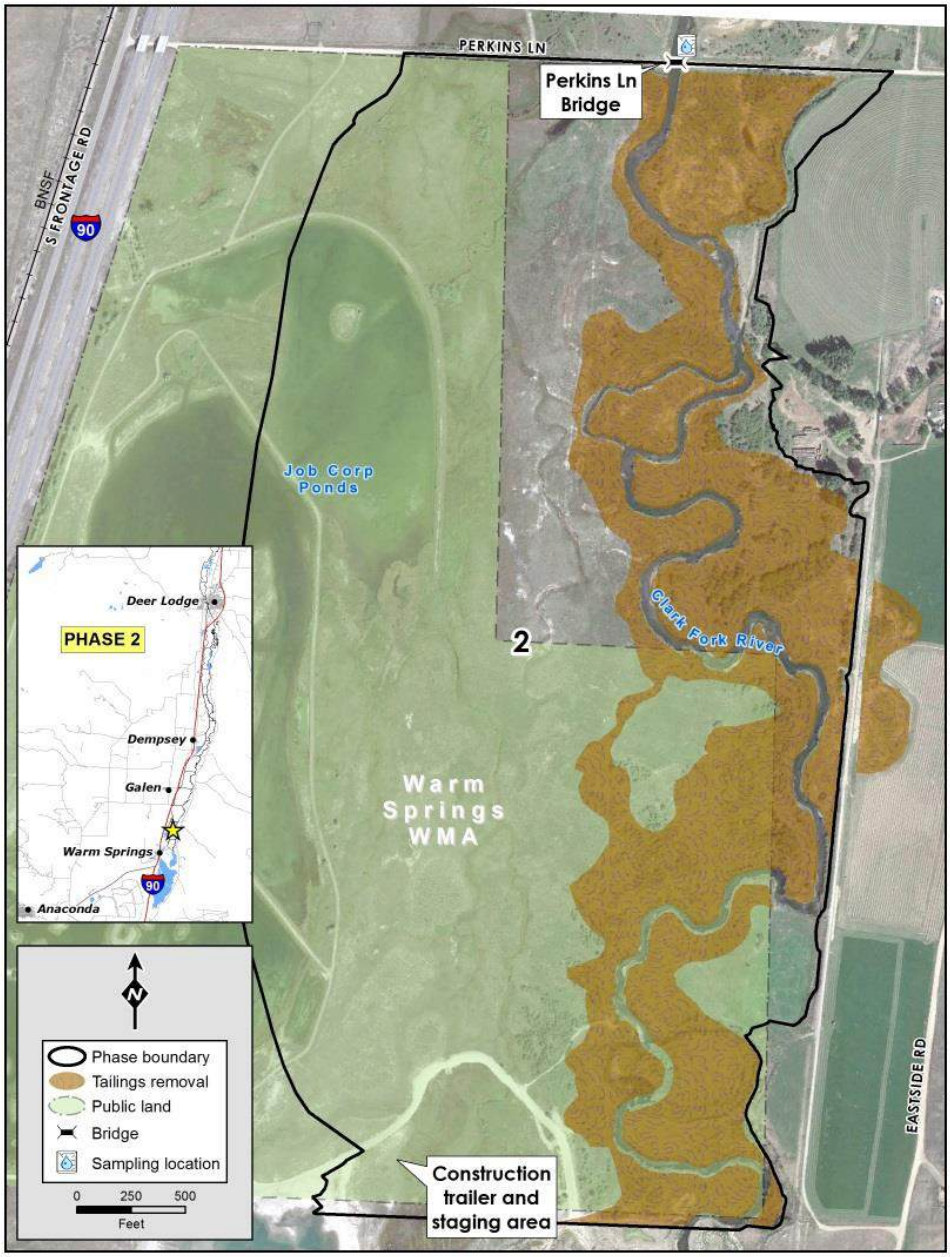


Figure 1-4. Phase 2 project area in the Clark Fork River Operable Unit.

1.3 Phases 3 and 4

Remedial work in Phase 3 was initiated in 2021 (Figure 1-4). Work in Phase 4 began in 2023. These phases together consist of a 4.5-mile river length and an accompanying floodplain area of 261 acres.

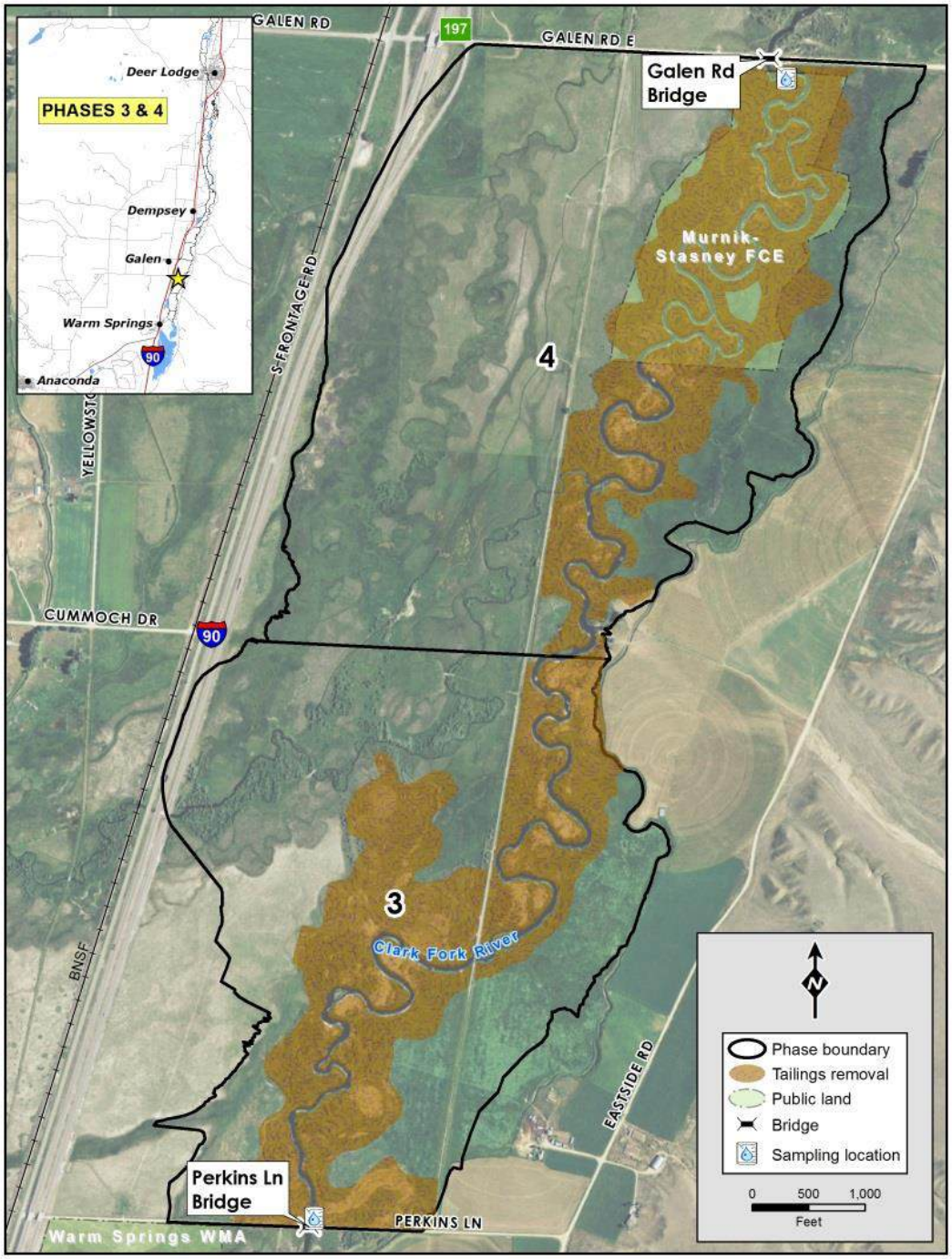


Figure 1-5. Phase 3 and 4 project areas in the Clark Fork River Operable Unit.

1.4 Phases 5 and 6

Remediation of Phases 5 and 6 (Figure 1-6) began in the summer of 2014. Phases 5 and 6 consist of the riverbanks and floodplain along a 4.3 river mile section (125 acres) of the Clark Fork River, immediately downstream from Phase 4. Construction and revegetation activities were completed in Phases 5 and 6 in 2016.

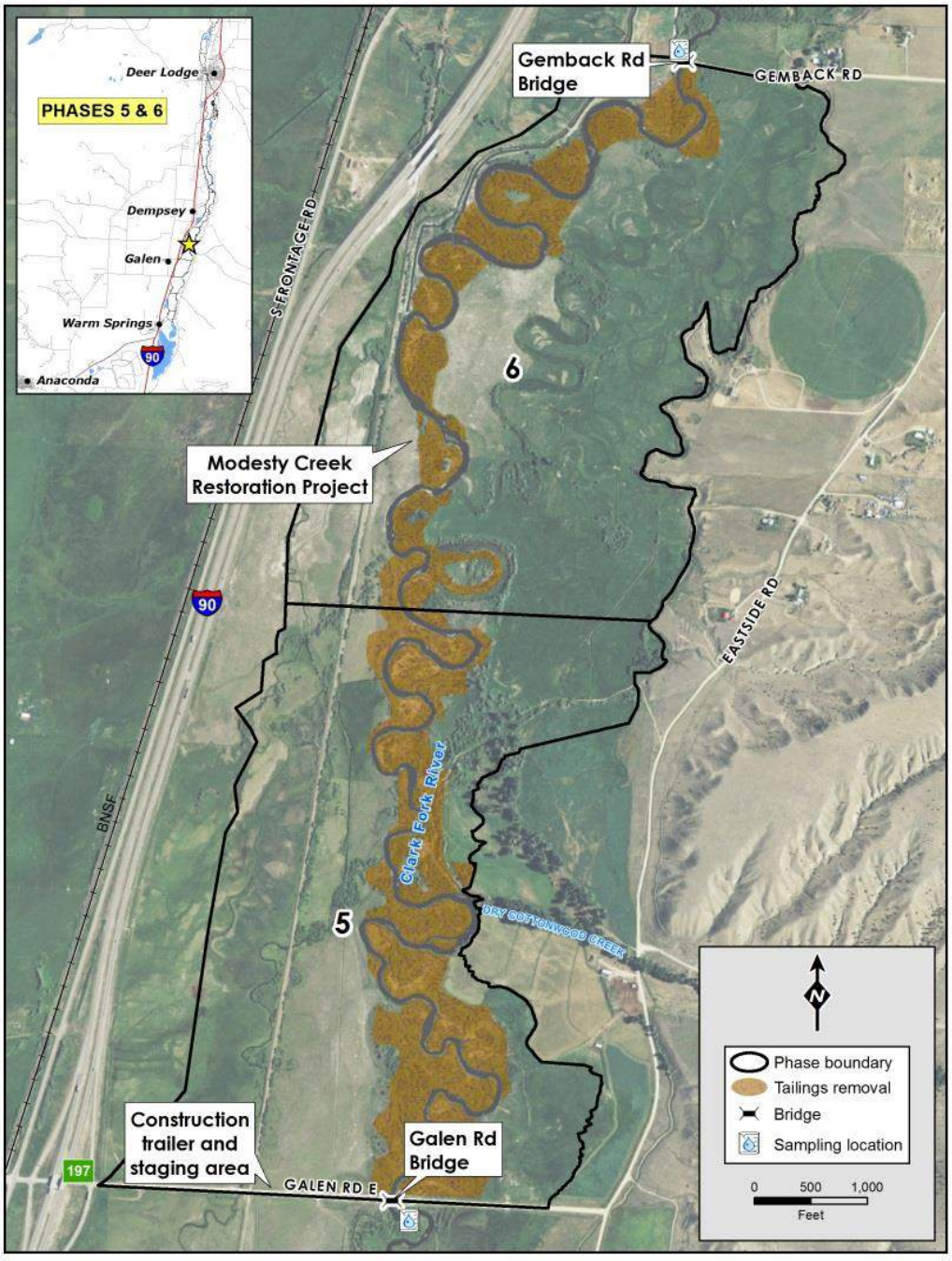


Figure 1-6. Phase 5 and 6 project areas in the Clark Fork River Operable Unit.

1.5 Phase 7

Remedial plans for Phase 7 (Figure 1-7) are currently in the preliminary design phase. Phase 7 consists of a 1.9-mile river length and an accompanying floodplain area of approximately 84 acres.

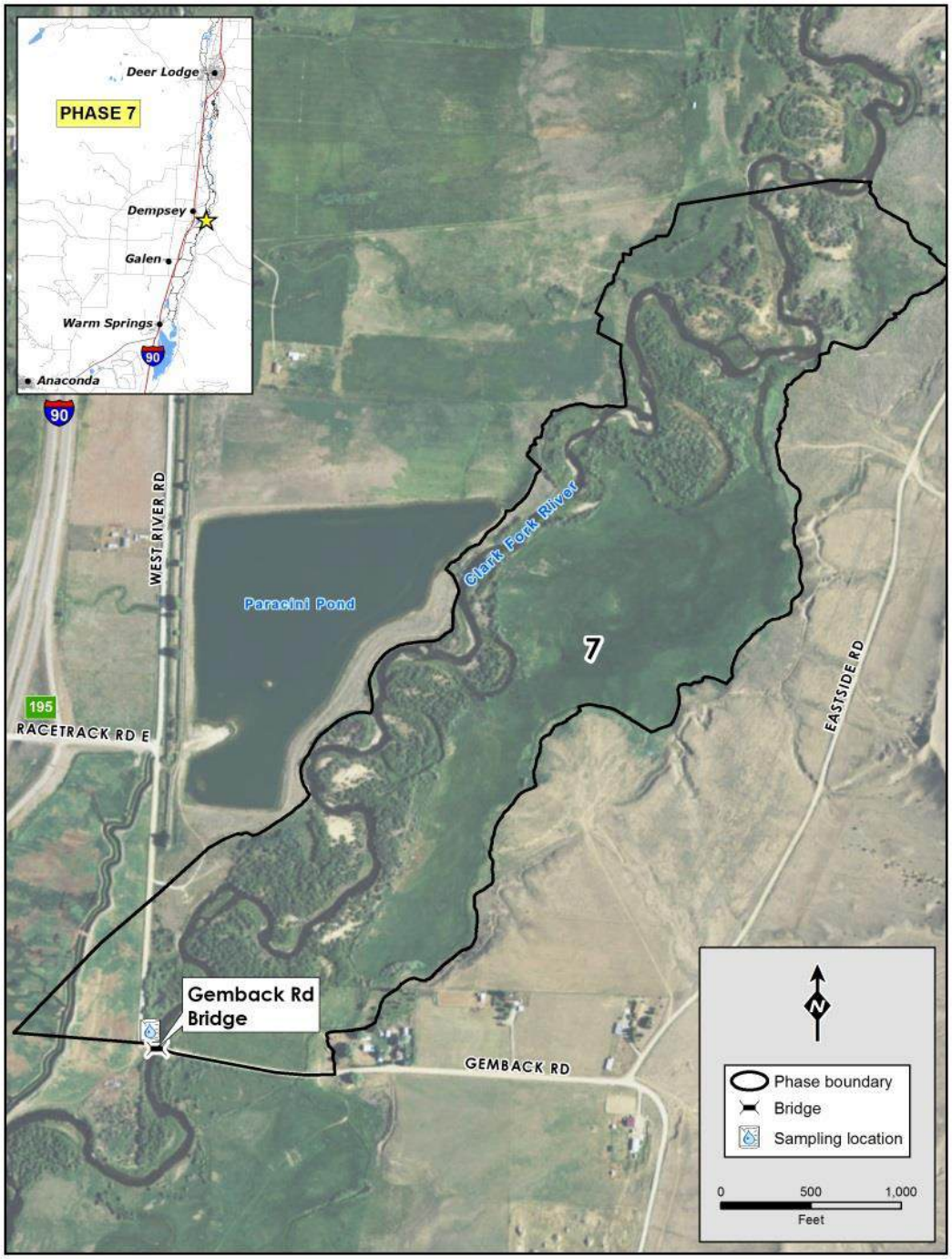


Figure 1-7. Phase 7 project area in the Clark Fork River Operable Unit.

1.6 Phases 8 and 9

Remedial plans for Phases 8 and 9 (Figure 1-8) are currently in the sampling and site characterization phase. Phases 8 and 9 consist of a 5.1-mile river length and accompanying floodplain area.

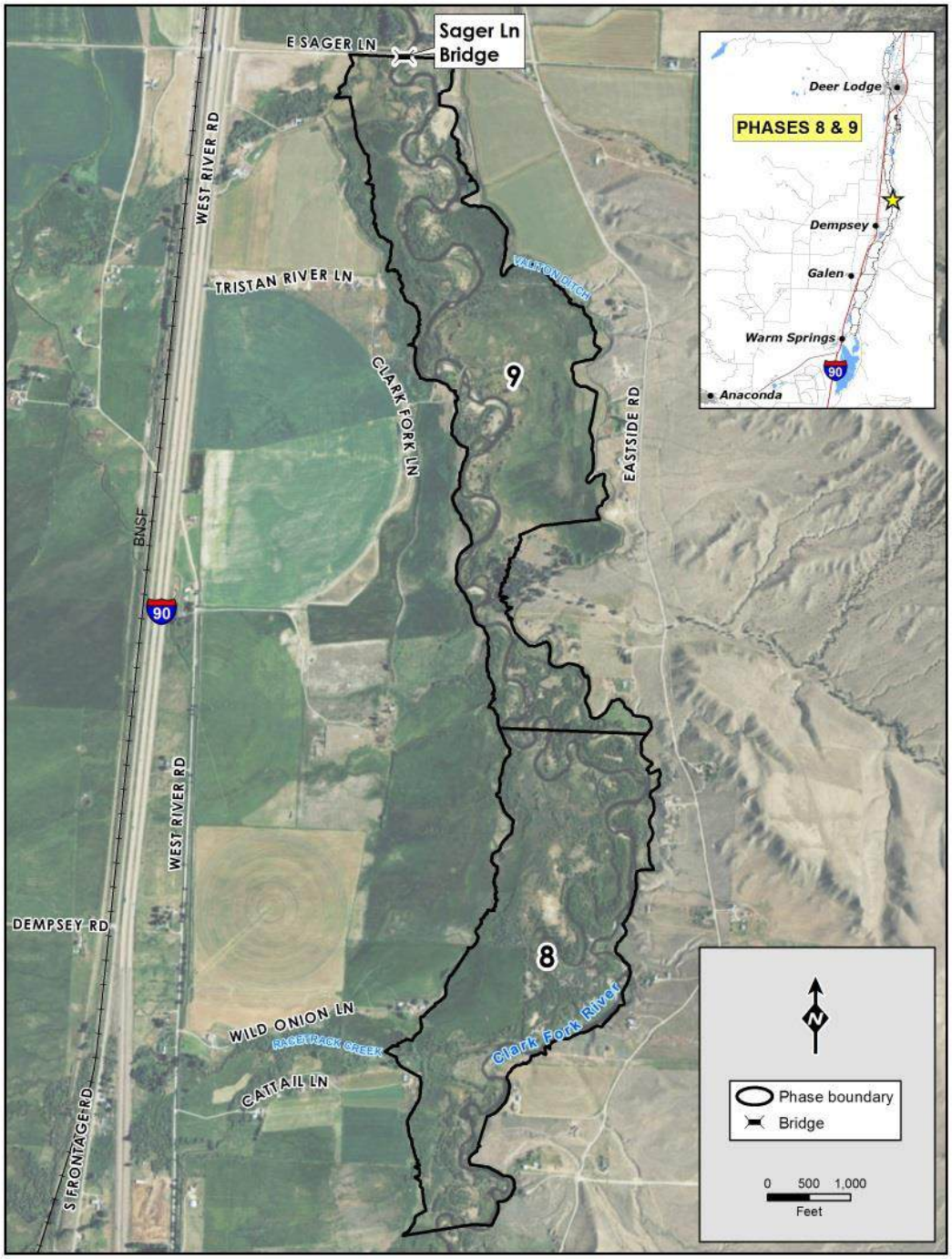


Figure 1-8. Phases 8 and 9 project areas in the Clark Fork River Operable Unit.

1.7 Eastside Road (adjacent to Phase 12)

Remediation occurred in 2012 and 2015 in the "Eastside Road" pasture areas adjacent to Phases 12 and 13 (Figure 1-8). This work consisted of removal of contaminated material from pastures in an area of approximately 100 acres which had been flood-irrigated with contaminated water from the Clark Fork River. This project area is located outside the Clark Fork River floodplain. Ongoing monitoring of vegetation establishment and weed control is being conducted in the Eastside Road and pastures. Monitoring work for the Eastside Road area is not described within this report.

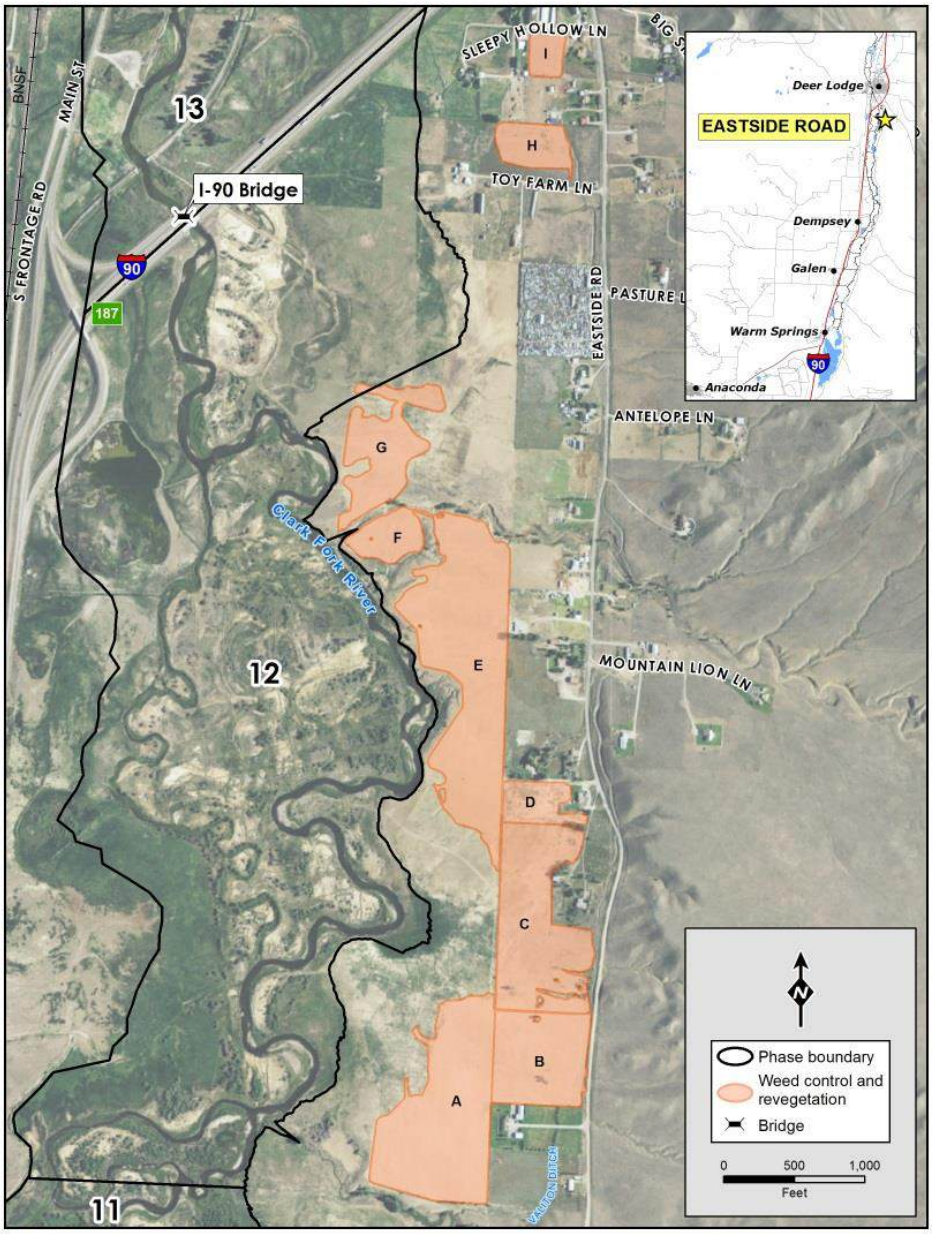


Figure 1-9. Eastside Road project area in the Clark Fork River Operable Unit.

1.8 Phase 13

Remedial plans for the "Arrowstone Park" (Phase 13) area (Figure 1-9) in the town of Deer Lodge, Montana are currently in the sampling and site characterization phase. The Arrowstone Park project area consists of a 1.2-mile river length and accompanying floodplain area. The start date for construction activities in the Arrowstone Park area is yet to be determined.

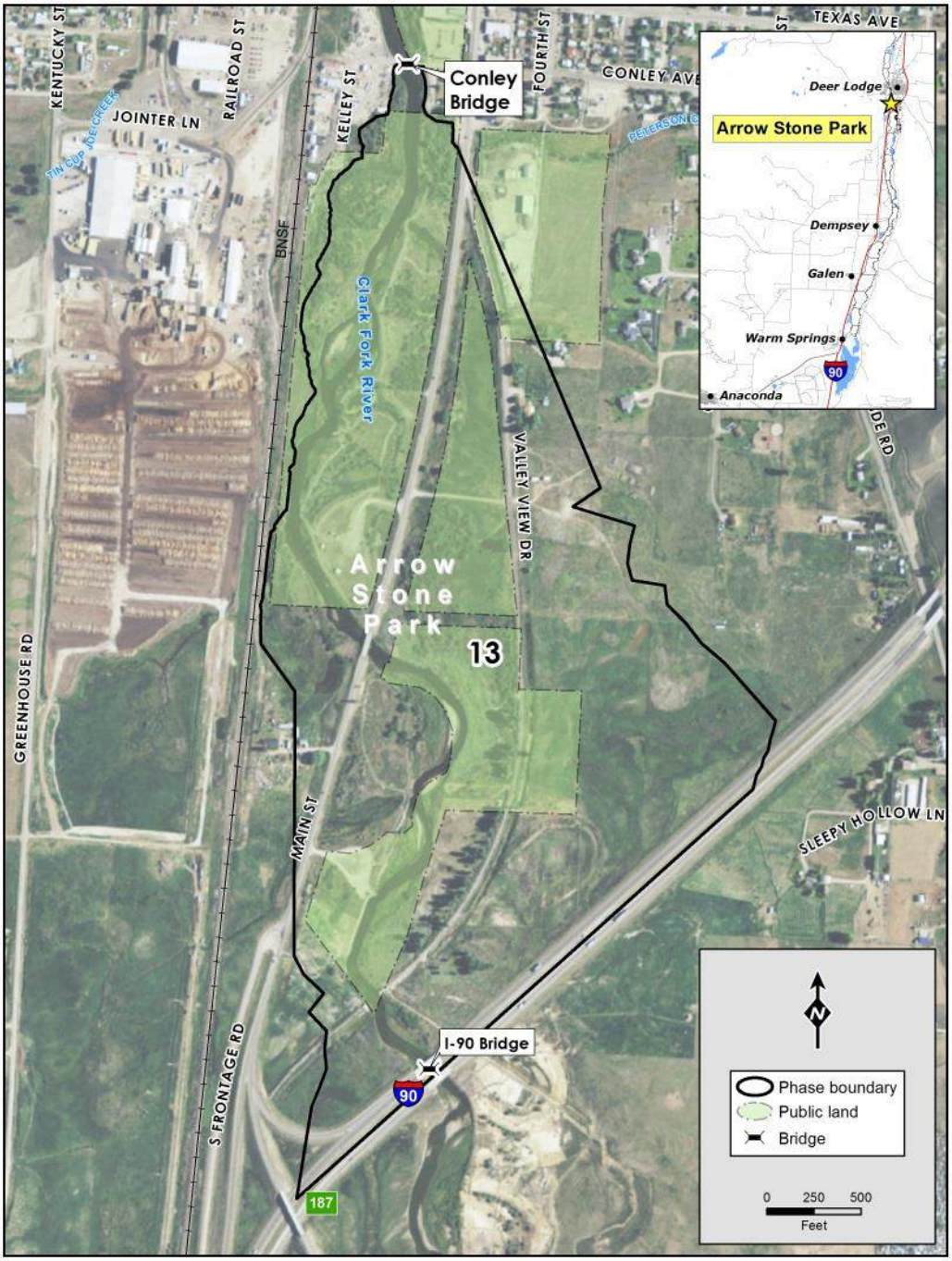


Figure 1-10. Arrowstone Park project area in the Clark Fork River Operable.

1.9 Trestle Area (portion of Phase 14)

Remediation occurred in residential yards and the "Trestle" area of Deer Lodge, Montana in a portion of Phase14 (Figure 1-10). This work consisted of removal of contaminated material from residential yards and a recreational area along the Clark Fork River in the City of Deer Lodge. The work was completed in 2011 and approximately 10,000 cubic yards of contaminated soils were removed.

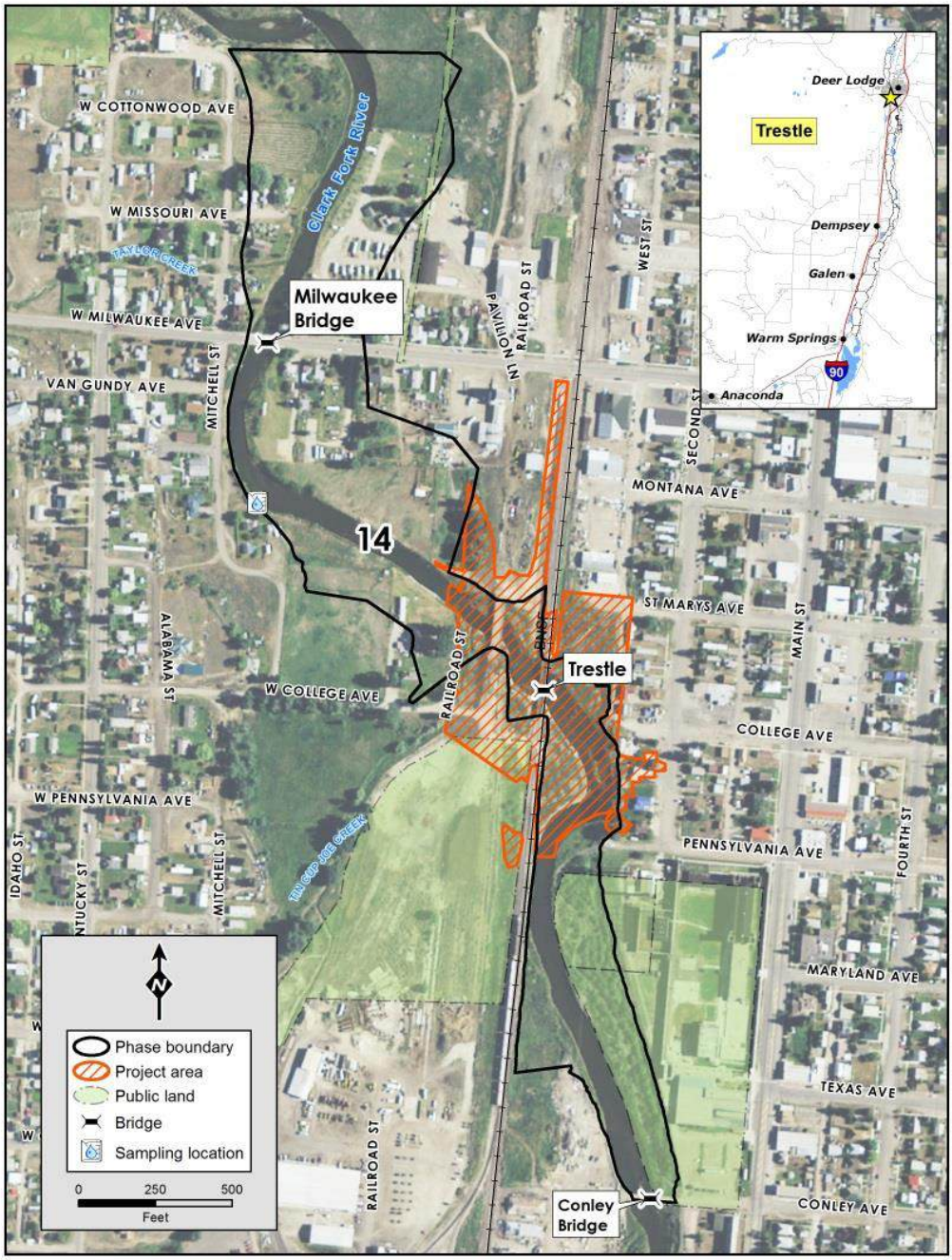


Figure 1-11. Trestle project area in the Clark Fork River Operable Unit.

1.10 Phases 15 and 16

Remedial work in Phases 15 and 16 was completed in 2021 (Figure 1-12). These phases together consist of a 2.6-mile river length and an accompanying floodplain area of approximately 180 acres, which lie within the boundary of the Grant-Kohrs Ranch National Historic Site. Approximately 326,000 cubic yards of contaminated material was removed. The majority of revegetation activities (seeding) in Phases 15 and 16 was completed in 2021. An additional 2,000 trees and shrubs were transplanted within the site in 2022.

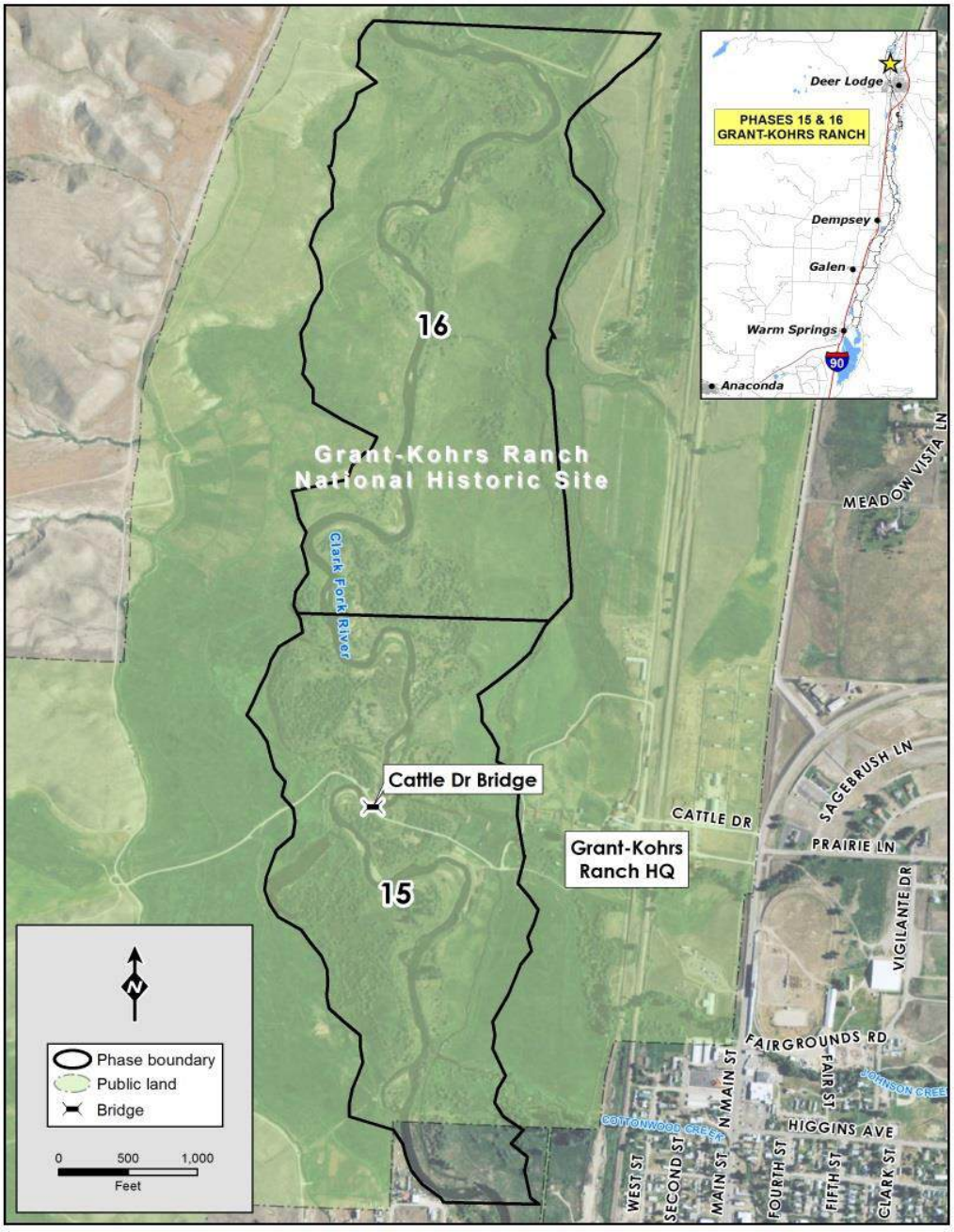


Figure 1-12. Phases 15 and 16 project areas in the Clark Fork River Operable Unit.

2.0 SURFACE WATER

2.1 INTRODUCTION

Performance goals were established in the CFROU ROD for surface water [USEPA, 2004]. The goal for surface water quality is for concentrations of all metal contaminants of concern (COCs; arsenic, cadmium, copper, lead, and zinc) to be below the concentrations identified in the CFROU ROD (Table 2-1). The remedy for the Clark Fork River is expected to achieve these goals through the removal of contaminated floodplain soils (i.e., "slickens"), *in situ* (i.e., on site) treatment of floodplain soils with relatively low COC concentrations, and streambank stabilization. When the remediation activities are completed, surface water quality in the Clark Fork River is expected to fully support the growth and propagation of coldwater fishes (e.g., salmonids) and associated aquatic life. Surface waters will be monitored at specific locations along the Clark Fork River. Performance goals must be met at each location for the remedial actions to be considered successful.

This report evaluates progress toward attainment of surface water performance goals as defined in the CFROU ROD (Table 2-1). Water chemistry data were collected in 2022 to monitor COC concentrations and make direct comparisons to relevant performance standards. In addition to COC concentrations, data were collected to describe other water quality constituents which influence the toxicity of metal contaminants or otherwise influence the ecology of the Clark Fork River. Other water quality constituents described include total suspended sediment, common ion, and nutrient concentrations, and other physical properties of water (e.g., acidity).

Table 2-1. Remediation performance goals for surface water in the Clark Fork River Operable Unit [USEPA, 2004].

Contaminant of Concern	Performance Goal		
	Aquatic Life Standard[1]		Human Health or Drinking Water Standard (µg/L)
	Chronic (µg/L)	Acute (µg/L)	
Arsenic	150	340	10/18[2]
Cadmium	0.25	2	5
Copper[3]	9	13	1,300
Lead	3.2	81	15
Zinc	119	119	2,100

[1] The aquatic life standards for cadmium, copper, lead, and zinc vary in relation to water hardness. The values displayed in this table correspond to a water hardness of 100 mg/L.

[2] The performance standard includes both the federal maximum contaminant level (MCL; 10 µg/L; dissolved concentration) and the state of Montana standard (18 µg/L; total recoverable concentration).

[3] Based on the federal ambient water quality criteria (USEPA [1986]; dissolved concentration).

2.2 METHODS

The purpose of the surface water monitoring program is to collect data describing the temporal and spatial variation of metal and nutrient concentrations, and other physical properties of surface water in the CFROU. These data provide a long-term record of environmental conditions in the CFROU. As of 2022, 13 years of CFROU surface water data (2010-2022) have been collected under this monitoring program. This long-term record provides a dataset to evaluate the effect of remediation on environmental conditions in the CFROU over time.

Some changes to the surface water monitoring program's methods have occurred over time and a record of these changes is provided in the project sampling and analysis plan (SAP) [RESPEC, 2022a]. Generally, the changes to the program have consisted of expanding or contracting the temporal or spatial extent of the sampling program. Fundamental sample collection, processing, and analysis methods have remained consistent throughout the duration of this monitoring program.

2.2.1 Monitoring Locations

Surface water was monitored at nine CFROU sites in 2022 (Figure 2-1). The monitoring network included six sites in the Clark Fork mainstem and three sites on tributary streams (Figure 2-1; Table 2-2).

2.2.1.1 Clark Fork River Mainstem

Each of the mainstem sample site locations were selected for a specific monitoring objective. The five mainstem Clark Fork River monitoring sites in Reach A (Sites CFR-03A, CFR-07D, CFR-11F, CFR-27H, and CFR-34) were included to provide a detailed spatial representation of conditions in Reach A where the remedial work is occurring (Figure 2-1). Site CFR-34 was added to the monitoring network in 2015 to monitor remedial work in Phases 15 and 16. One mainstem site is located downstream from the Flint Creek tributary (Site CFR-84F) (Figure 2-1). Site CFR-84F is intended to assess the influence of the Flint Creek inflow which typically has elevated mercury concentrations [Langner et al., 2012; RESPEC, 2022b] on water quality in the mainstem.

2.2.1.2 Tributaries

Tributary site locations were selected to assess the significance of COC or nutrient loading from the two primary sources upstream from the CFROU. Each tributary has one sample site located immediately above the CFROU.

2.2.1.2.1 Silver Bow Creek

Silver Bow Creek is the upstream-most tributary of the Clark Fork River. Silver Bow Creek historically was the primary source of COCs to the Clark Fork River [DEQ and USEPA, 1995] but it has undergone extensive remediation since 1998 and COC concentrations are reduced

compared to historic levels [Sando et al., 2014; RESPEC, 2022c]. All streamflow from Silver Bow Creek is captured by the Warm Springs Ponds and treated to reduce metal loading to the Clark Fork River (see: www.cfrtac.org). One sample site (Silver Bow Creek at Warm Springs; Site SS-25) is located on Silver Bow Creek, below the spillway of the Warm Springs Ponds and below the confluence with Mill-Willow Creek (Figure 2-1).

2.2.1.2.2 Warm Springs Creek

The Clark Fork River mainstem begins at the confluence of Silver Bow Creek and Warm Springs Creek (Figure 2-1). Warm Springs Creek is a major tributary to the Clark Fork River in Reach A. Warm Springs Creek typically has relatively low nutrient concentrations and relatively cool streamflows. Water chemistry in Warm Springs Creek is monitored at Site WSC-SBC (Figure 2-1).

2.2.1.2.3 Flint Creek

Flint Creek enters the Clark Fork River near the boundary between Reach B and Reach C (Figure 2-1). Flint Creek is a major source of mercury to the Clark Fork River [Langner et al., 2012; RESPEC, 2022b]. Site FC-CFR monitors water chemistry in Flint Creek (Figure 2-1). Prior monitoring of Flint Creek indicates that it is a major source of mercury and lead to the Clark Fork River mainstem.

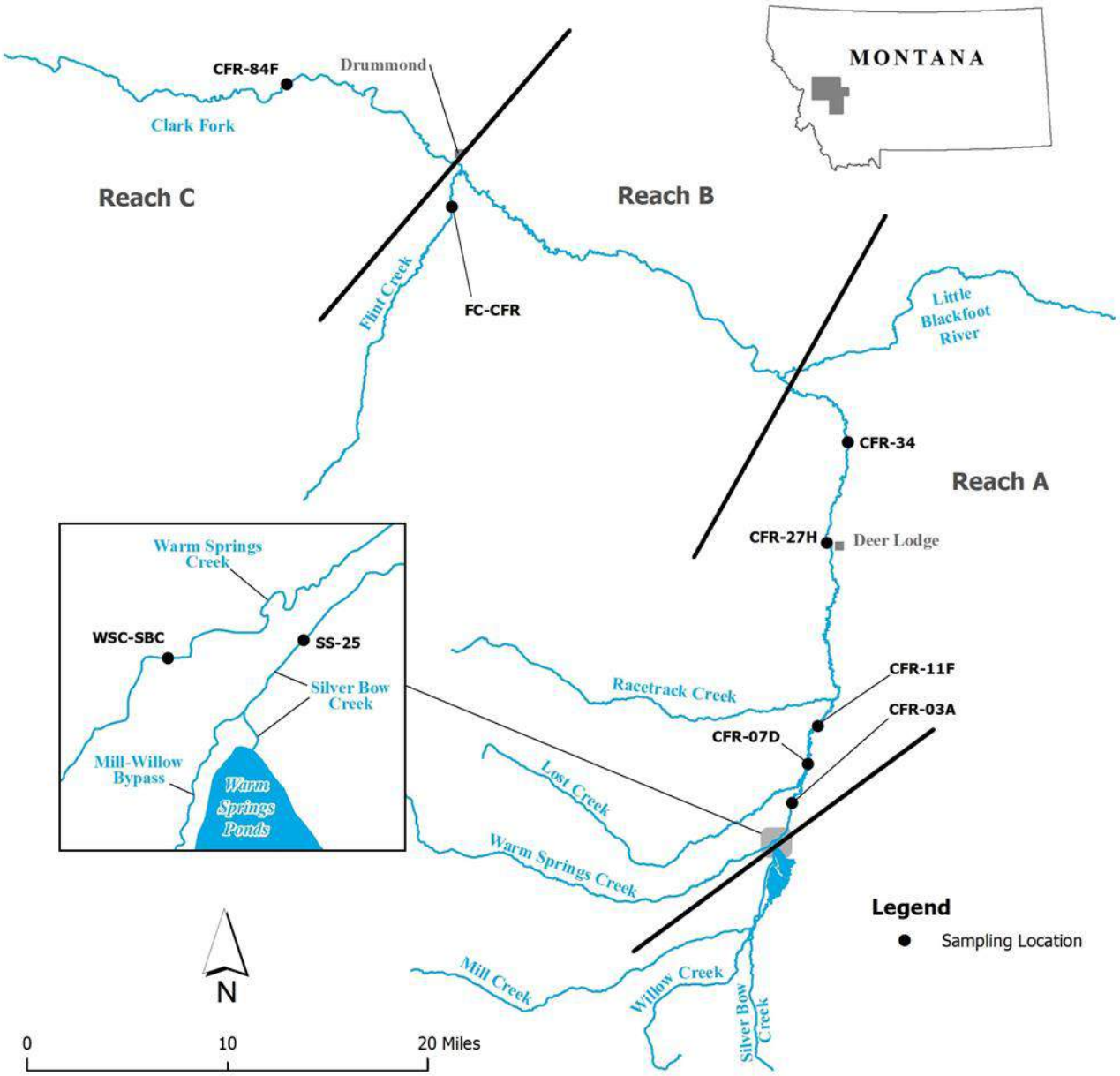


Figure 2-1. Surface water sampling locations in the Clark Fork River Operable Unit.

Table 2-2. Surface water sampling locations in the Clark Fork River Operable Unit. Streamflows were measured at all sites which did not a have co-located U.S. Geological Survey (USGS) streamflow gage.

Site ID	Site Location	Co-located USGS Streamflow Gage	Location (GPS coordinates, NAD 83)	
			Latitude	Longitude
Mainstem Sites				
CFR-03A	Clark Fork River near Galen	12323800	46.20877	-112.76740
CFR-07D	Clark Fork River at Galen Road	none	46.23725	-112.75302
CFR-11F	Clark Fork River at Gemback Road	none	46.26520	-112.74430
CFR-27H	Clark Fork River at Deer Lodge	12324200	46.39796	-112.74283
CFR-34	Clark Fork River at Williams-Tavenner Bridge	none	46.47119	-112.72492
CFR-84F	Clark Fork near Drummond	12331800	46.71204	-113.33137
Tributary sites				
SS-25	Silver Bow Creek at Warm Springs	12323750	46.18123	-112.77917
WSC-SBC	Warm Springs Creek near mouth	12323770	46.18041	-112.78592
FC-CFR	Flint Creek near mouth	12331500	46.62891	-113.15151

2.2.2 Monitoring Schedule

At least one monitoring event was scheduled for each calendar quarter of 2022. Each quarterly monitoring event occurred near the end of each corresponding quarter. Monitoring events occurred on March 15, 2022 (Q1), June 7, 2022 (Q2), September 1, 2022 (Q3), and December 7, 2022 (Q4).

2.2.3 Monitoring Parameters

Surface water samples were analyzed for the parameters and analytes listed in Table 2-3. Parameters and analytes were the same at all sites except Sites FC-CFR and CFR-84F. At Site FC-CFR, mercury and methylmercury concentrations were analyzed in addition to all other analytes. At Site CFR-84F, a surface water sample was collected but only analyzed for mercury and methylmercury concentrations. All parameters listed in Table 2-3 were monitored as well as some additional parameters as described in RESPEC [2022a].

Six monitoring stations in the DEQ Clark Fork River monitoring network were co-located with active U.S. Geological Survey (USGS) streamflow gaging stations (Table 2-2). For sample sites with co-located USGS gage stations, U.S. Geological Survey streamflow records were accessed and streamflows were obtained from those gages for inclusion in this report. Streamflows at monitoring stations without co-located USGS gages were measured manually.

Table 2-3. Sampling parameters and analytes for surface water monitoring of the Clark Fork River Operable Unit.

Parameter	Analytes
Metal concentrations (total recoverable and dissolved)[4]	Arsenic, cadmium, copper, lead, zinc, mercury, methylmercury
Nutrient concentrations	Nitrogen (total nitrogen, nitrate plus nitrite, ammonia[5]), and phosphorus (total)
Common ion concentrations (total)	Sulfate, chloride, alkalinity, bicarbonate, magnesium, potassium, sodium
Field parameters	Total suspended sediment (TSS) concentration, hardness, water temperature, pH, specific conductivity, dissolved oxygen (DO) concentrations, turbidity

2.2.4 Sample Collection and Analysis

Sample collection, analysis, and quality assurance procedures were described in the quality assurance project plan [Atkins, 2013]. Methods generally followed standard operating procedures (SOPs) developed for the Clark Fork River [AR, 1992]. Field sampling procedures were in accordance with DEQ [2019a] and followed "clean hands/dirty hands" procedures to minimize sample contamination as described in USGS [2006][6]. Composited surface water samples were collected using width-depth integration according to methods described in USGS [2006]. When streamflows were high and samples could not be safely collected by wading, samples were collected with a crane mounted D-95 sampler operated from road bridges.

Field parameters (water temperature, pH, dissolved oxygen concentration, and conductivity) were measured during each monitoring event with a field multimeter (YSI Professional Plus or YSI 556). Turbidity was measured with a field turbidity meter (Hach Model 2100P Portable Turbidimeter). Streamflows were measured using either a portable electromagnetic streamflow meter (Marsh-McBirney Flo-Mate 2000) or an acoustic doppler current profiler (Teledyne StreamPro). Calibration methods for field meters, data recording and handling methods, and quality assurance and quality control procedures are described in the quality assurance project plan [Atkins, 2013].

Samples were analyzed by Energy Laboratories (Helena, Montana). Requested laboratory analysis procedures for each analyte are presented in Table 2-4.

[4] At CFR-84F, no nutrient or metal concentrations were measured except mercury and methylmercury. At Site FC-CFR, mercury and methylmercury were measured in addition to all other analytes.

[5] Ammonia concentrations were only measured in the Silver Bow Creek site.

[6] We deviated from the USGS [2006] protocols to minimize sample contamination (Section 4.0.2) in two regards. First, we did not collect samples sequentially in the order of least to greatest potential for contamination. Second, samples were processed outside the sampling vehicles, rather than within an enclosed space.

Table 2-4. Analytes, methods, and reporting limits for surface water samples in the Clark Fork River Operable Unit. All samples were analyzed by Energy Laboratories in Helena, Montana.

Analyte	Requested Method	Requested Reporting Limit (mg/L)[7]	Holding Time (days)	Bottle	Preservative
Physical Properties and Inorganics					
Solids, Total Suspended (at 105C)	A 2540 D	1	7	1 L HDPE	4 ± 2 C
Alkalinity, Total (as CaCO3)	A 2320 B	4	14	500 mL HDPE	
Alkalinity, Bicarbonate (as HCO3)					
Chloride	EPA 300.0	1	28		
Sulfate					
Hardness (as CaCO3)	A 2340 B		180		
Nutrients					
Nitrogen, Ammonia (as N)	EPA 350.1	0.05	28	250 mL HDPE	4 ± 2 C
Nitrogen, Nitrate-Nitrite (as N)	EPA 353.2	0.02			H2SO4 to pH<2, 4 ± 2 C
Nitrogen, Total	A 4500 N-C	0.05	30		4 ± 2 C
Phosphorus, Total	EPA 365.1	0.003	28		H2SO4 to pH<2, 4 ± 2 C
Dissolved Metals (0.45 µm filtered)					
Arsenic	EPA 200.8	0.001	180	250 mL HDPE	HNO3 to pH <2
Cadmium		0.00003			
Copper		0.001			
Lead		0.0003			
Zinc		0.008			
Total Recoverable Metals					
Total Recoverable Metals Digestion	EPA 200.2	-	-	-	-
Arsenic	EPA 200.8	0.001	180	250 mL HDPE	HNO3 to pH <2
Cadmium		0.00003			
Calcium		1			
Copper		0.001			
Lead		0.0003			
Magnesium		1			
Potassium		1			
Sodium		1			
Zinc		0.008			
Mercury	EPA 245.1	0.000005	28		
Methylmercury	EPA 1630	0.05 ng/L			HCl to pH <2,

[7] Requested reporting limits are either the required reporting limit of DEQ [2019b], or the lowest reporting limit previously provided by the analytical laboratory, whichever is lower.

2.2.5 Data Analysis

Data analysis approaches included evaluation of remedial performance goal exceedances (for COCs) or relevant regulatory standards (for non-COC constituents) and evaluation of spatial and temporal trends.

Exceedances were assessed by comparing constituent concentrations to the relevant performance goal or regulatory standard. For some COCs and for ammonia concentrations, the relevant goal or standard is based on site- and time-specific conditions (e.g., hardness-based standards; DEQ [2019b]) which were measured concomitantly with each sample collected. Some performance goals and regulatory standards assume that the measured constituent concentration will be consistent over a specific period. For example, the chronic aquatic life standard is typically based on 96-hour mean concentrations [DEQ, 2019b]. However, in this monitoring program analyte concentrations were measured at a specific point in time and mean concentrations over time are unknown. Therefore, assessments of performance goal or regulatory standard exceedances assume that the measured concentration was representative of the required period as it relates to each specific goal or standard.

Spatial trends were assessed by graphing seasonal concentrations from upstream to downstream in the Clark Fork River mainstem and tributary sites. Boxplots were created to evaluate general spatial trends by summarizing data collected over the last five monitoring years (2018-2022). Statistics summarized in each boxplot include the median (midline of each box), quartiles (ends of each box), outlier extent (whiskers which extend 1.5 times the interquartile range or to the most extreme observation if no observations extend beyond 1.5 times the interquartile range), and outliers (circles above or below the whiskers which are any observations more than 1.5 times the interquartile range).

Temporal trends were also evaluated for COCs and some nutrients by plotting all observations in scatterplots at each site for the period of record. The scatterplots summarize all data collected at each monitoring site since monitoring began in 2010 and were created to evaluate evidence of monotonic (increasing or decreasing) trends.

Some samples had constituent concentrations which were below the method detection limits and therefore the precise concentration was unknown. These results are known as “censored data”. In order to represent these censored data in graphical representations (i.e., boxplots and scatterplots), values were substituted at half the method detection limit for each result with below detection limit concentrations.

2.2.6 Data Validation

Data quality objectives (DQOs) were established in the CFROU monitoring project quality assurance project plan (QAPP) for data “representativeness”, “comparability”, “completeness”, “sensitivity”, “precision”, “bias”, and “accuracy” [Atkins, 2013]. Methods for field and laboratory quality assurance and quality control (QA/QC) procedures are also described in detail in the

project QAPP. A completed QA/QC checklist, summary tables of field duplicate and field blank results, and assessments of data quality objectives are included in Appendix A.

2.3 RESULTS

2.3.1 Streamflow

Streamflows measured at each site at the time each sample was collected are presented in Table 2-5. Streamflows throughout 2022 for each CFROU site with a co-located USGS streamflow gage are depicted in the following figures: Silver Bow Creek at Warm Springs (USGS 12323750) (Figure 2-2), Warm Springs Creek at Warm Springs (USGS 12323770) (Figure 2-3), Clark Fork River near Galen (USGS 12323800) (Figure 2-4), Clark Fork River at Deer Lodge (USGS 12324200) (Figure 2-5), Flint Creek (USGS 12331500) (Figure 2-6), and Clark Fork River near Drummond (USGS 12331800) (Figure 2-7).

At most sites, including the tributaries (Silver Bow Creek, Warm Springs Creek, and Flint Creek), streamflows during the spring were low compared to the long-term median as cold weather delayed the onset of the spring freshet. Once snowmelt began, peak freshet streamflows were at or above the median at all sites. All sites also had a prolonged period of late summer low flows which were well below the median.

Table 2-5. Streamflow (ft^3/s) at Clark Fork River Operable Unit monitoring stations, 2022.[8]

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	97	424	40	93
CFR-07D	Clark Fork River at Galen Road	168	484	63	-
CFR-11F	Clark Fork River at Gemback Road	181	597	44	-
CFR-27H	Clark Fork River at Deer Lodge	226	512	62	163
CFR-34	Clark Fork River at Williams-Tavenner Bridge	304	532	78	-
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	59	259	21	40
WSC-SBC	Warm Springs Creek near mouth	39	147	19	51
FC-CFR	Flint Creek near mouth	90	198	25	105

\- No measurement due to channel ice.

[8] Results from monitoring sites CFR-03A, CFR-27H, SS-25, WSC-SBC, and FC-CFR were obtained from USGS stream gages [USGS, 2022] and data may be provisional.

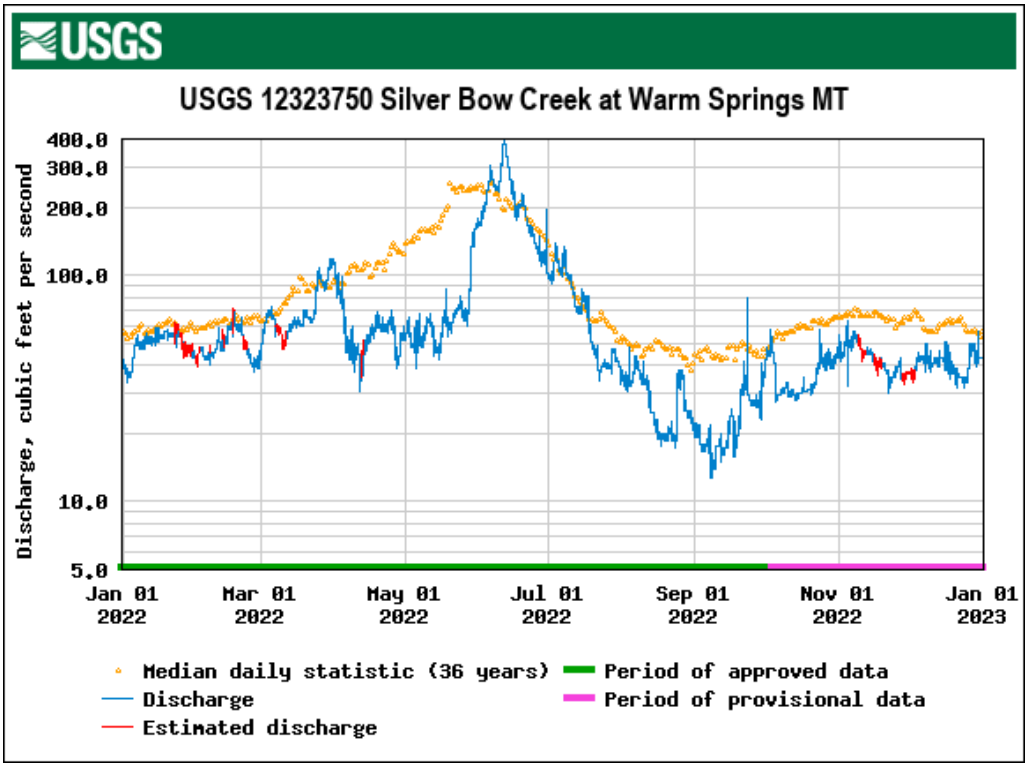


Figure 2-2. Hydrograph for Silver Bow Creek at Warm Springs, 2022.

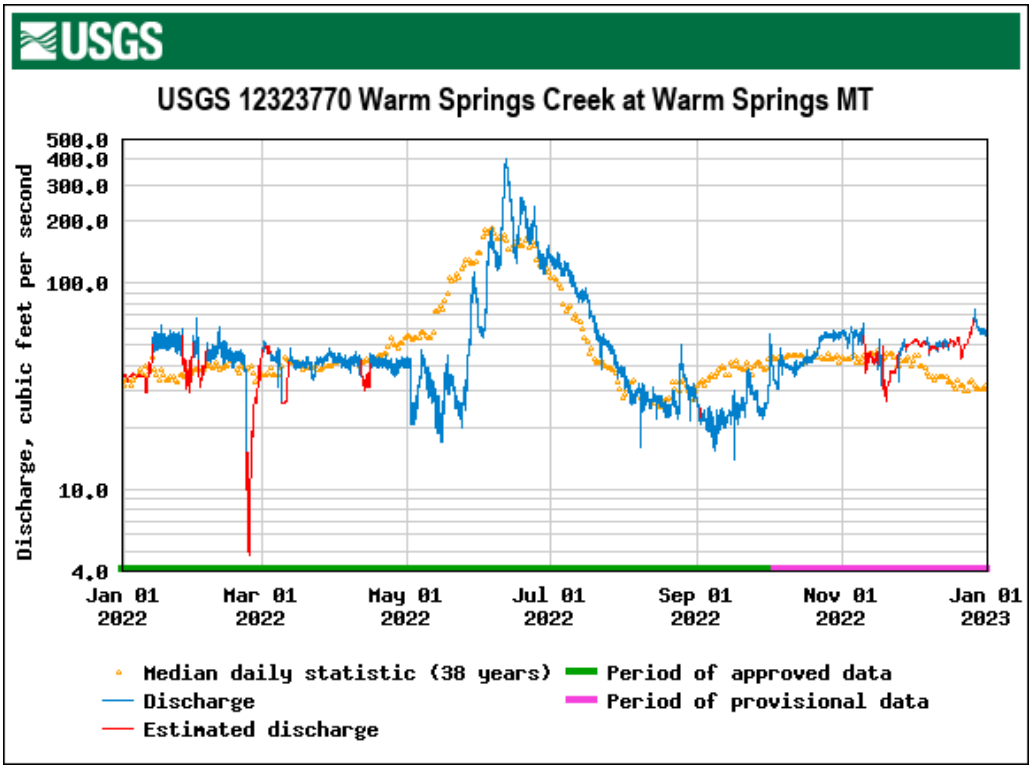


Figure 2-3. Hydrograph for Warm Springs Creek at Warm Springs, 2022.

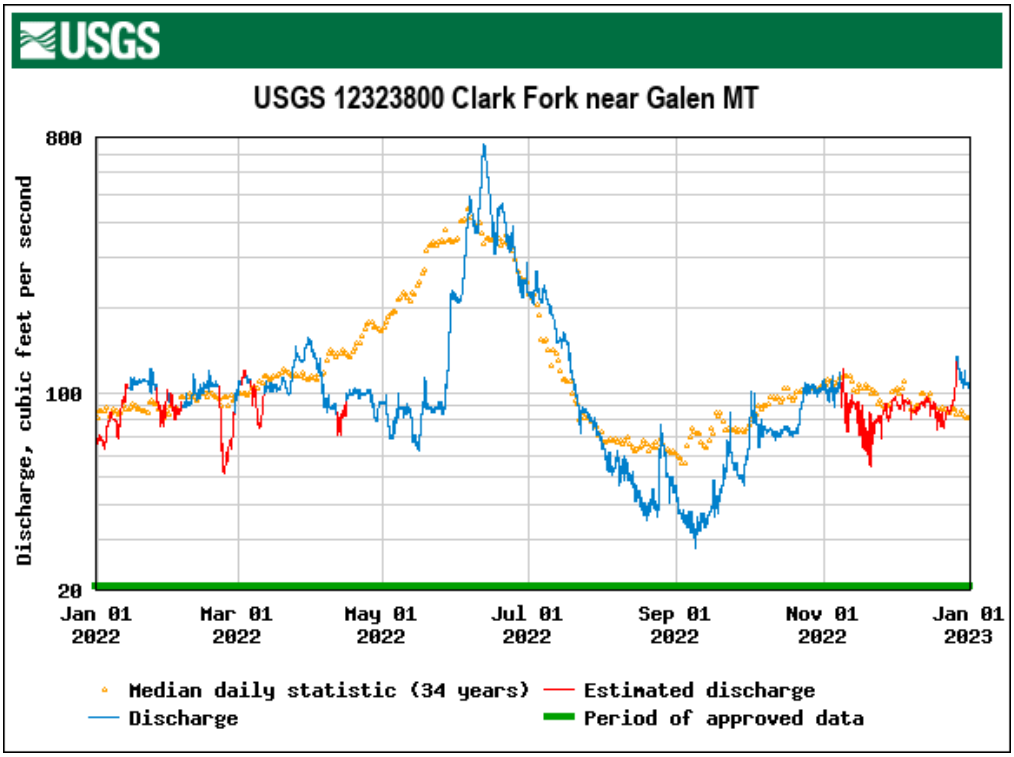


Figure 2-4. Hydrograph for Clark Fork River near Galen, 2022.

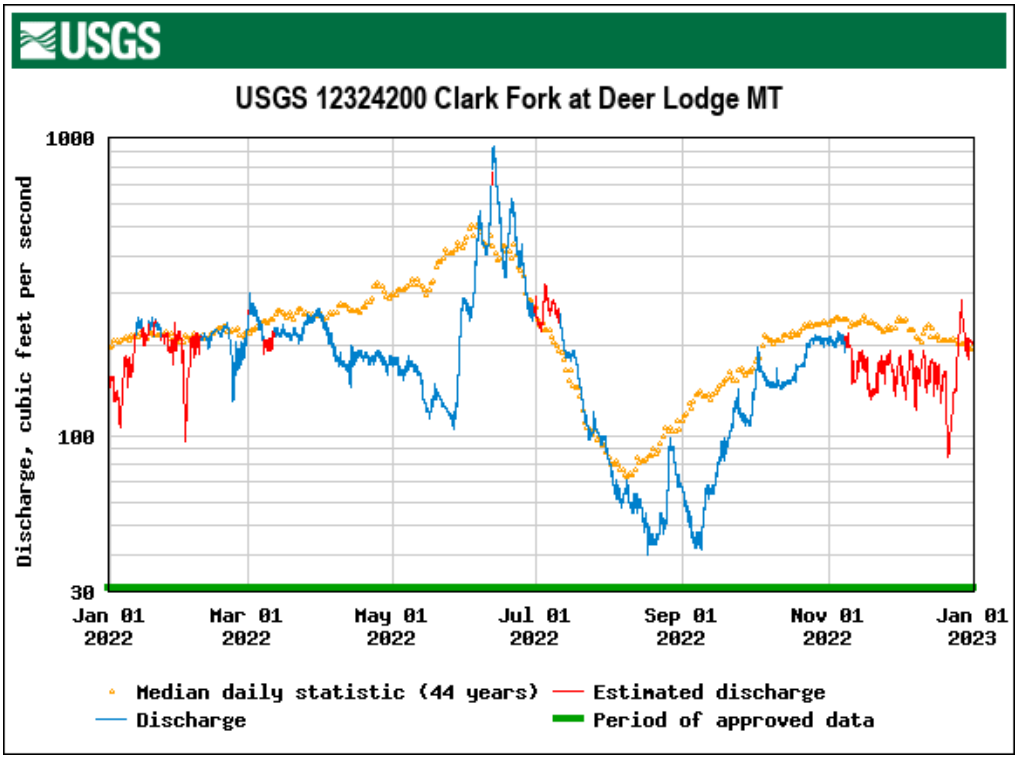


Figure 2-5. Hydrograph for Clark Fork River at Deer Lodge, 2022.

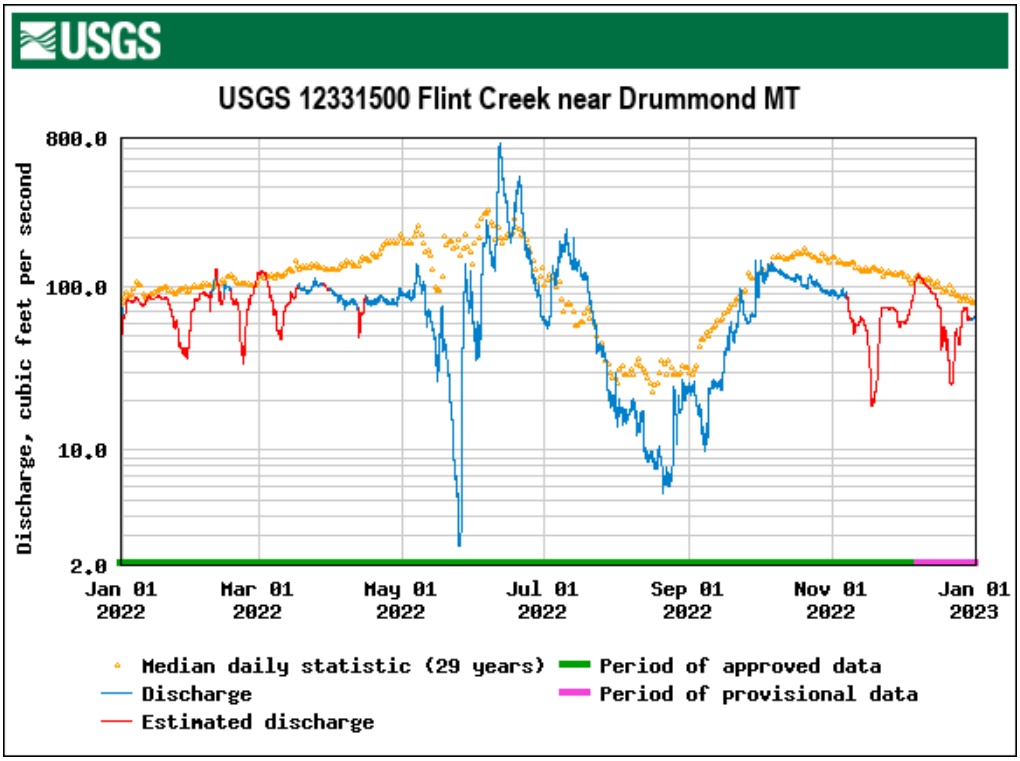


Figure 2-6. Hydrograph for Flint Creek, 2022.

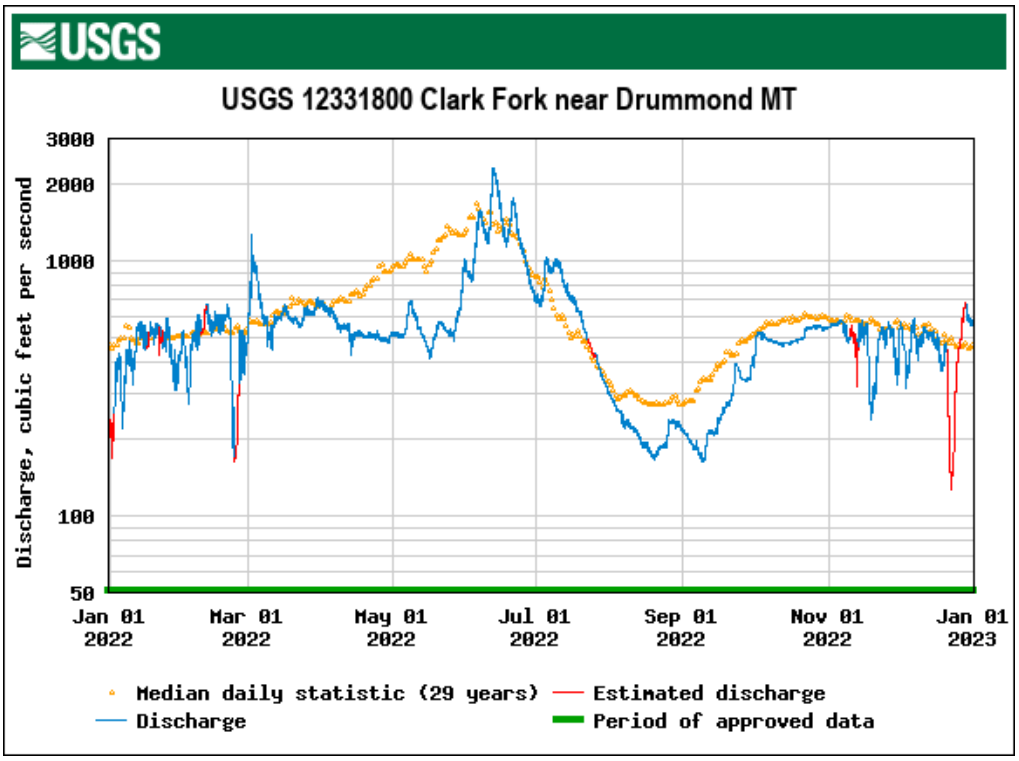


Figure 2-7. Hydrograph for Clark Fork River near Drummond, 2022.

2.3.2 Field Parameters

2.3.2.1 Water Temperature

At the time samples were collected in 2022, water temperatures ranged from 0.1-21.8 ºC in the Clark Fork River, from 1.8-20.9 ºC in Silver Bow Creek, from 1.9-17.6 ºC in Warm Springs Creek, and from 1.7-14.6 ºC in Flint Creek (Table 2-6). The highest temperatures were observed during the September (Q3) sample period.

Table 2-6. Water temperature (ºC) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	5.5	12.0	20.8	1.5
CFR-07D	Clark Fork River at Galen Road	5.9	12.9	21.7	0.4
CFR-11F	Clark Fork River at Gemback Road	5.6	12.8	21.8	0.1
CFR-27H	Clark Fork River at Deer Lodge	4.7	13.1	20.0	0.6
CFR-34	Clark Fork River at Williams-Tavenner Bridge	5.0	12.8	19.6	1.6
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	5.1	13.2	20.9	1.8
WSC-SBC	Warm Springs Creek near mouth	6.0	10.2	17.6	1.9
FC-CFR	Flint Creek near mouth	3.4	-	14.6	1.7

- No measurement.

2.3.2.2 pH

Water pH ranged from 7.55-9.06 in the Clark Fork River, from 7.80-8.81 in Silver Bow Creek, from 7.82-8.61 in Warm Springs Creek, and from 7.42-8.36 in Flint Creek (Table 2-7). Potential water discharge restrictions could occur in the mainstem Clark Fork River between the Cottonwood Creek confluence (at Deer Lodge) and Little Blackfoot River confluence when pH exceeds 8.5 as this stream reach is designated as C-1 for water-use classification stream. Site CFR-34 is in this designated C-1 reach and pH at that site exceeded 8.5 in Q3 (Table 2-7). Potential water discharge restrictions could occur in Silver Bow Creek (designated as an I water-use classification stream; ARM 17.30.607) when pH exceeds 9.5. In Silver Bow Creek, pH was below 9.5 during all sample periods of 2022.

Table 2-7. Water pH (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	8.05	7.65	9.06	8.71
CFR-07D	Clark Fork River at Galen Road	7.99	7.87	8.91	8.50
CFR-11F	Clark Fork River at Gemback Road	7.81	8.00	8.75	8.41
CFR-27H	Clark Fork River at Deer Lodge	7.73	7.64	8.51	8.08
CFR-34	Clark Fork River at Williams-Tavenner Bridge	7.55	7.70	8.63	8.10
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	8.17	7.80	8.81	8.22
WSC-SBC	Warm Springs Creek near mouth	8.12	7.82	8.61	8.39
FC-CFR	Flint Creek near mouth	7.42	-	8.36	8.18

Exceeds potential limit (pH >8.5) for streams classified as C-1 (e.g., Clark Fork River between Deer Lodge and Garrison, represented by Site CFR-34).

\- No measurement.

2.3.2.3 Conductivity

Conductivity ranged from 431-674 µS/cm in the Clark Fork River, from 526-890 µS/cm in Silver Bow Creek, from 166-318 µS/cm in Warm Springs Creek, and from 196-475 µS/cm in Flint Creek (Table 2-8). Conductivity varied strongly by season and differed among sample periods by as much as 243 µS/cm in the Clark Fork River and by 364 µS/cm in Silver Bow Creek (Table 2-8). Within sample periods, conductivity was generally similar among mainstem sites (Table 2-8).

Table 2-8. Conductivity (µS/cm) at Clark Fork River Operable Unit monitoring stations, 2022

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	674	431	493	610
CFR-07D	Clark Fork River at Galen Road	634	441	505	601
CFR-11F	Clark Fork River at Gemback Road	631	452	507	597
CFR-27H	Clark Fork River at Deer Lodge	526	458	492	535
CFR-34	Clark Fork River at Williams-Tavenner Bridge	555	451	483	316
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	841	526	723	890
WSC-SBC	Warm Springs Creek near mouth	318	169	269	166
FC-CFR	Flint Creek near mouth	299	196	475	381

2.3.2.4 Dissolved Oxygen

Dissolved oxygen concentration ranged from 9.0-16.2 mg/L in the Clark Fork River, from 9.4-14.6 mg/L in Silver Bow Creek, from 8.9-12.0 mg/L in Warm Springs Creek, and from 10.1-12.5 mg/L in Flint Creek (Table 2-9). Many sites had annual variance of 6.0 mg/L or more (Table 2-9). No sites in the sampling area had dissolved oxygen concentrations that were below the most restrictive freshwater aquatic life standard for dissolved oxygen (8.0 mg/L; DEQ [2019b]) during the September sample period (Table 2-9).

Table 2-9. Dissolved oxygen concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	12.6	-	11.8	16.2
CFR-07D	Clark Fork River at Galen Road	12.6	9.0	11.6	15.5
CFR-11F	Clark Fork River at Gemback Road	11.7	9.3	12.5	14.9
CFR-27H	Clark Fork River at Deer Lodge	12.6	-	12.5	13.8
CFR-34	Clark Fork River at Williams-Tavenner Bridge	10.7	9.2	13.5	13.6
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	12.8	-	9.4	14.6
WSC-SBC	Warm Springs Creek near mouth	12.0	-	8.9	11.7
FC-CFR	Flint Creek near mouth	12.2	10.9	10.1	12.5

Below the dissolved oxygen 1-day minimum standard for waters classified as A-1, B-1, B-2, C-1, or C-2 where early life stages of fish are present (8.0 mg/L; DEQ [2019b]).

\- No measurement.

2.3.2.5 Turbidity

Turbidity ranged from 1.0-50.8 NTU in the Clark Fork River, from 2.1-7.3 NTU in Silver Bow Creek, from 1.5-11.4 NTU in Warm Springs Creek, and from 1.2-14.7 NTU in Flint Creek (Table 2-10).

Table 2-10. Turbidity (NTU) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	2.1	7.3	2.7	2.4
CFR-07D	Clark Fork River at Galen Road	4.7	11.4	1.5	4.1
CFR-11F	Clark Fork River at Gemback Road	5.0	14.7	1.2	7.7
CFR-27H	Clark Fork River at Deer Lodge	10.4	38.4	1.0	5.4
CFR-34	Clark Fork River at Williams-Tavenner Bridge	10.0	50.8	-	8.6
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	2.1	7.3	2.7	2.4
WSC-SBC	Warm Springs Creek near mouth	4.7	11.4	1.5	4.1
FC-CFR	Flint Creek near mouth	5.0	14.7	1.2	7.7

- No measurement.

2.3.3 Total Suspended Sediment

Total suspended sediment concentration ranged from 1-118 mg/L in the Clark Fork River, from 1-9 mg/L in Silver Bow Creek, from 2-17 mg/L in Warm Springs Creek, and from 1-38 mg/L in Flint Creek (Table 2-11). Over the last five monitoring years, median total suspended sediment concentrations generally increased sequentially at each downstream site and sites in lower Reach A (Sites CFR-27H and CFR-34) had the greatest variability in concentrations among the mainstem sites (Figure 2-8).

Table 2-11. Total suspended sediment concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	3	20	3	3
CFR-07D	Clark Fork River at Galen Road	11	34	2	7
CFR-11F	Clark Fork River at Gemback Road	12	47	1[J]	15
CFR-27H	Clark Fork River at Deer Lodge	23	104	2	9
CFR-34	Clark Fork River at Williams-Tavenner Bridge	25	118	5	17
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	2	9	3	1
WSC-SBC	Warm Springs Creek near mouth	4	17	2	4[J]
FC-CFR	Flint Creek near mouth	36	38	1[J]	18

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

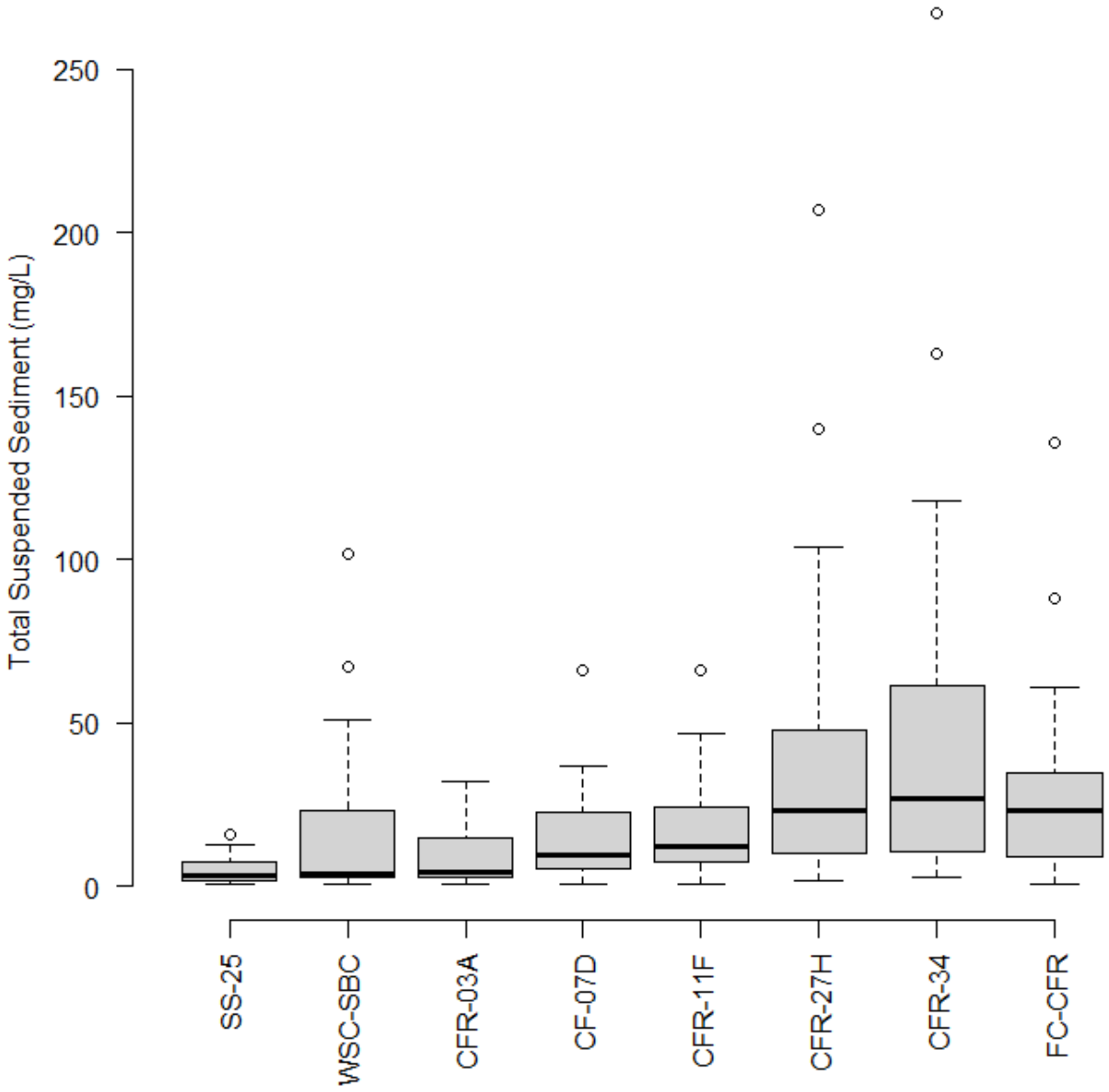


Figure 2-8. Total suspended sediment concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022

2.3.4 Common Ions

2.3.4.1 Hardness

Hardness ranged from 184-291 mg/L in the Clark Fork River, from 225-408 mg/L in Silver Bow Creek, from 84-160 mg/L in Warm Springs Creek, and from 100-218 mg/L in Flint Creek (Table 2-12). At all sites, hardness was lowest during the spring runoff (Q2) (Table 2-12). In 2022, hardness was highest in Silver Bow Creek during every monitoring period (Table 2-12). Over the last five years, median hardness was higher, and more variable, in the Clark Fork River mainstem compared to Warm Springs Creek and Flint Creek (Figure 2-9). Water hardness in Silver Bow Creek has been more variable than in the Clark Fork River mainstem over that period (Figure 2-9), primarily due to the recent increase in Silver Bow Creek water hardness since 2019 [RESPEC, 2022c].

Table 2-12. Hardness (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	291	184	227	282
CFR-07D	Clark Fork River at Galen Road	286	191	233	288
CFR-11F	Clark Fork River at Gemback Road	289	198	233	289
CFR-27H	Clark Fork River at Deer Lodge	248	206	222	252
CFR-34	Clark Fork River at Williams-Tavenner Bridge	247	209	220	253
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	370	225	331	408
WSC-SBC	Warm Springs Creek near mouth	160	84	138	159
FC-CFR	Flint Creek near mouth	141	100	218	162

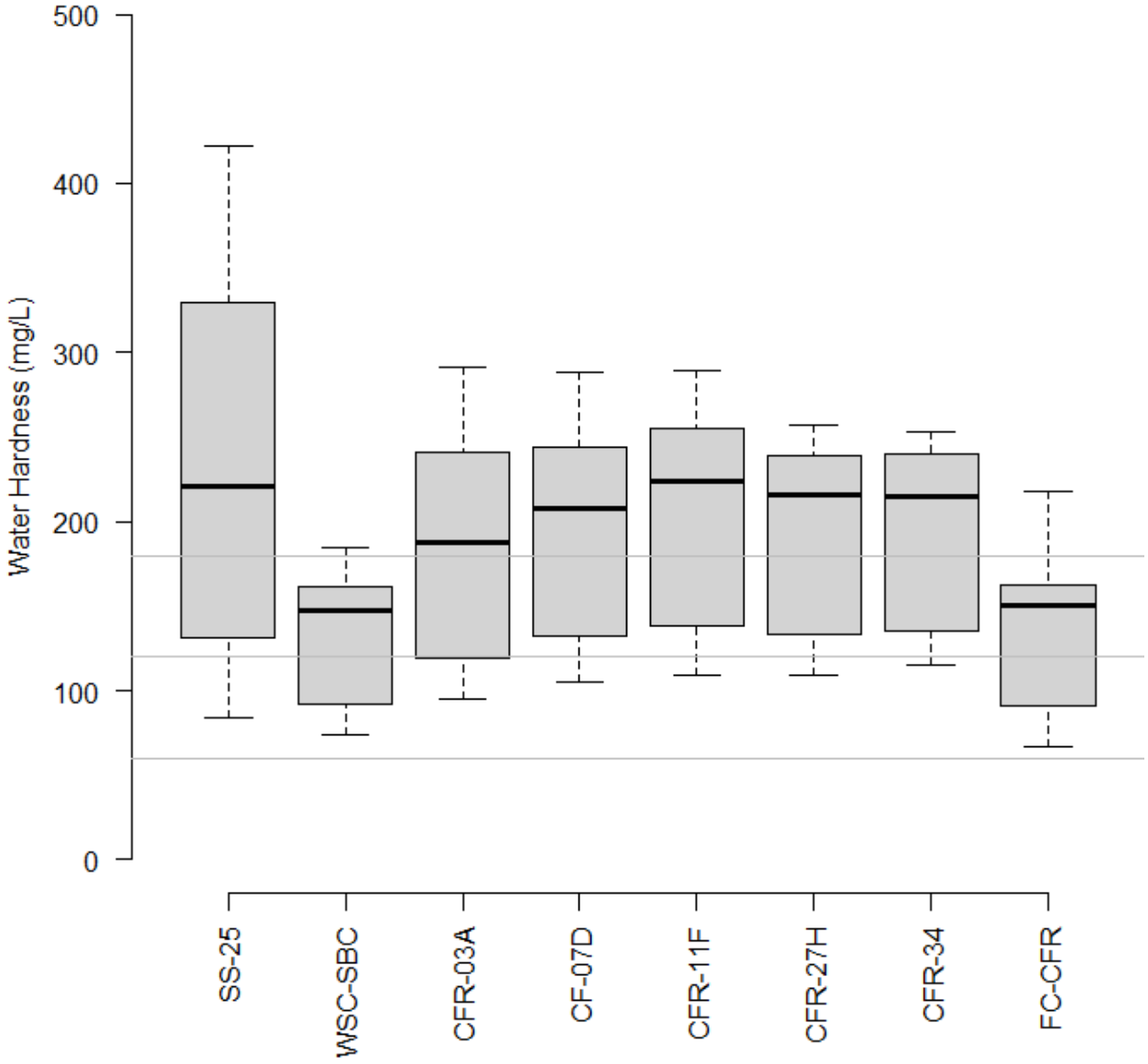


Figure 2-9. Hardness at sampling sites in the Clark Fork River Operable Unit, 2018-2022.[9]

[9] Lines represent boundaries between "soft" water (0-60 mg/L), "moderately hard" water (60-120 mg/L), "hard" water (120-180 mg/L), and "very hard" water (>180 mg/L).

2.3.4.2 Alkalinity and Bicarbonate

Alkalinity ranged from 73-230 mg/L in the Clark Fork River, from 47-110 mg/L in Silver Bow Creek, from 73-140 mg/L in Warm Springs Creek, and from 92-170 mg/L in Flint Creek (Table 2-13). Bicarbonate alkalinity ranged from 89-270 mg/L in the Clark Fork River, from 57-130 mg/L in Silver Bow Creek, from 89-160 mg/L in Warm Springs Creek, and from 110-190 mg/L in Flint Creek (Table 2-14). At all sites, alkalinity and bicarbonate alkalinity were lowest during the runoff (Q2) (Table 2-13; Table 2-14).

Table 2-13. Alkalinity (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	110	73	110[J]	120
CFR-07D	Clark Fork River at Galen Road	130	79	120[J]	130
CFR-11F	Clark Fork River at Gemback Road	140	82	130[J]	140
CFR-27H	Clark Fork River at Deer Lodge	140	96	160[J]	140
CFR-34	Clark Fork River at Williams-Tavenner Bridge	150	100	230[J]	150
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	98	47	89[J]	110
WSC-SBC	Warm Springs Creek near mouth	140	73	120[J]	130
FC-CFR	Flint Creek near mouth	140	92	170[J]	150

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

Table 2-14. Bicarbonate concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	140	89	110[J]	140
CFR-07D	Clark Fork River at Galen Road	160	96	120[J]	160
CFR-11F	Clark Fork River at Gemback Road	170	100	140[J]	170
CFR-27H	Clark Fork River at Deer Lodge	170	120	180[J]	170
CFR-34	Clark Fork River at Williams-Tavenner Bridge	180	120	270[J]	180
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	120	57	98[J]	130
WSC-SBC	Warm Springs Creek near mouth	160	89	140[J]	160
FC-CFR	Flint Creek near mouth	170	110	190[J]	180

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

2.3.4.3 Calcium

Calcium concentrations ranged from 59-93 mg/L in the Clark Fork River, from 75-130 mg/L in Silver Bow Creek, from 26-47 mg/L in Warm Springs Creek, and from 28-63 mg/L in Flint Creek (Table 2-16). At all but one site (CFR-34), concentrations were lowest during the runoff (Q2) (Table 2-16).

Table 2-15. Calcium concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	93	61	68	88
CFR-07D	Clark Fork River at Galen Road	89	62	69	89
CFR-11F	Clark Fork River at Gemback Road	90	63	68	88
CFR-27H	Clark Fork River at Deer Lodge	77	65	66	77
CFR-34	Clark Fork River at Williams-Tavenner Bridge	76	65	59	77
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	121	75	101	130
WSC-SBC	Warm Springs Creek near mouth	47	26	41	46
FC-CFR	Flint Creek near mouth	38	28	63	43

2.3.4.4 Chloride

Chloride concentrations ranged from 6-20 mg/L in the Clark Fork River, from 19-33 mg/L in Silver Bow Creek, from 0.91-1 mg/L in Warm Springs Creek, and from 2-11 mg/L in Flint Creek (Table 2-16). Concentrations were lowest at the Clark Fork River at Deer Lodge (Site CFR-27H), Warm Springs Creek (Site WSC-SBC), and Flint Creek (Site FC-CFR) sites during runoff (Q2), while all other sites had the lowest concentrations in Q3 (Table 2-16).

Table 2-16. Chloride concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	20	10	9	17
CFR-07D	Clark Fork River at Galen Road	15	10	9	13
CFR-11F	Clark Fork River at Gemback Road	14	10	9	13
CFR-27H	Clark Fork River at Deer Lodge	12	10	11	14
CFR-34	Clark Fork River at Williams-Tavenner Bridge	12	10	6	11
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	32	31	19	33
WSC-SBC	Warm Springs Creek near mouth	1	0.91[J]	0.98[J]	1
FC-CFR	Flint Creek near mouth	4	2	11	4

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

2.3.4.5 Magnesium

Magnesium concentrations ranged from 8-17 mg/L in the Clark Fork River, from 9-20 mg/L in Silver Bow Creek, from 5-11 mg/L in Warm Springs Creek, and from 7-14 mg/L in Flint Creek (Table 2-17). At all sites, concentrations were lowest during the runoff (Q2) (Table 2-17).

Table 2-17. Magnesium concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	14	8	14	15
CFR-07D	Clark Fork River at Galen Road	15	9	15	16
CFR-11F	Clark Fork River at Gemback Road	16	10	15	17
CFR-27H	Clark Fork River at Deer Lodge	14	11	14	15
CFR-34	Clark Fork River at Williams-Tavenner Bridge	14	11	18	15
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	17	9	19	20
WSC-SBC	Warm Springs Creek near mouth	11	5	9	11
FC-CFR	Flint Creek near mouth	12	7	14	13

2.3.4.6 Sulfate

Sulfate concentrations ranged from 28-206 µS/cm in the Clark Fork River, from 164-333 mg/L in Silver Bow Creek, from 14-34 mg/L in Warm Springs Creek, and from 9-87 mg/L in Flint Creek (Table 2-18). At all but two sites (CFR-27H and CFR-34), concentrations were lowest during the runoff (Q2) (Table 2-18).

Table 2-18. Sulfate concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	206	116	141[J]	180
CFR-07D	Clark Fork River at Galen Road	176	118	139[J]	163
CFR-11F	Clark Fork River at Gemback Road	169	119	130[J]	154
CFR-27H	Clark Fork River at Deer Lodge	130	112	94[J]	118
CFR-34	Clark Fork River at Williams-Tavenner Bridge	123	103	28[J]	116
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	314	164	271[J]	333
WSC-SBC	Warm Springs Creek near mouth	34	14	27[J]	29
FC-CFR	Flint Creek near mouth	16	9	87[J]	17

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

2.3.5 Nutrients

2.3.5.1 Total Nitrogen

Total nitrogen concentration ranged from 0.22-0.53 mg/L in the Clark Fork River, from 0.30-0.48 mg/L in Silver Bow Creek, from 0.08-0.10 mg/L in Warm Springs Creek, and from 0.21-0.34 mg/L in Flint Creek in 2022 (Table 2-19). At all sites except the Silver Bow Creek site (Site SS-25) and the Clark Fork River near Galen site (Site CFR-03A), concentrations were lowest in Q3 (Table 2-19). The Clark Fork River at Williams-Tavenner Bridge (Site CFR-34) and Silver Bow Creek (Site SS-25) sites exceeded the Clark Fork River total nitrogen standard (ARM 17.30.631) in Q3 2022 (Table 2-19).

Over the last five years, median concentrations tended to increase at each downstream Clark Fork River site (Figure 2-10). Four mainstem sites (Sites CFR-07D, CFR-11F, CFR-27H, CFR-34) had concentrations at or above the total nitrogen standard (Figure 2-10). However, the standard was only technically applicable in Q3 and at that time, only one mainstem sample (Site CFR-34) had a concentration exceeding the standard (Table 2-19).

Concentrations measured in 2022 were generally at the lower end of the range of prior sample concentrations at each site (Figure 2-11).

Table 2-19. Total nitrogen concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.23	0.22	0.28[J]	0.24
CFR-07D	Clark Fork River at Galen Road	0.33	0.24	0.24	0.32
CFR-11F	Clark Fork River at Gemback Road	0.33	0.29	0.22	0.33
CFR-27H	Clark Fork River at Deer Lodge	0.41	0.38	0.29[J]	0.49
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.45	0.40	0.36[J]	0.53
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.30	0.35	0.48[J]	0.40
WSC-SBC	Warm Springs Creek near mouth	0.08	0.10	0.08	0.10
FC-CFR	Flint Creek near mouth	0.31	0.26	0.21	0.34

Exceeds Clark Fork River total nitrogen standard (0.30 mg/L; applies to mainstem sites from June 21 to September 21; ARM 17.30.631).

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

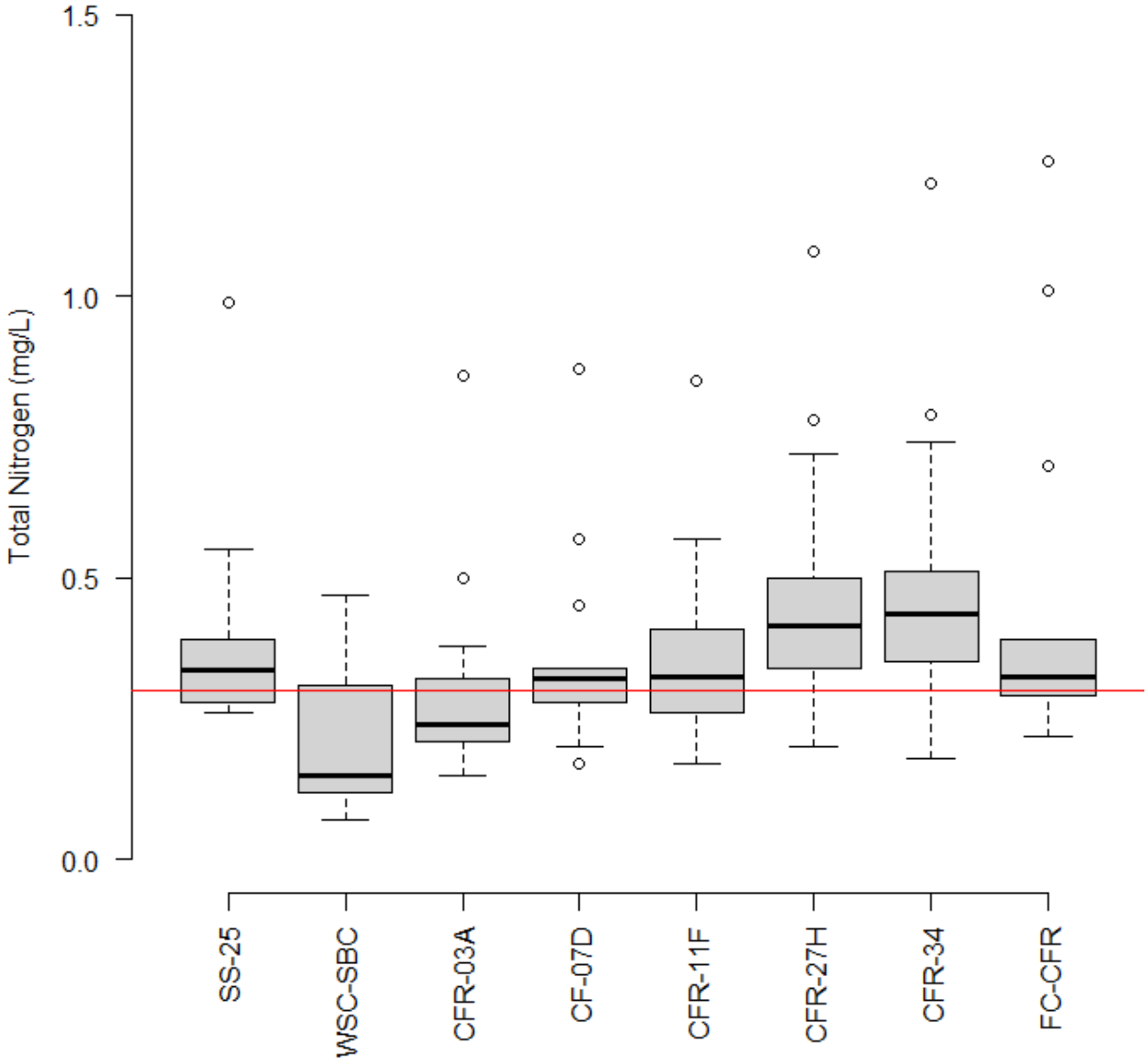


Figure 2-10. Total nitrogen concentration (mg/L) at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents Clark Fork River total nitrogen standard (applies June 21 to September 21; ARM 17.30.631).

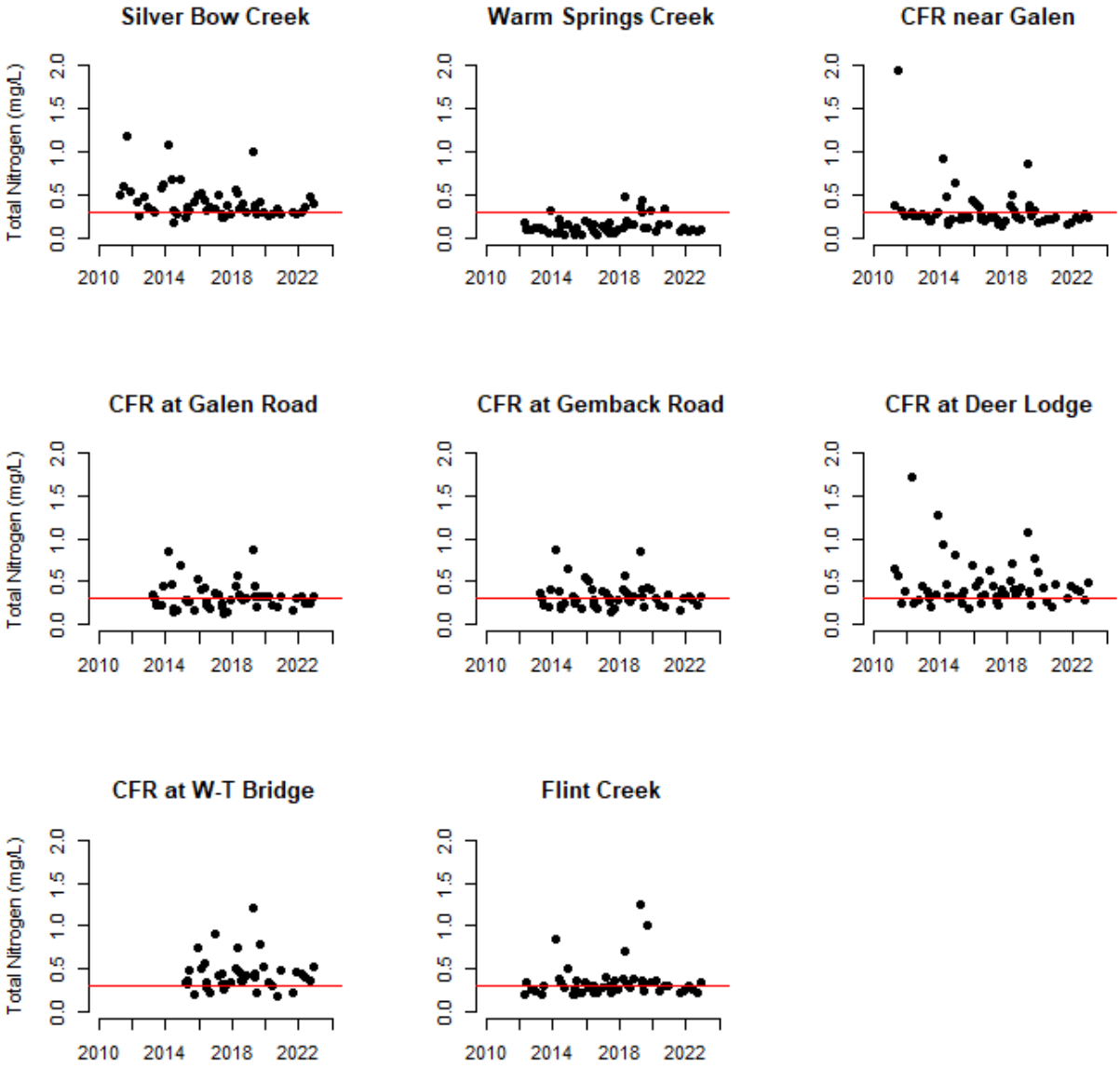


Figure 2-11. Total nitrogen concentration (mg/L) at sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal line represents Clark Fork River total nitrogen standard (applies June 21 to September 21; ARM 17.30.631).

2.3.5.2 Nitrate Plus Nitrite Nitrogen

Nitrate plus nitrite nitrogen concentration ranged from <0.009-0.36 mg/L in the Clark Fork River, from <0.009-0.07 mg/L in Silver Bow Creek, from <0.009-0.07 mg/L in Warm Springs Creek, and from 0.019-0.20 mg/L in Flint Creek in 2022 (Table 2-20).

Over the last five years, median concentrations were particularly high in Clark Fork River Sites CFR-27H and CFR-34 (Figure 2-12). Among tributaries, median concentrations were highest in Flint Creek (Figure 2-12).

Table 2-20. Nitrate plus nitrite nitrogen concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.03	0.013[J]	ND	0.07
CFR-07D	Clark Fork River at Galen Road	0.15	0.03	ND	0.17
CFR-11F	Clark Fork River at Gemback Road	0.15	0.03	ND	0.20
CFR-27H	Clark Fork River at Deer Lodge	0.22	0.09	0.10	0.35
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.22	0.11	ND	0.36
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.05	0.019[J]	ND	0.07
WSC-SBC	Warm Springs Creek near mouth	0.013[J]	0.016[J]	ND	0.07
FC-CFR	Flint Creek near mouth	0.10	0.04	0.019[J]	0.20

ND Not detected at method detection limit.

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

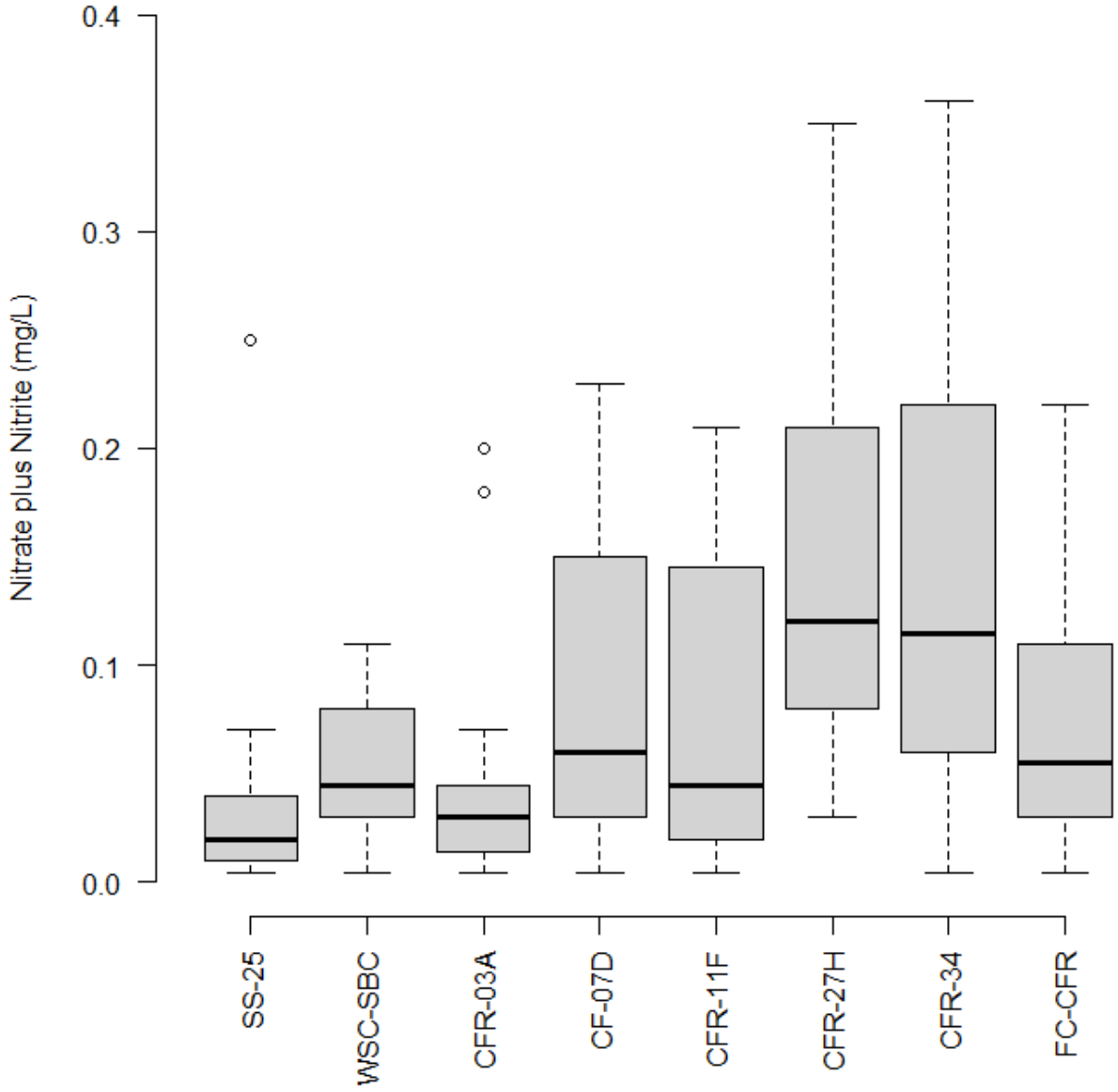


Figure 2-12. Nitrate plus nitrite nitrogen concentration (mg/L) at sampling sites in the Clark Fork River Operable Unit, 2018-2022.

2.3.5.3 Total Ammonia

Ammonia concentrations were only measured in Silver Bow Creek (Site SS-25) in 2022. One Site SS-25 sample collected in Q4 2022 had a concentration above the method detection limit (0.03 mg/L). That sample concentration was 0.07 mg/L.

2.3.5.4 Total Phosphorus

Total phosphorus concentration ranged from 0.010-0.178 mg/L in the Clark Fork River, from 0.013-0.088 mg/L in Silver Bow Creek, from 0.005-0.025 mg/L in Warm Springs Creek, and from 0.021-0.077 mg/L in Flint Creek in 2022 (Table 2-21). Exceedances of the total phosphorus standard for the Clark Fork River occurred in the Clark Fork River near Galen (CFR-03A) and Clark Fork River at Williams-Tavenner Bridge (CFR-34) sites (Table 2-21).

Over the last five years, median concentrations were similar among the three upstream-most mainstem sites (Sites CFR-03A, CFR-07D, and CFR-11F) but higher in Silver Bow Creek, Flint Creek, and the two downstream-most mainstem sites (Sites CFR-27H and CFR-34) (Figure 2-13). All sites, except Warm Springs Creek (Site WSC-SBC), had median concentrations above the Clark Fork River standard (Figure 2-13).

Concentrations measured in 2022 were generally in the range of prior samples but low compared to the relatively high concentrations observed at many sites in 2018 and 2019 (Figure 2-14).

Table 2-21. Total phosphorus concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.013	0.078	0.022[J]	0.009
CFR-07D	Clark Fork River at Galen Road	0.015	0.085	0.016[J]	0.012
CFR-11F	Clark Fork River at Gemback Road	0.018	0.093	0.012	0.018
CFR-27H	Clark Fork River at Deer Lodge	0.030	0.169	0.010	0.018
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.032	0.178	0.081[J]	0.028
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.013	0.088	0.044[J]	0.013
WSC-SBC	Warm Springs Creek near mouth	0.005	0.025	0.008	0.007
FC-CFR	Flint Creek near mouth	0.059	0.077	0.021[J]	0.051

Exceeds Clark Fork River total phosphorus standard (0.020 mg/L; applies to mainstem sites from June 21 to September 21; ARM 17.30.631).

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

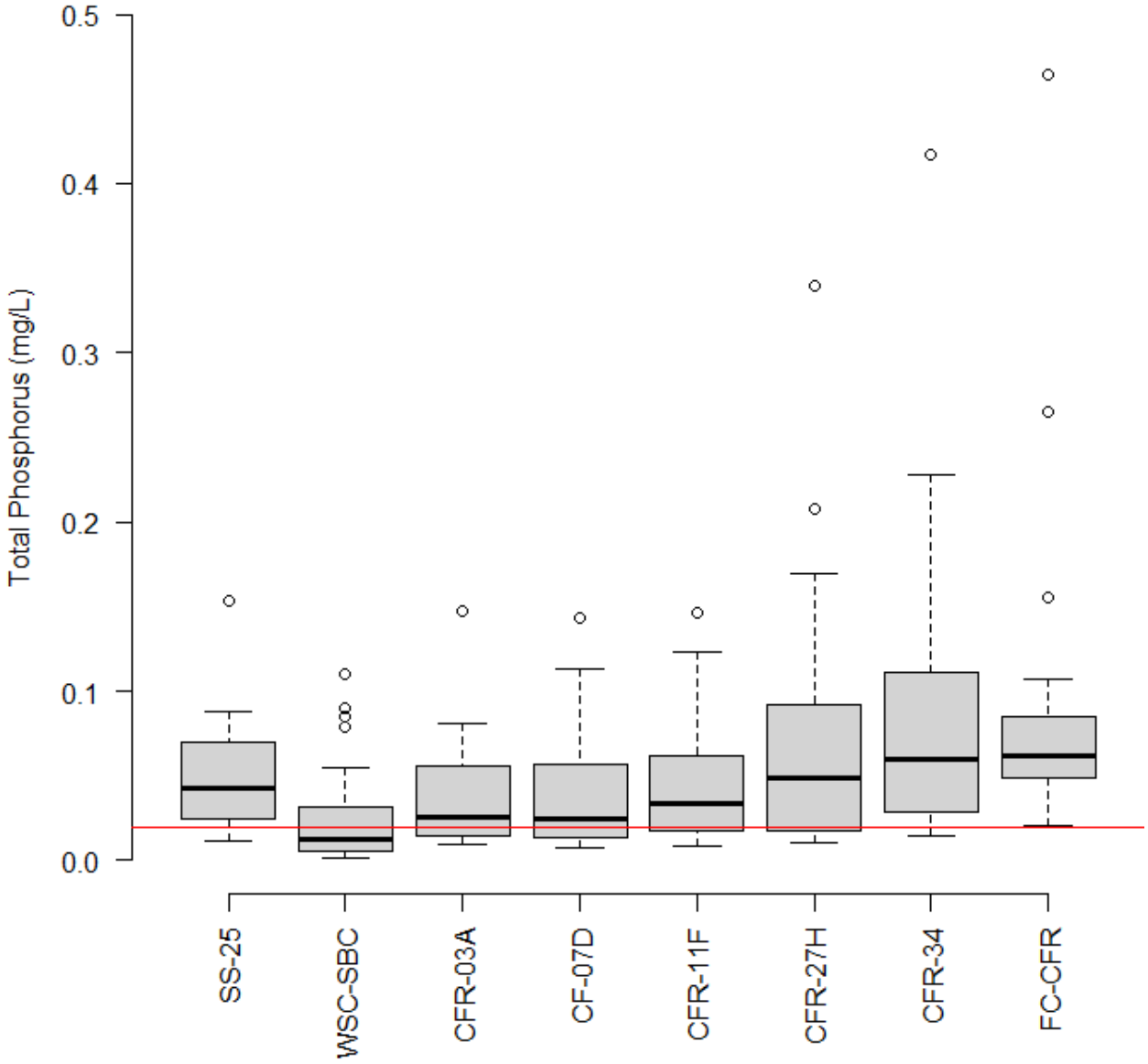


Figure 2-13. Total phosphorus concentration (mg/L) at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the Clark Fork River total phosphorus standard (applies to mainstem sites from June 21 to September 21; ARM 17.30.631).

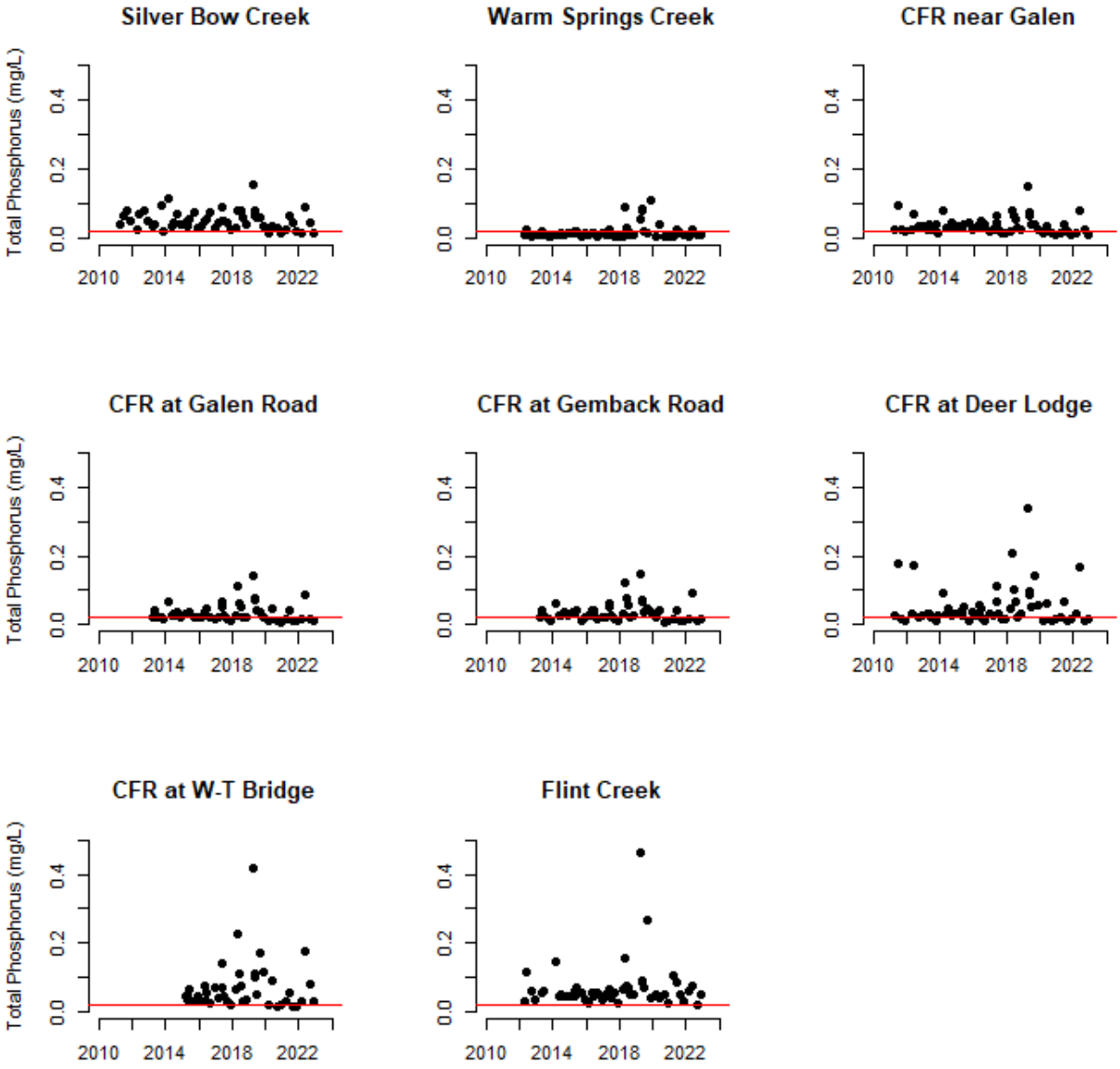


Figure 2-14. Total phosphorus concentration (mg/L) at sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal line represents the Clark Fork River total phosphorus standard (applies to mainstem sites from June 21 to September 21; ARM 17.30.631).

2.3.6 Contaminants of Concern

2.3.6.1 Arsenic

2.3.6.1.1 Dissolved

Dissolved arsenic concentrations ranged from 0.004-0.016 mg/L in the Clark Fork River, from 0.006-0.024 mg/L in Silver Bow Creek, from 0.003-0.005 mg/L in Warm Springs Creek, and from 0.006-0.014 mg/L in Flint Creek in 2022 (Table 2-22). Exceedances of the dissolved arsenic performance goal in 2022 occurred at all Clark Fork River mainstem sites in Q2 and Q3, in Silver Bow Creek (Site SS-25) in Q2 and Q3, and Flint Creek (Site FC-CFR) in Q3 (Table 2-22).

Over the last five years, median concentrations were highest in Silver Bow Creek (about 0.018 mg/L), moderate in the Clark Fork River sites (about 0.011 mg/L), and lowest in (about 0.005-0.007 mg/L) in Warm Springs Creek and Flint Creek (Figure 2-15). Sample concentrations in Q1 and Q4 of 2022 were generally below the median from the last five years at all sites (Table 2-22; Figure 2-15). Sample concentrations in Q2 and Q3 of 2022 were at or above the median from the last five years at almost all sites (Table 2-22; Figure 2-15).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-16).

Table 2-22. Dissolved arsenic concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.005	0.014	0.014[J]	0.004
CFR-07D	Clark Fork River at Galen Road	0.007	0.014	0.014[J]	0.005
CFR-11F	Clark Fork River at Gemback Road	0.007	0.015	0.013[J]	0.005
CFR-27H	Clark Fork River at Deer Lodge	0.007	0.016	0.012[J]	0.006
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.007	0.016	0.011[J]	0.006
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.007	0.019	0.024[J]	0.006
WSC-SBC	Warm Springs Creek near mouth	0.003	0.003	0.005	0.003
FC-CFR	Flint Creek near mouth	0.006	0.007	0.014[J]	0.006

Exceeds specified arsenic surface water performance goal for dissolved concentration (0.010 mg/L) [USEPA, 2004].

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

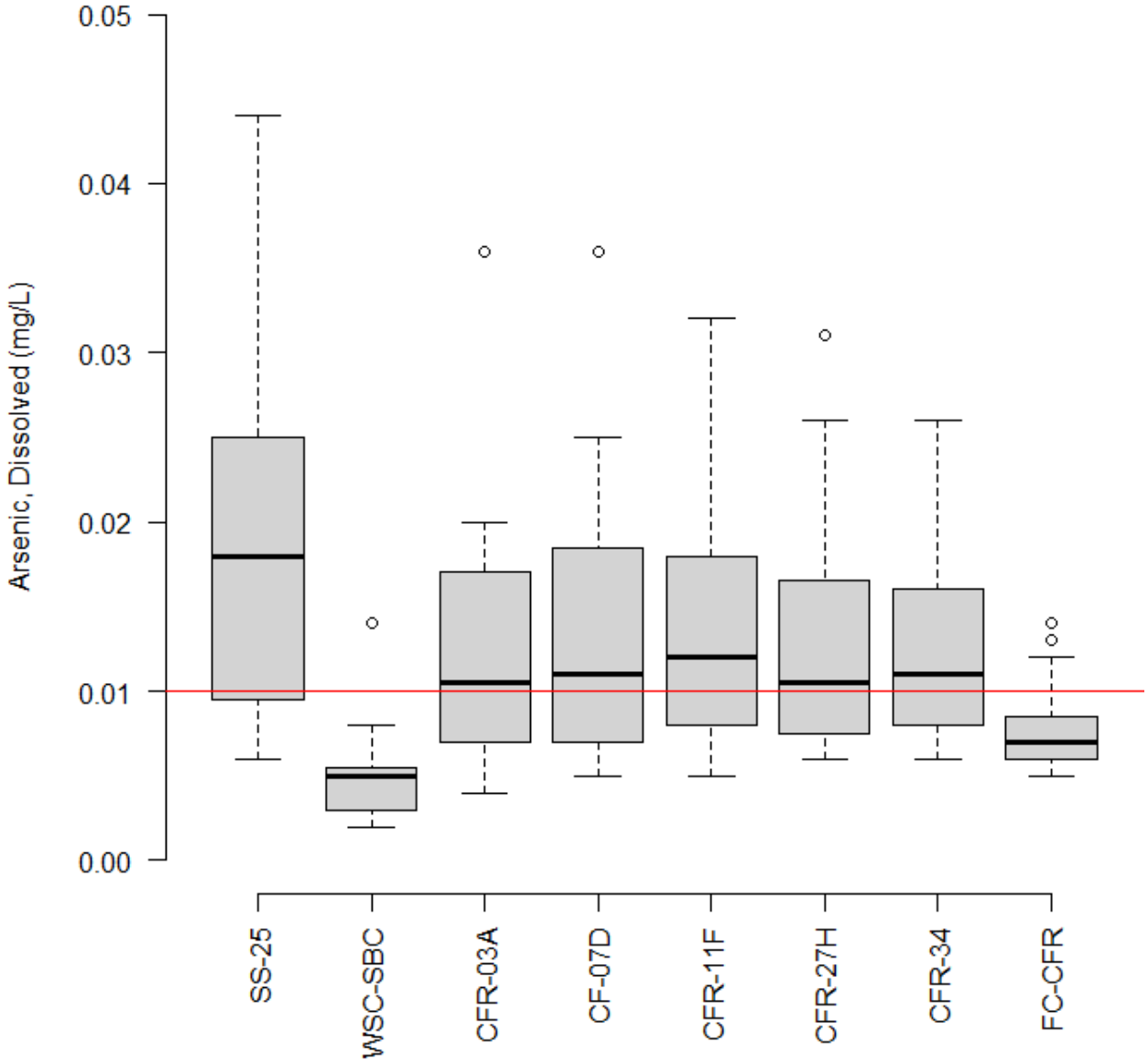


Figure 2-15. Dissolved arsenic concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the arsenic performance goal for dissolved concentration [USEPA, 2004].

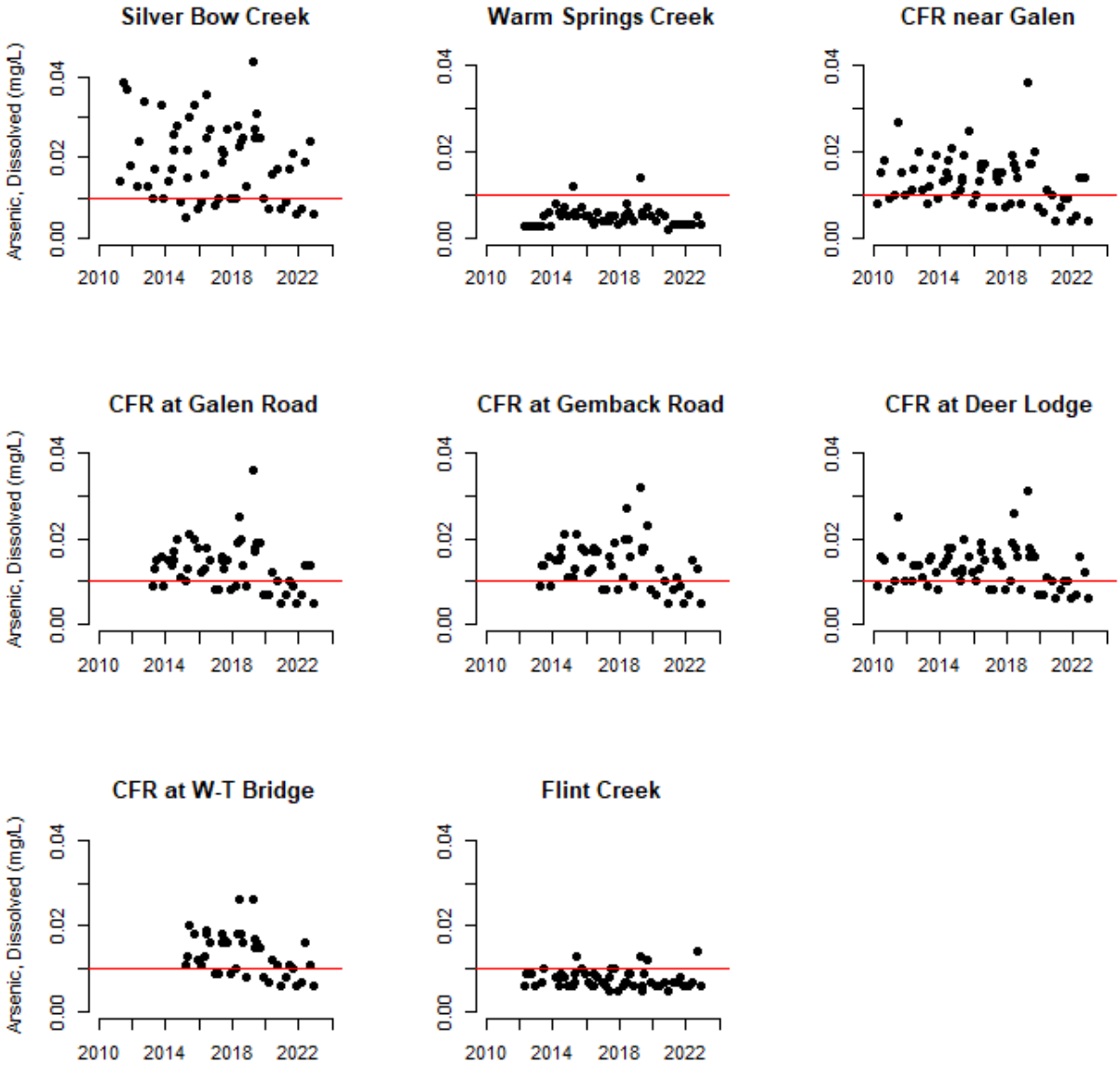


Figure 2-16. Dissolved arsenic concentration sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal lines represent the arsenic performance goal for dissolved concentration [USEPA, 2004].

2.3.6.1.2 Total Recoverable

Total recoverable arsenic concentrations ranged from 0.006-0.035 mg/L in the Clark Fork River, from 0.007-0.025 mg/L in Silver Bow Creek, from 0.003-0.005 mg/L in Warm Springs Creek, and from 0.008-0.014 mg/L in Flint Creek in 2022 (Table 2-23). Exceedances of the total recoverable arsenic performance goal in 2022 occurred in Silver Bow Creek (Site SS-25) in Q2 and Q3 and in all Clark Fork River sites in Q2 except the Clark Fork River near Galen (CFR-03A) site (Table 2-23).

Over the last five years, median concentrations were below the total arsenic performance goal in all sites except Silver Bow Creek (Figure 2-17). Median concentrations were generally similar in the mainstem sites and relatively low in Warm Springs Creek (Site WSC-SBC) and Flint Creek (Site FC-CFR) (Figure 2-17).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-18).

Table 2-23. Total recoverable arsenic concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.006	0.016	0.015[J]	0.006
CFR-07D	Clark Fork River at Galen Road	0.008	0.020	0.014[J]	0.007
CFR-11F	Clark Fork River at Gemback Road	0.008	0.021	0.014[J]	0.007
CFR-27H	Clark Fork River at Deer Lodge	0.010	0.034	0.013[J]	0.008
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.011	0.035	0.010[J]	0.009
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.009	0.021	0.025[J]	0.007
WSC-SBC	Warm Springs Creek near mouth	0.003	0.004	0.005	0.003
FC-CFR	Flint Creek near mouth	0.012	0.014	0.014[J]	0.008

Exceeds specified arsenic surface water performance goal for total recoverable concentration (0.018 mg/L) [USEPA, 2004].

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

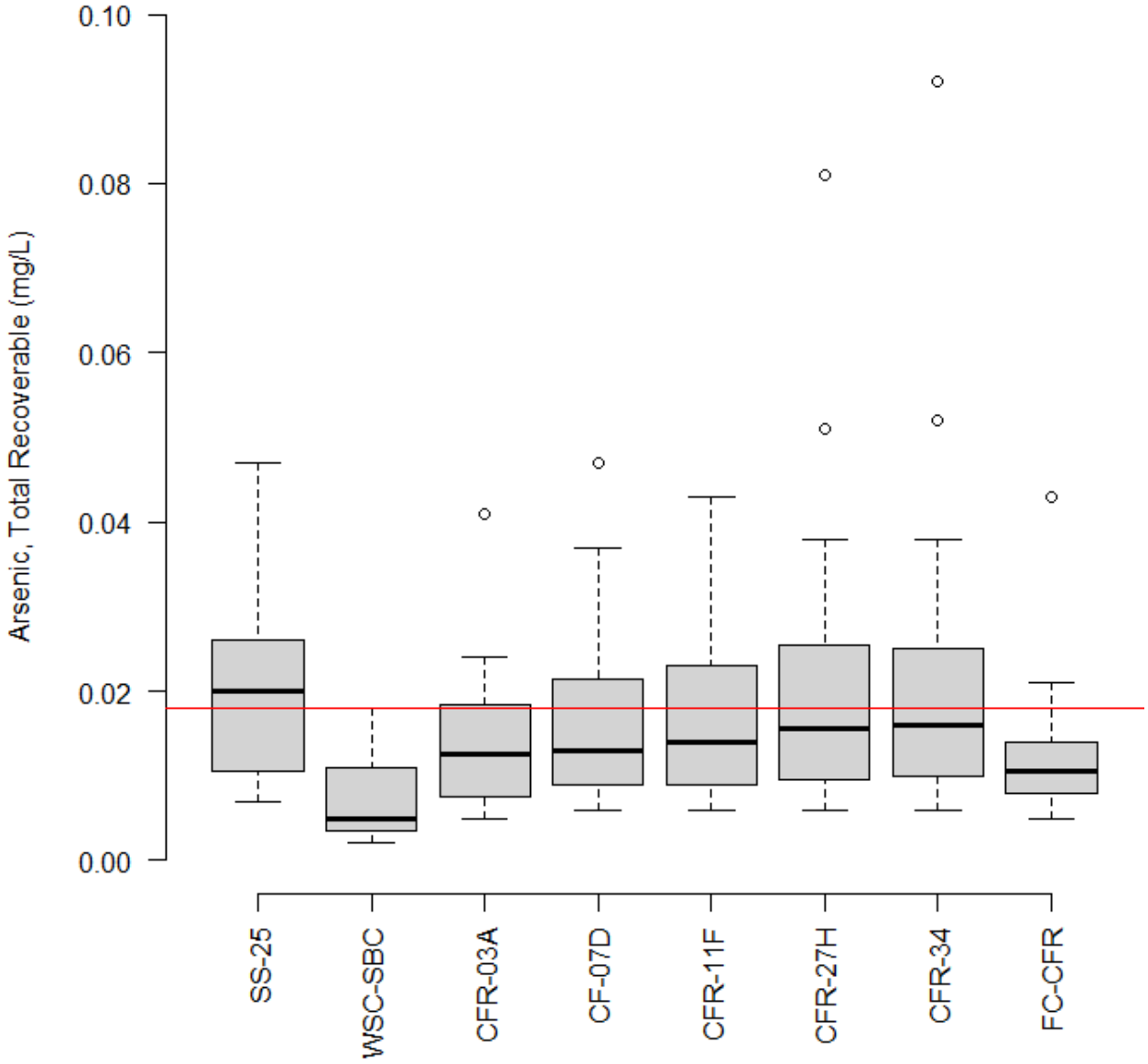


Figure 2-17. Total recoverable arsenic concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the arsenic performance goal for dissolved concentration [USEPA, 2004].

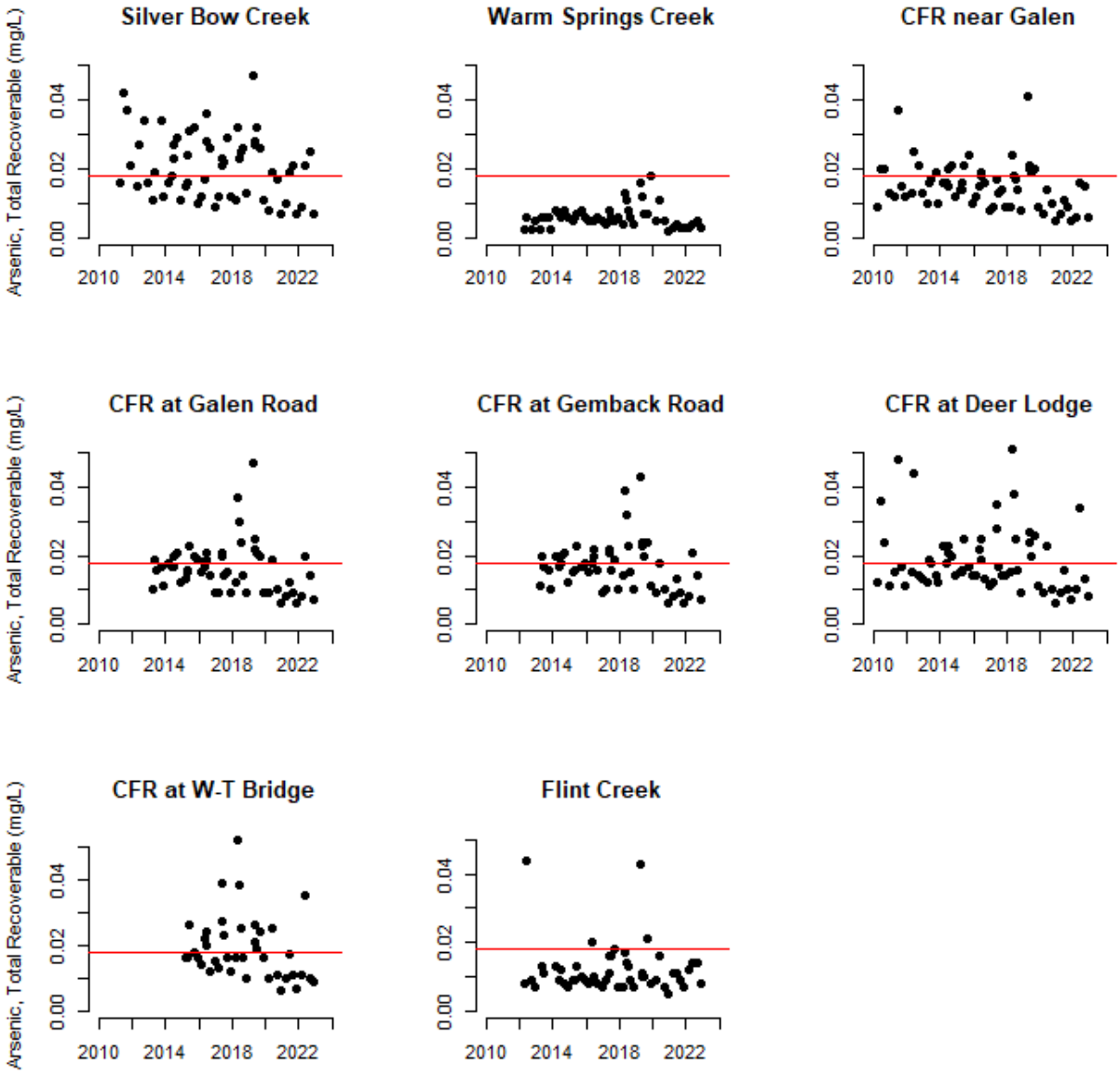


Figure 2-18. Total recoverable arsenic concentrations at sampling sites in the Clark Fork River Operable Unit, 2010-2022.[10] Horizontal lines represent the arsenic performance goal for total recoverable concentration [USEPA, 2004].

[10] Two samples collected on April 8, 2019 are not depicted: 0.081 mg/L at Site CFR-27H ("CFR at Deer Lodge") and 0.092 mg/L at Site CFR-27H ("CFR at W-T Bridge").

2.3.6.2 Cadmium

Total recoverable cadmium concentrations ranged from <0.00003-0.00077 mg/L in the Clark Fork River, from <0.00003-0.00013 mg/L in Silver Bow Creek, from <0.00003-0.00006 mg/L in Warm Springs Creek, and from 0.00005-0.00027 mg/L in Flint Creek in 2022 (Table 2-24). There were two exceedances of the chronic aquatic life standard [DEQ, 2019b] in 2022: at Sites CFR-27H and CFR-34 in Q2 (Table 2-24).

Over the last five years, median concentrations were generally similar at most sites with the exception of the two downstream-most mainstem sites (Sites CFR-27H and CFR-34) which had higher median concentrations (Figure 2-19).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-20).

Table 2-24. Total recoverable cadmium concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.00013	0.00017	0.00003	0.00005
CFR-07D	Clark Fork River at Galen Road	0.00010	0.00023	ND	0.00009
CFR-11F	Clark Fork River at Gemback Road	0.00010	0.00028	ND	0.00012
CFR-27H	Clark Fork River at Deer Lodge	0.00018	0.00065	ND	0.00010
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.00018	0.00077	ND	0.00016
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.00013	0.00013	ND	0.00009
WSC-SBC	Warm Springs Creek near mouth	ND	0.00006	0.00003[J]	0.00003
FC-CFR	Flint Creek near mouth	0.00009	0.00015	0.00027	0.00005

ND	Not detected at method detection limit.
J	Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).
	Exceeds chronic aquatic life standard [DEQ, 2019b].

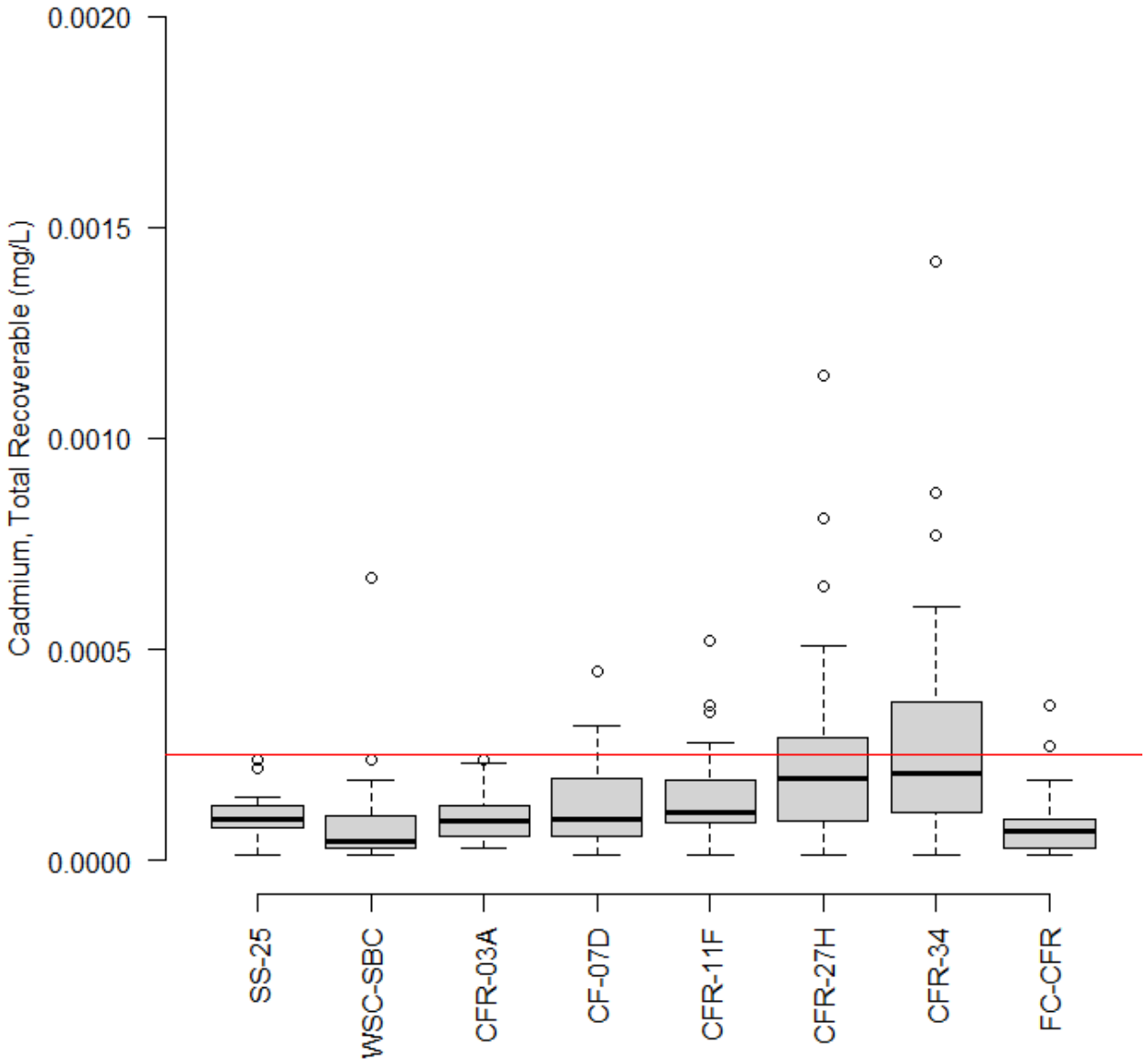


Figure 2-19. Total recoverable cadmium concentration in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

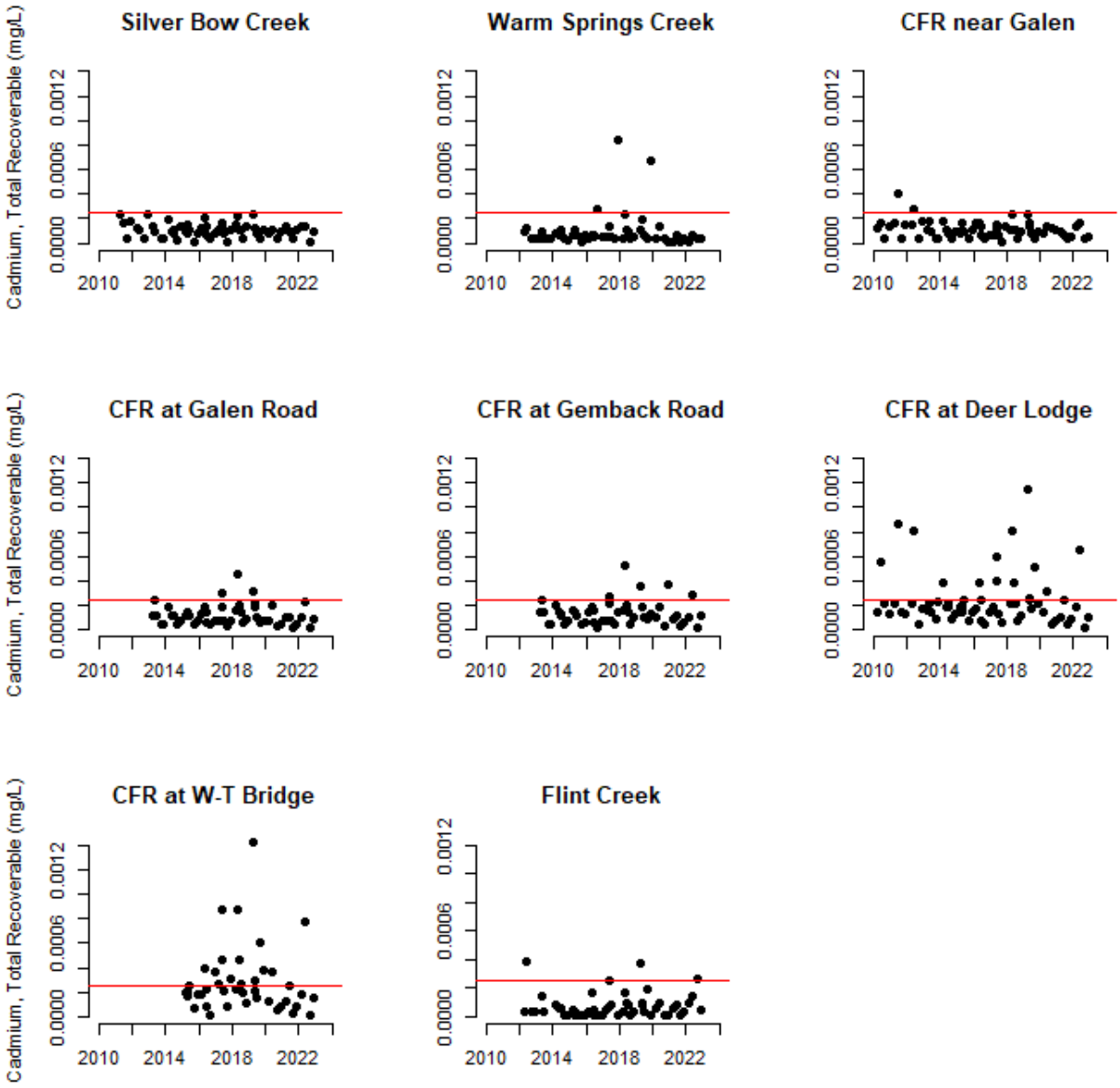


Figure 2-20. Total recoverable cadmium concentrations at mainstem sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal lines represent the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

2.3.6.3 Copper

Dissolved copper concentrations ranged from 0.001-0.009 mg/L in the Clark Fork River, from 0.002-0.003 mg/L in Silver Bow Creek, from 0.001-0.003 mg/L in Warm Springs Creek, and from 0.0004-0.006 mg/L in Flint Creek in 2022 (Table 2-25). There were no exceedances of the chronic standard [USEPA, 1986] in 2022 (Table 2-25).

Over the last five years, median concentrations in the mainstem have generally increased at each downstream site sequentially from the upstream-most site (Site CFR-03A) to the downstream-most site (Site CFR-34) (Figure 2-21). Median concentrations in the tributaries were lower than in the mainstem with the exception of Silver Bow Creek (Site SS-25) which had a median concentration similar to the mainstem sites CFR-03A and CFR-07D (Figure 2-21).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-22).

Table 2-25. Dissolved copper concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.002	0.003	0.003	0.002
CFR-07D	Clark Fork River at Galen Road	0.003	0.004	0.004	0.002
CFR-11F	Clark Fork River at Gemback Road	0.003	0.005	0.004	0.003
CFR-27H	Clark Fork River at Deer Lodge	0.005	0.009	0.007[J]	0.004
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.005	0.009	0.001	0.004
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.003	0.003	0.002	0.002
WSC-SBC	Warm Springs Creek near mouth	0.001	0.003	0.002	0.001[J]
FC-CFR	Flint Creek near mouth	0.0005[J]	0.001	0.006[J]	0.0004[J]

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

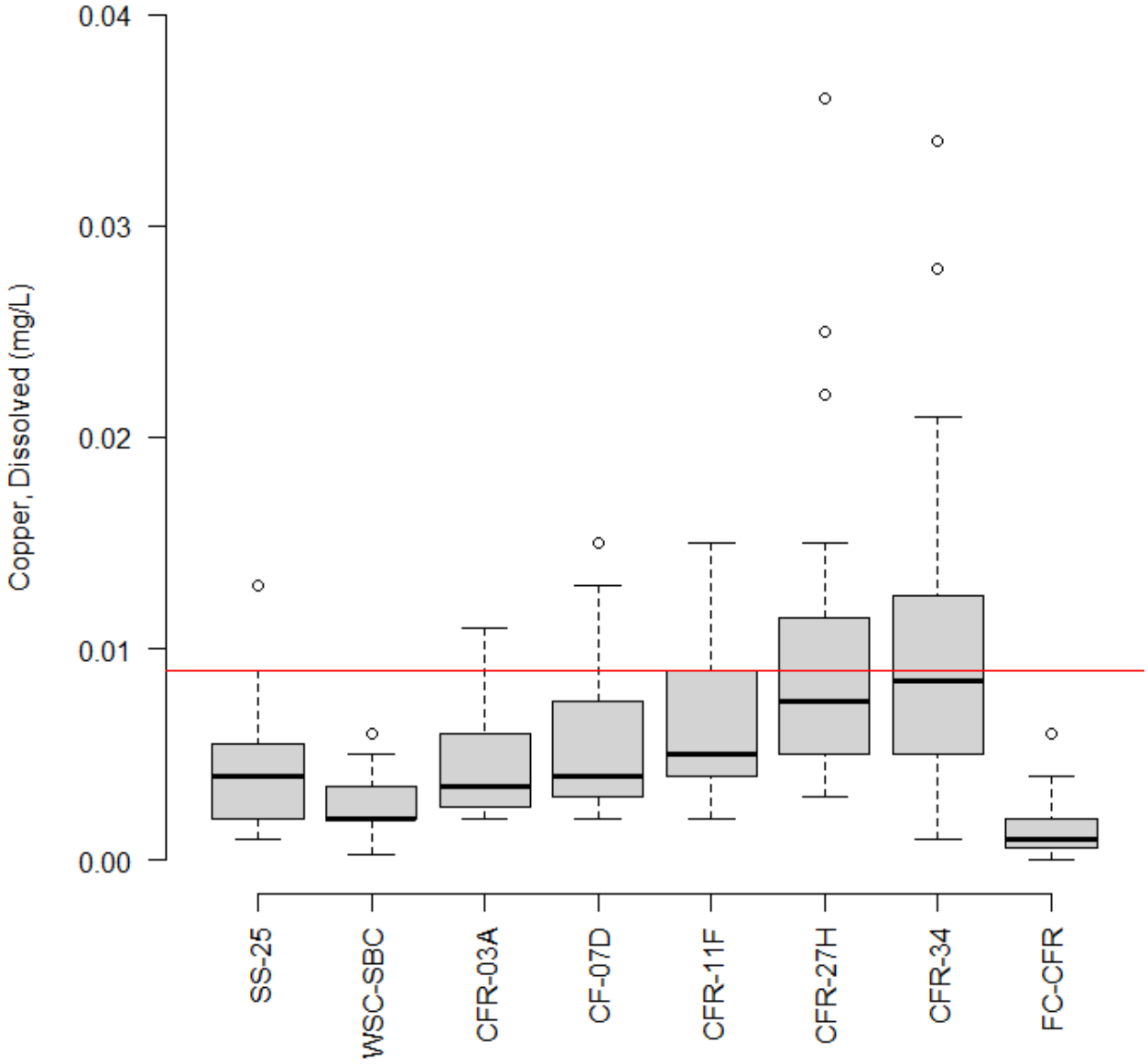


Figure 2-21. Dissolved copper concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

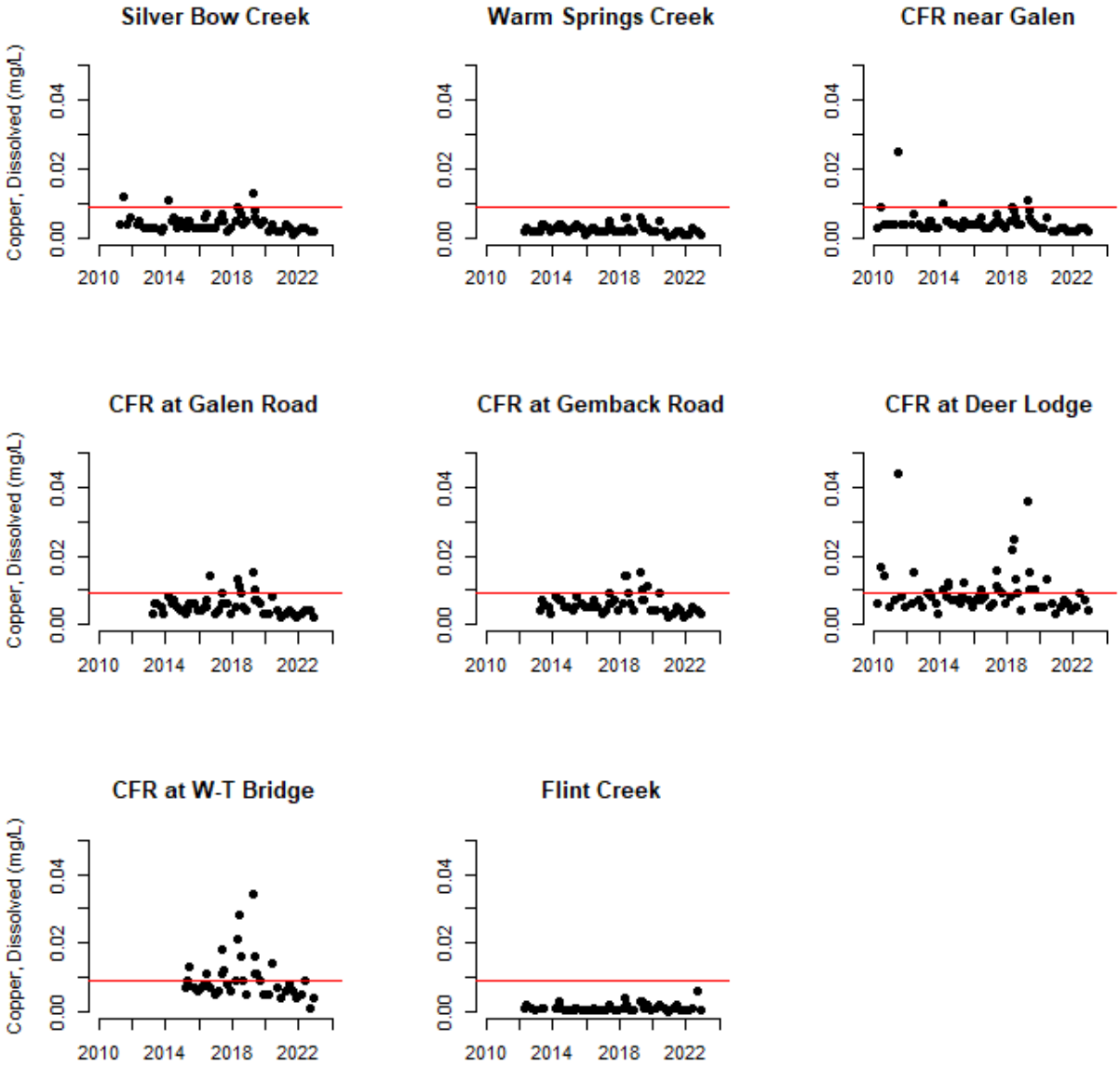


Figure 2-22. Dissolved copper concentration at sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal lines represent the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

2.3.6.4 Lead

Total recoverable lead concentrations ranged from 0.0003-0.0235 mg/L in the Clark Fork River, from 0.0002-0.0017 mg/L in Silver Bow Creek, from 0.0002-0.0015 mg/L in Warm Springs Creek, and from 0.0003-0.0118 mg/L in Flint Creek in 2022 (Table 2-26). Three mainstem samples (from Sites CFR-07D, CFR-27H, and CFR-34 in Q2) and one Flint Creek sample (collected in Q1) exceeded the chronic aquatic life standard [DEQ, 2019b] in 2022 (Table 2-26).

Over the last five years, median concentrations in the mainstem increased at each downstream site sequentially from the upstream-most site (Site CFR-03A) to the downstream-most site (Site CFR-34) (Figure 2-23). Median concentrations in Silver Bow Creek and Warm Springs Creek (Sites SS-25 and WSC-SBC) were relatively low and similar to mainstem Site CFR-03A, whereas the median concentration in Flint Creek was relatively high and similar to mainstem Site CFR-34 (Figure 2-23).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-24).

Table 2-26. Total recoverable lead concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.0003[J]	0.0024	0.0004	0.0007
CFR-07D	Clark Fork River at Galen Road	0.0012	0.0084	0.0003[J]	0.0015
CFR-11F	Clark Fork River at Gemback Road	0.0016	0.0069	0.0003[J]	0.0024
CFR-27H	Clark Fork River at Deer Lodge	0.0040	0.0216	0.0004	0.0026
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.0043	0.0235	0.0007	0.0034
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.0002[J]	0.0017	0.0002[J]	0.0002[J]
WSC-SBC	Warm Springs Creek near mouth	0.0002[J]	0.0015	0.0002[J]	0.0005
FC-CFR	Flint Creek near mouth	0.0093	0.0118	0.0003[J]	0.0035

ND	Not detected at method detection limit.
J	Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).
	Exceeds chronic aquatic life standard [DEQ, 2019b].

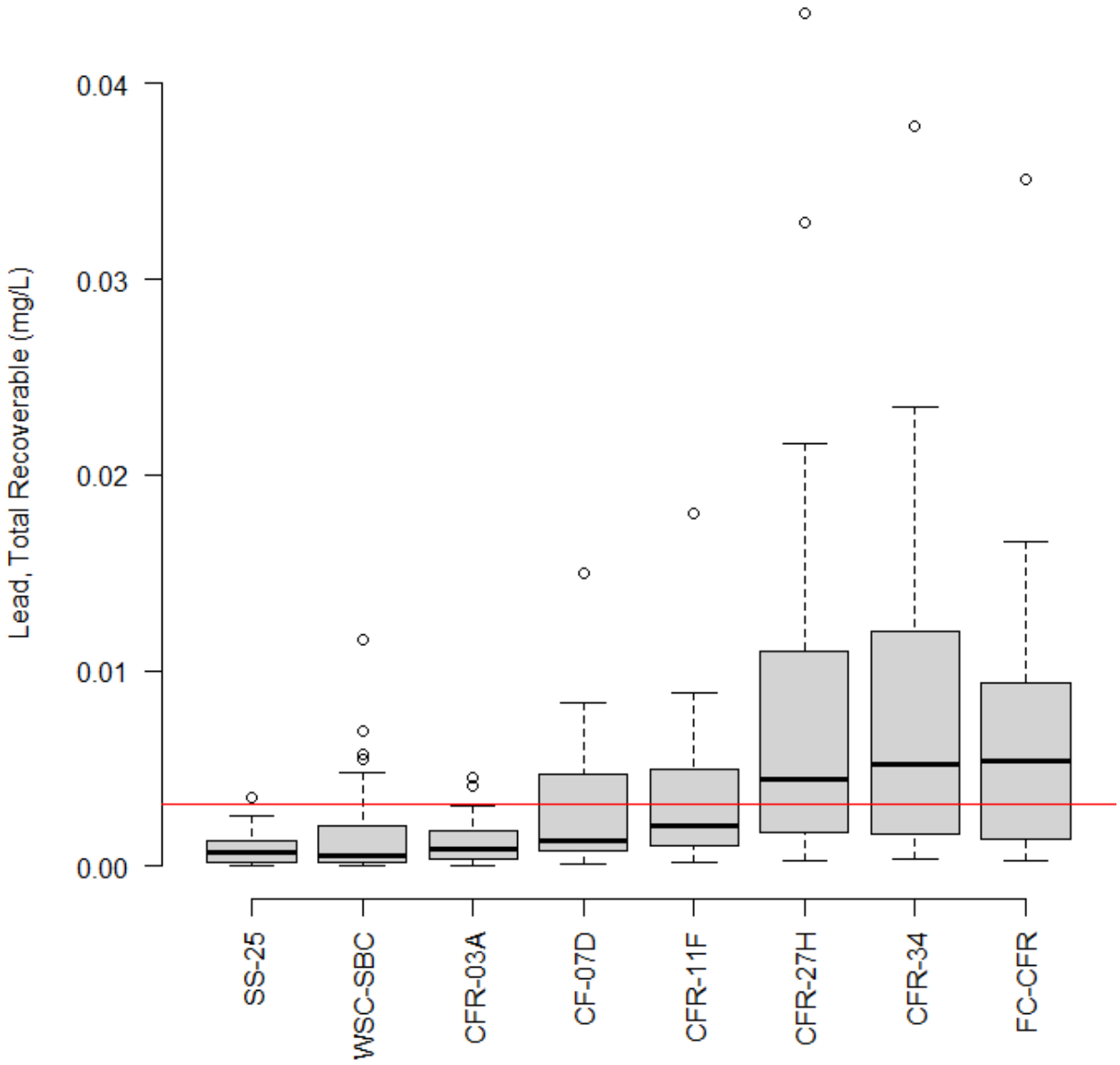


Figure 2-23. Total recoverable lead concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

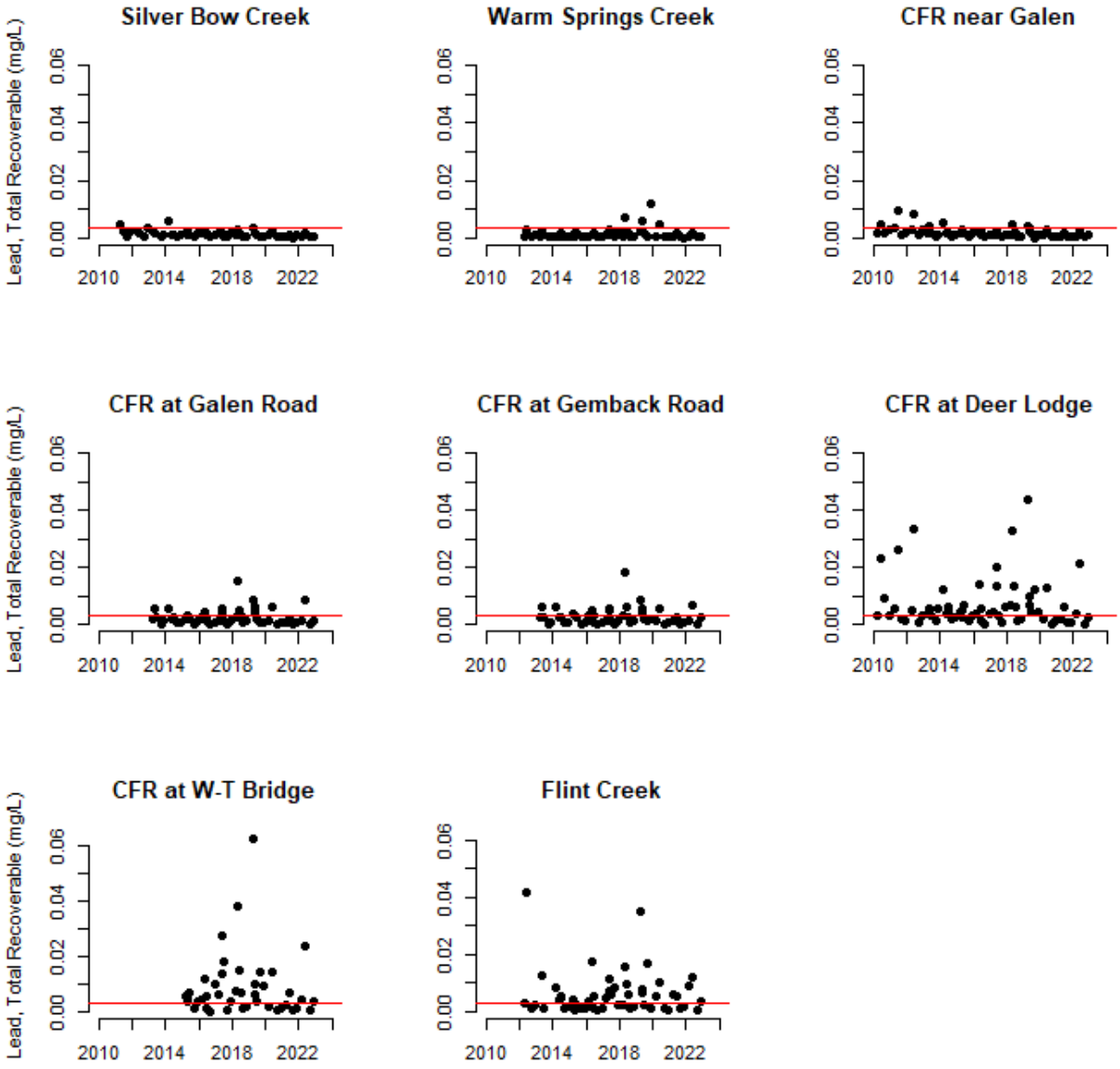


Figure 2-24. Total recoverable lead concentration at sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal lines represent the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

2.3.6.5 Zinc

Total recoverable zinc concentrations ranged from 0.002-0.140 mg/L in the Clark Fork River, from 0.002-0.024 mg/L in Silver Bow Creek, from <0.001-0.009 mg/L in Warm Springs Creek, and from 0.003-0.037 mg/L in Flint Creek in 2022 (Table 2-27). There were no exceedances of the chronic/acute aquatic life standard [DEQ, 2019b] in 2022 (Table 2-27).

Over the last five years, median concentrations in the mainstem increased at each downstream site sequentially from the upstream-most site (Site CFR-03A) to the downstream-most site (Site CFR-34) (Figure 2-25). Median concentrations in the tributary sites (Sites SS-25, WSC-SBC, and FC-CFR) were relatively low and similar to mainstem Site CFR-03A (Figure 2-25).

Concentrations measured in 2022 were generally low compared to prior sample concentrations at each site (Figure 2-26). Exceedances of the chronic/acute aquatic life standard have been rare over the last ten years (Figure 2-26).

Table 2-27. Total recoverable zinc concentrations (mg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-03A	Clark Fork River near Galen	0.014	0.018	0.003[J]	0.008
CFR-07D	Clark Fork River at Galen Road	0.015	0.036	0.002[J]	0.014
CFR-11F	Clark Fork River at Gemback Road	0.018	0.049	0.002[J]	0.021
CFR-27H	Clark Fork River at Deer Lodge	0.032	0.127	0.004[J]	0.024
CFR-34	Clark Fork River at Williams-Tavenner Bridge	0.037	0.140	0.003[J]	0.028
Tributary sites					
SS-25	Silver Bow Creek at Warm Springs	0.024	0.015	0.002[J]	0.017
WSC-SBC	Warm Springs Creek near mouth	ND	0.009	0.001[J]	0.003[J]
FC-CFR	Flint Creek near mouth	0.025	0.037	0.003[J]	0.014

ND Not detected at method detection limit.

J Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

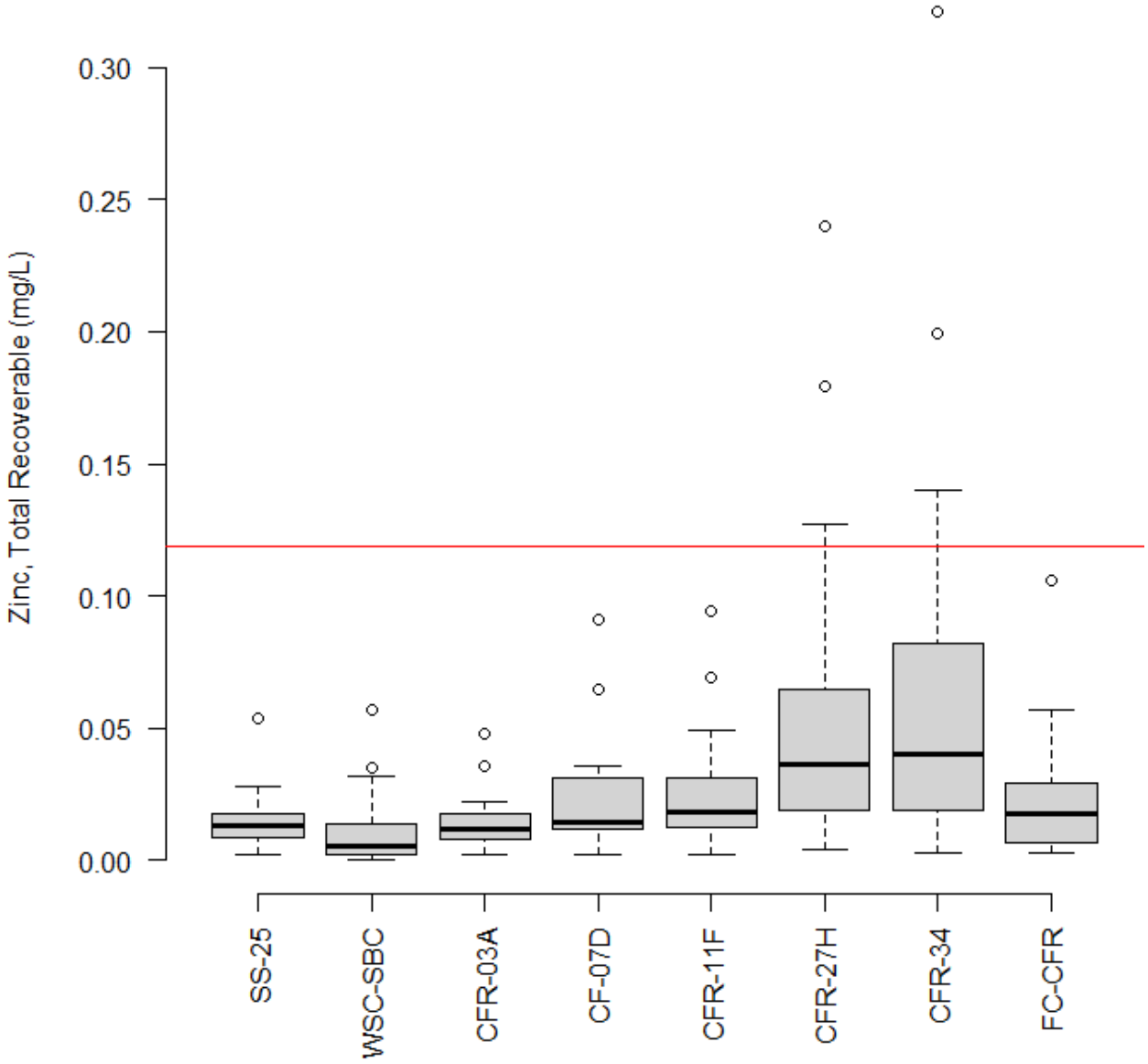


Figure 2-25. Total recoverable zinc concentration at sampling sites in the Clark Fork River Operable Unit, 2018-2022. Horizontal line represents the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

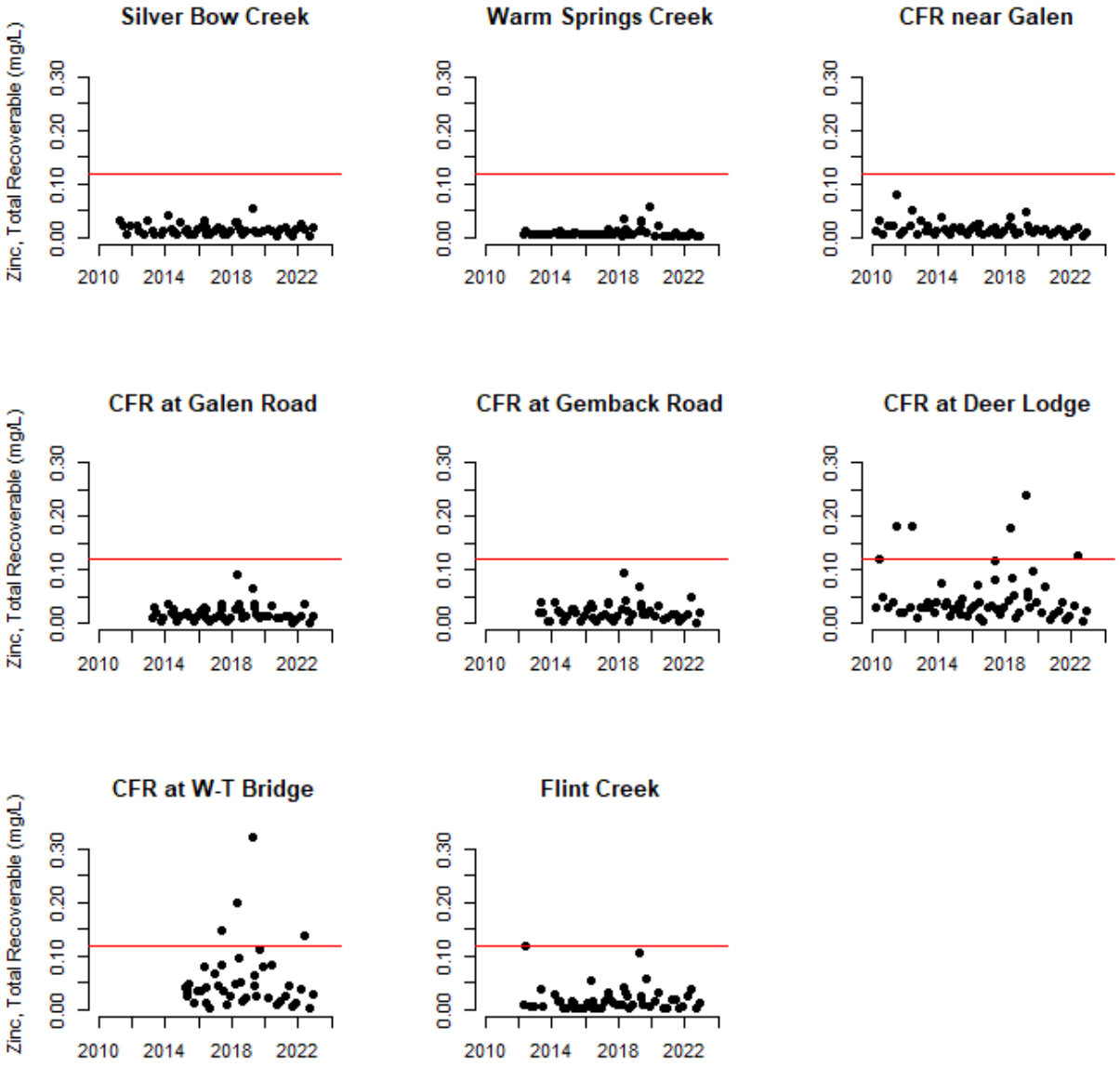


Figure 2-26. Total recoverable zinc concentration at sampling sites in the Clark Fork River Operable Unit, 2010-2022. Horizontal lines represent the performance goal assuming hardness of 100 mg/L [USEPA, 2004].

2.3.7 Other Metals

2.3.7.1 Mercury

In the Clark Fork River near Drummond (Site CFR-84F) total mercury concentrations in 2022 ranged from 0.009-0.280 µg/L (Table 2-28). In Flint Creek (Site FC-CFR), concentrations ranged from 0.003-0.470 µg/L (Table 2-28). Exceedances of the mercury human health surface water standard occurred in the Clark Fork in Q1 and Q2 and in Flint Creek during all sample periods except Q3 (Table 2-28).

Table 2-28. Total mercury concentrations (µg/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-84F	Clark Fork River near Drummond	0.063	0.280	0.009	0.014
Tributary sites					
FC-CFR	Flint Creek near mouth	0.340	0.470	0.003[J]	0.190

J — Estimated because: (1) result is between method detection limit and analytical reporting limit, or (2) relative percent difference of associated field sample and duplicate pair was above project-specific data quality objective (25 percent).

Exceeds human health surface water standard (0.050 µg/L; DEQ [2019b]).

2.3.7.2 Methylmercury

In the Clark Fork River near Drummond in 2022, detectable methylmercury concentrations ranged from 0.202-0.556 ng/L (Table 2-29). In Flint Creek in 2022, concentrations ranged from 0.923-2.130 ng/L (Table 2-29).

Table 2-29. Methylmercury concentrations (ng/L) at Clark Fork River Operable Unit monitoring stations, 2022.

Site ID	Site Location	Sample Period			
		Q1	Q2	Q3	Q4
Mainstem sites					
CFR-84F	Clark Fork River near Drummond	0.556	ND	0.257	0.202
Tributary sites					
FC-CFR	Flint Creek near mouth	1.920	2.130	1.070	0.923

ND — Not detected at method detection limit.

2.3.8 Data Validation

Data derived from laboratory analysis of surface water samples collected at upper Clark Fork River locations were validated through field quality control samples (i.e., field duplicates and field blanks) and laboratory control samples (lab duplicates, blanks, spikes, and reference and calibration standards). Analysis of field quality measures are described in Appendix A. Results of laboratory quality control measures are described in Appendix B. Data quality objectives (DQOs) were evaluated for accuracy and precision. These DQOs were largely met in 2022 with a few exceptions.

Analyte concentrations were measured in field blanks to evaluate sampling accuracy and the extent to which the field techniques may have contaminated the samples. Four field blank samples were collected in 2022 and 30 analyte concentrations were measured in each, for a total of 120 separate analytes. In total, 0.8 percent (1 of 120) of the analytes in the field blanks had concentrations exceeding the respective analytical reporting limit (RL). Dissolved zinc concentration was 0.025 mg/L in the field blank collected at Site FC-CFR on June 7, 2022 (RL = 0.008 mg/L).

Analyte concentrations were compared in field sample and field duplicate pairs to evaluate overall sampling precision. Four field sample and field duplicate pairs were collected in 2022 and 25 analytes were analyzed in each. Therefore, in total 100 comparisons were made between field sample and field duplicate pairs in 2022. The relative percent difference (RPD) of each of those pairs exceeded 25 percent in 13 percent (16 of 117) of the pairs. Some other pairs had RPD greater than 25 percent but either the field sample, field duplicate, or both had a concentration that was less than five times the RL and therefore the RPD from those pairs were disregarded for purposes of quality assurance performance evaluation. The majority of the field sample and field duplicate pairs with RPDs higher than 25 percent (13 of the 16 analyte pairs) were collected in Q3 (September 1, 2022).

2.4 DISCUSSION

2.4.1 Streamflows

Streamflows in 2022 were generally low relative to long-term trends, particularly in the spring, summer and fall periods. The magnitude of the peak of the runoff was approximately normal but flows were not sustained during the summer and fall period.

2.4.2 Field Parameters

2.4.2.1 Water Temperature

Water temperature has considerable chemical and biological significance in riverine systems. Stream temperatures reflect seasonal changes in net solar radiation as well as daily changes in air temperature, and vary as a function of stream morphological characteristics, groundwater inputs, shading, the presence of particulate matter in the water column, and other factors. Optimal water temperature for most trout species is approximately 12–14 ºC. Sustained temperatures in the 20–25 ºC range may be fatal for trout. Temperature monitoring results in 2022 reflected typical seasonal variation and maximum observed temperatures were high (>20 ºC) at multiple sites.

2.4.2.2 pH

Water pH measures the acidity of water as the concentration of hydrogen ions on a logarithmic scale. Acidity is influenced by water temperature, although the relationship is not linear, and typically shows a weak inverse relationship to streamflow as concentrations of base minerals tend to become diluted during runoff conditions. Acidity typically fluctuates on a diel cycle in relation to stream metabolism, with pH highest during the day. As dissolved carbon dioxide (a weak acid) levels increase during the night (because photosynthesis does not occur), pH levels decrease. Stream pH has direct and indirect effects on water chemistry and the biota of aquatic systems. If pH falls below 6.5, salmonid egg production, salmonid hatching success, and emergence success of some aquatic insects may be reduced. The solubility of some metals varies with pH. This is important in systems such as the Clark Fork River where metal concentrations in sediments are elevated. Stream pH also affects a variety of other instream chemical equilibria, for example the proportion of ammonia present in the toxic (un-ionized) form.

DEQ stream classifications in the upper Clark Fork River watershed vary by stream and recommended pH levels differ based on the classification. In the Clark Fork River mainstem downstream from Deer Lodge recommended pH is a range of 6.5-8.5 and upstream from Deer Lodge the recommended range is 6.5-9.0 (ARM 17.30.607). In addition, Silver Bow Creek at Warm Springs (Site SS-25) has a recommended pH range of 6.5-9.5 due to its "I" classification (ARM 17.30.607). The mainstem Site CFR-34 falls within the C classification reach and exceeded the 8.5 threshold in Q3. Elevated daytime pH, observed at many of these sites in 2022 and prior years,

may have been the result of excessive liming, diel cycles related to high productivity from nutrient enrichment, or both [Nimmick et al., 2011; Chatham, 2012].

2.4.2.3 Conductivity

Conductivity is a quantitative measure of the ability of an aqueous solution to convey an electrical current and is a function of water temperature and of the concentration of dissolved ions in water. Conductivity provides an approximation of the concentration of dissolved solids in water as well as its potential suitability for uses that may be limited by excessive salinity. Conductivity also gives general insight into spatial and seasonal changes in water chemistry. Elevated conductivity reflecting high dissolved solids may limit some water uses, such as irrigation or drinking water. Very low conductivity, as affected by watershed geology, may contribute to low productivity of associated biological systems. Conductivity tends to be inversely proportional to streamflow due to dilution from spring snowmelt runoff.

Conductivity measured in the Clark Fork River mainstem in 2022 was high but similar to prior years with a range of 431-674 µS/cm. In comparison, the EPA states, "Studies of inland fresh waters indicate that streams supporting good mixed fisheries have a (conductivity) range between 150 and 500 µS/cm" [USEPA, 2015]. Conductivity measurements in all mainstem and Silver Bow Creek sites routinely exceeded 500 µS/cm.

2.4.2.4 Dissolved Oxygen

Dissolved oxygen refers to the amount of oxygen dissolved in water. The capacity of water to hold oxygen in solution is inversely proportional to water temperature. In addition to water temperature, instream dissolved oxygen concentrations are affected by respiration of organisms, photosynthesis of aquatic plants, the biochemical oxygen demand of substances in the water, and the solubility of atmospheric oxygen. Dissolved oxygen levels fluctuate seasonally and over diel cycles due to variation in rates of stream metabolism. Adequate dissolved oxygen concentrations are required by biological stream communities and for the decomposition of organic matter in the stream. Acceptable levels of dissolved oxygen for the protection of aquatic life are defined in the Montana water quality standards [DEQ, 2019b].

Recent work indicates that anoxic conditions have occurred along the stream bottom of the Clark Fork River beneath *Cladophora* mats in Reach C [Valett et al., 2017]. It is not known if those conditions also occur in other portions of the Clark Fork River, but *Cladophora* growth is prolific in Reach A and B of the CFROU as well. These anoxic conditions may have a strong influence on stream ecology in the Clark Fork River.

2.4.2.5 Turbidity

Turbidity refers to the amount of light that is absorbed or scattered by water. Increasing turbidity or "cloudiness" in surface waters usually results from the presence of suspended silt or clay particles, organic matter, colored organic compounds, or microorganisms. Turbidity usually,

but not always, correlates closely with the total suspended sediment concentration which measures the weight of suspended matter in solution. The lack of correlation between those parameters may be due to variation in particle sizes, weights, or refractive properties of the substances that contribute to turbidity. Turbidity is an important parameter for drinking water. Elevated turbidity may impede recreational and aesthetic uses of water. High turbidity may adversely affect feeding, growth, and habitat quality for salmonids and other fishes, and may influence surface water temperatures. The DEQ has established maximum allowable increases above naturally occurring turbidity. The allowable increase is 10 nephelometric turbidity units (NTU) for C-2 class streams (Clark Fork River from Warm Springs Creek to Cottonwood Creek), and five units for C-1 (Clark Fork River from Cottonwood Creek to the Little Blackfoot River) and B-1 (remainder of Clark Fork) class streams (ARM 17.30.623; ARM 17.30.626–627). Turbidity during the 2022 monitoring events was relatively low and typical of prior results with the exception of Sites CFR-27H and CFR-34 which had relatively high turbidity in Q2.

2.4.3 Total Suspended Sediment

Total suspended sediment measures the mass of material suspended in a given volume of water. Suspended sediment measures sediment in the water column as opposed to sediment transported along the stream bottom, which is known as bedload. Suspended sediment in streams generally includes a range of particle sizes which may vary with watershed geology, stream velocity, bed form, and turbulence. Excess fine sediment interferes with most water uses and may have particularly adverse effects on benthic invertebrate and salmonid fish growth and reproduction. Increased suspended sediment reduces light penetration and may affect primary production by aquatic plants and the morphology of alluvial stream channels.

In general, total suspended sediment concentrations had spatial and seasonal patterns similar to those for turbidity. As with turbidity, total suspended sediment concentrations were moderate during the runoff period and low during other periods in the mainstem sites. Concentrations in 2022 were moderately low compared to prior monitoring periods.

2.4.4 Common Ions

Common ion concentrations describe basic water chemistry. Certain ions, such as sulfate, may indicate the presence of mining-related contaminants. Calcium and magnesium ions contribute to water hardness, which helps to buffer the toxic effects of some metals. Aquatic life toxicity criteria for metal COCs vary directly in relation to hardness. Hardness mitigates metals toxicity by impeding the rate at which aquatic organisms absorb metals through the gills. Carbonate and bicarbonate alkalinity contribute to the buffering system of surface waters to resist changes in pH. Levels of water hardness and alkalinity also strongly influence the productivity of aquatic systems. Western freshwater fisheries typically have alkalinity of 100–200 mg/L. In 2022, the Clark Fork mainstem alkalinity ranged from 69-150 mg/L. Based on previous monitoring, calcium is the dominant cation at the upper Clark Fork River monitoring network stations.

Water hardness in the Clark Fork River mainstem in 2022 typically fell into the "very hard" range. In comparison, most rivers in western Montana have "moderately hard" to "hard" water [USGS, 2015]. Hardness was particularly high in Silver Bow Creek in 2022 exceeding 330 mg/L in three of the four sampling. Elevated water hardness in the Clark Fork River relative to other regional rivers is likely beneficial overall for aquatic life because water hardness mitigates toxicity of heavy metals [USEPA, 1986]. Alkalinity in the upper mainstem Clark Fork River was also moderate to high which reflects a well buffered system, with good potential for fish production barring other limitations.

2.4.5 Nutrients

Numeric water quality standards have been adopted for nutrients in the Clark Fork River from the Warm Springs Creek confluence to the Blackfoot River confluence, a river section which encompasses most of the CFROU (ARM 17.30.631). The standards apply only to the summer season (June 21 through September 21). The standards for this segment of the Clark Fork River are 0.300 mg/L for total nitrogen and 0.020 mg/L for total phosphorus (ARM 17.30.631). Total nitrogen concentrations were at or below the standard level at most sites in Q3, when that standard technically applies, but exceeded that level regularly during other periods at all sites except in Warm Springs Creek.

Three of five mainstem sites had total phosphorus concentrations below the Clark Fork River mainstem-specific total phosphorus standard during the Q3 event but concentrations exceeded that standard in two tributaries: Silver Bow Creek and Flint Creek. Phosphorus was highest and well above the standard level at all sites in Q2.

In addition to these direct measurements of nutrient levels, pH and dissolved oxygen monitoring yielded additional indirect evidence of the effects of nutrient enrichment in the Clark Fork River mainstem. During Q3, mainstem pH was high (8.51-9.06) and oxygen levels were supersaturated (11.6-13.5 mg/L or 130-142 percent saturated). Elevated pH and oxygen levels are commonly associated with high primary productivity in rivers (e.g., Turner et al., [2009]).

2.4.6 Contaminants of Concern

Reach A, extending from the Warm Springs Creek confluence to the Little Blackfoot River confluence, has the largest volume of streamside tailings in the CFROU. The upper-most portion of the river, located upstream from the town of Deer Lodge, has been identified as an area of relatively heavy COC loading to the Clark Fork River [Sando et al., 2014]. Surface water monitoring data collected in 2022 represents the 13th year of monitoring in the CFROU for this program.

Monitoring from 2010-2012 represented baseline conditions in the CFROU immediately prior to the start of remediation. Because remedial activities were just beginning in 2013, it was unlikely that monitoring in that year would demonstrate much change in COC levels in the river from pre-remediation concentrations in 2010-2012. The 2014 monitoring year was the first year

following complete cleanup of the Phase 1 project area. In 2015, remedial actions were in progress in additional river sections (Phases 2, 5, and 6) stretching approximately 6.4 miles in total and those cleanup actions were completed by the end of 2017. Remedial actions in Phases 15 and 16, downstream from the town of Deer Lodge in Reach A, were in progress from 2019 through 2020 and were completed in 2021. In 2022, remediation of Phase 3 was in progress.

In 2022, exceedances of performance goals in the Clark Fork River mainstem sites occurred at similar rates to prior years. Arsenic exceeded performance goals in half (10 of 20) of the samples, lead exceeded performance goals in 15 percent (3 of 20) samples, and cadmium exceeded performance goals in 10 percent (2 of 20) of the samples.

Since monitoring began in 2010, arsenic has been the COC which has most frequently exceeded performance goals (Figure 2-27). Arsenic exceedance rates for Clark Fork River samples from Reach A ranged from 38-75 percent between 2010 and 2019, declined to 23 percent in 2020 and 5 percent in 2021, but rebounded to 50 percent in 2022 (Figure 2-27). Exceedance rates for other COCs were relatively low in 2022, which is generally similar to prior monitoring years (Figure 2-27). Monitoring data consistently demonstrates that COC concentrations in the mainstem increase at each downstream site, particularly between Site CFR-11F (at the boundary between Phases 6 and 7) and Site CFR-27H (at Deer Lodge in Phase 14; at Deer Lodge).

Tributary monitoring results indicate that Silver Bow Creek below the Warm Springs Ponds (represented by Site SS-25) has been an arsenic source to the Clark Fork River, although concentrations at SS-25 appear to be declining. Flint Creek (represented by Site FC-CFR) was a source of lead, particularly in the winter and spring periods. Arsenic mobilization within the Warm Springs Ponds during warmer seasons has been identified as a significant source of arsenic contamination in the Clark Fork River [Chatham, 2012]. These results also support findings of the USGS monitoring program which identified the Warm Springs Ponds, the Mill-Willow Bypass, and groundwater near the Warm Springs Ponds as substantial arsenic sources to the upper Clark Fork River [Sando et al., 2014].

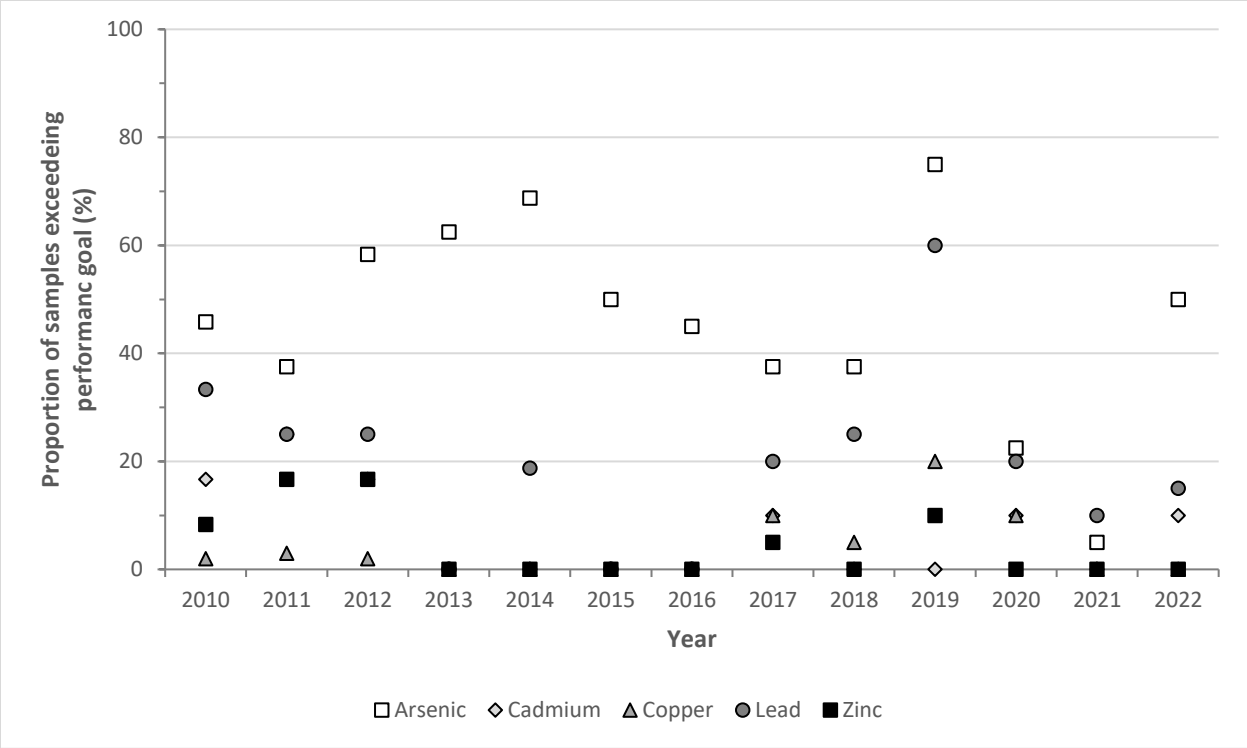


Figure 2-27. Surface water exceedance rates for each contaminant of concern at monitoring sites sampled quarterly in Reach A of the Clark Fork River Operable Unit, 2010-2022.[11,12]

2.4.7 Other Metals

Monitoring data continues to implicate Flint Creek as a primary source of mercury and methylmercury to the Clark Fork River. High total mercury and methylmercury were measured both in Flint Creek and, to a lesser degree, in the Clark Fork River near Drummond in 2022.

2.4.8 Data Validation

Generally, this monitoring program has satisfied the data quality objectives and data quality indicators specified in the QAPP [Atkins, 2013]. In 2022, the sampling accuracy data quality objective, measured by analysis of field blank samples, was met for 99 percent of the analytes in the field blank samples. The overall sampling precision data quality objective, measured by the RPD of analytes in field sample and duplicate pairs, was met for 87 percent of the analytes in the field sample and duplicate pairs.

[11] During some monitoring years, additional samples were collected in Q2 during the rising and falling limbs of the runoff period. Exceedance rates for most COCs during the runoff period are typically higher. Inclusion of additional samples from Q2 during some years would confound interpretation of annual trends. Therefore, additional Q2 results from those years with more than one Q2 sample period are not included in this summary.

[12] Arsenic exceedances of the performance goals include those for either dissolved or total recoverable sample fractions.

Failure to achieve the sampling precision data quality objective in 13 percent of the analytes was a relatively high rate for this monitoring program. This result was almost entirely due to the field sample and duplicate pair collected in Q3 (September 1, 2022). Although of concern, we consider this result anomalous and does not represent a systemic data quality concern.

3.0 SEDIMENT

3.1 INTRODUCTION

Remedial actions to remove floodplain tailings deposits and reduce streambank erosion within the CFROU are expected to result in reduced COC concentrations for instream sediments within the Clark Fork River. Therefore, instream sediment COC concentrations will be monitored in the CFROU prior to, during, and following remediation. This report reviews spatial and temporal trends in instream sediment metals concentrations in the CFROU during 2022 and prior monitoring years.

No specific remediation performance standards were established within the CFROU ROD for concentrations of COC metals in instream sediments [USEPA, 2004]. In lieu of performance standards, the "threshold effect concentration" (TEC) and "probable effect concentration" (PEC) consensus-based sediment quality guidelines for benthic organisms [MacDonald et al., 2000], provide useful reference values for instream sediment quality (Table 3-1). At metal COC concentrations above the TEC, benthic organisms may be affected by that COC. At metal COC concentrations above the PEC, benthic organisms are likely to be affected by that COC.

Table 3-1. Reference values for contaminant of concern (COC) concentrations (expressed as dry weight concentrations [DW]) in instream sediments within the Clark Fork River Operable Unit. The threshold effect concentration (TEC) and probable effect concentration (PEC) were described in MacDonald et al. [2000].

Contaminant of Concern	Threshold Effect Concentration (mg/kg-DW)	Probable Effect Concentration (mg/kg-DW)
Arsenic	9.79	33.0
Cadmium	0.99	4.98
Copper	31.6	149
Lead	35.8	128
Zinc	121	459

3.2 METHODS

3.2.1 Monitoring Locations

Instream sediment was monitored at seven CFROU sites in 2022 (Table 3-2; Figure 3-1). The monitoring network includes five sites on the Clark Fork River mainstem and two sites on tributary streams (Table 3-2). Some monitoring site changes have occurred through time in the

CFROU over the 2010-2022 monitoring period of record. Please see the project sampling and analysis plan for details of those changes [RESPEC, 2022a].

Table 3-2. Instream sediment sampling locations in the Clark Fork River Operable Unit.

Site ID	Site Location	Co-located USGS Streamflow Gage	Location (GPS coordinates, NAD 83)	
			Latitude	Longitude
Mainstem Sites				
CFR-03A	Clark Fork River near Galen	12323800	46.20877	-112.76740
CFR-07D	Clark Fork River at Galen Road	none	46.23725	-112.75302
CFR-11F	Clark Fork River at Gemback Road	none	46.26520	-112.74430
CFR-27H	Clark Fork River at Deer Lodge	12324200	46.39796	-112.74283
CFR-34	Clark Fork River at Williams-Tavenner Bridge	none	46.47119	-112.72492
Tributary Sites				
SS-25	Silver Bow Creek at Warm Springs	12323750	46.18123	-112.77917
WSC-SBC	Warm Springs Creek near mouth	12323770	46.18041	-112.78592

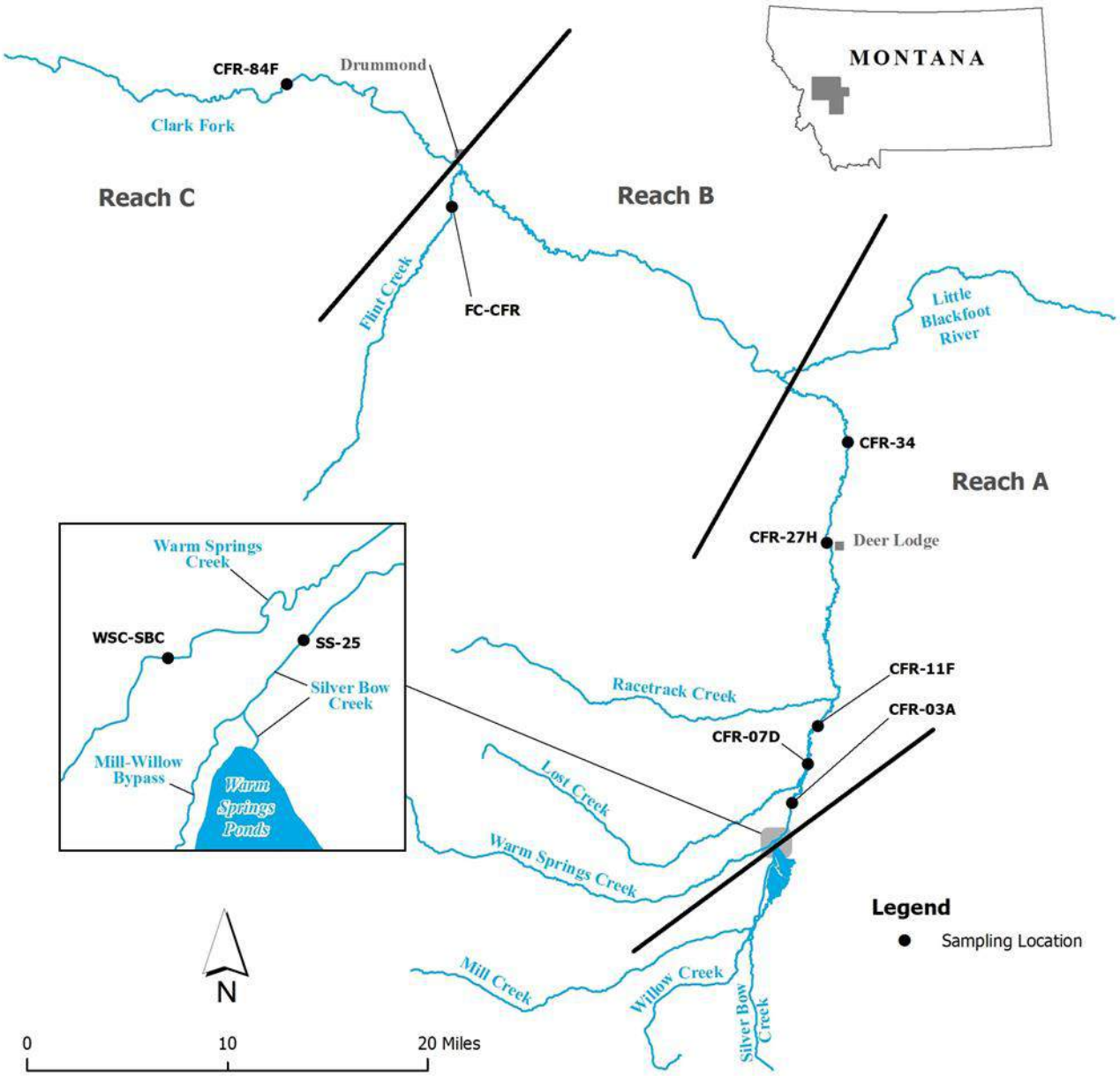


Figure 3-1. Instream sediment sampling locations in the Clark Fork River Operable Unit.[13]

[13] Sites FC-CFR and CFR-84F were sampled for surface water but not for instream sediment.

3.2.2 Monitoring Schedule

One surface water monitoring event occurred during each calendar quarter of 2022. Instream sediment samples were collected during the first quarter (Q1) and third quarter (Q3) surface water monitoring events. The first monitoring event (Q1) occurred in the late winter, prior to spring runoff, on March 15. The late summer (Q3) monitoring event occurred during low streamflow conditions on September 1.

3.2.3 Monitoring Parameters

Instream sediment samples were analyzed for dry weight (DW) total extractable metal (arsenic, cadmium, copper, lead, and zinc) concentrations.

3.2.4 Sample Collection and Laboratory Analysis

Sediment samples were collected by compositing subsamples from at least five deposition zones in wadeable locations at each monitoring site. Shallow bed sediment (less than 5 cm below bed surface) was collected from the streambed manually with a plastic spoon following the DEQ standard operating procedure [DEQ, 2019a]. The fine fraction (particle diameter <0.063 mm) portion of each sample was isolated from each composited sample by wet sieving in the laboratory shortly after collection and retained for analysis of metal concentrations. Each sample was analyzed for total extractable dry weight concentrations (mg/kg-DW) of arsenic, cadmium, copper, lead, and zinc following methods identified in Table 3-3. The relative proportion (by weight) of the fine fraction sediment in each sample was also determined. Sediment samples were analyzed by Energy Laboratories (Helena, Montana).

Table 3-3. Analytes, methods, and reporting limits for instream sediment sampling in the Clark Fork River Operable Unit.

Analyte	Requested Method	Requested Reporting Limit (mg/kg-DW)	Holding Time (days)	Bottle	Preservative
Total Metals Digestion	EPA 3050	-	-	-	-
Arsenic	SW 6010B	5	180	1000 mL clear glass wide mouth jars	4 ± 2 C during shipment; -15 C in laboratory
Cadmium	SW 6010B	0.2			
Copper	SW 6010B	5			
Lead	SW 6010B	5			
Zinc	SW 6010B	5			

3.2.5 Data Analysis

Data were analyzed to assess temporal and spatial trends for COC concentrations and to evaluate the frequency and magnitude of reference value exceedances. Temporal trends were

assessed for the period of record for each site by examination of scatterplots for each COC. Spatial trends were assessed by use of boxplots for each COC at each site. Boxplots included all samples from the last five years of monitoring (2018-2022). Statistics summarized in each boxplot include the median (midline of each box), quartiles (ends of each box), outlier extent (whiskers which extend 1.5 times the interquartile range), and outliers (circles above or below the whiskers which are any observations more than 1.5 times the interquartile range).

3.2.6 Data Validation

Data quality objectives (DQOs) were established in the CFROU quality assurance project plan (QAPP) for "data representativeness", "comparability", "completeness", "sensitivity", "precision", "bias", and "accuracy" [Atkins, 2013]. Methods for field and laboratory quality assurance and quality control (QA/QC) procedures are also described in detail in the project QAPP. A completed QA/QC checklist, summary tables of field duplicate and field blank results, and assessments of data quality objectives, are included in Appendix A.

Variability in sediment metals concentrations among samples was assessed by comparing field duplicate samples to field samples. Field duplicate samples were collected at the same location and at the same time as field samples and were processed and analyzed by the same methods. The relative percent difference (RPD) between the concentration in the field duplicate and field sample pair was determined for each metal. Two field duplicate samples were collected during each sampling event and RPD statistics were calculated for each field duplicate and field sample pair.

3.3 RESULTS

3.3.1 Sample Size Fraction

The proportion of sediment in the fine size fraction (<0.063 mm) in each sediment sample is displayed in Table 3-4.

Table 3-4. Proportion of each sample collected in the Clark Fork River Operable Unit composed of fine fraction (<0.063 mm) sediment particles, 2022.

Site ID	Site Location	Sample proportion (%)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	11.6	3.9
CFR-07D	Clark Fork River at Galen Road	19.4	2.6
CFR-11F	Clark Fork River at Gemback Road	12.2	1.7
CFR-27H	Clark Fork River at Deer Lodge	35.2	2.4
CFR-34	Clark Fork River at Williams-Tavenner Bridge	2.4	0.6
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	1.5	1.1
WSC-SBC	Warm Springs Creek near mouth	11.9	4.5

3.3.2 Contaminants of Concern

3.3.2.1 Arsenic

In 2022, fine fraction (<0.063 mm) arsenic concentrations ranged from 98-242 mg/kg-DW in the Clark Fork River and both samples from the Silver Bow Creek tributary site were within that same range (Table 3-5). In Warm Springs Creek, concentrations were below the range of concentrations observed in the Clark Fork River in both Q1 (79 mg/kg-DW) and Q3 (73 mg/kg-DW) (Table 3-5). Exceedances of the PEC reference value occurred at all sites during both sample periods (Table 3-5). The highest concentration was observed at Site CFR-07D in Q3 with a sample concentration exceeding the PEC by more than seven times (Table 3-5).

Arsenic concentrations in 2022 were generally consistent with prior years, with some exceptions (Figure 3-2). Concentrations in the Clark Fork River at Sites CFR-03A and CFR-34 appear to be decreasing through time (Figure 3-2).

Median arsenic concentrations during the last five years (2018-2022) were similar at all Clark Fork River sites with the exception of Site CFR-07D which was substantially higher than other mainstem sites (Figure 3-3). The median concentration in Silver Bow Creek was similar to the Clark Fork River sites whereas the Warm Springs Creek median concentration was the lowest of all sites (Figure 3-3). Median concentrations at all sites were roughly three to six times higher than the PEC (Figure 3-3).

Table 3-5. Total arsenic concentrations (mg/kg dry weight) in fine fraction (<0.063 mm) instream sediment samples from the Clark Fork River Operable Unit, 2022.

Site ID	Site Location	Sample concentration (mg/kg-DW)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	100	115
CFR-07D	Clark Fork River at Galen Road	143	242
CFR-11F	Clark Fork River at Gemback Road	119	144
CFR-27H	Clark Fork River at Deer Lodge	180	140
CFR-34	Clark Fork River at Williams-Tavenner Bridge	98	111
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	208	239
WSC-SBC	Warm Springs Creek near mouth	79	73

Exceeds threshold effect concentration (9.79 mg/kg; MacDonald et al. [2000]).

Exceeds probable effect concentration (33.0 mg/kg; MacDonald et al. [2000]).

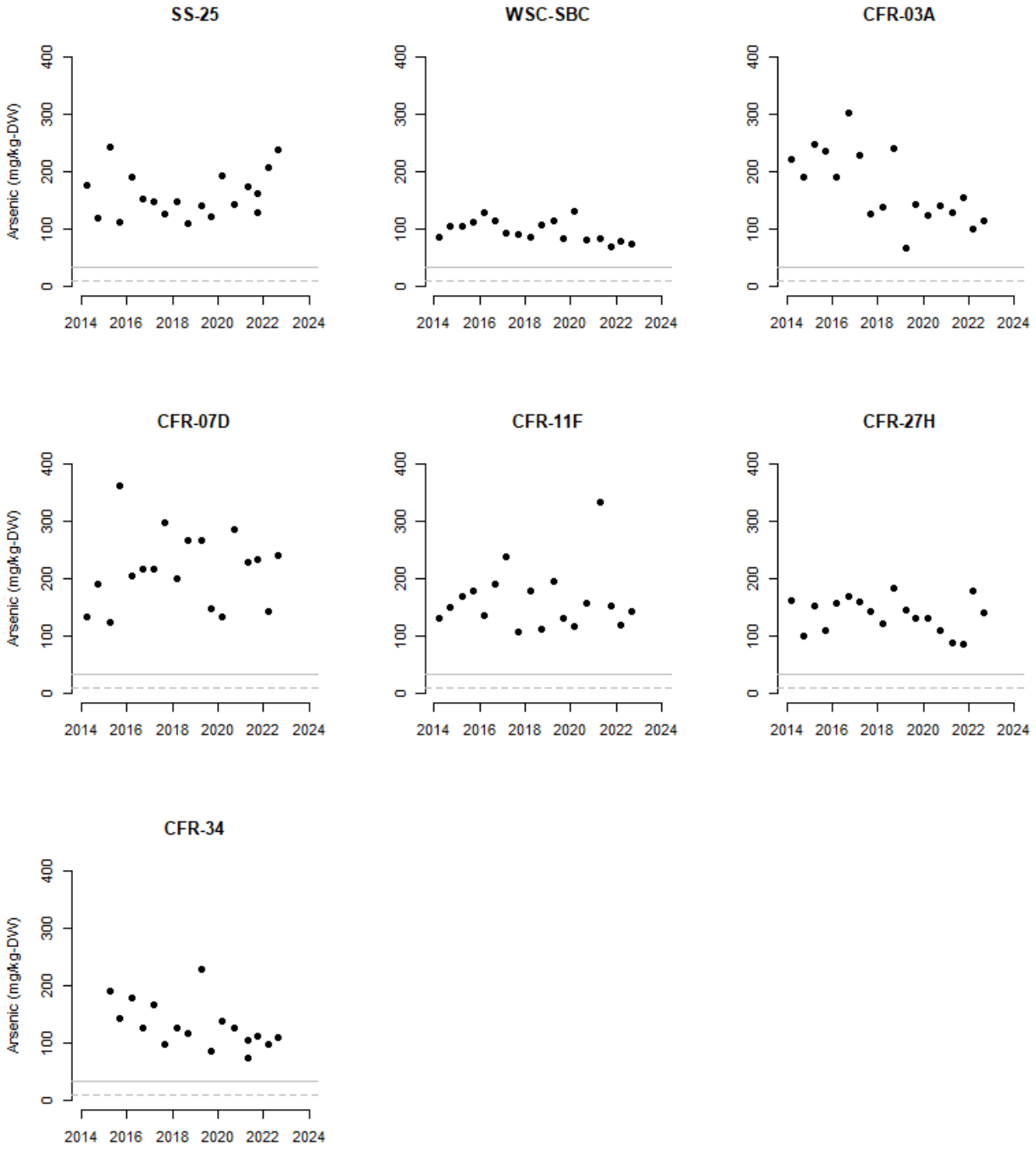


Figure 3-2. Total arsenic concentrations (dry weight) at each site in the Clark Fork River Operable Unit, 2014-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line; 9.79 mg/kg) and the "probable effect concentration" (PEC; solid line; 33.0 mg/kg) [MacDonald et al., 2000].

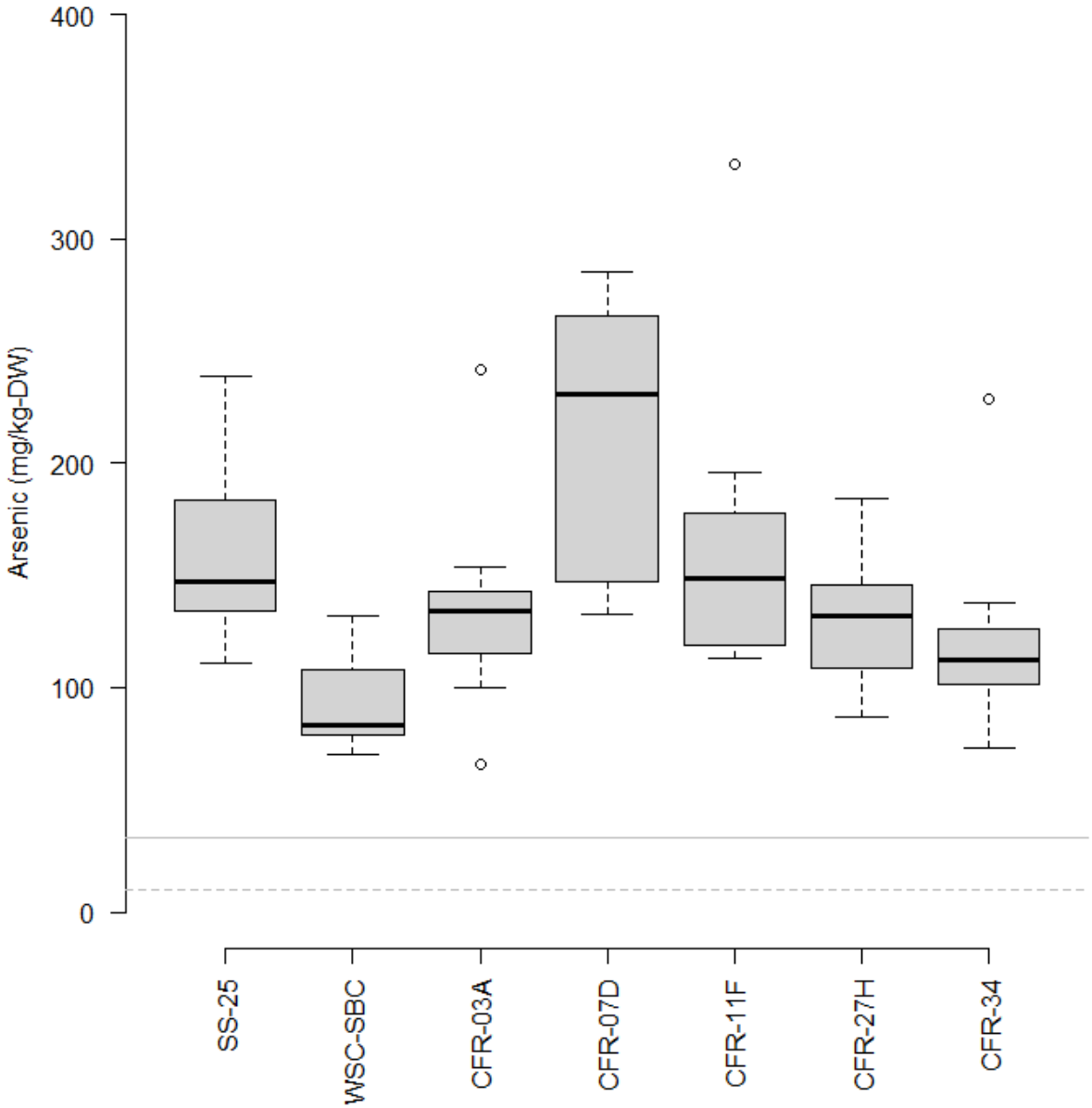


Figure 3-3. Boxplots of total arsenic concentrations (dry weight) in the Clark Fork River Operable Unit, 2018-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 9.79 mg/kg and the "probable effect concentration" (PEC; solid line) at 33.0 mg/kg [MacDonald et al., 2000].

3.3.2.2 Cadmium

In 2022, fine fraction (<0.063 mm) cadmium concentrations ranged from 3.8-10.5 mg/kg-DW in the Clark Fork River and Silver Bow Creek sites (Table 3-6). In Warm Springs Creek, concentrations were lower and ranged from 2.7-3.2 mg/kg-DW (Table 3-6). All 2022 samples exceeded the TEC reference value and exceedances of the PEC reference value occurred at all Clark Fork River and Silver Bow Creek sites in Q3 (Table 3-6). Two sites Clark Fork River sites (Sites CFR-11F and CFR-27H) exceeded the PEC reference value in Q1 (Table 3-6)).

Cadmium concentrations in 2022 were generally consistent with prior years (Figure 3-4). Concentrations at Clark Fork River Sites CFR-03A and CFR-34 appear to be declining through time (Figure 3-4).

Median cadmium concentrations during the last five years (2018-2022) were similar in each Clark Fork River site (Sites CFR-03A, CFR-07D, CFR-11F, CFR-27H, and CFR-34) (Figure 3-5). The median concentration in Silver Bow Creek was higher than in any mainstem site and the concentration in Warm Springs Creek was lower than in any mainstem site (Figure 3-5). Median concentrations were above the PEC at all Clark Fork River and Silver Bow Creek sites and above the TEC in Warm Springs Creek (Figure 3-5).

Table 3-6. Total cadmium concentrations (mg/kg dry weight) in fine fraction (<0.063 mm) instream sediment samples from the Clark Fork River Operable Unit, 2022.

Site ID	Site Location	Sample concentration (mg/kg-WW)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	4.3	5.3
CFR-07D	Clark Fork River at Galen Road	3.8	7.9
CFR-11F	Clark Fork River at Gemback Road	6.6	10.5
CFR-27H	Clark Fork River at Deer Lodge	6.9	9.5
CFR-34	Clark Fork River at Williams-Tavenner Bridge	4.9	5.4
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	9.2	9.1
WSC-SBC	Warm Springs Creek near mouth	3.2	2.7

Exceeds threshold effect concentration, 0.99 mg/kg [MacDonald et al., 2000].

Exceeds probable effect concentration, 4.98 mg/kg [MacDonald et al., 2000].

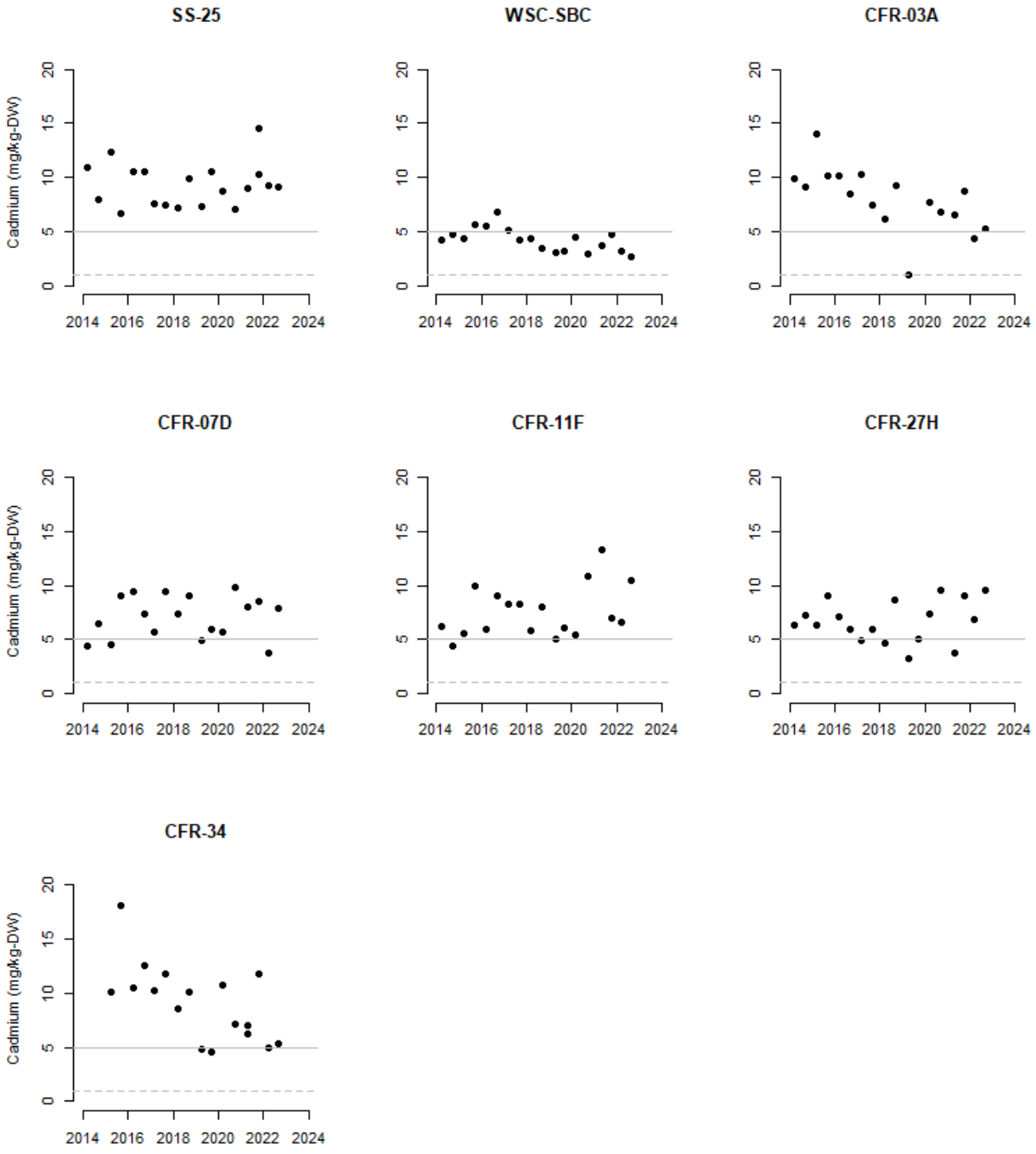


Figure 3-4. Total cadmium concentrations (dry weight) at each site in the Clark Fork River Operable Unit, 2014-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 0.99 mg/kg and the "probable effect concentration" (PEC; solid line) at 4.98 mg/kg [MacDonald et al., 2000].[14]

[14] One sample with a concentration of 106 mg/kg-DW, collected near Galen on September 10, 2019, is not depicted.

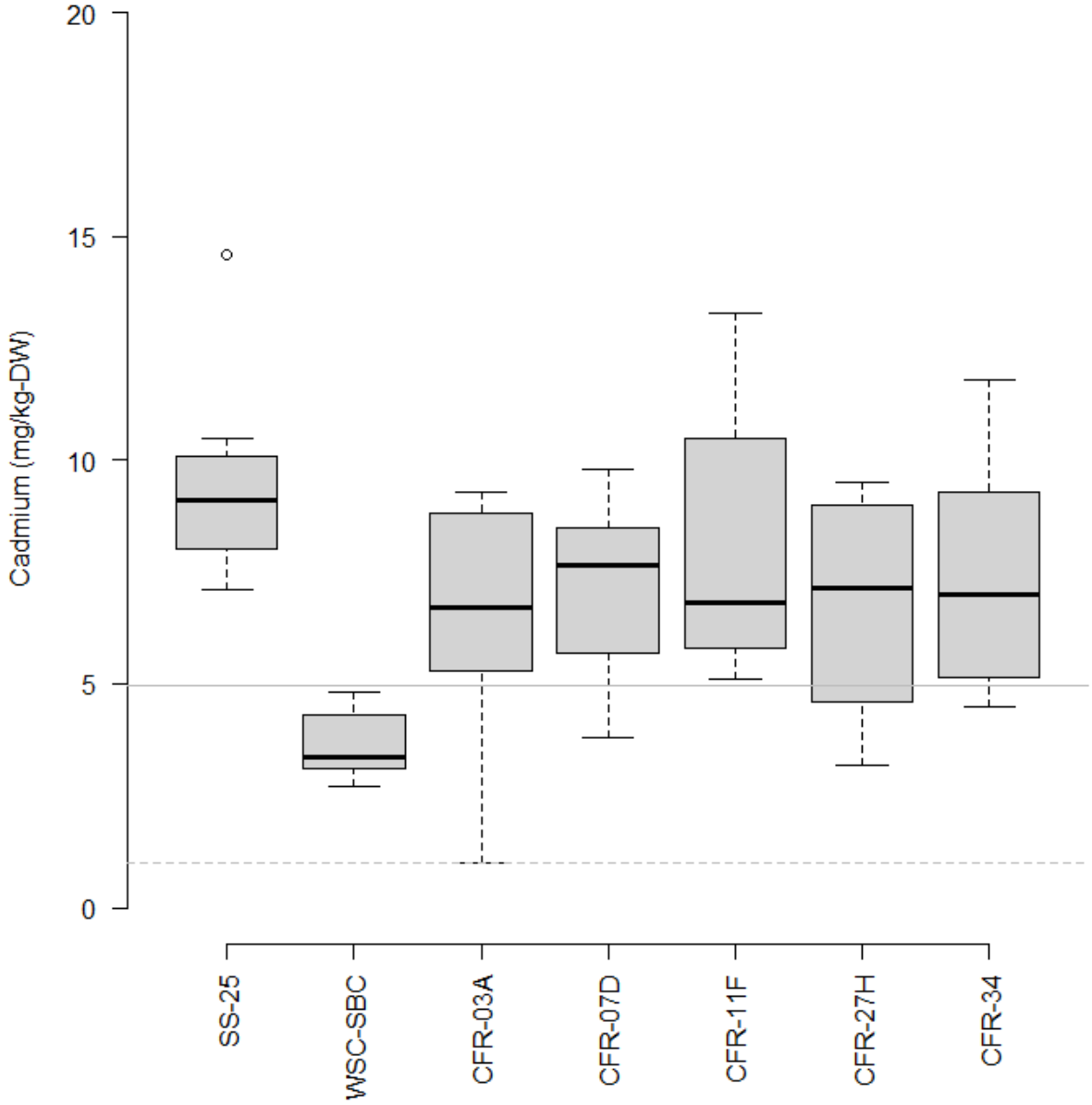


Figure 3-5. Boxplots of total cadmium concentrations (dry weight) in the Clark Fork River Operable Unit, 2018-2022.[15] Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 0.99 mg/kg and the "probable effect concentration" (PEC; solid line) at 4.98 mg/kg [MacDonald et al., 2000].

[15] One sample from Site CFR-03A on September 10, 2019 with a concentration of 106 mg/kg-DW is not depicted.

3.3.2.3 Copper

In 2022, fine fraction (<0.063 mm) copper concentrations ranged from 715-2,380 mg/kg-DW in the Clark Fork River and Warm Springs Creek sites (Table 3-7). In Silver Bow Creek, concentrations were lower and ranged from 309-357 mg/kg-DW (Table 3-7). Exceedances of the PEC reference value occurred at all sites during each sample period (Table 3-7).

Copper concentrations in 2022 were generally consistent with prior years at each site (Figure 3-6). Concentrations in the Clark Fork River at Site CFR-03A and Site CFR-34 appear to be decreasing through time (Figure 3-6).

Median copper concentrations during the last five years of monitoring (2018-2022) were relatively high in each Clark Fork River site (ranging from approximately 1,400-2,000 mg/kg-DW), moderate in Warm Springs Creek (approximately 1,000 mg/kg-DW), and relatively low in Silver Bow Creek (approximately 350 mg/kg-DW) (Figure 3-7). Median concentrations were typically an order of magnitude higher than the PEC in the Clark Fork River sites (Figure 3-7).

Table 3-7. Total copper concentrations (mg/kg dry weight) in fine fraction (<0.063 mm) instream sediment samples from the Clark Fork River Operable Unit, 2022.

Site ID	Site Location	Sample concentration (mg/kg-DW)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	715	1,080
CFR-07D	Clark Fork River at Galen Road	1,270	2,380
CFR-11F	Clark Fork River at Gemback Road	1,170	1,630
CFR-27H	Clark Fork River at Deer Lodge	1,640	1,850
CFR-34	Clark Fork River at Williams-Tavenner Bridge	1,170	1,160
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	309	357
WSC-SBC	Warm Springs Creek near mouth	830	857

Exceeds threshold effect concentration, 31.6 mg/kg [MacDonald et al., 2000].

Exceeds probable effect concentration, 149 mg/kg [MacDonald et al., 2000].

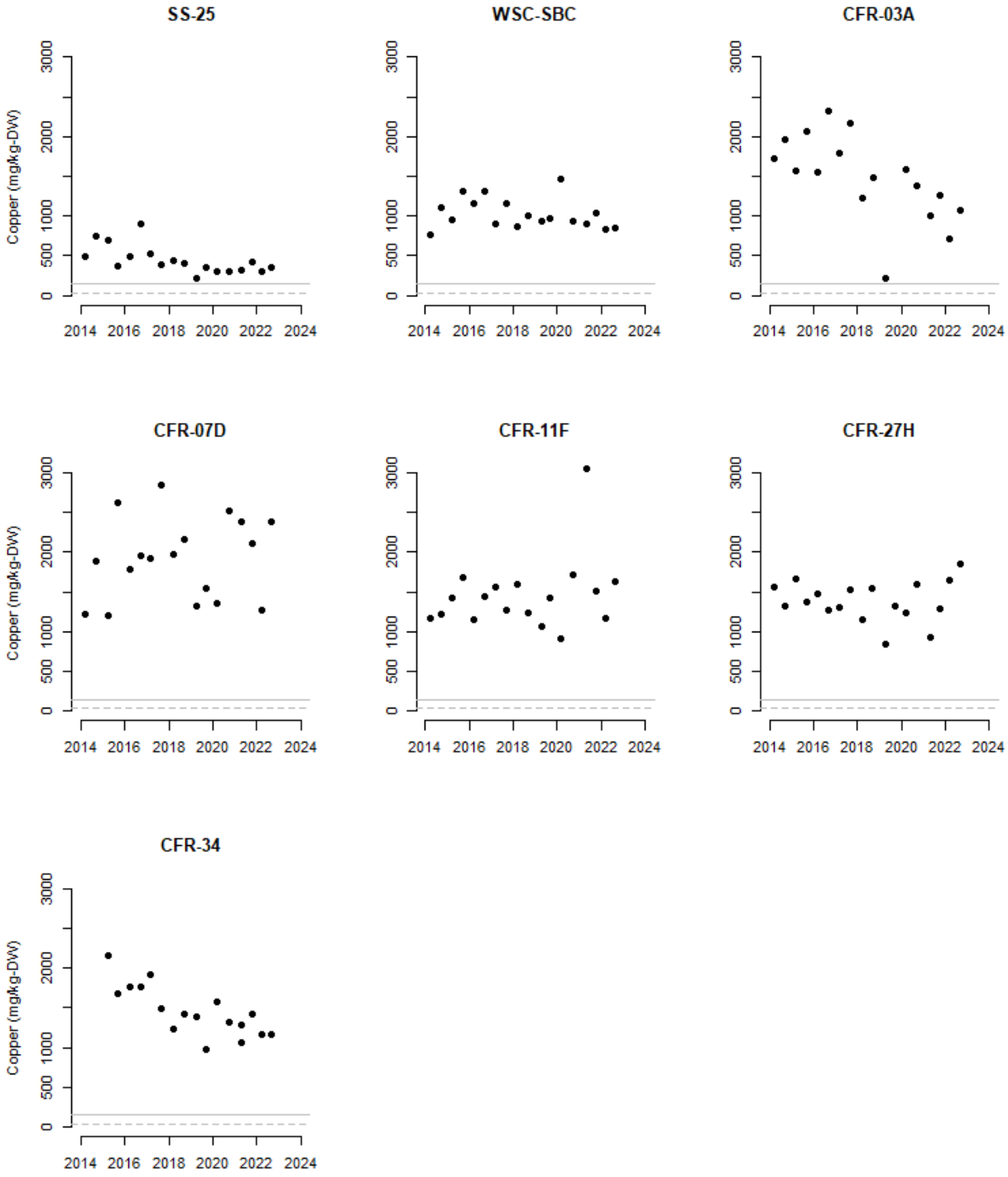


Figure 3-6. Total copper concentrations (dry weight) at each site in the Clark Fork River Operable Unit, 2014-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 31.6 mg/kg and the "probable effect concentration" (PEC; solid line) at 149 mg/kg [MacDonald et al., 2000].[16]

[16] One sample with a concentration of 4,880 mg/kg, collected near Galen on September 10, 2019, is not depicted.

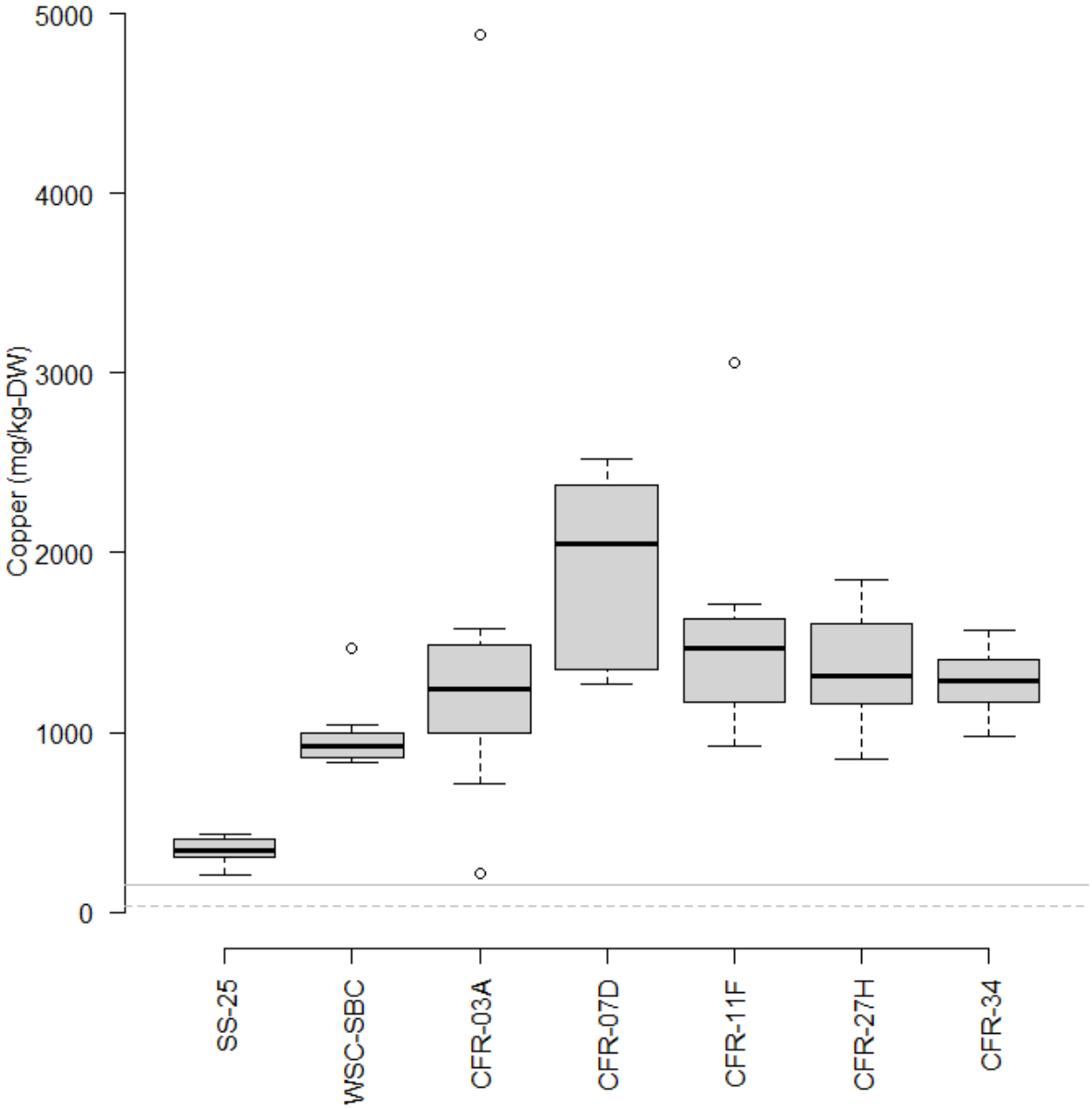


Figure 3-7. Boxplots of total copper concentrations (dry weight) in the Clark Fork River Operable Unit, 2018-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 31.6 mg/kg and the "probable effect concentration" (PEC; solid line) at 149 mg/kg [MacDonald et al., 2000].

3.3.2.4 Lead

In 2022, fine fraction (<0.063 mm) lead concentrations ranged from 103-277 mg/kg-DW in the Clark Fork River sites (Table 3-8). Concentrations in Silver Bow Creek and Warm Springs Creek were within the mainstem range (Table 3-8). Exceedances of the TEC reference value occurred in all samples and exceedances of the PEC occurred in both Silver Bow Creek samples and in all but one Clark Fork River sample (Table 3-8).

Lead concentrations in 2022 were generally within the range of prior results at each site but were generally in the lower portion of the prior range at most sites (Figure 3-8). Concentrations have been variable in the Clark Fork River and in Silver Bow Creek sites (Figure 3-8). It appears that concentrations may be decreasing through time at the Clark Fork River Sites CFR-03A and CFR-34 and potentially at the Silver Bow Creek site (SS-25) (Figure 3-8).

Median lead concentrations during the last five years of monitoring (2018-2022) were similar in most sites except Warm Springs Creek (Site WSC-SBC) and the upstream-most Clark Fork River Site (Site CFR-03A), which had relatively low median concentrations (Figure 3-9). Median concentrations were above the PEC at all sites except the Warm Springs Creek site (Site WSC-SBC) where the concentration was slightly below the PEC (Figure 3-9).

Table 3-8. Total lead concentrations (mg/kg dry weight) in fine fraction (<0.063 mm) instream sediment samples from the Clark Fork River Operable Unit, 2022.

Site ID	Site Location	Sample concentration (mg/kg-WW)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	103	163
CFR-07D	Clark Fork River at Galen Road	143	277
CFR-11F	Clark Fork River at Gemback Road	154	234
CFR-27H	Clark Fork River at Deer Lodge	208	242
CFR-34	Clark Fork River at Williams-Tavenner Bridge	158	231
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	137	163
WSC-SBC	Warm Springs Creek near mouth	104	118

Exceeds threshold effect concentration, 35.8 mg/kg [MacDonald et al., 2000].

Exceeds probable effect concentration, 128 mg/kg [MacDonald et al., 2000].

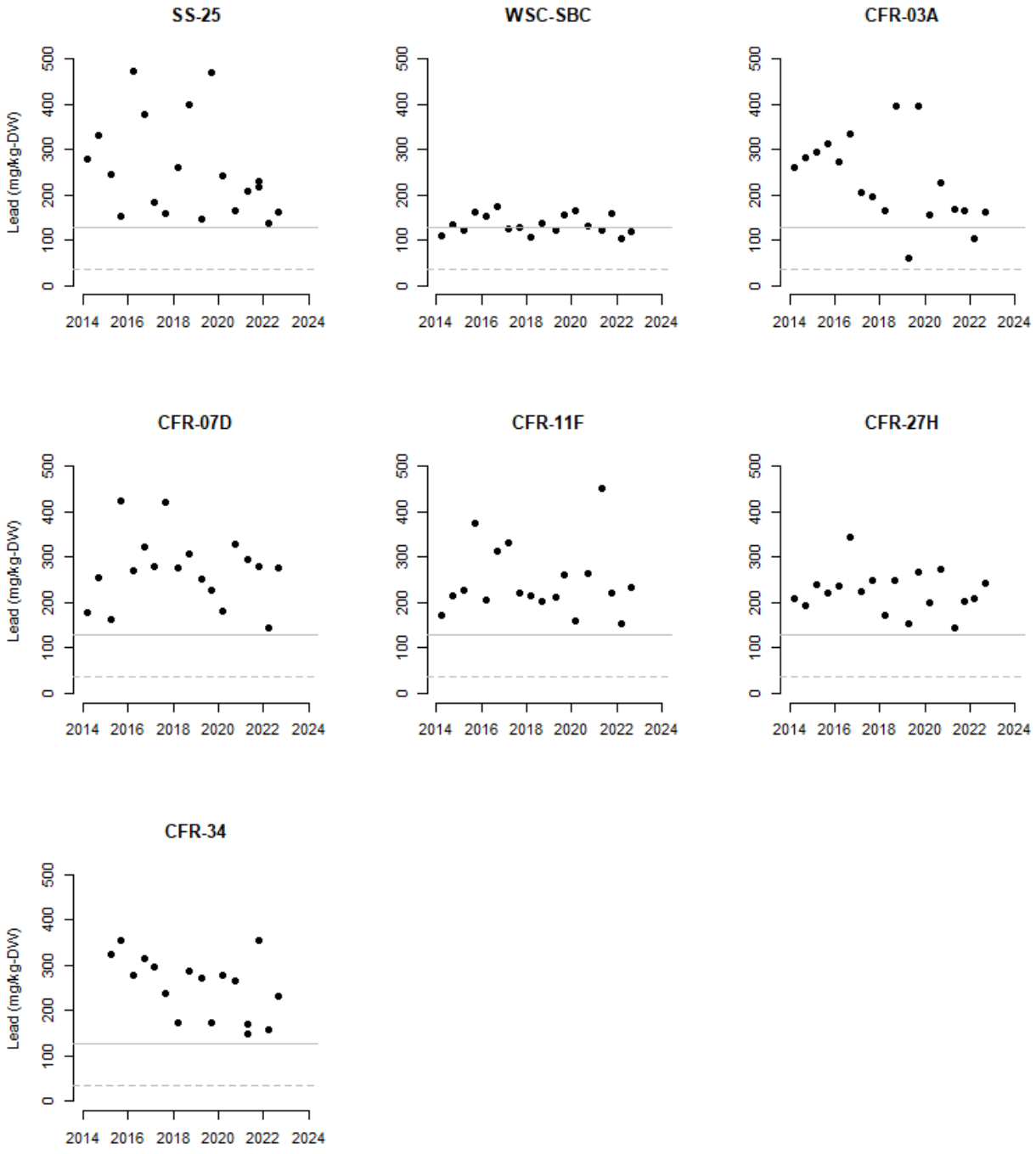


Figure 3-8. Total lead concentrations (dry weight) at each site in the Clark Fork River Operable Unit, 2014-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 35.8 mg/kg and the "probable effect concentration" (PEC; solid line) at 128 mg/kg [MacDonald et al., 2000].

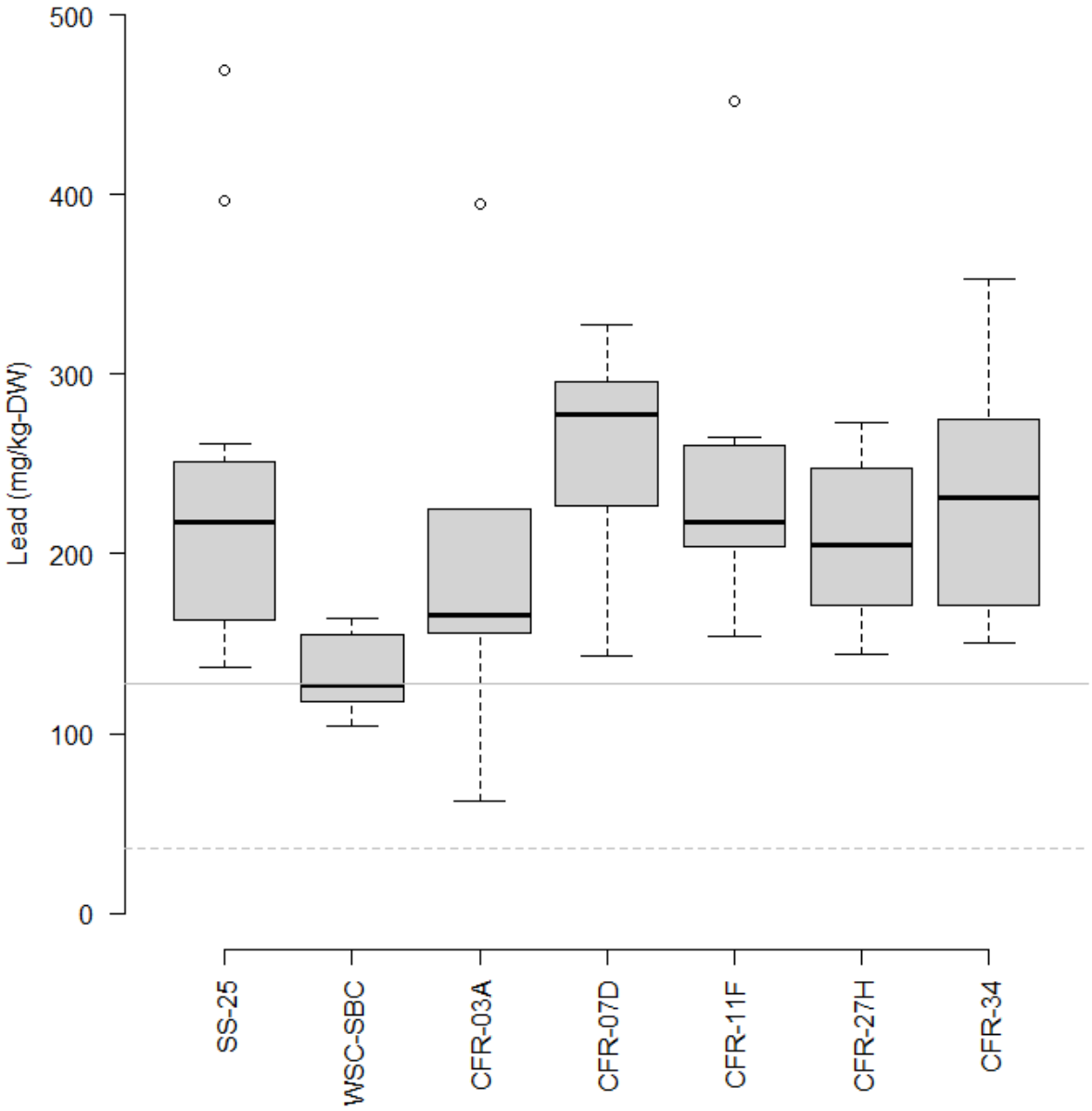


Figure 3-9. Boxplots of total lead concentrations (dry weight) in the Clark Fork River Operable Unit, 2018-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 35.8 mg/kg and the "probable effect concentration" (PEC; solid line) at 128 mg/kg [MacDonald et al., 2000].

3.3.2.5 Zinc

In 2022, fine fraction (<0.063 mm) zinc concentrations ranged from 840-1,720 mg/kg-DW in the Clark Fork River and Silver Bow Creek sites (Table 3-9). In Warm Springs Creek, concentrations were lower and ranged from 348-398 mg/kg-DW (Table 3-9). Exceedances of the TEC reference value occurred in all samples and exceedances of the PEC occurred in all samples except those collected in Warm Springs Creek (Table 3-9).

Zinc concentrations in 2022 were generally consistent with prior years at each site with a few exceptions. Concentrations in the Clark Fork River at Site CFR-27H have become more variable since 2018 (Figure 3-10). Concentrations in the Clark Fork River at Sites CFR-03A and CFR-34 appear to be decreasing through time (Figure 3-10).

Median zinc concentrations during the last five years of monitoring (2018-2022) were relatively high in each Clark Fork River and Silver Bow Creek site (ranging from approximately 1,000-1,400 mg/kg-DW) but were much lower in Warm Springs Creek (approximately 450 mg/kg-DW) (Figure 3-11). Median concentrations were above the PEC at all Clark Fork River and Silver Bow Creek sites (Figure 3-11). In Warm Springs Creek, median concentrations were slightly below the PEC but above the TEC (Figure 3-11).

Table 3-9. Total zinc concentrations (mg/kg dry weight) in fine fraction (<0.063 mm) instream sediment samples from the Clark Fork River Operable Unit, 2022.

Site ID	Site Location	Sample concentration (mg/kg-WW)	
		Q1	Q3
Mainstem Sites			
CFR-03A	Clark Fork River near Galen	904	1,060
CFR-07D	Clark Fork River at Galen Road	840	1,540
CFR-11F	Clark Fork River at Gemback Road	1,010	1,720
CFR-27H	Clark Fork River at Deer Lodge	1,620	1,320
CFR-34	Clark Fork River at Williams-Tavenner Bridge	929	1,000
Tributary Sites			
SS-25	Silver Bow Creek at Warm Springs	1,250	1,070
WSC-SBC	Warm Springs Creek near mouth	348	398

Exceeds threshold effect concentration, 121 mg/kg [MacDonald et al., 2000].

Exceeds probable effect concentration, 459 mg/kg [MacDonald et al., 2000].

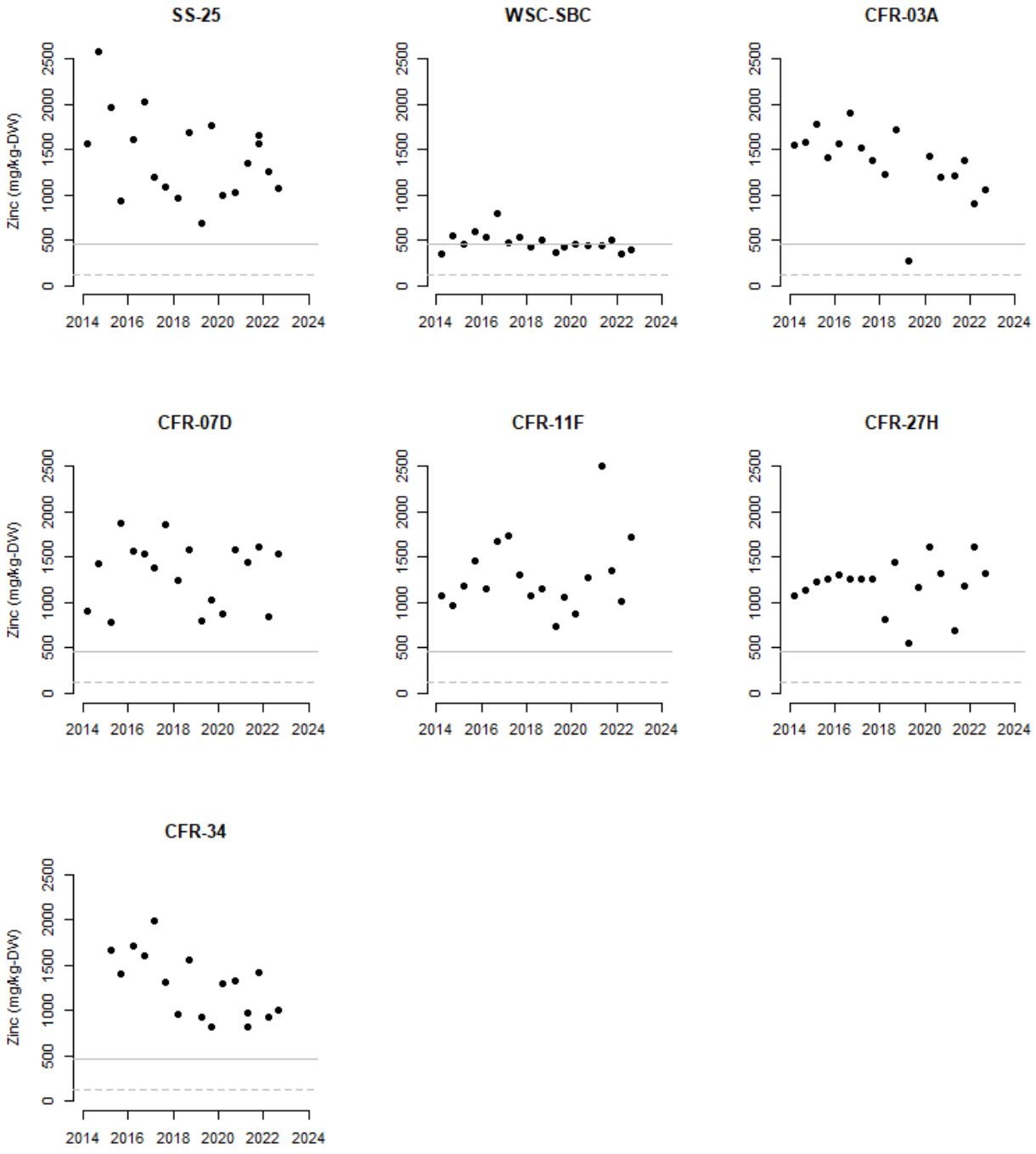


Figure 3-10. Total zinc concentrations (dry weight) at each site in the Clark Fork River Operable Unit, 2014-2022. Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 121 mg/kg and the "probable effect concentration" (PEC; solid line) at 459 mg/kg [MacDonald et al., 2000].[17]

[17] One sample with a concentration of 16,400 mg/kg, collected near Galen on September 10, 2019, is not depicted.

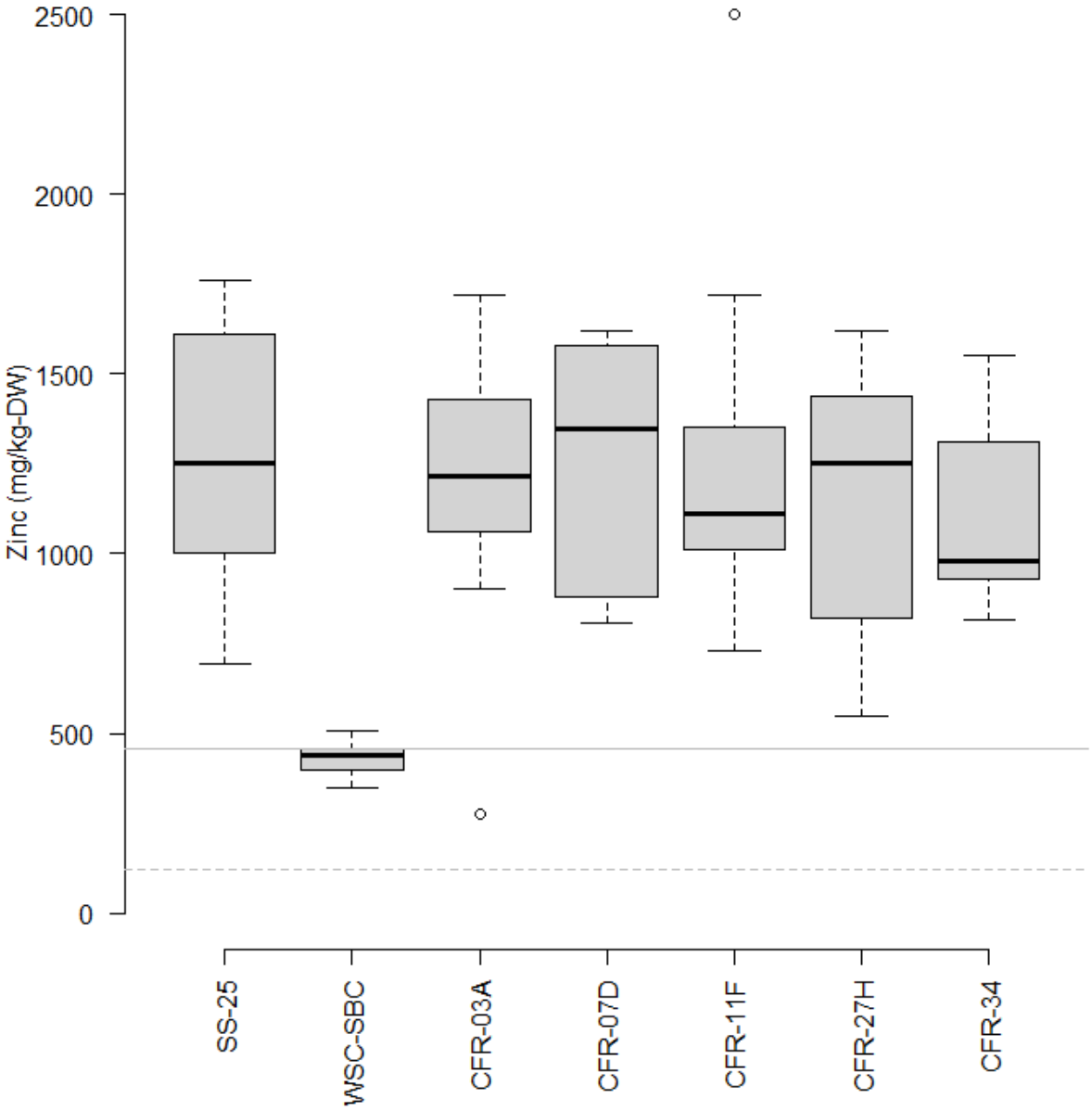


Figure 3-11. Boxplots of total zinc concentrations (dry weight) in the Clark Fork River Operable Unit, 2018-2022.[18] Horizontal lines represent the "threshold effect concentration" (TEC; dashed line) at 121 mg/kg and the "probable effect concentration" (PEC; solid line) at 459 mg/kg [MacDonald et al., 2000].

[18] One sample from Site CFR-03A on September 10, 2019 with a concentration of 16,400 mg/kg-DW is not depicted.

3.3.3 Data Validation

The quantitative portion of the data quality objectives (DQOs) for sampling precision consist of comparisons between field sample and field duplicate concentrations for each analyte in the monitoring program. In 2022, one field sample and field duplicate pair was collected during each of the two sampling events. In each pair, five comparisons of concentrations were made, one for each metal in the fine fraction (<0.063 mm) of each sample. Thus, there were 10 analytes where field sample and duplicate relative percent difference (RPD) comparisons were made. Of those, 0 of 10 (0 percent) had an RPD greater than the DQO specified for sampling precision (40 percent). The range of RPD statistics among the 10 analyte pairs was 2.6-20.4 percent (mean = 9.3 percent).

3.4 DISCUSSION

3.4.1 Sample Size Fraction

Variability in sediment metals concentrations at any given monitoring site during any particular sampling event may be influenced by channel morphology and depositional processes. These factors also cause variability in the size composition of the sample, which in turn influences the concentrations of metals because size fraction is strongly related (inversely) to metal concentration in the CFROU. The proportion of sediment in the fine size fraction (<0.063 mm) was highly variable among sites and among sample periods. Sediment samples in the CFROU were analyzed in only the fine size fraction to minimize variability in the concentrations due to size fraction.

3.4.2 Contaminants of Concern

Results of 2022 sampling were generally consistent with prior results. Exceedances of the more restrictive reference value (the TEC) occurred for every COC in all 2022 samples. Exceedances of the more lenient reference value (the PEC) also occurred for all Clark Fork River and Silver Bow Creek samples, with the exception of cadmium in three sites in Q1 and lead in one site in Q1. The PEC was exceeded in all Warm Springs Creek samples for arsenic and copper.

Results at two mainstem sites (Sites CFR-03A and CFR-34) suggest declining COC concentrations through time, although the sample sizes are small and such apparent trends may simply be an artifact of the high degree of variability in the results. Each of these sites are located downstream from operable unit phases which have been remediated; Site CFR-03A is located downstream from Phases 1 and 2 and Site CFR-34 is located downstream from Phases 15 and 16.

3.4.3 Data Validation

All of the field sample and field duplicate pairs in 2022 had RPD statistics within 40 percent, and therefore satisfied the project goal for "overall precision". A complete analysis of data validation procedures and results is described in Appendix A.

4.0 PERIPHYTON

4.1 INTRODUCTION

This report describes results of periphyton monitoring in 2022 within the Clark Fork River Operable Unit (CFROU). Several approaches were used to analyze the periphyton samples. The taxonomy and assemblage structure of non-diatom (soft-bodied) algae and diatom (silica-walled) algae were examined and a suite of analytical metrics were applied to the diatom data to assess the degree of impairment from metals, nutrients, and sediment. These metrics included a stressor-specific tool developed for the Middle Rockies Ecoregion [Teply 2010a; 2010b] and adopted by Montana Department of Environmental Quality (DEQ) as a periphyton standard operating procedure for determining the probability of sediment impairment [DEQ, 2011b]. In addition, a variety of diatom metrics developed for Montana mountain streams were used [Bahls et al., 1992; Bahls, 1993; Teply and Bahls, 2005]. These metrics were based on autecological preferences or requirements of freshwater diatoms [Lowe, 1974; Van Dam et al., 1994; Bahls, 2006].

4.2 METHODS

4.2.1 Monitoring Locations

Periphyton samples were collected at seven CFROU sites (Table 4-1). Each of these sites is consistent with ongoing surface water, sediment, and macroinvertebrate monitoring locations in the CFROU.

Table 4-1. Periphyton sampling locations in the Clark Fork River Operable Unit.

Site description	Site ID	Co-located USGS gage	Latitude (NAD 83)	Longitude (NAD 83)
Tributary Sites				
Warm Springs Creek near mouth	WSC-SBC	12323770	46.18046	-112.78596
Silver Bow Creek at Warm Springs	SS-25	12323750	46.18123	-112.77917
Mainstem Sites				
Clark Fork River near Galen	CFR-03A	12323800	46.20877	-112.76740
Clark Fork River at Galen Road	CFR-07D	NA	46.23725	-112.75302
Clark Fork River at Gemback Road	CFR-11F	NA	46.26520	-112.74430
Clark Fork River at Deer Lodge	CFR-27H	12324200	46.39796	-112.74283
Clark Fork River at Williams-Tavenner Bridge	CFR-34	NA	46.39778	-112.74194

4.2.2 Monitoring Schedule

Periphyton monitoring occurred at all CFROU sites on August 25, 2022. Macroinvertebrate samples were also collected at each site at the same time each periphyton sample was collected.

4.2.3 Monitoring Parameters

Each periphyton sample was analyzed for non-diatom (soft-bodied) and diatom algae relative abundance. Typically, non-diatom algae were identified to genus-level and diatoms were identified to species-level.

4.2.3.1 Non-diatom Algae

Relative abundances of non-diatom algae were estimated on an ordinal scale by genus. The scale was based on the average number of cells of a particular genus identified on a microscope slide at 200X magnification. The scale rankings for each genus were defined as the number of cells per field of view: "rare" (<1 cell), "common" (1-5 cells), "very common" (5-25 cells), and "abundant" (>25 cells).

Within each sample, each identified non-diatom algal genera was also ranked according to biovolume. Rare genera were noted but identified as contributing a negligible proportional biovolume contribution.

4.2.4 Sample Collection

One composite periphyton sample was collected from multiple substrates and habitat types at each site. Samples were collected following the DEQ standard operating procedure for flowing streams where a defined reach has not been established [DEQ, 2011b]. Periphyton samples were preserved in the field with Lugols solution and transported to Rhithron Associates (Missoula, Montana) for analysis.

4.2.5 Laboratory Analysis

At the laboratory, initial sample volumes were measured and recorded. The samples were thoroughly mixed by shaking and then split into two aliquots for separate analyses of non-diatom and diatom algae.

4.2.5.1 Non-Diatom Algae

For non-diatom algae sample aliquots, the raw periphyton material was manually homogenized and emptied into a porcelain evaporating dish. A small, random sub-sample of algal material was pipetted into a standard Palmer-Maloney counting chamber using a disposable Pasteur pipette. Visible (macroscopic) algae were also sub-sampled, in proportion to their estimated abundance relative to the total volume of algal material in the sample and added to

the liquid fraction on the slide. The Palmer-Maloney cell was then covered with a 22x30 mm coverslip for microscopic estimation of non-algae relative abundance.

4.2.5.2 Diatom Algae

Permanent diatom slides were prepared by the following protocol: subsamples were taken and treated with 70 percent nitric acid (HNO_3) and digested using a closed-vessel microwave digestion system (Milestone Ethos EZ), following the method developed by the Academy of Natural Sciences, Philadelphia [Charles et al., 2002]. The samples were neutralized by rinses with distilled water, and subsample volumes were adjusted to obtain adequate densities for slide mounts. Dilution and concentration factors, as appropriate, were recorded for each sample. Subsamples were dried onto 22-mm square coverslips. Coverslips were mounted on slides using Naphrax diatom mount. To ensure a high-quality mount for identification and to make replicates available for archives, two slide mounts were made from each sample. One of the replicates was selected from each sample batch for identification. A diamond scribe mark was made to define a transect line on the cover slip, and a minimum of 800 diatom valves were identified along the transect mark. A Leica DM 2500 compound microscope, Nomarski contrast, and 1000x magnification were used for identifications. Diatoms were identified to the lowest possible taxonomic level, generally species.

4.2.6 Data Analysis

Results of periphyton taxonomic analyses were summarized using two general approaches: (1) taxa richness and diversity and (2) diatom bioassessment indices.

4.2.6.1 Taxa Richness and Diversity

Richness of diatom and non-diatom taxa were examined separately within each sample to provide a general understanding of the diversity of the periphyton assemblages at each site. Non-diatom taxa richness and biovolume was summarized by genus within each taxonomic division for each site. Diatom taxa richness and Shannon diversity were compared among samples to evaluate general trends among sites. For diatoms, richness was estimated at the species-level and sub-species (i.e., variants) when practical. Detailed summaries of diatom identifications and richness for each sample are available in Appendix E.

4.2.6.2 Diatom Bioassessment Indices

Taxonomic results for diatom sample analyses were used to calculate an array of bioassessment indices for each sample. Three general types of bioassessment tools were applied to each: Increaser Taxa bioindices [DEQ, 2011b; Teply, 2010a], Diatom Association Metrics for Montana Mountain Streams [Bahls, 1993], and Ecological Indicator Values of Freshwater Diatoms [Van Dam et al., 1994]. Each bioassessment index generates a value summarizing the degree of impairment to the diatom assemblage at each site. Some indices are designed to represent impairment from specific environmental stressors (e.g., hypoxia), whereas others represent general impairment.

4.2.6.2.1 Increaser Taxa

Each periphyton sample was evaluated according to the DEQ periphyton standard operating procedure [DEQ, 2011b] using "pollutant-diagnosing biometrics based on stressor-specific increaser diatom taxa as described in Teply [2010a; 2010b]". The pollutant-diagnosing biometrics described in DEQ [2011b] are known as "increaser taxa" and are specifically designed to diagnose stress from sediments and nutrients. According to DEQ [2011b], "the assessment tools have been designed to function properly in the presence (or absence) of the other stressor types". For the Middle Rockies ecoregion, the DEQ has adopted only the sediment biometric. However, the impairment probabilities for the nutrient increaser taxa are also summarized in this report using the general mountains ecoregions criteria [Teply and Bahls, 2006].

4.2.6.2.2 Diatom Association Metrics for Montana Mountain Streams

In addition to the diatom bioassessment indices, seven diatom association metrics were used to augment assessments of impairment (Table 4-2). Each of these seven diatom association metrics provides a general measure of environmental impairment. Results from each site were tabulated and sites were rated on an impairment scale based on the criteria listed in Table 4-2. Additional metrics were combined into an index that evaluates overall biointegrity at each site. The following paragraphs summarize each metric.

Species richness is a common measure of environmental impairment with greater richness generally reflecting more heterogeneous environmental conditions. Low taxa richness generally reflects environmental homogeneity, which may be the result of several specific stressors such as metal contamination or nutrient enrichment. Bahls [1979] used species richness as a measure of diatom biointegrity.

The diversity index is based on Shannon diversity which includes measures of species evenness and taxa richness and is sensitive to variation in water quality [Bahls, 1993].

Pollution tolerance groups, defined by Lange-Bertalot [1979], diatom autecological profiles described by Lowe [1974], and Montana diatom data described in Bahls [2006] were combined in the Pollution Index [Bahls, 1993]. This index rates diatom tolerance to nutrient enrichment, minerals, elevated temperatures, and metal toxicity. Diatom species are assigned a score from 1-3: a score of 1 corresponds to "most-tolerant", a score of 2 corresponds to "less-tolerant", and a score of 3 corresponds to "sensitive."

The Siltation Index examines the percentage of diatom taxa associated with fine sediments [Bahls, 1993; Teply and Bahls, 2005], Many diatom species are motile. Motility is thought to be an adaptation to siltation whereby individual diatom cells can move to avoid inundation by deposited sediment. The Siltation Index [Bahls, 1993] is calculated as the total percent abundance of motile diatom taxa which include species belonging to the genera *Navicula, Nitzschia, Surirella,* and other closely related taxa.

The Disturbance Index [Barbour et al., 1999] is based on the percent relative abundance of the diatom *Achnanthidium minutissimum*, which is highly specialized in the post-disturbance recolonization of stream substrates. Elevated numbers may be indicative of recent environmental stress caused by elevated or highly variable stream flows, water velocities, and water temperatures at a site. Care must be taken in the interpretation of this metric because this diatom may also be the dominant species in swiftly flowing mountain streams because of the naturally occurring disturbances there.

The relative abundance of the dominant diatom taxon [Teply and Bahls, 2005] in an assemblage is a measure of evenness; the greater the percentage of organisms in the dominant taxon, the more skewed the assemblage. The underlying principle is that a healthy and stable assemblage will be more even with a relatively consistent division of its organisms into taxa.

The percentage of abnormal diatom valves examines the relative abundance of diatom valves with irregular outlines and abnormal ornamentation. McFarland et al. [1997] examined the percentage of abnormal diatom (*Fragilaria* species) valves in a Rocky Mountain river in Colorado. Abnormal valves ranged from 0.2-12.0 percent and the percentage was positively correlated to the concentration of metals (cadmium, copper, iron, and zinc). These data suggested that morphologically abnormal diatoms may be an indicator of elevated dissolved metal concentrations in streams.

An overall biointegrity rating was assigned for each monitoring site based on the individual bioassessment metrics (Table 4-2). This overall rating was determined using a series of steps. First, at each site, scores were assigned for each diatom association metric on an ordinal scale: "excellent" = 3, "good" = 2, "fair" = 1, and "poor" = 0. Second, the mean score of those seven metrics at each site was calculated. The mean score of the seven metrics was then used as the overall biointegrity rating on another ordinal scale: "excellent" = more than 2.7, "good" = 1.7-2.7, "fair" = 0.7-1.7, and "poor" = less than 0.7.

Table 4-2. Summary of diatom association metrics to evaluate biological integrity in mountain streams: references range of values, expected response to increasing impairment or stress.

Metric	Biological Integrity				Range	Expected Response	Reference
	Excellent	Good	Fair	Poor			
Species Richness	>29	20-29	10-19	<10	0-100+	decrease	Bahls, 1993
Diversity Index	>2.99	2.00-2.99	1.00-1.99	<1.00	0-5+	decrease	Bahls, 1993
Pollution Index	>2.50	2.01-2.50	1.50-2.00	<1.5	1-3	decrease	Bahls, 1993
Siltation Index	<20.0	20.0-39.9	40.0-59.9	>59.9	0-90+	increase	Bahls, 1993
Disturbance Index	<25.0	25.0-49.9	50.0-74.9	>74.9	0-100	increase	Barbour et al., 1999
Dominant Species (%)	<25.0	25.0-49.9	50.0-74.9	>74.9	~5-100	increase	Barbour et al., 1999
Abnormal Valves (%)	0	>0.0, <3.0	3.0-9.9	>9.9	0-30+	increase	McFarland et al., 1997

4.2.6.2.3 Freshwater Diatoms as Ecological Indicators

Van Dam et al. [1994] identified diatom taxa considered to be indicators of specific conditions. Conditions identified by the Van Dam et al. [1994] indicator taxa included organic nitrogen tolerance and tolerance to hypoxia.

Most diatoms are nitrogen-autotrophs and are unable to directly utilize organic nitrogen. For some nitrogen-autotrophs, organic nitrogen may be toxic. Some diatoms directly assimilate organic nitrogen in addition to, or as an alternative to, inorganic nitrogen (i.e., facultative nitrogen heterotrophs). Van Dam et al. [1994] classified diatom species by trophic state, either as nitrogen-autotrophs or nitrogen heterotrophs. Relative abundances of diatoms in each group were quantified for each site. Nitrogen-heterotroph relative abundance is expected to generally increase in relation to organic nitrogen concentrations and the opposite relationship is expected for nitrogen-autotrophs intolerant of organic nitrogen.

Some diatoms are intolerant of saprobic conditions (i.e., waters with excessive organic materials in various states of decomposition resulting in high biochemical oxygen demand and less than 75 percent dissolved oxygen saturation) [Van Dam et al., 1994]. Diatoms with such sensitivities are referred to as oligosaprobous or ß-mesosaprobous and these would likely be found in low relative abundance in water with excessive organic pollution. Similarly, water with low dissolved oxygen saturation would likely have few species sensitive to hypoxia. The relative abundance of oligosaprobous or ß-mesosaprobous diatoms and oxygen-sensitive diatoms were summarized by site.

4.2.6.3 Spatial and Temporal Trends

Diatom bioassessment metrics for each CFROU site from the last eight monitoring years (2015-2022) were compiled and presented graphically to assess temporal and spatial trends. Spatial trends were assessed by use of boxplots for each diatom bioassessment metric at each site. Statistics summarized in each boxplot include the median (midline of each box), quartiles (ends of each box), outlier extent (whiskers which extend 1.5 times the interquartile range), and outliers (circles above or below the whiskers which are any observations more than 1.5 times the interquartile range). Temporal trends were assessed for each site by examination of scatterplots for each diatom bioassessment metric.

4.3 RESULTS

4.3.1 Non-Diatoms

In 2022, a total of 18 non-diatom genera, representing four taxonomic divisions, were identified in the Clark Fork River Operable Unit samples (**Table 4-3**). Taxa observed included six Chlorophyta (green algae) genera, one Chrysophyta (golden algae) genus, nine Cyanophyta (blue-green algae) genera, and one Rhodophyta (red algae) genus. The Rhodophyta and one of the Cyanophyta species observed in the samples could not be identified with confidence to a lower taxonomic level.

Based on relative abundance and biovolume estimates for each sample, blue-green algae were common or abundant at all sites. Common blue-green algae observed by site included: *Calothrix* (Site CFR-07D), *Homoeothrix* (Site CFR-27H), *Leptolyngbya* (Sites CFR-07D, CFR-11F, CFR-27H, and CFR-34), *Nostoc* (CFR-03A and CFR-11F), and *Phormidium* (Sites SS-25, WSC-SBC, and CFR-03A) (**Table 4-3**). Green algae (*Cladophora*) were either common or abundant at Sites SS-25 and CFR-27H (**Table 4-3**).

Richness of non-diatom algae ranged from 5-10 genera among the seven sites sampled (**Figure 4-1**). Green algae and blue-green algae were present at all sites (**Figure 4-1**). Golden algae were present only at Site CFR-03A and red algae were present at Sites WSC-SBC, CFR-03A, and CFR-11F (**Figure 4-1**). Richness of non-diatom algae was highest at Sites SS-25, CFR-03A, and CFR-07D, and lowest at Site WSC-SBC (**Figure 4-1**).

Table 4-3. Relative abundance and relative biovolume of non-diatom algae in Clark Fork River Operable Unit, 2022.

Site	Taxon	Division	Relative Abundance[19]	Relative Biovolume[20]
SS-25	*Phormidium*	Cyanophyta	Common	4
	Leptolyngbya	Cyanophyta	Very Common	3
	Cladophora	Chlorophyta	Common	2
	Chamaesiphon	Cyanophyta	Rare	0
	Dolichospermum	Cyanophyta	Rare	0
	Homoeothrix	Cyanophyta	Rare	0
	Oedogonium	Chlorophyta	Rare	0
	Scenedesmus	Chlorophyta	Rare	0
	Tolypothrix	Cyanophyta	Rare	0
	Undetermined Cyanophyte	Cyanophyta	Rare	0
WSC-SBC	*Leptolyngbya*	Cyanophyta	Common	3
	Phormidium	Cyanophyta	Common	2

[19] Scale rankings are the number of cells visible in each prepared sample slide: "rare" (<1 cell), "common" (1-5 cells), "very common" (5-25 cells), and "abundant" (>25 cells).

[20] Rank of taxa biovolume within each sample. Rare taxa are ranked as 0.

Site	Taxon	Division	Relative Abundance[19]	Relative Biovolume[20]
	Closterium	Chlorophyta	Rare	0
	Oedogonium	Chlorophyta	Rare	0
	Ulothrix	Chlorophyta	Rare	0
	Undetermined Rhodophyte	Rhodophyta	Rare	0
CFR-03A	*Leptolyngbya*	Cyanophyta	Common	4
	Phormidium	Cyanophyta	Common	3
	Nostoc	Cyanophyta	Common	2
	Calothrix	Cyanophyta	Rare	0
	Cladophora	Chlorophyta	Rare	0
	Homoeothrix	Cyanophyta	Rare	0
	Oedogonium	Chlorophyta	Rare	0
	Tribonema	Chrysophyta	Rare	0
	Undetermined Rhodophyte	Rhodophyta	Rare	0
CFR-07D	*Calothrix*	Cyanophyta	Common	3
	Leptolyngbya	Cyanophyta	Very Common	2
	Cladophora	Chlorophyta	Rare	0
	Homoeothrix	Cyanophyta	Rare	0
	Nostoc	Cyanophyta	Rare	0
	Oedogonium	Chlorophyta	Rare	0
	Pediastrum	Chlorophyta	Rare	0
	Phormidium	Cyanophyta	Rare	0
	Tolypothrix	Cyanophyta	Rare	0
CFR-11F	*Nostoc*	Cyanophyta	Common	3
	Leptolyngbya	Cyanophyta	Very Common	2
	Cladophora	Chlorophyta	Rare	0
	Homoeothrix	Cyanophyta	Rare	0
	Oedogonium	Chlorophyta	Rare	0
	Undetermined Rhodophyte	Rhodophyta	Rare	0
CFR-27H	*Homoeothrix*	Cyanophyta	Common	4
	Leptolyngbya	Cyanophyta	Very Common	3
	Cladophora	Chlorophyta	Common	1
	Chamaesiphon	Cyanophyta	Rare	0
	Pediastrum	Chlorophyta	Rare	0
	Scenedesmus	Chlorophyta	Rare	0
CFR-34	*Leptolyngbya*	Cyanophyta	Common	2
	Calothrix	Cyanophyta	Rare	0
	Chamaesiphon	Cyanophyta	Rare	0
	Cladophora	Chlorophyta	Rare	0
	Phormidium	Cyanophyta	Rare	0
	Scenedesmus	Chlorophyta	Rare	0

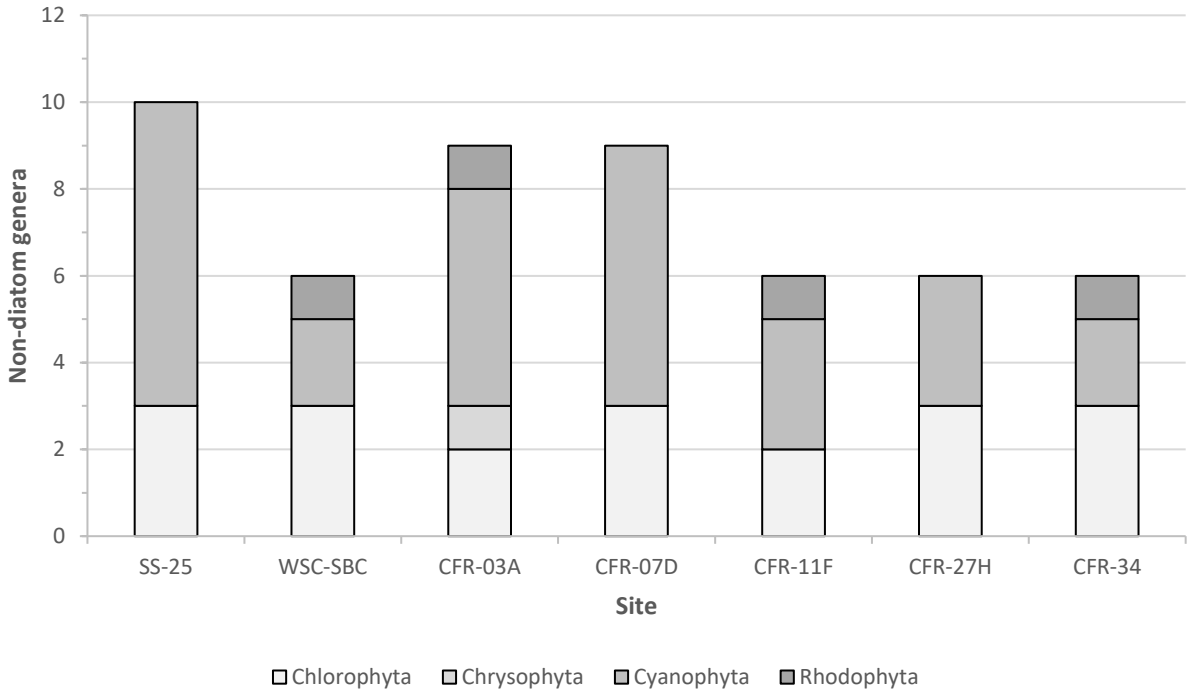


Figure 4-1. Taxonomic richness of non-diatom algae in Clark Fork River Operable Unit, 2022.

4.3.2 Diatoms

4.3.2.1 Relative Abundance

Among the seven periphyton samples collected in 2022, a total of 123 separate diatom taxa were identified. Most taxa were identified to species or subspecies (variant) level. Among the 123 diatom taxa observed, 48 genera were represented (Table 4-4). The most commonly observed genera were *Cocconeis, Achnanthidium, Navicula, and Nitzschia* (Table 4-4). Relative abundance of each taxon by site are provided in Appendix E.

Table 4-4. Relative abundance of each diatom genus among the seven samples collected in the Clark Fork River Operable Unit, 2022.

Genus	Relative Abundance (%)
Cocconeis	22.3
Achnanthidium	17.0
Navicula	13.7
Nitzschia	11.6
Epithemia	5.9
Amphora	3.9
Rhoicosphenia	3.7
Gomphonema	2.9
Encyonopsis	2.3
Encyonema	2.2
Planothidium	2.1
Staurosira	1.9
Cymbella	1.6
Diatoma	1.3
Reimeria	1.3
Staurosirella	1.2
Eolimna	1.0
Gomphonella	0.6
Fragilaria	0.5
Synedra	0.5
Opephora	0.5
Geissleria	0.4
Mayamaea	0.2
Caloneis	0.2
Bacillariophyta	0.2
Cyclotella	0.1
Denticula	0.1
Rhopalodia	0.1
Simonsenia	0.1

Genus	Relative Abundance (%)
Humidophila	0.1
Adlafia	0.1
Amphipleura	0.1
Hippodonta	0.1
Fragilariforma	0.04
Gomphoneis	0.04
Gyrosigma	0.04
Meridion	0.04
Psammothidium	0.04
Pseudostaurosira	0.04
Sellaphora	0.04
Stauroneis	0.04
Surirella	0.04
Cyclostephanos	0.02
Cymatopleura	0.02
Grunowia	0.02
Luticola	0.02
Melosira	0.02
Placoneis	0.02

4.3.2.2 Taxa Richness

In 2022, diatom taxa richness ranged from 42-65 taxa in the Clark Fork River mainstem sites (Table 4-5). Taxa richness in each of the tributary sites was within the mainstem range (Table 4-5).

Based on the combined results from the last eight (2015-2022) monitoring years, median taxa richness was slightly lower in the tributary sites and the lower-most mainstem site (Site CFR-34) compared the other mainstem sites (Figure 4-4). Richness ranged from about 50 taxa at Site WSC-SBC to 60 taxa at Site CFR-03A (Figure 4-4).

Taxa richness in 2022 was generally as expected based on prior monitoring years at each site (Figure 4-5). Some sites appear to be demonstrating slight increasing trends in taxa richness through time (Sites SS-25, WSC-SBC, and CFR-03A), whereas others appear to be declining (Sites CFR-11F, CFR-27H, and CFR-34) (Figure 4-5).

Table 4-5. Diatom taxa richness and Shannon diversity results for each site sampled in the Clark Fork River Operable Unit, 2022.

Site	Taxa Richness	Shannon Diversity
Tributary Sites		
SS-25	58	4.44
WSC-SBC	56	4.20
Mainstem Sites		
CFR-03A	65	4.62
CFR-07D	58	4.35
CFR-11F	50	3.88
CFR-27H	42	2.89
CFR-34	49	4.19

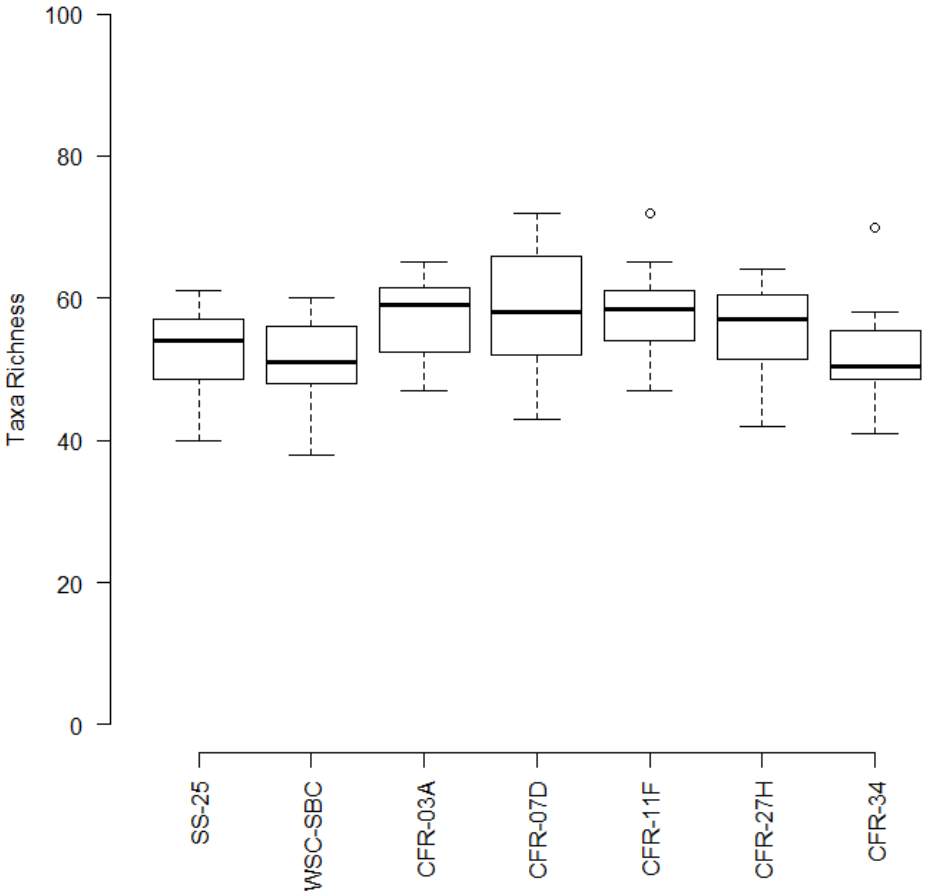


Figure 4-2. Boxplots of diatom taxa richness for diatom samples collected in Clark Fork River Operable Unit monitoring sites, 2015-2022.

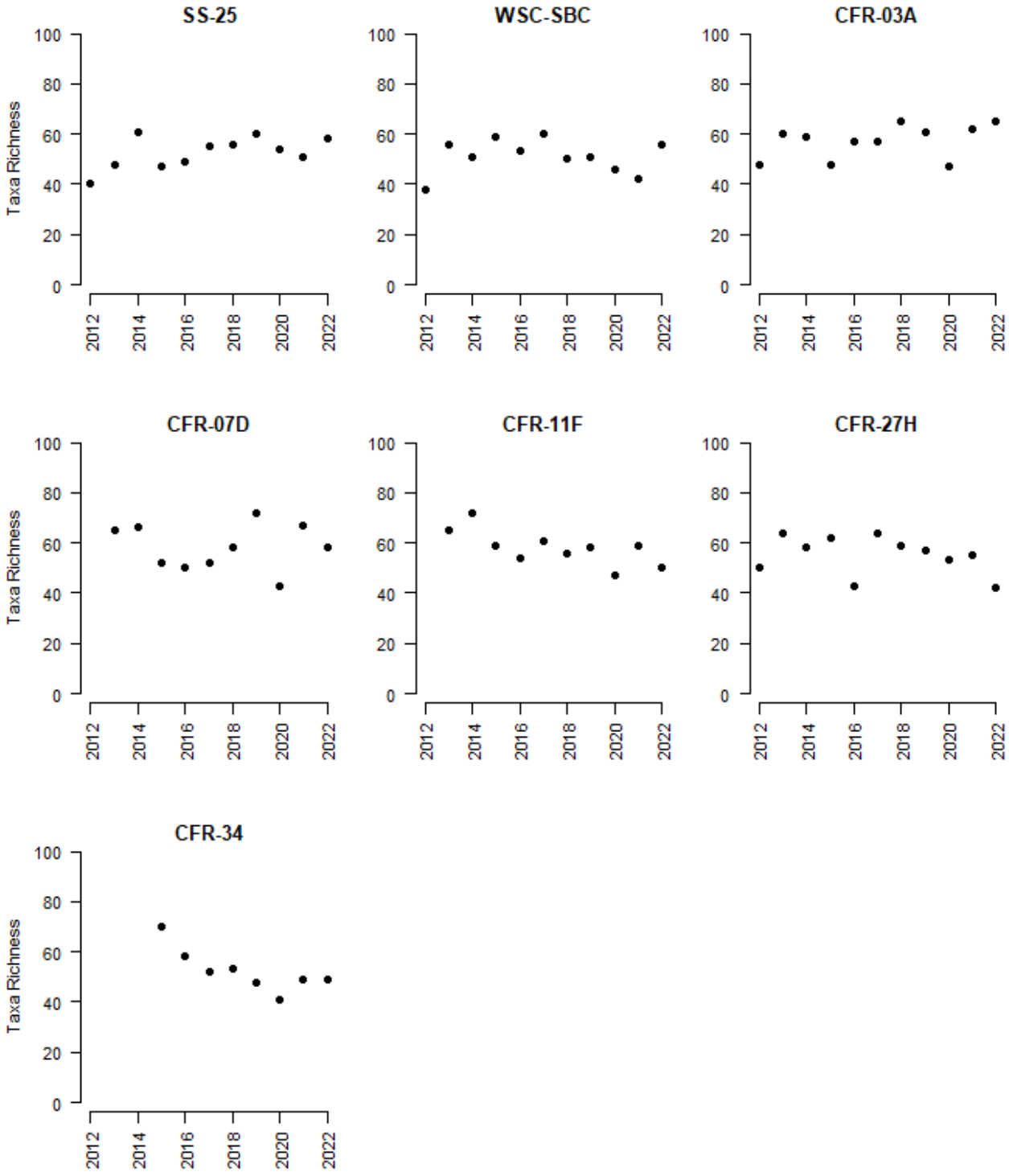


Figure 4-3. Diatom taxa richness for diatom samples collected in Clark Fork River Operable Unit monitoring sites, 2015-2022.

4.3.2.3 Shannon Diversity

In 2022, Shannon diversity ranged from 2.89-4.62 in the Clark Fork River mainstem and values in the tributaries also fell within the mainstem range for Shannon diversity (Table 4-5).

Based on the combined results from the last eight (2015-2022) monitoring years, median Shannon diversity values were similar at most sites and ranged from about 3.1-3.5, but were slightly higher at Site CFR-34 (about 3.8) (Figure 4-4).

Shannon diversity values in 2022 were generally as expected based on prior monitoring years at each site (Figure 4-5). All sites appear to be demonstrating increasing trends through time (Figure 4-5).

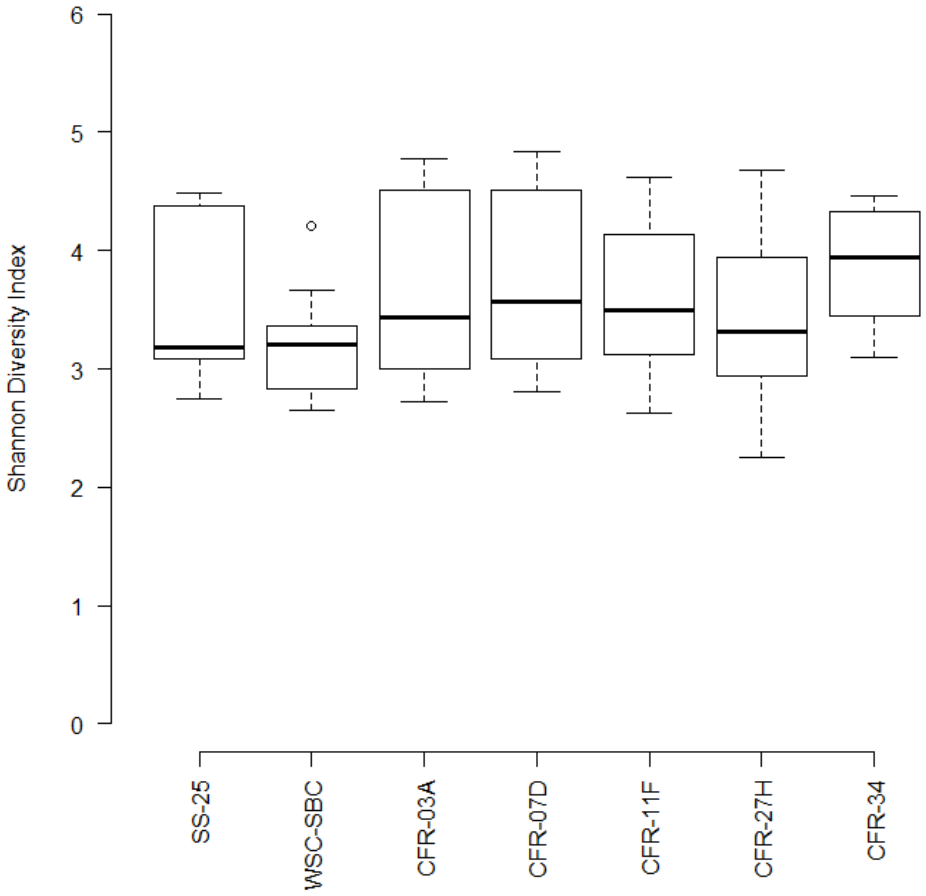


Figure 4-4. Boxplots of Shannon diversity scores for diatom assemblages at Clark Fork River Operable Unit monitoring sites, 2015-2022.

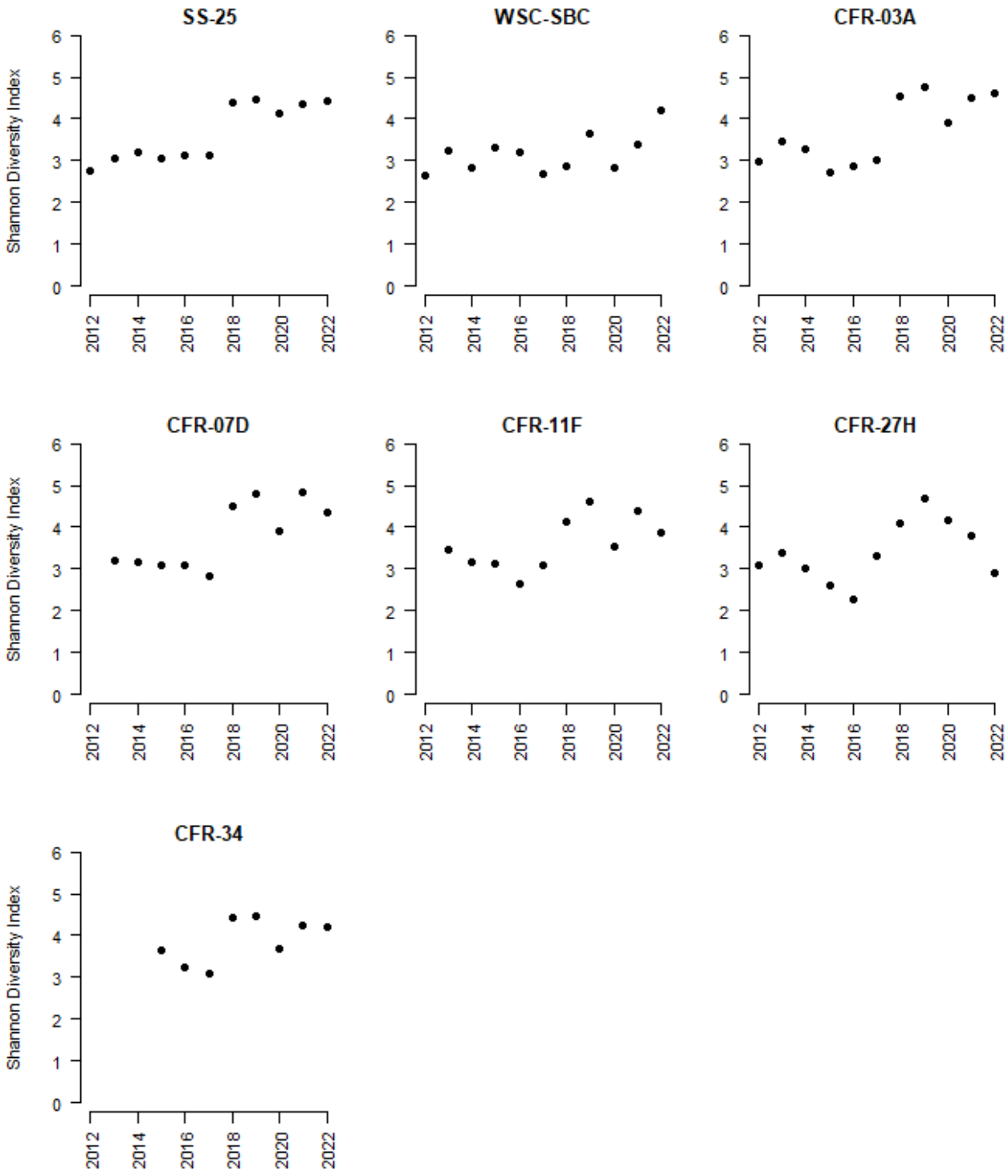


Figure 4-5. Shannon diversity scores for diatom assemblages at Clark Fork River Operable Unit monitoring sites, 2015-2022.

4.3.2.4 Bioassessment Indices

Bioassessment results for each CFROU site are presented in Table 4-6.

Table 4-6. Diatom bioindex results for each site sampled in the Clark Fork River Operable Unit, 2022.

Site	Biological Integrity	Nutrient Impairment (%)	Sediment Impairment (%)	N-autotroph taxa (%)	N-heterotroph taxa (%)	Oligosaprobous and β-mesosaprobous taxa (%)
Tributary Sites						
SS-25	2.71	94	52	59	14	61
WSC-SBC	2.57	17	14	77	3	63
Mainstem Sites						
CFR-03A	2.86	75	59	67	3	70
CFR-07D	2.71	91	48	68	4	73
CFR-11F	2.71	98	60	70	2	73
CFR-27H	2.29	23	20	79	1	90
CFR-34	2.86	72	80	66	2	75

4.3.2.4.1 Sediment and Nutrient Impairment

Impairment probabilities derived from increaser taxa bioindices for 2022 are presented in **Table 4-6**. All impairment probabilities are expressed as the likelihood that a given site would be impaired by the particular stressor. The probability of impairment from sediment ranged widely from 14 percent at Site WSC-SBC to 80 percent at Site CFR-34 (**Table 4-6**). The probability of impairment from nutrients ranged from 17 percent at Site WSC-SBC to 98 percent at Site CFR-11F (**Table 4-6**).

Based on the combined results from the last eight (2015-2022) monitoring years, there appears to be large variability in sediment impairment likelihood among sites in the CFROU (Figure 4-6). Median impairment probabilities were relatively low at Sites WSC-SBC and CFR-27H, but there is a large degree of annual variability at all sites (Figure 4-6; Figure 4-7). Site WSC-SBC has consistently had low (less than 50 percent) impairment probability since 2013, and has been less than 20 percent annually since 2016 (Figure 4-7).

Based on the combined results from the last eight (2015-2022) monitoring years, median impairment probability from nutrients has been highly variable annually at all sites (Figure 4-8). Multiple sites have had consistently high nutrient impairment probabilities with median probability exceeding 80 percent at Sites CFR-03A, CFR-07D, and CFR-11F (**Figure 4-8**). Median nutrient impairment probability at Site WSC-SBC was lowest at less than 20 percent (Figure 4-8). Site CFR-27H also had low median impairment probability (about 25 percent) but results have been highly variable at that site (**Figure 4-8**). Scatterplots of annual results at each site clarify the level of variability observed in the boxplots (Figure 4-9).

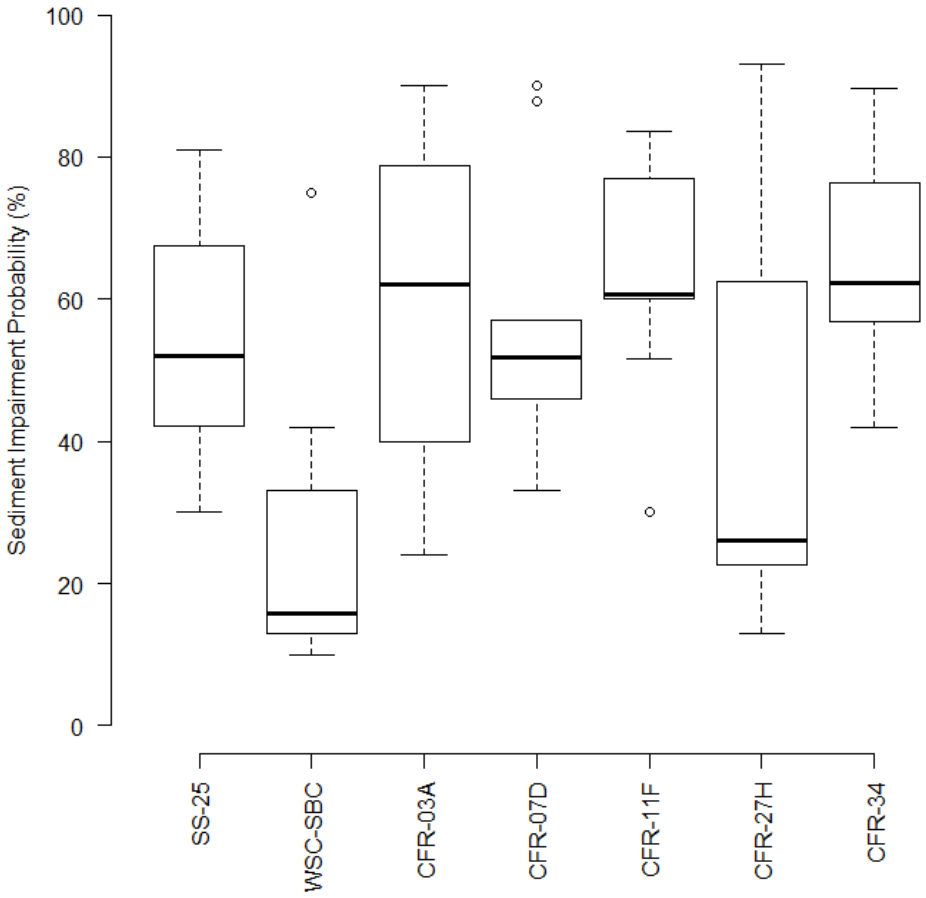


Figure 4-6. Boxplots of sediment impairment probability based on diatom assemblages for Clark Fork River Operable Unit monitoring sites, 2015-2022.

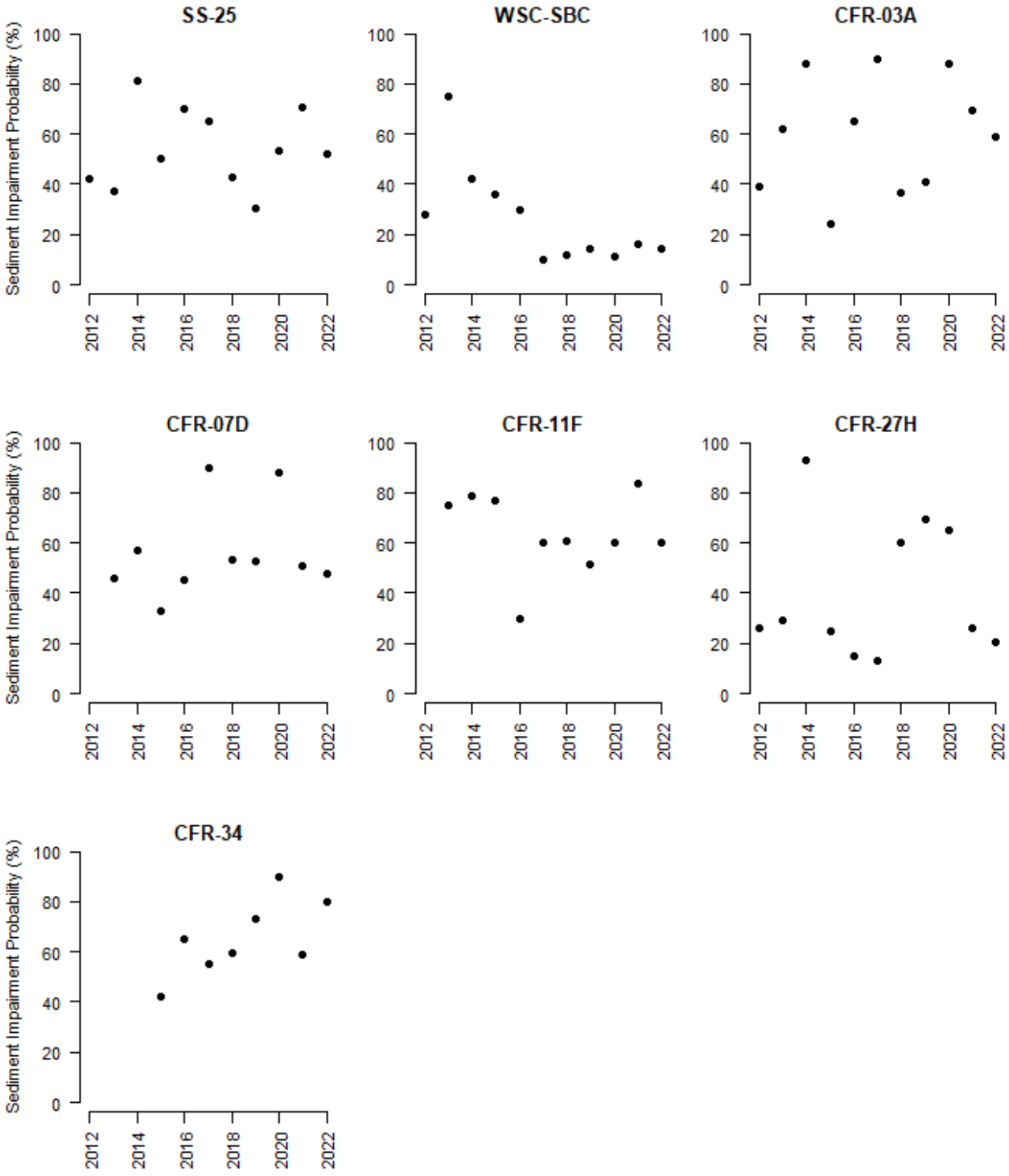


Figure 4-7. Sediment impairment probability based on diatom assemblages for Clark Fork River Operable Unit monitoring sites, 2015-2022.

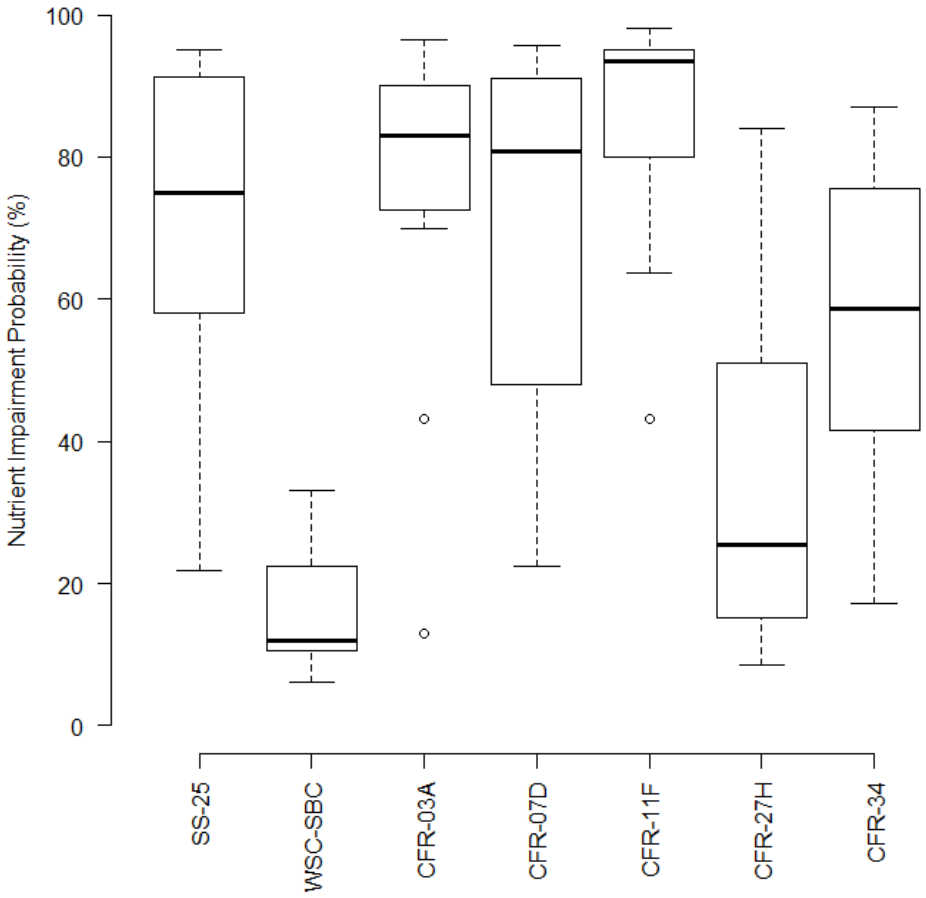


Figure 4-8. Boxplots of nutrient impairment probability based on diatom assemblages for Clark Fork River Operable Unit monitoring sites, 2015-2022.

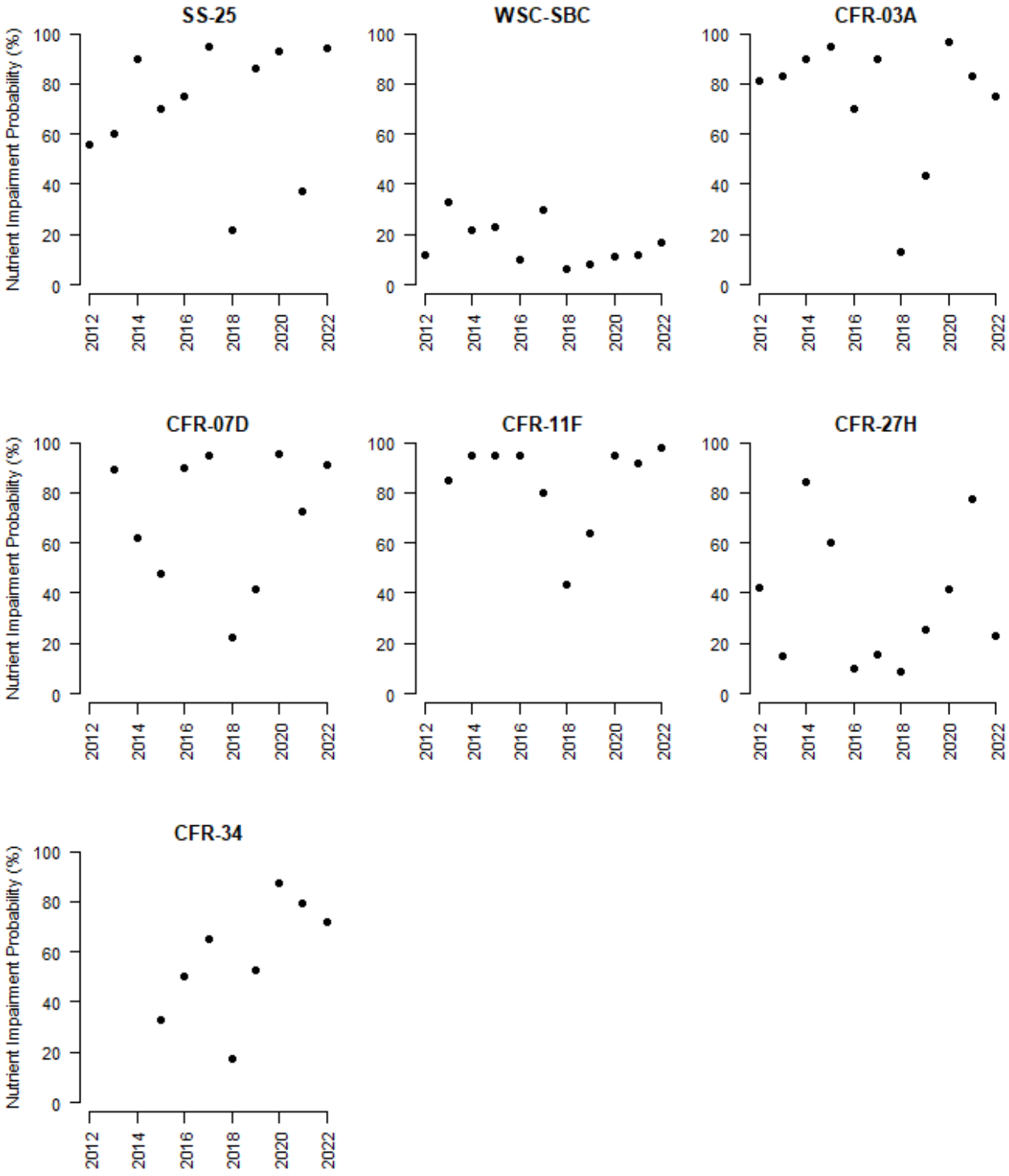


Figure 4-9. Nutrient impairment probability based on diatom assemblages for Clark Fork River Operable Unit monitoring sites, 2015-2022.

4.3.2.4.2 Overall Biointegrity

Results for each diatom association metric and the overall biological integrity rating for each site are presented in Table 4-7. Overall, every site was rated as having "excellent" overall biological integrity except Sites WSC-SBC and CFR-27H which had "good" biological integrity (Table 4-7). The metrics which most commonly reflected impaired conditions were the siltation index and dominant taxon metric (Table 4-7). The following sections examine temporal and spatial trends for each of these metrics at each site.

Based on the combined results from the last eight (2015-2022) monitoring years, median overall biointegrity has been "excellent" at all sites except Sites WSC-SBC, CFR-27H, and CFR-34 (**Figure 4-10**). All sites have been above the threshold for "moderate" impairment during all monitoring years (**Figure 4-11**).

Table 4-7. Diatom association metrics, biological integrity, and impairment ratings for individual metrics and an overall score and rating for each Clark Fork River Operable Unit site, 2022.[21]

Site	Taxa Richness	Shannon Diversity	Pollution Index	Siltation Index (%)	Disturbance Index (%)	Dominant Taxon (%)	Abnormal Cells (%)	Biological Integrity
Tributary Sites								
SS-25	58	4.44	2.56	24.9	2.2	29.1	0	2.71
WSC-SBC	56	4.20	2.66	28.8	32.3	32.3	0	2.57
Mainstem Sites								
CFR-03A	65	4.62	2.66	31.1	7.8	20.3	0	2.86
CFR-07D	58	4.35	2.70	28.2	8.8	26.3	0	2.71
CFR-11F	50	3.88	2.73	24.7	4.0	35.3	0	2.71
CFR-27H	42	2.89	2.82	19.5	52.9	52.9	0	2.29
CFR-34	49	4.19	2.71	33.3	6.5	21.6	0	2.71

Result indicates no impairment or excellent biological integrity.

Result indicates mild impairment or good biological integrity.

Result indicates moderate impairment or fair biological integrity.

Result indicates severe impairment or poor biological integrity.

[21] Metric classifications were based on criteria in Table 6-2. Overall biological integrity scores were based on the techniques described in the methods where scores were assigned for each metric on an ordinal scale: "excellent" = 3, "good" = 2, "fair" = 1, and "poor" = 0. The mean score of the seven metrics at each site was used to assign the overall biointegrity rating: "excellent" if more than 2.7, "good" if 1.7-2.7, "fair" if 0.7-1.7, and "poor" if less than 0.7.

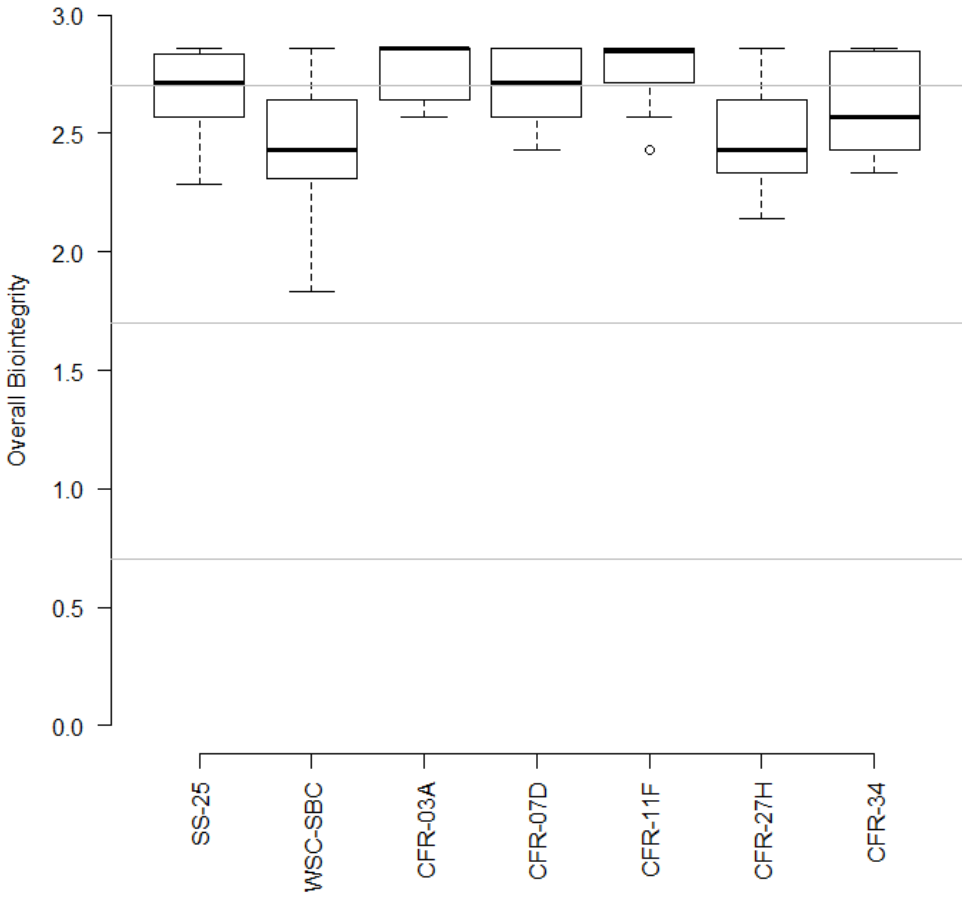


Figure 4-10. Boxplots of overall biointegrity score for diatom assemblages in Clark Fork River Operable Unit monitoring sites, 2015-2022. Lines represent boundaries between impairment classifications: >2.7 percent indicates no impairment, 1.7-2.7 percent indicates mild impairment, 0.7-1.7 percent indicates moderate impairment, and <0.7 percent indicates severe impairment.

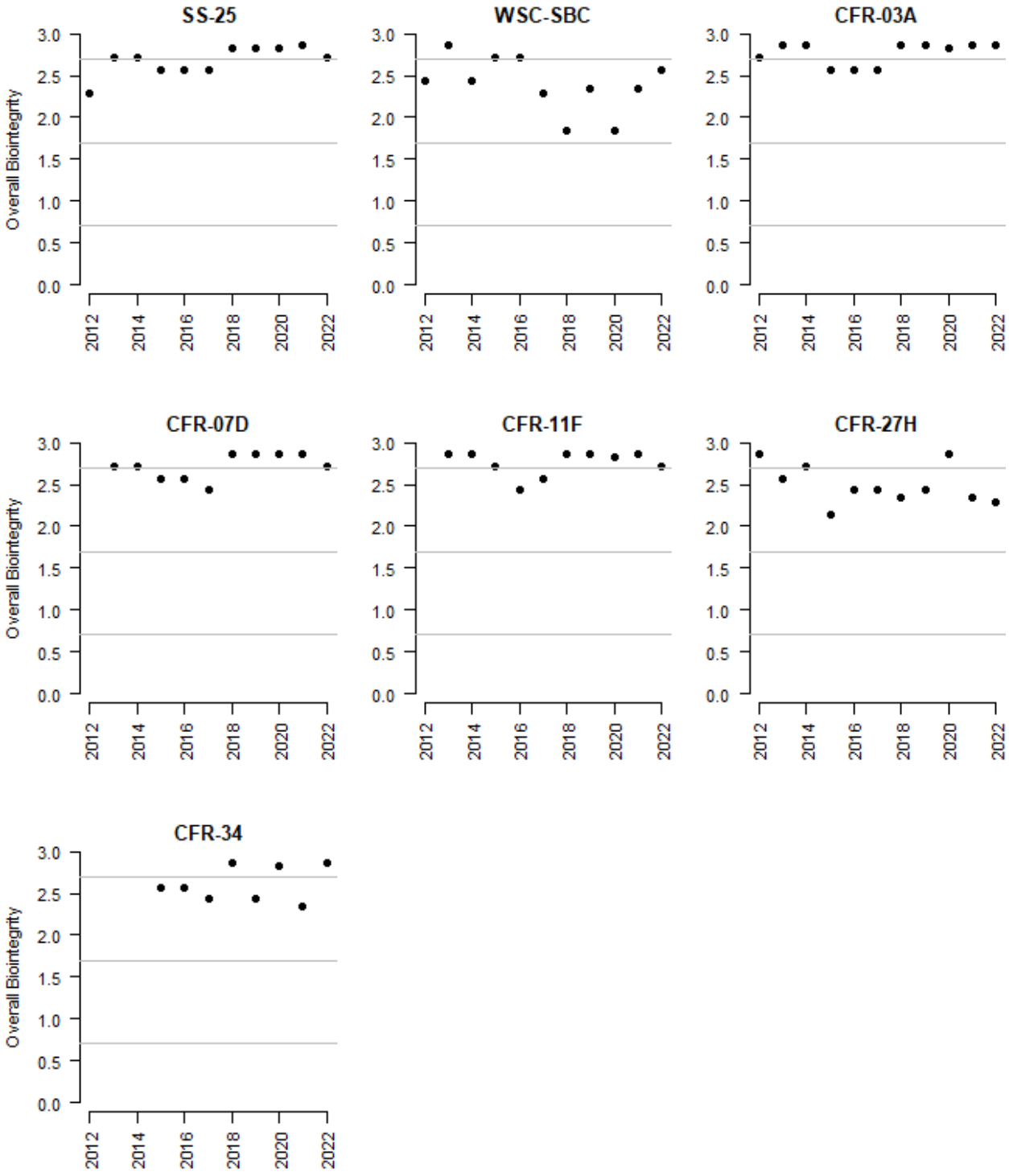


Figure 4-11. Overall biointegrity score for diatom assemblages in Clark Fork River Operable Unit monitoring sites, 2015-2022. Lines represent boundaries between impairment classifications: >2.7 percent indicates no impairment, 1.7-2.7 percent indicates mild impairment, 0.7-1.7 percent indicates moderate impairment, and <0.7 percent indicates severe impairment.

4.3.2.4.3 Trophic State

In 2022, relative abundance of nitrogen-autotrophic diatoms, which are intolerant of organic nitrogen, ranged from a low of 59 percent at Site SS-25 to a high of 77 percent at Site WSC-SBC (**Table 4-6**). The relative abundance of nitrogen-heterotrophic diatoms, which consume organic nitrogen and are thus tolerant of nutrient-rich conditions, ranged from 1-3 percent among all sites except Site SS-25, which had 14 percent (**Table 4-6**).

The median proportion of nitrogen-autotroph diatoms ranged from about 60-80 percent (**Figure 4-12**). There appears to be a slight increasing trend in the proportion of diatom taxa that are nitrogen-autotrophic at most sites, with the exception of Site SS-25 (**Figure 4-13**).

The median proportion of nitrogen-heterotroph diatoms ranged from about 2-15 percent (**Figure 4-14**). Several sites demonstrate potentially declining nitrogen-heterotroph taxa proportions, although the decline appears to be subtle at each site (**Figure 4-15**).

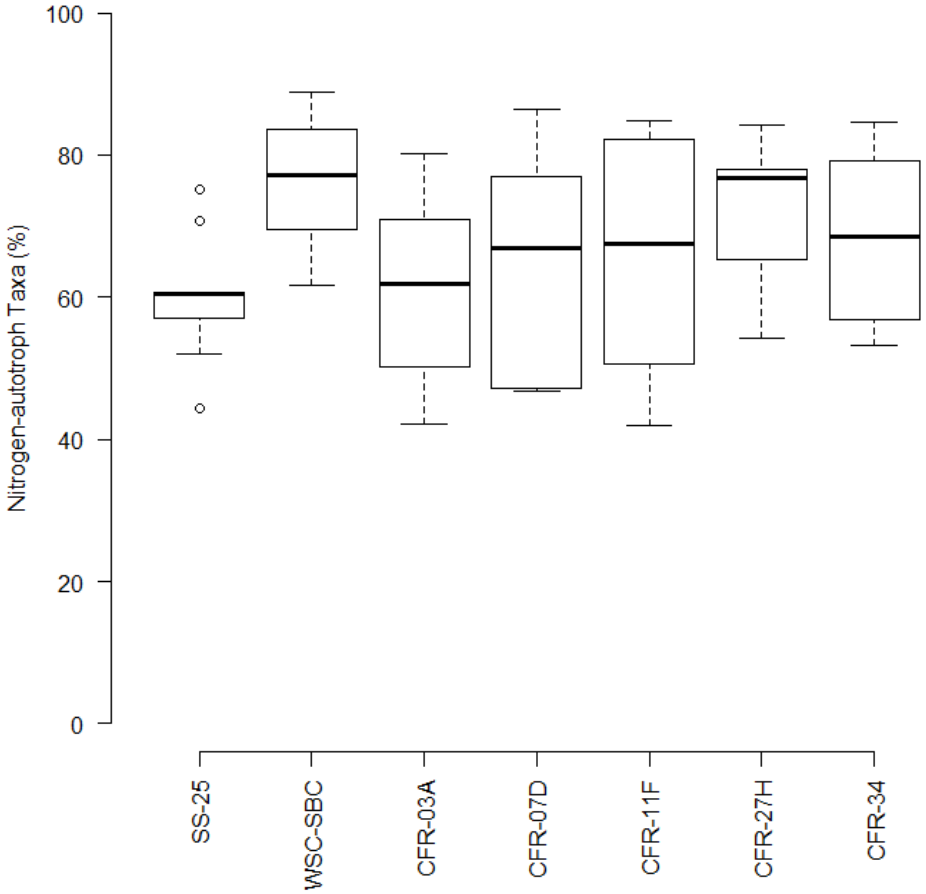


Figure 4-12. Boxplots for the proportion of sampled diatoms that are nitrogen-autotrophs for Clark Fork River Operable Unit monitoring sites, 2015-2022.

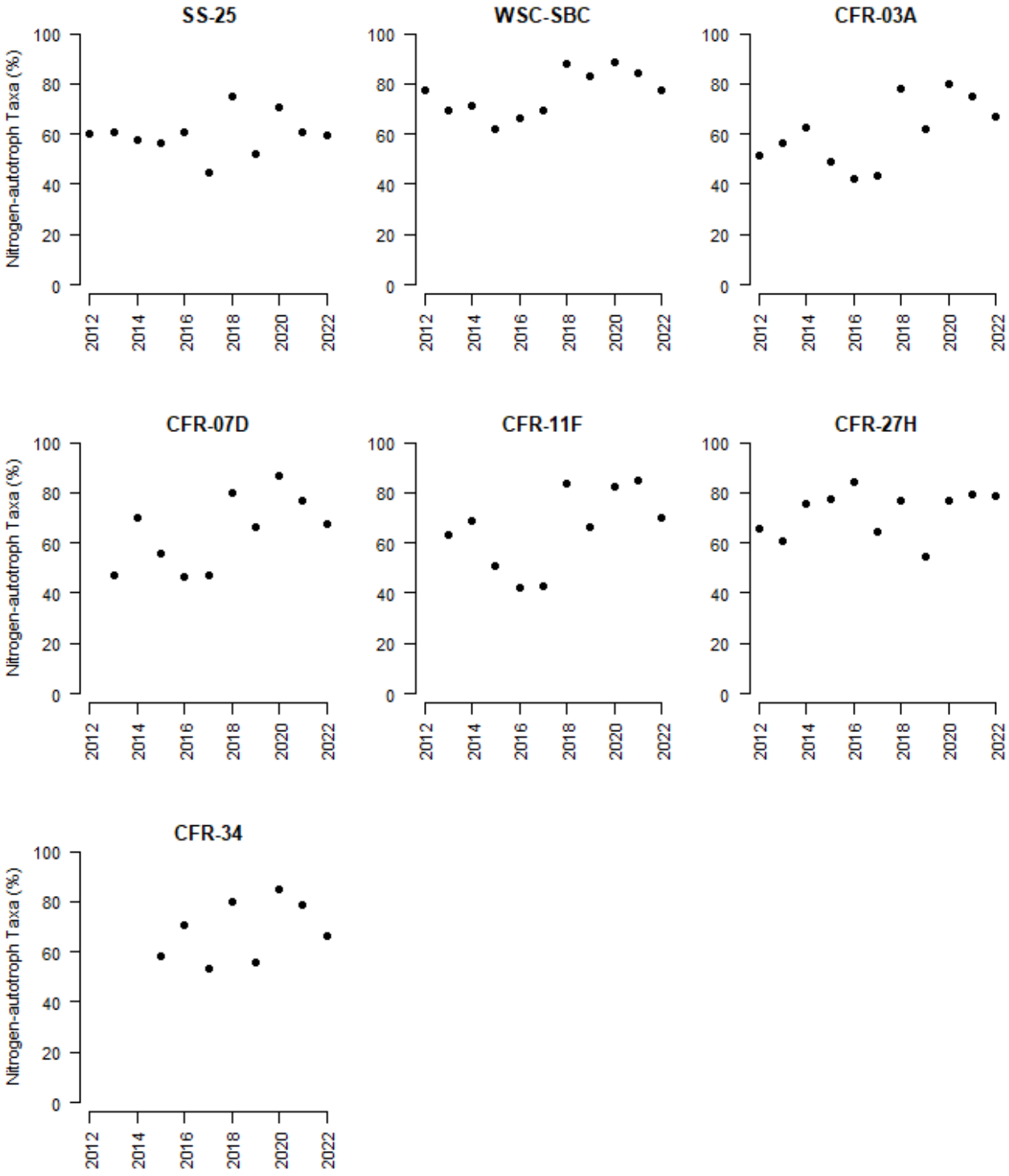


Figure 4-13. Proportion of sampled diatoms that are nitrogen-autotrophs for Clark Fork River Operable Unit monitoring sites, 2015-2022.

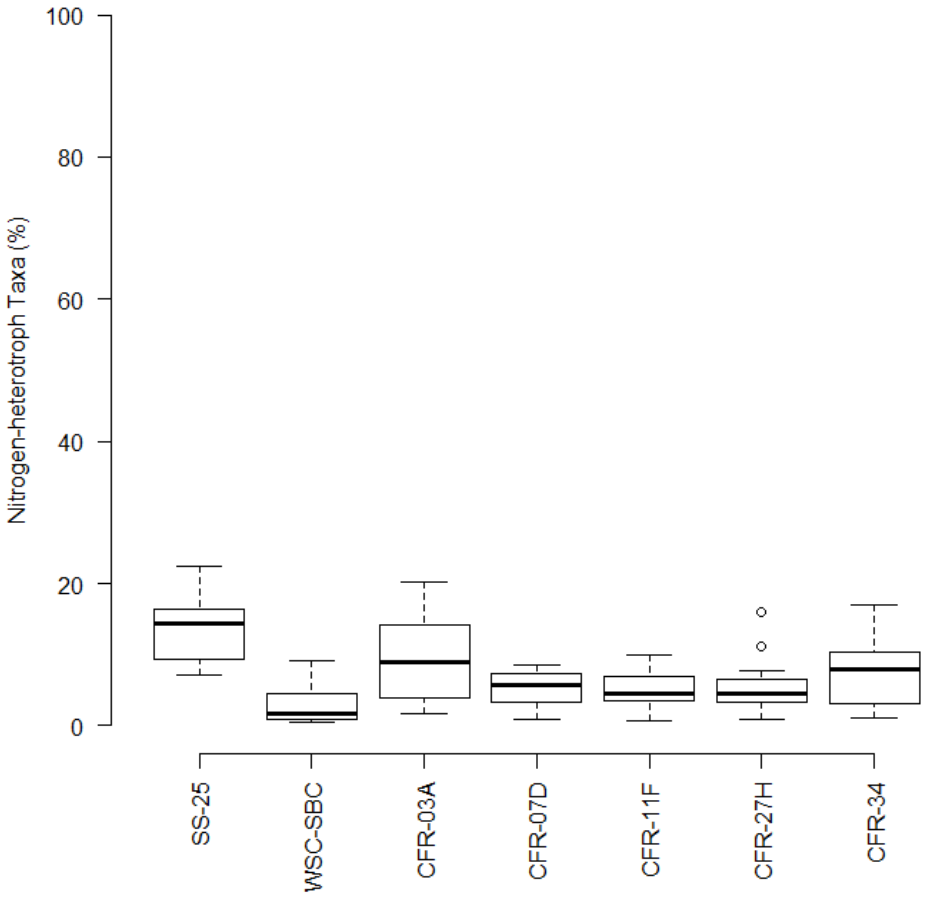


Figure 4-14. Boxplots for the proportion of sampled diatoms that are nitrogen-heterotrophs for Clark Fork River Operable Unit monitoring sites, 2015-2022.

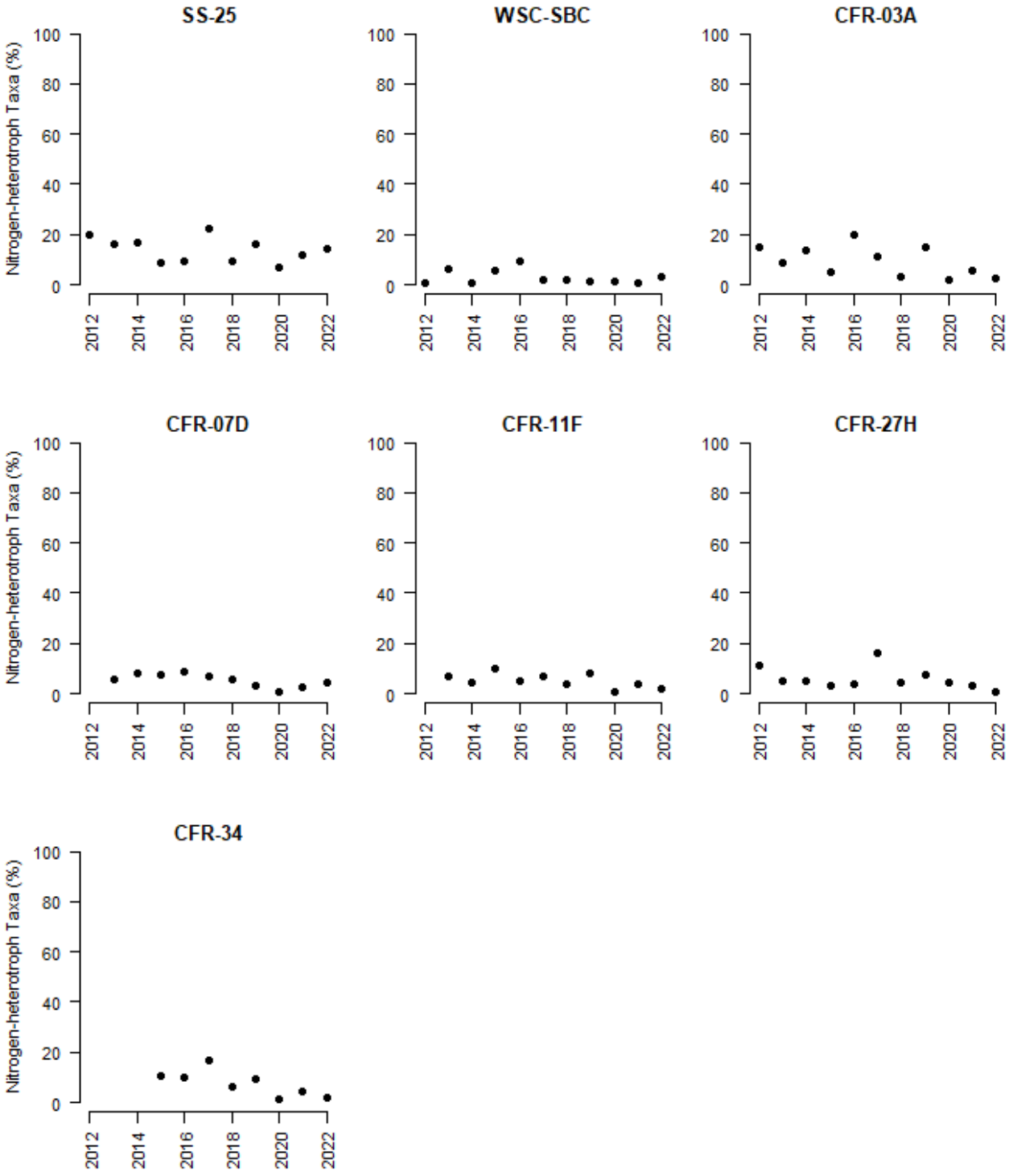


Figure 4-15. Proportion of sampled diatoms that are nitrogen-heterotrophs for Clark Fork River Operable Unit monitoring sites, 2015-2022.

4.3.2.4.4 Saprobity and Hypoxia

The relative abundance of oligosaprobous or ß-mesosaprobous diatoms is likely to be correlated with stream reaches having low levels of organic decomposition and high (at least 70 percent) dissolved oxygen saturation.

In 2022, relative abundance of these species varied from a low of 61 percent at Site SS-25 to 90 percent at Site CFR-27H (**Table 4-6**). Relative abundance of these species at all mainstem sites was 70 percent or higher (**Table 4-6**).

Based on the combined results from the last eight (2015-2022) monitoring years, the median proportion of oligosaprobous or ß-mesosaprobous diatoms was relatively consistent at about 70-80 percent in the mainstem and Warm Springs Creek sites, but lower (about 55 percent) at the Silver Bow Creek site (**Figure 4-16**). Sites CFR-27H and CFR-34 demonstrated the greatest degree of annual variability (**Figure 4-16**). None of the sites demonstrated clear evidence of increasing or decreasing trends through time (Figure 4-17).

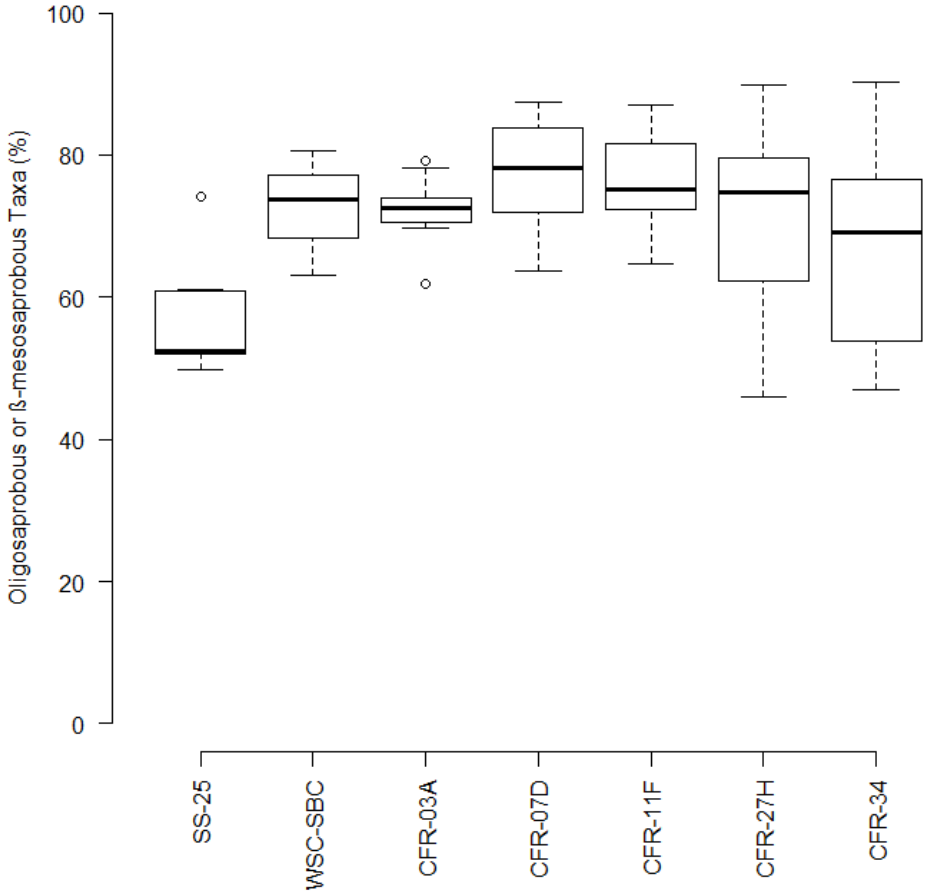


Figure 4-16. Boxplots for the proportion of sampled diatoms considered oligosaprobous or ß-mesosaprobous for Clark Fork River Operable Unit monitoring sites, 2015-2022.

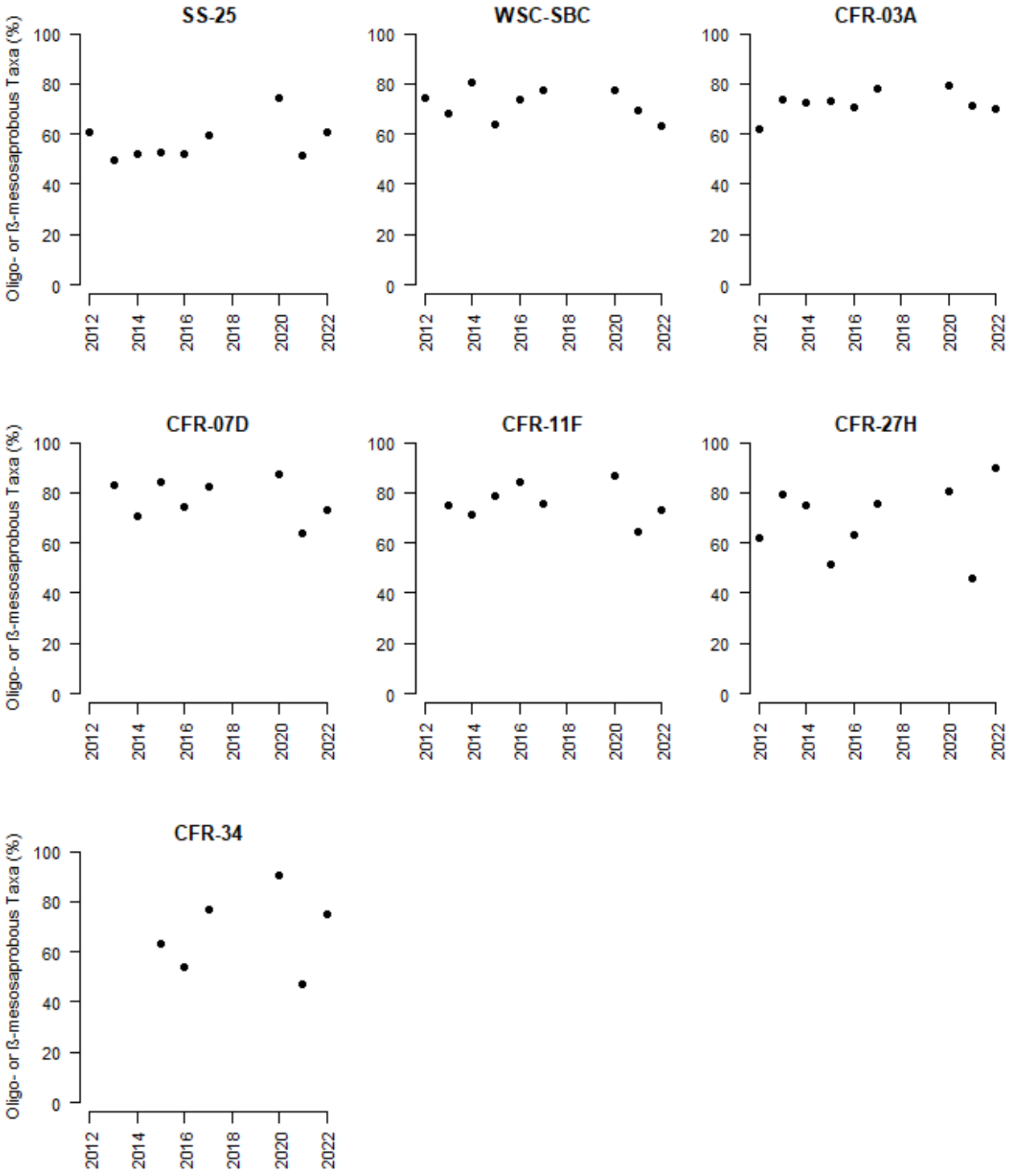


Figure 4-17. Proportion of sampled diatoms considered oligosaprobous or ß-mesosaprobous for Clark Fork River Operable Unit monitoring sites, 2015-2022.

4.4 DISCUSSION

Algal biomass in Clark Fork River Operable Unit is extensive and is related to the high levels of nutrient enrichment observed in the stream. The non-diatom algae comprising the greatest biovolume in the samples collected in 2022 were the blue-green algae (Cyanobacteria) genera *Calothrix, Homoeothrix, Leptolyngbya, Nostoc,* and *Phormidium* and the green algae *Cladophora*. Proliferation of blue-green algae, which are actually bacteria, are of particular concern. Under certain conditions these bacteria produce toxins which may be poisonous. Conditions under which harmful algal toxin events could occur include prolonged nutrient enrichment, warm, sunny weather, and warm, stagnant water. In the Clark Fork River system, these conditions would most likely occur during the late summer or early fall after prolonged periods of low flows due to evaporation, flow diversions through irrigation, or possibly within side channels or isolated pools.

The periphyton samples collected in 2022 were also monitored to investigate evidence of impairment to diatom communities from various stressors. Overall, all mainstem CFROU sites except one were considered to be in "excellent" condition based on Bahls [1993] overall biological integrity index scores derived from the diatom assemblages sampled at each site. The one exception was Site CFR-27H which was considered to be in "good" condition. Condition classifications in Silver Bow Creek and Warm Springs Creek site were similar at "excellent" and "good", respectively.

In the 2022 samples, there was evidence of stress to the diatom assemblages from several stressors including sediment and silt, nutrients, and excessive amounts of decaying organic matter. Sediment impairment probabilities at each site were estimated at 14-80 percent and nutrient impairment probabilities at each site were estimated at 17-98 percent. The proportion of diatom taxa which are nitrogen-heterotrophic, thus consuming organic nitrogen and thriving in environments with high nitrogen concentrations was low in the mainstem sites (4 percent or less). Oligosaprobous and ß-mesosaprobous diatom species, which are intolerant of aquatic conditions with extensive organic matter decay and hypoxia, comprised 70 percent or more of the assemblages observed in the mainstem.

5.0 MACROINVERTEBRATES

5.1 INTRODUCTION

Macroinvertebrate monitoring in the Clark Fork River Operable Unit (CFROU) is intended to determine if aquatic fauna are responding to the remedy. Macroinvertebrates, a general term for any aquatic invertebrates large enough to see without magnification, are of interest because the species composition observed at a site may reflect the quality of a given aquatic system. Certain macroinvertebrates are also classified as tolerant or sensitive to specific environmental stressors and thus can be used to identify direct impacts of abiotic conditions on the biota.

This report describes results of macroinvertebrate monitoring in the CFROU in 2022 and places those results in context with prior monitoring results. Results are summarized using several standard measures of biotic integrity for macroinvertebrate assemblages, including taxa richness, Shannon diversity, and a selection of biotic indices including the Montana Valley and Foothill Prairies index [Bollman, 1998], the Hilsenhoff Biotic Index [Hilsenhoff, 1987] tailored specifically to Montana waters [DEQ, 2011a; 2012], the Montana Observed:Expected index [Feldman and Jessup, 2012], and the Metals Tolerance Index (MTI) [McGuire, 2010].

5.2 METHODS

5.2.1 Monitoring Locations

Macroinvertebrates were sampled at seven CFROU sites (Table 5-1). Sample site locations were consistent with monitoring sites for surface water, sediment, periphyton, and geomorphic monitoring. At tributary sites, where the wetted stream channel width was relatively narrow (less than 12.5 m), macroinvertebrate (and periphyton) assemblages were sampled at 11 sites spaced along a longitudinal sample reach extending up to 500 m (i.e., 40 times the average wetted width at each sample site). At sites where the wetted width was greater than 12.5 m (i.e., all Clark Fork River mainstem sites), macroinvertebrates were sampled at 11 sites spaced along a lateral reach and distributed evenly across the channel. Subsamples collected at each site were composited at each site according to the protocols described in DEQ [2012].

Table 5-1. Macroinvertebrate sampling locations in the Clark Fork River Operable Unit.

Site description	Site ID	Co-located USGS gage	Latitude (NAD 83)	Longitude (NAD 83)
Tributary Sites				
Warm Springs Creek near mouth	WSC-SBC	12323770	46.18046	-112.78596
Silver Bow Creek at Warm Springs	SS-25	12323750	46.18123	-112.77917
Mainstem Sites				
Clark Fork River near Galen	CFR-03A	12323800	46.20877	-112.76740
Clark Fork River at Galen Road	CFR-07D	NA	46.23725	-112.75302
Clark Fork River at Gemback Road	CFR-11F	NA	46.26520	-112.74430
Clark Fork River at Deer Lodge	CFR-27H	12324200	46.39796	-112.74283
Clark Fork River at Williams-Tavenner Bridge	CFR-34	NA	46.39778	-112.74194

5.2.2 Monitoring Schedule

Samples were collected at all sites in the CFROU on August 25, 2022. Macroinvertebrate monitoring has occurred in the CFROU annually since 2011 but not all sites that were monitored in 2022 have been monitored throughout the duration of the monitoring program. Monitoring has been ongoing annually at Sites SS-25 and CFR-03A since 2011, at Site WSC-SBC since 2012, at Sites CFR-07D and CFR-11F since 2013, and at Site CFR-34 since 2015. Site CFR-27H was monitored from 2011-2012 and from 2020-2022. Monitoring at Site CFR-27H was discontinued between the 2013-2019 period to avoid redundancy of monitoring efforts between the DEQ and EPA monitoring programs.

5.2.3 Monitoring Parameters

A randomly selected, representative subsample of 500 (±10 percent) organisms was obtained from each sample and all organisms within those subsamples were identified to the lowest practical taxonomic level. Taxa counts were tabulated from the taxa identifications for each subsample. Measures of diversity (i.e., taxa richness and Shannon diversity) and indices of biotic integrity were then determined based on the taxa counts within each subsample.

5.2.4 Sampling Methods

At each long-term monitoring site (Table 5-1), Macroinvertebrate samples were composited from 11 sampling locations using the DEQ [2012] "traveling kick" method and a 1,000 µm mesh-size kick net. Samples were field preserved in ethanol and hand delivered to Rhithron Associates (Missoula, Montana) for analysis.

5.2.5 Laboratory Methods

Subsamples of organisms were obtained using Caton sub-sampling devices [Caton, 1991], divided into 30 grids, each approximately 6x6 cm. Each individual sample was thoroughly mixed in its jar(s), poured out and evenly spread into the Caton tray, and individual grids were randomly selected. The contents of each grid were examined under stereoscopic microscopes (Leica S6) using 10x-30x magnification. All aquatic invertebrates from each selected grid were sorted from the substrate and placed in 80 percent ethanol for subsequent identification. Grid selection, examination, and sorting continued until at least 500 (±10 percent) organisms were sorted. The final grid was completely sorted of all organisms. All unsorted sample fractions were retained and stored at the Rhithron laboratory.

Organisms were individually examined by certified taxonomists, using 10x-80x stereoscopic dissecting scopes (Leica S8E) and identified to the lowest practical level consistent with DEQ [DEQ, 2011a; 2012] data requirements, using appropriate published taxonomic references and keys. After slide-mounting, representative specimens of midges and worms were further examined at 200x-1,000x magnification using Leica DM1000 or Olympus BX 51 compound microscopes.

Identification, counts, life stages, and information about the condition of specimens were recorded on electronic bench sheets. Organisms that could not be identified to the taxonomic targets because of immaturity, poor condition, or lack of complete, current, and/or regionally-applicable published keys were left at appropriate taxonomic levels that were coarser than those specified. To obtain accuracy in richness measures, these organisms were designated as "not unique" if other specimens from the same group could be taken to target levels. Organisms designated as "unique" were those that could be definitively distinguished from other organisms in the sample. Identified organisms were preserved in 80 percent ethanol in labeled vials or, when appropriate, slide mounted and archived at the Rhithron laboratory.

5.2.6 Data Analysis Methods

Taxa lists and counts for each sample were compiled and approximately 72 standard metric expressions of taxonomic, functional, and behavioral characteristics as well as tolerance attributes were calculated, using a customized laboratory information system application. Aquatic invertebrate metrics highlighted in this report include taxa richness, Shannon diversity, the Hilsenhoff Biotic Index (with tolerance values and impact thresholds modified for Montana fauna [DEQ 2011a; 2012]), and the Metals Tolerance Index which was developed by McGuire [2010] for the Clark Fork River watershed. Table 5-2 shows scoring criteria applied by McGuire [2010] for these metrics.

Taxa richness is a count of the number of different taxa within a sample. It is a general and simple measure of ecological diversity and a coarse indicator of overall ecological function and complexity. Shannon diversity is another simple measure of ecological diversity, but it is more refined because it accounts for taxa richness as well as evenness (i.e., the number of individuals

of each taxa within the sample). For each of these measures, higher scores are generally considered indicative of ecological systems which are less disturbed and more complex because the site provides suitable habitat for a large number of taxa and each of those taxa is abundant and well-represented in the sample.

In addition to these indices, the sites were also evaluated using the Montana Observed:Expected model where "Observed" (O) represents the taxa collected in a sample and "Expected" (E) is the probability of capture for taxa expected at a site of similar type, that has not been negatively impacted by environmental stressors. Thus, the Observed:Expected model was used to test how far a given macroinvertebrate community (O) deviates from those sampled at reference sites (E). To derive the Observed:Expected ratio, the model application R code [DEQ, 2012] was used. The Observed:Expected index varies between zero (no organisms are collected) and one (the observed number of taxa is equal to the number of taxa expected at reference sites). In Montana, the Observed:Expected index is scored as pass/fail. In montane and transition zones, an Observed:Expected score at least 0.90 is a "pass" and a score of less than 0.90 is a "failure" [DEQ, 2011a; 2012]. An explanation of the theory and processes of the model is included in Feldman and Jessup [2012].

A multimetric index (Montana Valley and Foothill Prairies bioassessment index) was also used to examine the data [Bollman, 1998]. Six calculated metrics (

Table 5-3) are the index components. The Montana Valley and Foothill Prairies index is a quantitative measure which may be useful in assessing progress toward attainment of the general remediation goal of a "balanced, integrated, adaptive community" of aquatic invertebrates, as envisioned by Karr and Dudley [1981]. To arrive at a Montana Valley and Foothill Prairies index score and impairment classification, each component metric value was calculated, based on the taxonomic, functional, and tolerance attributes of the aquatic invertebrate assemblage, and categorical scores were assigned to each metric. Metric scores were summed for a total score, which was expressed as a percentage of the maximum total score. The percentages were then used to classify sites into impairment categories according to the following scenario: at least 83 percent was classified as "unimpaired"; 53-83 percent was classified as "slightly impaired"; 17-53 percent was classified as "moderately impaired"; and less than 17 percent was classified as "severely impaired".

Table 5-2. Hilsenhoff Biotic Index (HBI) and Metals Tolerance Index (MTI): metrics modified and developed by McGuire [2010] for assessing biological integrity in the Clark Fork River basin.

Metric	"no impact" ----------"severe impact"						
HBI	<4.0	4.0 – 4.5	4.6 – 5.1	5.2 – 5.7	5.8 – 6.3	6.4 – 6.9	>6.9
MTI	<4.0	4.0 – 4.9	5.0 – 5.9	6.0 – 6.9	7.0 – 7.9	8.0 – 8.9	>8.9

Table 5-3. Component metrics and scoring scheme for the aquatic invertebrate-based Montana Valley and Foothill Prairies (MVFP) bioassessment index [Bollman, 1998].

Metric	Metric score			
	3	2	1	0
	Metric values			
Ephemeroptera richness	>5	5 – 4	3 – 2	<2
Plecoptera richness	>3	3 – 2	1	0
Trichoptera richness	>4	4 – 3	2	<2
Number of sensitive taxa	>3	3 – 2	1	0
Percent filterers	0 - 5	5 – 10	10 – 25	>25
Percent tolerant taxa	0 - 5	5 - 10	10 - 35	>35

5.2.7 Quality Control

Quality control procedures for initial sample processing and subsampling involved checking sorting efficiency. The check was conducted on one of the samples (12.5 percent) by an independent technician who microscopically re-examined 100 percent of sorted substrate from each sample.

The sample processing quality control technician poured the sorted substrate from a processed sample out into a Caton tray. Portions of substrate were systematically removed and re-examined until 100 percent of the substrate was re-sorted. All organisms that were missed were counted and this number was added to the total number obtained in the original sort. Sorting efficiency was evaluated by applying the following calculation:

$$SE = \frac{n_1}{n_1 + n_2} \times 100$$

where: SE is the sorting efficiency (percent), n_1 is the total number of specimens in the first sort, and n_2 is the total number of specimens obtained in the second sort.

Quality control procedures for taxonomic determinations of invertebrates involved checking accuracy, precision, and enumeration. One sample (12.5 percent) was randomly selected, and all organisms re-identified and counted by an independent taxonomist. The percent taxonomic disagreement and percent difference in enumeration parameters were calculated. Routinely, discrepancies between the original identifications and the quality control identifications are discussed among the taxonomists, and necessary rectifications to the data are made. Discrepancies that cannot be rectified by discussions are routinely sent out to taxonomic specialists for identification. However, taxonomic certainty for identifications in this project was high and no external verifications were necessary.

5.3 RESULTS

5.3.1 Richness and Diversity

A total of 138 separate macroinvertebrate taxa were observed in the subsampled portions of the 2022 CFROU samples (Table 5-4). The orders with the greatest diversity observed were midges (41 taxa), followed by caddisflies (23 taxa), mayflies (15 taxa), true flies (9 taxa), and snails (7 taxa) (Table 5-4). For the first time in the CFROU or SSTOU, a New Zealand mudsnail (*Potamopyrgus antipodarum*) was observed. New Zealand mudsnails are an invasive species in North America. They were sampled only in the Silver Bow Creek site near Warm Springs (Site SS-25) during the 2022 monitoring period. Since New Zealand mudsnails were discovered at the site in August 2022, their presence at the site has been confirmed by Montana Fish, Wildlife and Parks in March 2023.

In 2022, taxa richness in the Clark Fork River mainstem sites sampled ranged from 35-44 and from 37-41 in the tributary sites (Table 5-5). Since 2011, median taxa richness has ranged from about 40-50 with the highest median richness at Site SS-25 (Figure 5-1). Taxa richness has been variable between 2011-2022 at all sites (Figure 5-2). Some sites appear to have declining richness over the monitoring period but given the high degree of variance at each site it is unlikely that any of the observed trends would be statistically significant.

Shannon diversity index values ranged from 3.50-4.33 in the Clark Fork River mainstem sites in 2022 (Table 5-5). Since 2011, median Shannon diversity values have ranged from about 3.8-4.2 (Figure 5-3). Shannon diversity appears to have been relatively steady at most sites over the monitoring period from 2011-2022 (Figure 5-4).

Table 5-4. Macroinvertebrate taxa observed in the Clark Fork River Operable Unit, 2022.

Common Name (Order)	Taxonomic Name	Comment
Beetles	*Cleptelmis addenda*	
	Isogenoides	
	Microcylloepus	
	Optioservus	
	Zaitzevia	
Bivalves (Clams)	*Pisidiidae*	*Sphaeriidae*
Bloodworms	*Alotanypus*	
	Micropsectra	
	Microtendipes	
	Nanocladius	
	Orthocladius	
Caddisflies	*Agapetus*	
	Amiocentrus aspilus	
	Arctopsyche	

Common Name (Order)	Taxonomic Name	Comment
	Brachycentridae	
	Brachycentrus occidentalis	
	Cheumatopsyche	
	Glossosoma	
	Glossosomatidae	
	Helicopsyche	
	Hydropsyche	
	Hydropsychidae	
	Hydroptila	
	Hydroptilidae	
	Lepidostoma	
	Limnephilidae	
	Micrasema	
	Nectopsyche	
	Neophylax rickeri	
	Oecetis	
	Protoptila	
	Psychoglypha	
	Psychomyia	
	Rhyacophila brunnea	*Rhyacophila Brunnea* group
Crane flies	*Hexatoma*	
	Tipula	
Crayfish	*Pacifastacus leniusculus*	
Crustaceans	*Caecidotea*	
	Cladocera	
	Copepoda	
	Crangonyx	
	Hyalella	
	Ostracoda	
Dragonflies	*Gomphidae*	
	Ophiogomphus	
Flatworms	*Trepaxonemata*	
Leeches	*Erpobdella*	
	Helobdella stagnalis	
	Theromyzon	
Mayflies	*Attenella*	
	Attenella margarita	
	Baetis	*Baetis Fuscatus* group
	Baetis tricaudatus	*Baetis tricaudatus* complex
	Callibaetis	

Common Name (Order)	Taxonomic Name	Comment
	Diphetor hageni	
	Drunella	
	Ecdyonurus criddlei	*Afghanurus criddlei*
	Ephemerella	
	Ephemerellidae	
	Heptagenia	
	Iswaeon	
	Leptophlebiidae	
	Procloeon	
	Tricorythodes	
Midges	*Apsectrotanypus*	
	Cardiocladius	
	Ceratopogoninae	
	Chironomini	
	Corynoneura	
	Cricotopus	
	Cricotopus (Cricotopus)	
	Cricotopus (Isocladius)	
	Cricotopus (Nostococladius)	
	Cricotopus bicinctus	
	Cricotopus trifascia	
	Dasyhelea	
	Diamesinae	
	Eukiefferiella	
	Eukiefferiella brehmi	*Eukiefferiella Brehmi* group
	Eukiefferiella claripennis	*Eukiefferiella Claripennis* group
	Eukiefferiella devonica	*Eukiefferiella Devonica* group
	Eukiefferiella gracei	*Eukiefferiella Gracei* group
	Odontomesa	
	Orthocladiinae	*Cricotopus / Orthocladius*
	Orthocladiinae	
	Pagastia	
	Parametriocnemus	
	Paratendipes	
	Pentaneura	
	Phaenopsectra	
	Polypedilum	
	Potthastia gaedii	*Potthastia Gaedii* group
	Procladius	
	Prodiamesa	

Common Name (Order)	Taxonomic Name	Comment
	Psectrocladius	
	Rheotanytarsus	
	Tanypodinae	
	Tanytarsini	
	Tanytarsus	
	Thienemanniella	
	Thienemannimyia	*Thienemannimyia* group
	Tribelos	
	Tvetenia	
	Tvetenia bavarica	*Tvetenia Bavarica* group
	Tvetenia vitracies	*Tvetenia tshernovskii*
Mites	*Acari*	
Moths	*Petrophila*	
Ribbon worms	*Prostoma*	
Roundworms	*Nematoda*	
Snails	*Galba*	
	Gastropoda	
	Gyraulus	
	Lymnaeidae	
	Physella	
	Potamopyrgus antipodarum	New Zealand mudsnail
	Stagnicola	
Stoneflies	*Chloroperlidae*	
	Hesperoperla pacifica	
	Isoperla	
	Perlidae	
	Skwala	
	Sweltsa	
True bugs	*Corixidae*	
True flies	*Atherix*	
	Chelifera	
	Conchapelopia	
	Empididae	
	Hemerodromia	
	Sciomyzidae	
	Simulium	
	Stratiomyidae	
	Tabanidae	
Worms	*Enchytraeidae*	
	Limnodrilus	

Common Name (Order)	Taxonomic Name	Comment
	Naididae	
	Naididae	*Tubificinae*
	Nais (Animalia)	
	Tubificidae	

Table 5-5. Taxa richness and Shannon diversity for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2022.

Site description	Site ID	Taxa Richness	Shannon Diversity
Tributary Sites			
Warm Springs Creek near mouth	WSC-SBC	41	3.68
Silver Bow Creek at Warm Springs	SS-25	37	2.79
Mainstem Sites			
Clark Fork River near Galen	CFR-03A	39	3.78
Clark Fork River at Galen Road	CFR-07D	44	4.33
Clark Fork River at Gemback Road	CFR-11F	40	4.23
Clark Fork River at Deer Lodge	CFR-27H	35	3.50
Clark Fork River at Williams-Tavenner Bridge	CFR-34	39	3.54

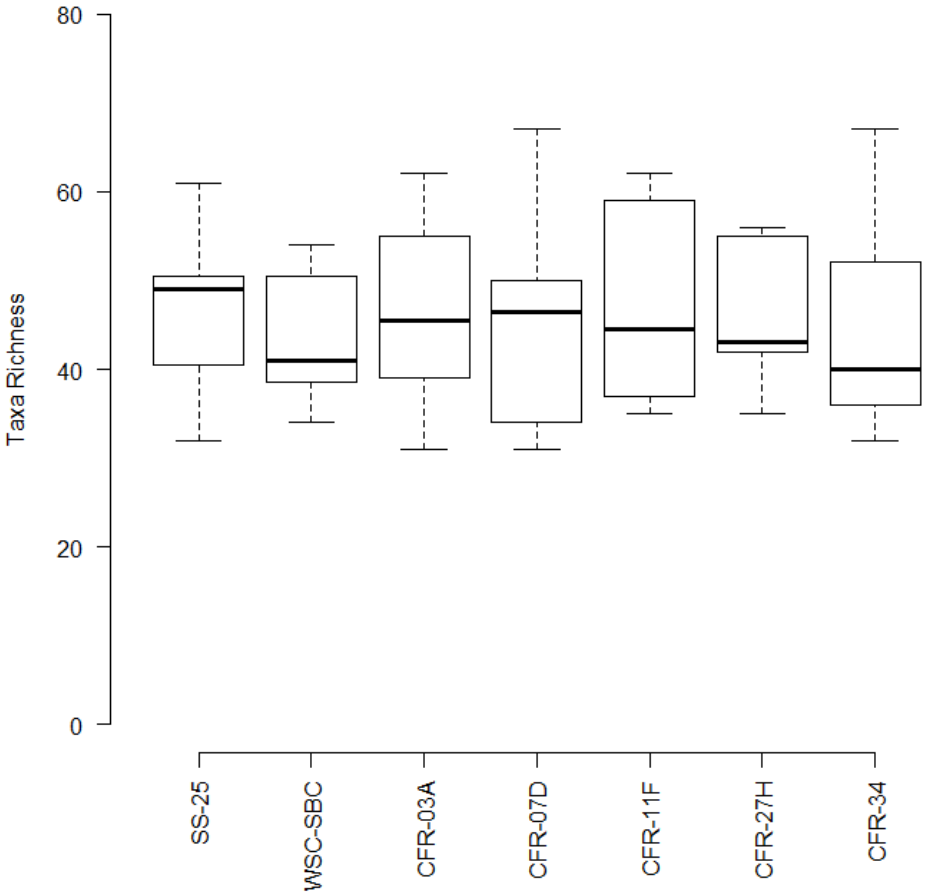


Figure 5-1. Boxplots of taxa richness for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2011-2022.

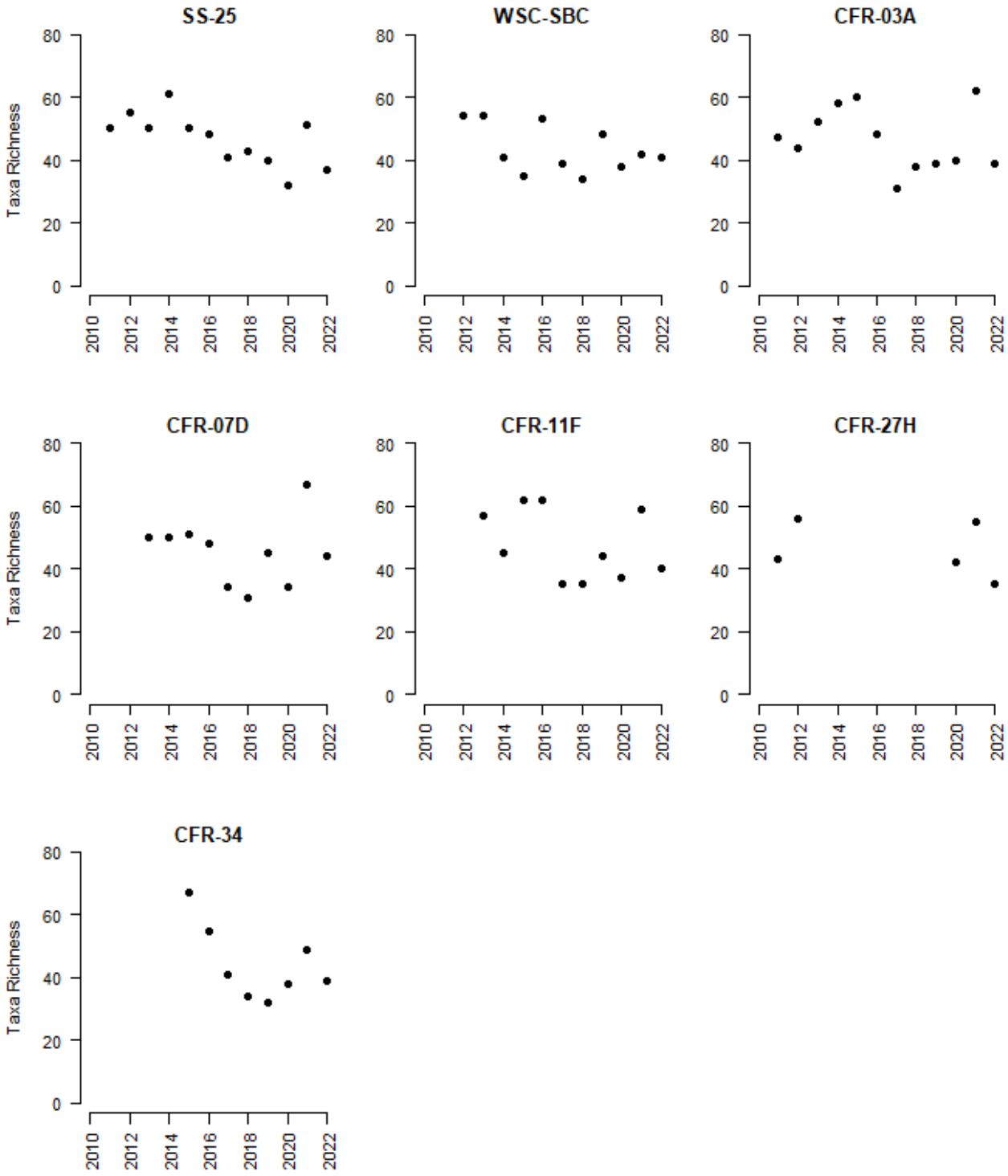


Figure 5-2. Taxa richness for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2011-2022.

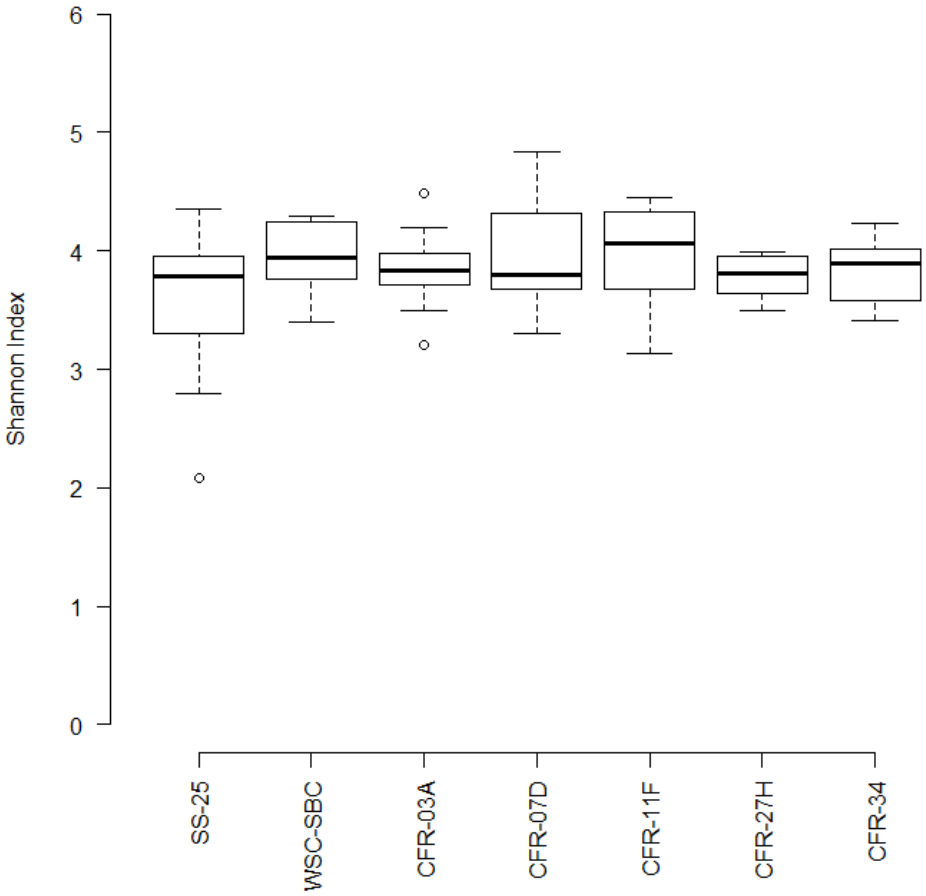


Figure 5-3. Boxplots of Shannon diversity for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2011-2022.

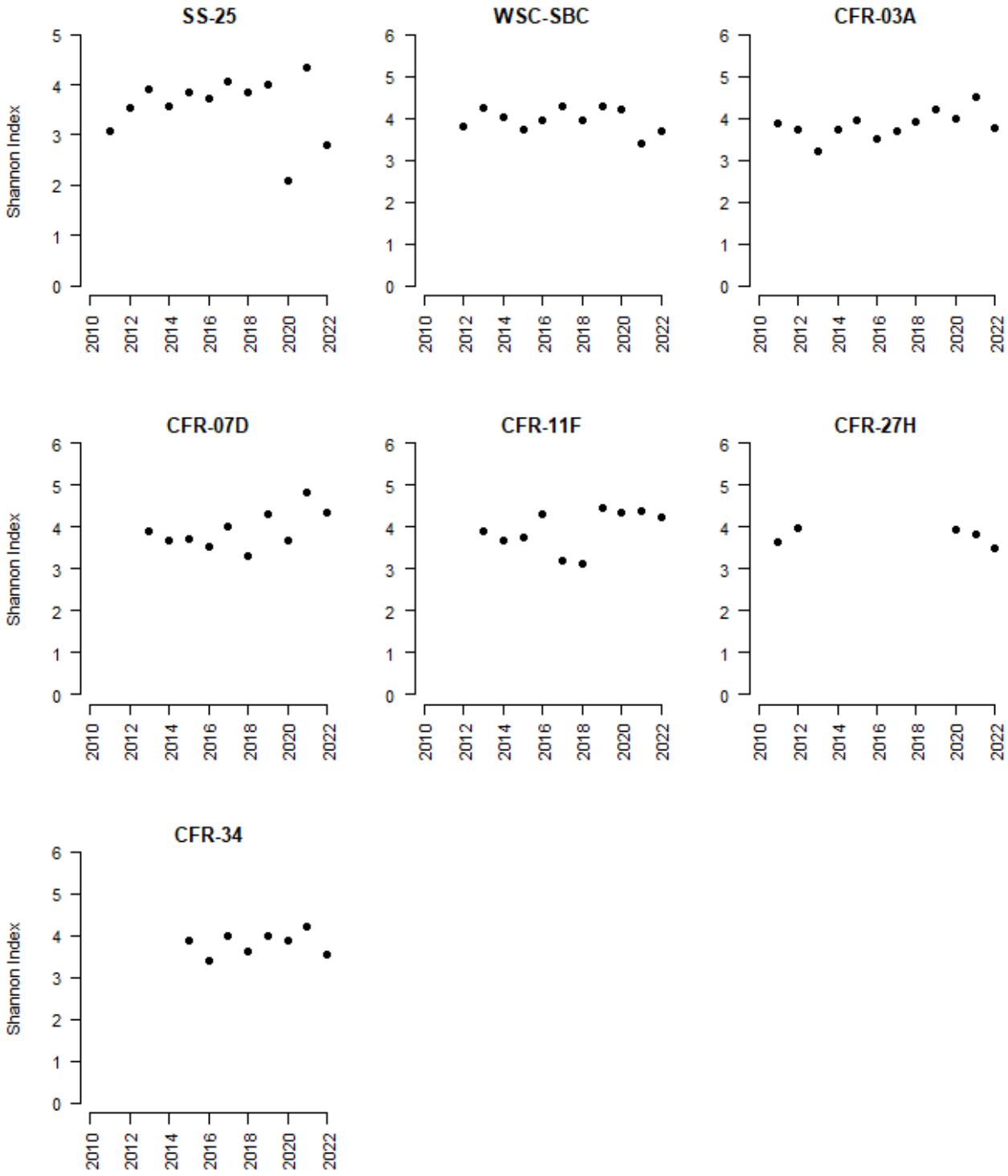


Figure 5-4. Shannon diversity for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2011-2022.

5.3.2 Bioassessment Indices

In 2022, all sites were classified as at least "mildly" impaired for at least three of the four bioassessment indices (Table 5-6). The Montana Valley and Foothill Prairies, Observed:Expected, and Hillsenhoff Biotic indices classified all sites as impaired and all but two sites (Sites CFR-07D and CFR-11F) were classified as impaired based on the Metals Tolerance Index (Table 5-6).

Table 5-6. Scores and impairment classifications for four selected macroinvertebrate bioindices for each Clark Fork River Operable Unit monitoring site, 2022.

Site description	Site ID	Montana Valley and Foothill Prairies	Observed: Expected	Hilsenhoff Biotic Index	Metals Tolerance Index
Tributary Sites					
Warm Springs Creek near mouth	WSC-SBC	44	0.78	4.20	4.52
Silver Bow Creek at Warm Springs	SS-25	28	0.69	5.06	4.63
Mainstem Sites					
Clark Fork River near Galen	CFR-03A	44	0.46	5.52	4.42
Clark Fork River at Galen Road	CFR-07D	56	0.59	4.50	3.90
Clark Fork River at Gemback Road	CFR-11F	56	0.44	4.90	3.90
Clark Fork River at Deer Lodge	CFR-27H	39	0.41	4.57	4.37
Clark Fork River at Williams-Tavenner Bridge	CFR-34	33	0.44	4.40	4.23

Result indicates no impairment.
Result indicates mild impairment.
Result indicates moderate impairment.
Result indicates severe impairment.

5.3.2.1 Montana Valley and Foothill Prairies

Median scores for the Montana Valley and Foothill Prairies index ranged from about 50-58 in the Clark Fork River Mainstem (Figure 5-5). Median scores were generally similar among mainstem sites, but slightly lower at the two lower sites (Sites CFR-27H and CFR-24) (Figure 5-5). The median score in Silver Bow Creek was at about the lower end of the Clark Fork River range, and the median score in Warm Springs Creek was slightly higher (about 60) and the highest in the CFROU (Figure 5-5). Median scores qualified as "moderately" impaired at Sites SS-25, CFR-27H, and CFR-34 and as "mildly" impaired at all other sites (Figure 5-5).

Montana Valley and Foothill Prairies index scores have been variable through time at most sites (Figure 5-6). Results through time at certain sites may suggest trends through time, generally declining (e.g., Sites SS-25, CFR-03A, and CFR-34), but given the degree of variance in the results at each site it is unlikely that these would be considered statistically significant trends (Figure 5-6).

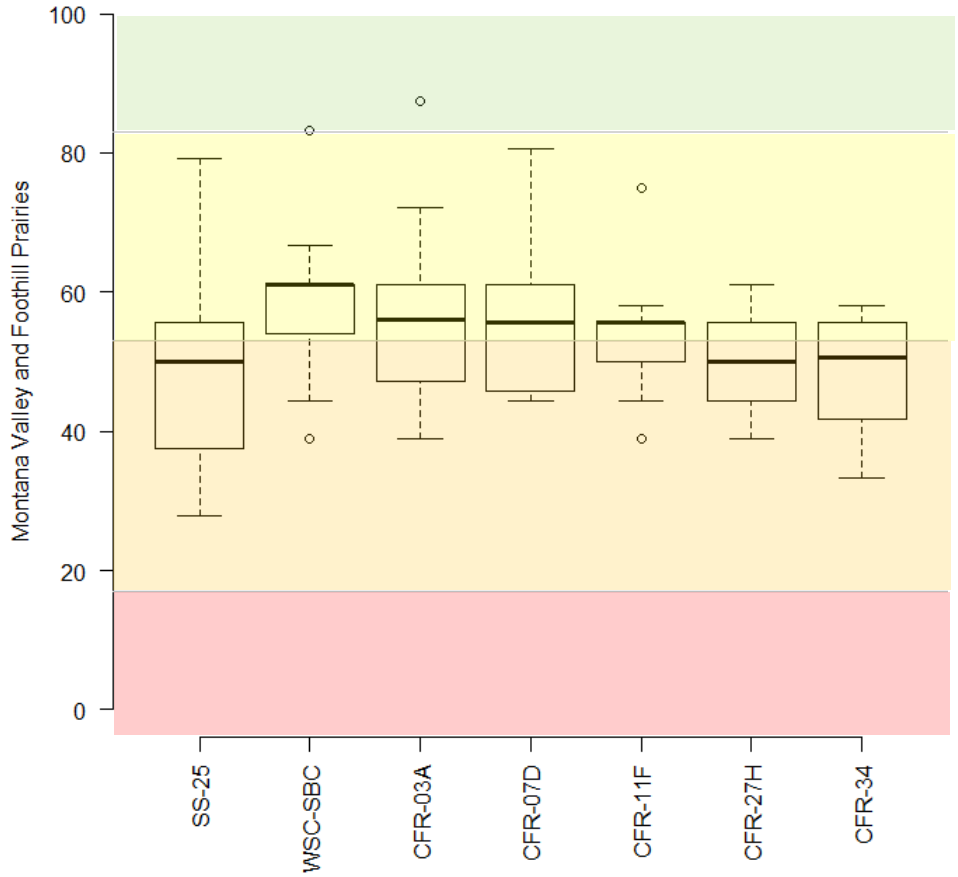


Figure 5-5. Boxplots of Montana Valley and Foothill Prairies index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 17 is severely impaired, 17-53 is moderately impaired, 53-83 is mildly impaired, and more than 83 is unimpaired.

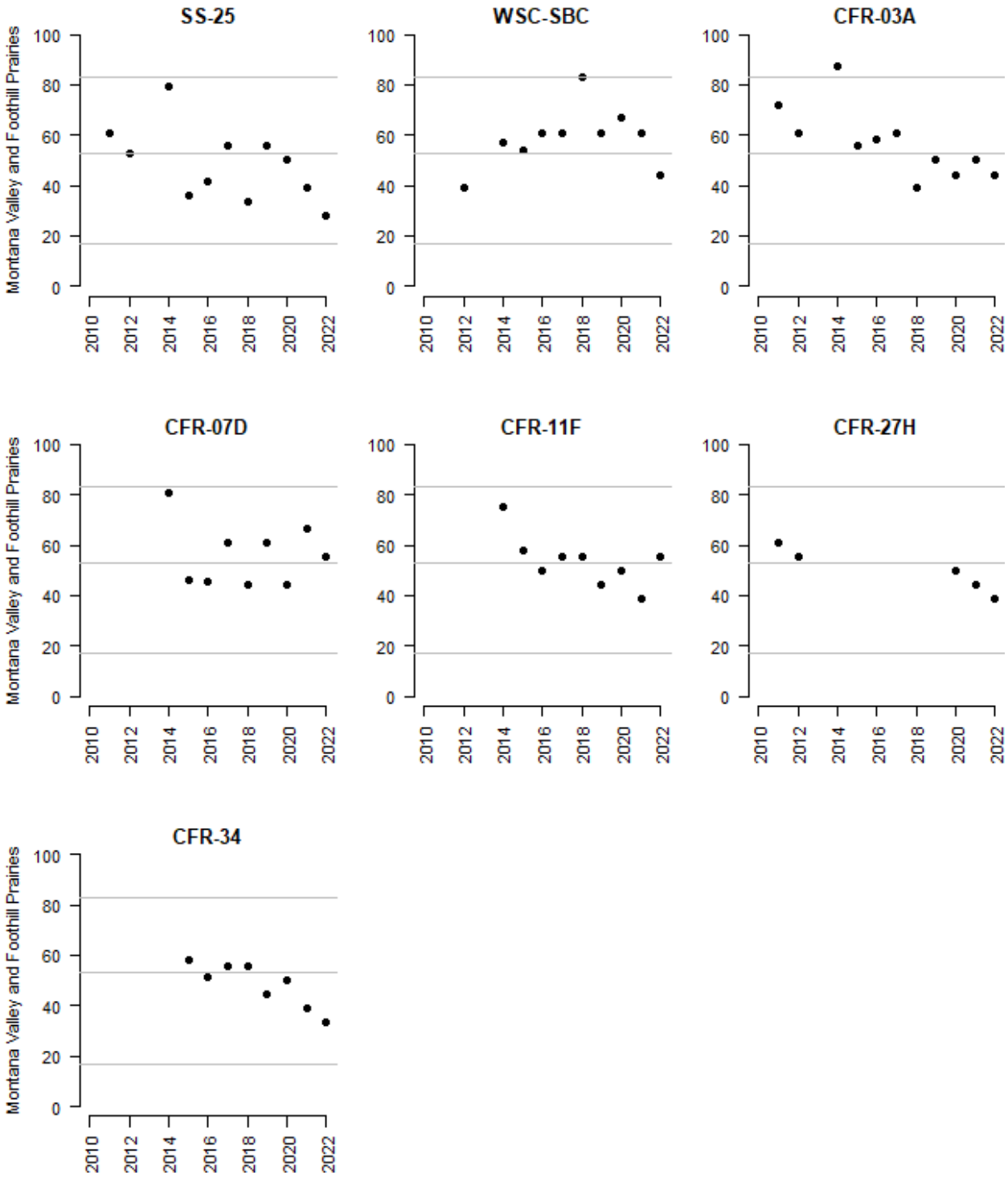


Figure 5-6. Montana Valley and Foothill Prairies index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 17 is severely impaired, 17-53 is moderately impaired, 53-83 is mildly impaired, and more than 83 is unimpaired.

5.3.2.2 Observed:Expected

Median scores for the Observed:Expected index have ranged from about 0.38-0.75 among the CFROU sites (Figure 5-7). Median scores were highest in the tributary sites (Sites SS-25 and WSC-SBC), but scores in those sites were also highly variable (). All mainstem sites had median scores near 0.40 (). Site CFR-34 was similar to the tributary sites in the high degree of variability in annual scores (). All median scores were below the "no impairment" threshold of 0.90 (Figure 5-7).

Observed:Expected index scores appear to have increased sharply over time at the tributary sites (Figure 5-8). Mainstem sites tended to have similar annual scores and no trends were apparent except, potentially at Site CFR-07D, which may be improving over time (Figure 5-8). Site CFR-34 had high scores in 2015 and 2016, but scores have since declined and since 2017 scores at that site have been similar to those in other mainstem sites (Figure 5-8). Through the period of monitoring in the CFROU, only two site samples have exceeded the "no impairment" threshold (Figure 5-8).

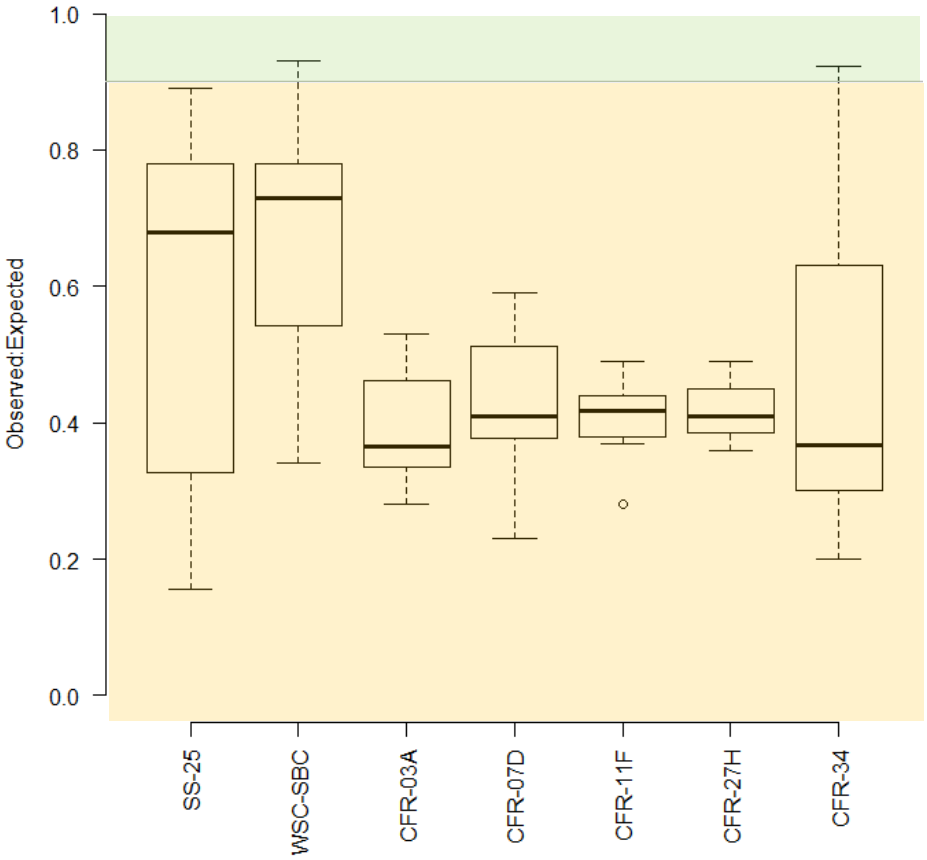


Figure 5-7. Boxplots of Observed:Expected index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment threshold is represented by horizontal line: less than 0.9 is impaired and more than 0.9 is unimpaired.

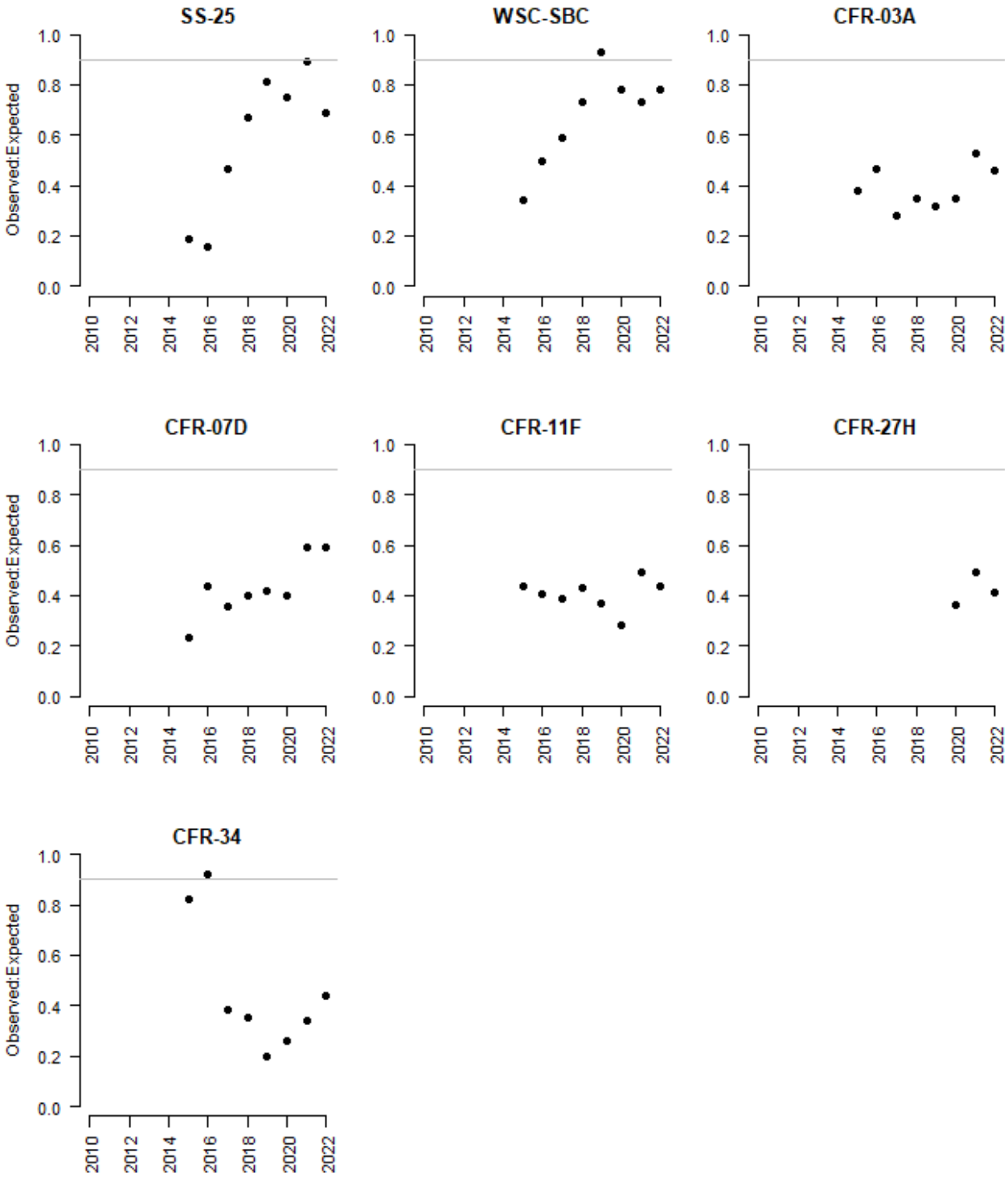


Figure 5-8. Observed:Expected index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment threshold is represented by horizontal line: less than 0.9 is impaired and more than 0.9 is unimpaired.

5.3.2.3 Hilsenhoff Biotic index

Median scores for the Hilsenhoff Biotic Index scores ranged from about 4.2-5.2 in the CFROU (Figure 5-9). The median score in Silver Bow Creek was higher than the mainstem median scores and the median score in Warm Springs Creek was slightly lower than the mainstem scores (Figure 5-9). Median scores fell within the "impaired" range at all sites (Figure 5-9).

Hilsenhoff Biotic Index scores have been relatively stable over time (Figure 5-10), and with little annual variation compared to the Observed:Expected and Montana Valley and Foothill Prairies indices At this point, there is little evidence of increasing or decreasing trends in the Hilsenhoff Biotic Index scores at any of these sites over time (Figure 5-10).

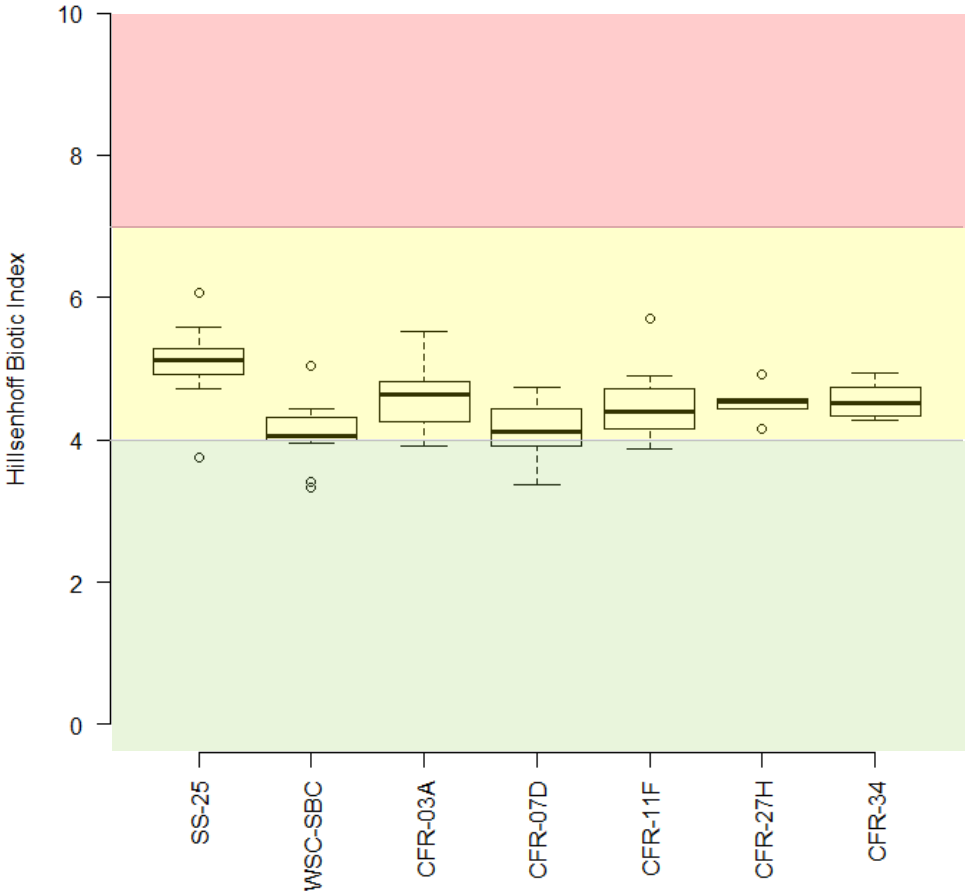


Figure 5-9. Boxplots of Hilsenhoff Biotic Index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 4 is unimpaired and more than 7 is severely impaired.

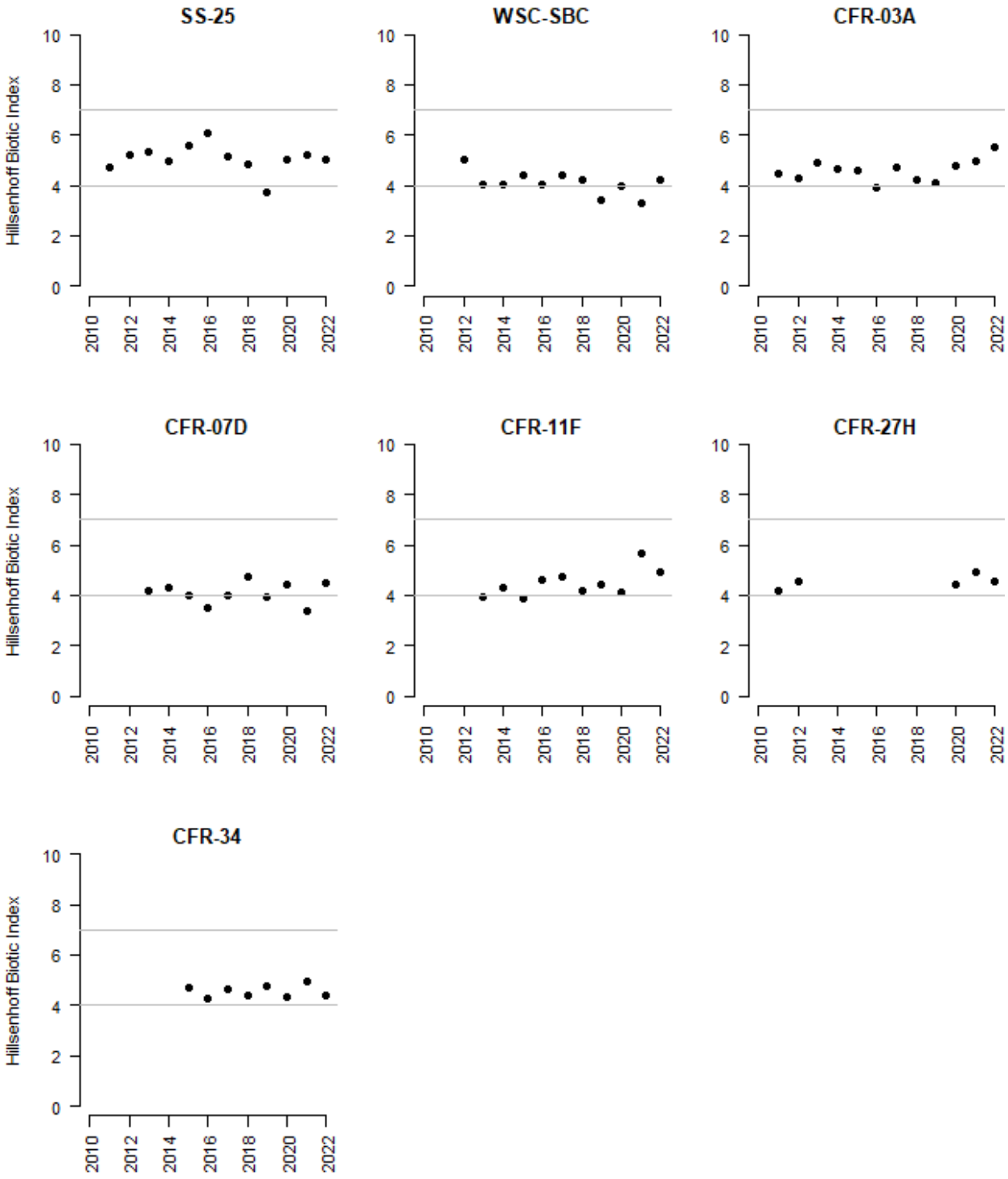


Figure 5-10. Hilsenhoff Biotic Index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 4 is unimpaired and more than 7 is severely impaired.

5.3.2.4 Metals Tolerance Index

Median scores for the Metals Tolerance Index scores ranged from about 3.9-4.7 in the CFROU (Figure 5-11). The median score in Silver Bow Creek and Warm Springs Creek were at the upper end of the range indicating slightly greater metals impairment at those sites compared to the mainstem, although mainstem Site CFR-27H also had a relatively high median score (Figure 5-11).

As with the results of the Hillsenhoff Biotic Index over time, the Metals Tolerance Index scores have been relatively consistent through time at each site (Figure 5-12). Trends at Sites SS-25, WSC-SBC, and CFR-03A suggest slowly declining scores at those sites, but these trends are subtle (Figure 5-12).

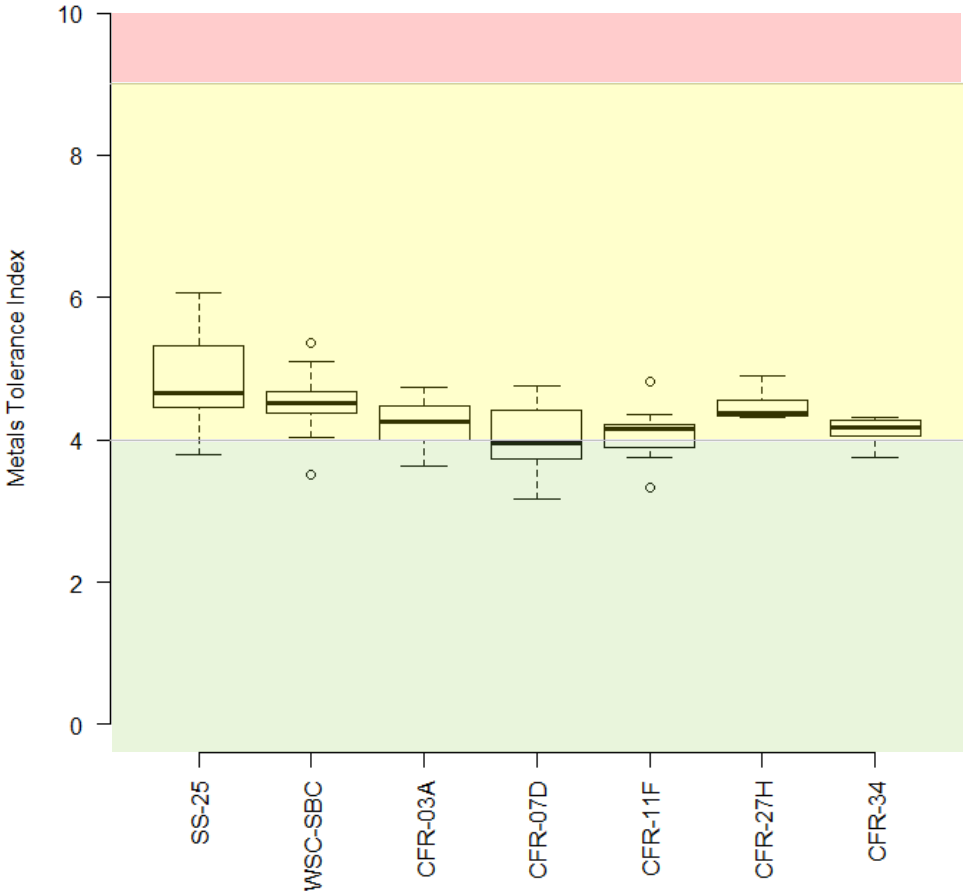


Figure 5-11. Boxplots of Metals Tolerance Index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 4 is unimpaired and more than 9 is severely impaired.

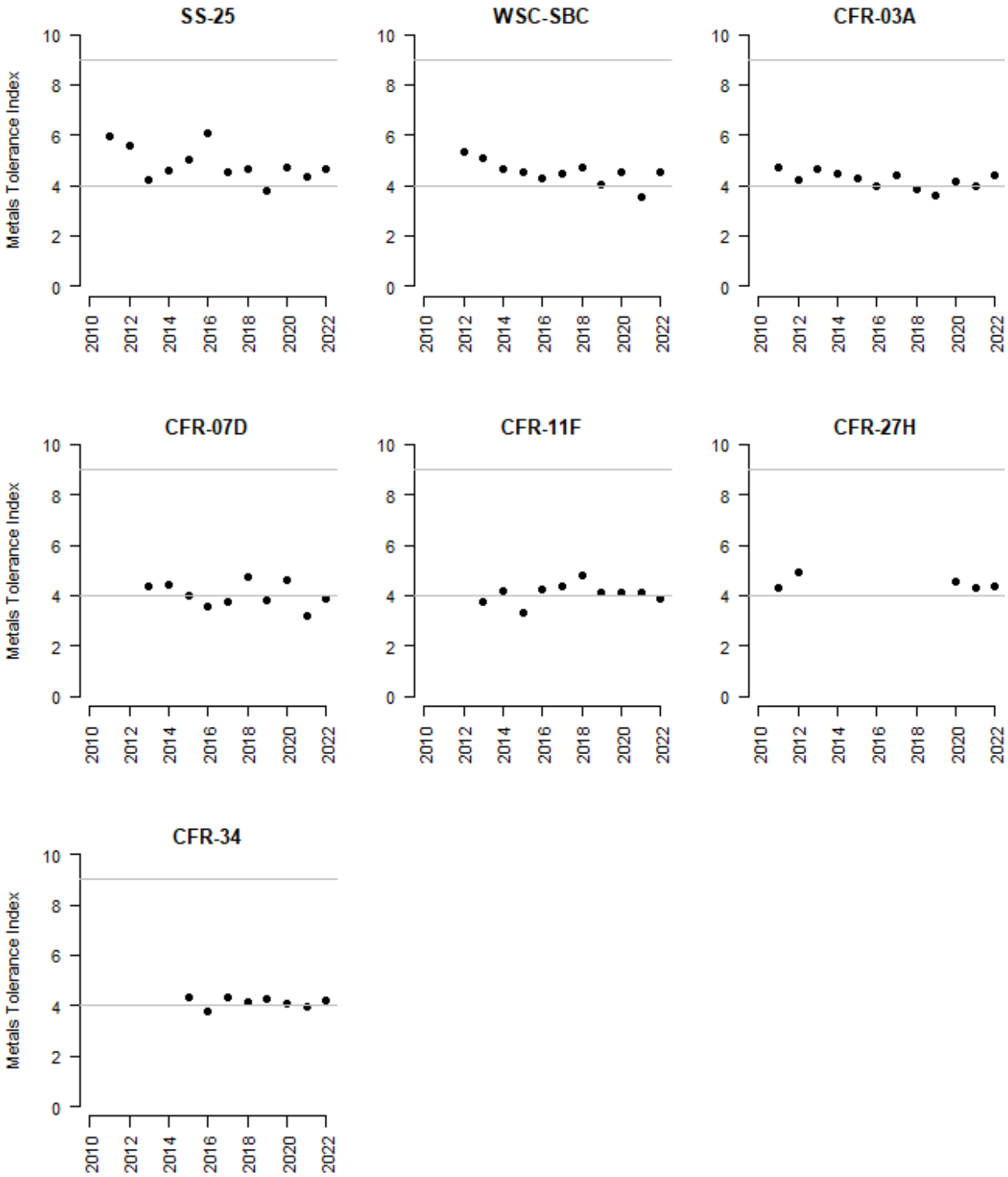


Figure 5-12. Metals Tolerance Index scores for macroinvertebrate assemblages at Clark Fork River Operable Unit sites, 2010-2022. Impairment thresholds are represented by horizontal lines: less than 4 is unimpaired and more than 9 is severely impaired.

5.3.1 Quality Control

The samples from Sites SS-25 and CFR-03A were randomly selected for quality control analyses in 2022. The Site SS-25 sample was analyzed for sorting efficiency and the Site CFR-03A sample was analyzed for percent taxonomic disagreement and percent difference in enumeration. Results were 100 percent for sorting efficiency, 0.37 percent for percent taxonomic disagreement, and 0 percent for percent difference in enumeration.

5.4 DISCUSSION

Biotic monitoring is intended to demonstrate ecological links to geochemical trends observed within the CFROU monitoring program. This report examines six separate holistic measures of macroinvertebrate biological integrity. Two of these measures are general indicators widely applied to a variety of ecological assemblages: species richness and Shannon diversity. The other four are specific macroinvertebrate biotic indices, three of which are intended to reflect general impairment and one is intended specifically to reflect impairment from metal contamination. These six measures have consistently been applied to the CFROU macroinvertebrate samples since 2011.

Over the period of monitoring (2011-2022), there is little evidence of change over time in the taxa richness or Shannon diversity metrics at any sites and relatively little difference in median scores among CFROU sites. Results of the Montana Valley and Foothill Prairies index consistently have indicated mild to moderate impairment at all sites but due to the high degree of variability in annual results at each site, it is difficult to identify temporal trends. The Observed:Expected bioindex results have also consistently reflected impaired conditions at all sites. Some sites, particularly the tributary sites, suggest rapid improvement in Observed:Expected bioindex scores. Compared to the Montana Valley and Foothill Prairies index and Observed:Expected index scores, the Hillsenhoff Biotic Index and Metals Tolerance Index scores have been much more consistent annually at each site and among sites. Those indices consistently had results near the threshold for impairment.

A highly notable outcome of the macroinvertebrate monitoring program in the CFROU in 2022 was the identification of New Zealand mudsnails in the sample collected in Silver Bow Creek at Site SS-25, located immediately upstream from the CFROU. New Zealand mudsnails are an aquatic invasive species in Montana. They have been present in the Madison and Missouri River systems since 1995, but have only recently been observed west of the continental divide, first in the Bitterroot River and now in the Clark Fork River headwaters [MNHP, 2023].

Quality control results were within Rhithron Associate's internal quality standards, derived from Stribling et al. [2003], and consistent with industry norms (i.e., at least 95 percent for sorting efficiency and less than five percent for percent taxonomic disagreement and percent differences in enumeration).

6.0 VEGETATION

6.1 INTRODUCTION

Major remediation and revegetation has been completed in Phases 1, 2, 5, 6, 15, and 16 of the Clark Fork River Operable Unit (CFROU). Work was completed in 2014 (Phase 1), 2016 (Phases 2, 5, and 6), and 2021 (Phases 15 and 16). Monitoring has occurred in each of these phases to assess vegetation conditions as measured by specific metrics and to evaluate progress toward attainment of vegetation performance targets. Monitoring in 2022 was conducted to satisfy Year-7 vegetation monitoring requirements for Phase 1. This report provides detailed methods and results for all vegetation monitoring activities conducted in 2022 in the CFROU.

6.2 METHODS

6.2.1 Monitoring Locations

The performance standards for vegetation are identified in the CFROU Record of Decision (ROD) and are grouped according to "post-remedial land use and landscape position" [USEPA, 2004]. We have identified three specific vegetation zones corresponding to these "post-remedial land use and landscape position" groupings as identified in the ROD and have defined these vegetation zones to correspond to the specific vegetation performance standards (Table 6-1). The vegetation zone closest to the river is the "Riparian Zone", which is defined in the ROD as the "streambank riparian buffer zone" [USEPA, 2004], and includes the area from the streambank and extending laterally 50 feet from the streambank on either side of the river. All areas outside the Riparian Zone are either be identified as "Transition Zone" or "Upland Zone". Transition Zone areas are those outside the Riparian Zone but within the 100-year floodplain. The Upland Zone are any areas that are outside the 100-year floodplain.

Table 6-1. Vegetation minimum performance standards and guidelines for monitoring metrics in the Clark Fork River Operable Unit [USEPA, 2004].

Vegetation Zone	Monitoring Metric	Year (Post-remediation)						
		1	2	3	4	5	7	10
Riparian[22]	Planted woody species survival (%)[23]	90	90	—	—	—	—	—
	Preferred woody species canopy cover (%)	—	—	—	—	50	60	80
	Total canopy cover of non-weed perennial vegetation (%)	90	95	—	98	98	98	98
Transition[24]	Total canopy cover of non-weed perennial vegetation (%)	90	95	98	—	98	—	—
Upland[25]	Noxious weed cover (%)							<5
	Total canopy cover of non-weed perennial vegetation (%)							45
	Species richness (per 100 square meters)[26]							5

6.2.1.1 Ground Cover

The CFROU ROD identified "total canopy cover of non-weed perennial vegetation" as monitoring metric and we hereafter refer to this monitoring metric as "ground cover". Ground cover was monitored in 60 small (1-m^2) plots (hereafter referred to as "transect subplots") within Phase 1. A systematic sampling design was used to establish each transect location to ensure that the transect subplots were evenly spaced longitudinally along the length of each phase and laterally across the floodplain. The systematic sampling design was as follows: points were established along each side of the riverbank at 25 percent, 50 percent, and 75 percent of the linear distance from the phase start to the phase end. From each point (on each side of the river), lateral transects were extended 100 m in an east-west direction. Along each transect, beginning at 10 m

[22] The Riparian Zone performance standards correspond to Exhibit 2-26 in the ROD [USEPA, 2004]. The Riparian Zone is defined as a polygon extending 50 feet laterally from the streambank on each side of the river in each remedial area. The Riparian Zone corresponds to the Streambank Riparian Buffer Zone, which is described in the ROD.

[23] The ROD specifies replanting criteria for the fourth, fifth, and seventh years instead of monitoring for this metric [USEPA, 2004].

[24] The Transition Zone performance standards are identified in the ROD in Exhibit 2-27 [USEPA, 2004]. This zone will be defined in the field as any portion of the floodplain between the riparian zone and the 100-year floodplain.

[25] This vegetation zone corresponds to performance standards identified in the ROD in Exhibit 2-28 [USEPA, 2004]. Specific timelines for attaining performance standards in Exhibit 2-28 were not identified [USEPA, 2004].

[26] Each species must account for more than 1 percent cover to be counted toward this metric; noxious weeds are not counted toward this metric. This metric does not apply in areas intended for agricultural crop production.

from the riverbank, points were then located every 20 m and two paired transect subplots were located at each transect point according to the transect subplot placement scheme depicted in Figure 6-1, with transect subplots located along an intersecting transect line at 0 m and 2 m. Thus, along each of the six transects in Phase 1, 10 transect subplots were sampled. For each transect subplot, the vegetation zone (i.e., Riparian, Transition, or Upland) was identified in the field at the time each subplot was sampled. Locations of each ground cover monitoring transect in Phase 1 are depicted in Figure 6-2.

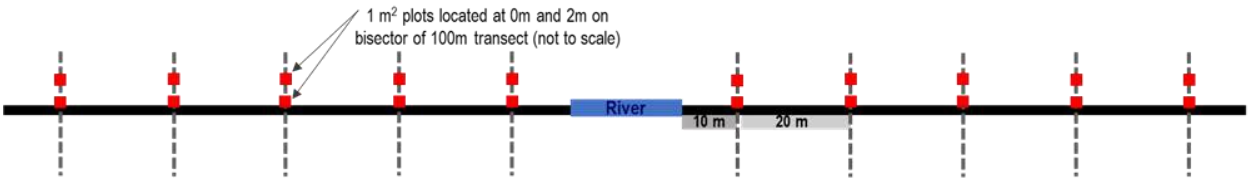


Figure 6-1. Example diagram of two transects and associated subplots for monitoring of total canopy cover of non-weed perennial vegetation.

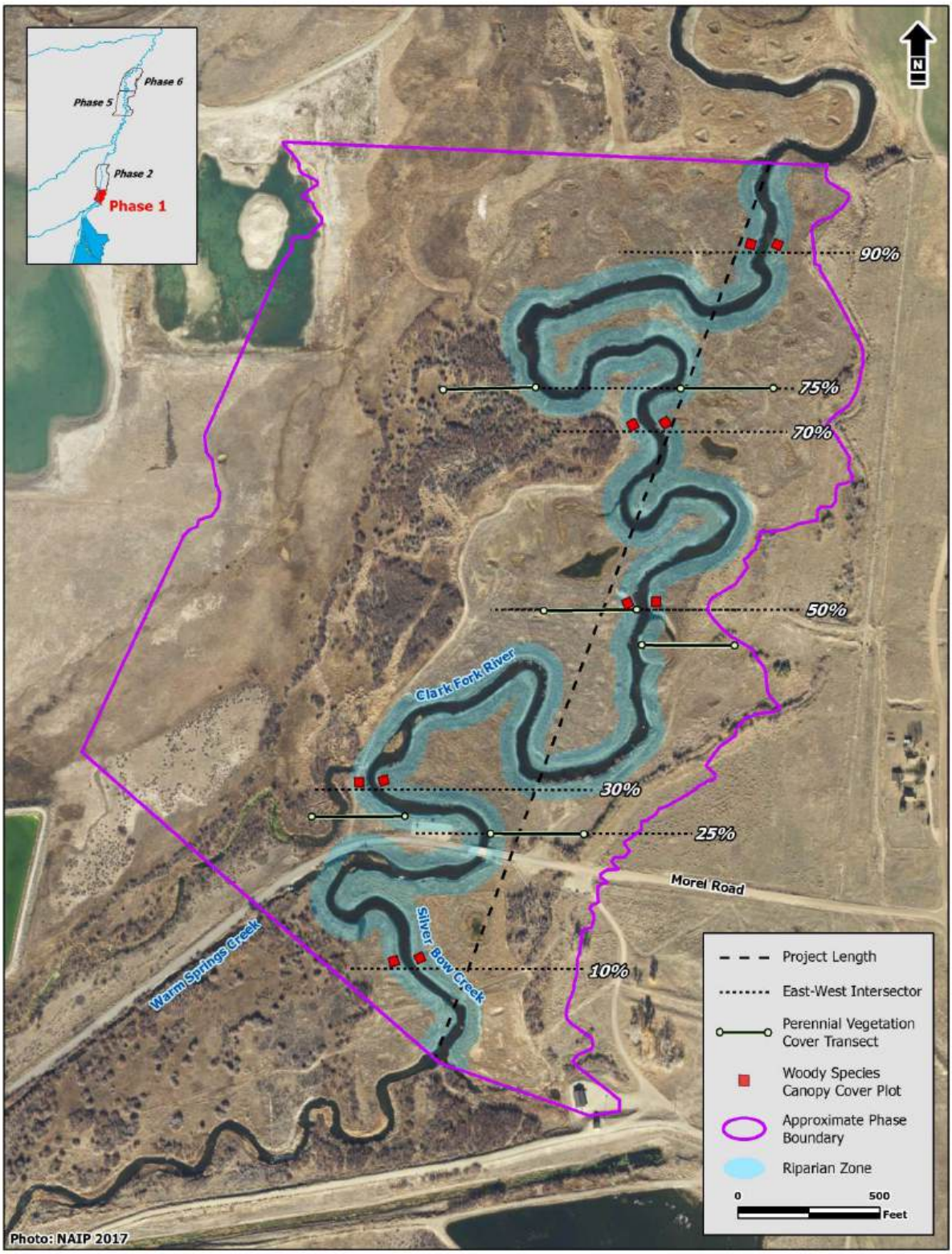


Figure 6-2. Vegetation monitoring locations in Phase 1 of the Clark Fork River Operable Unit.

6.2.1.2 Canopy Cover

The method for selecting canopy cover plot locations was intended to provide a simple, repeatable, and unbiased protocol to represent the entire Riparian Zone of each phase, as specified by the CFROU ROD [USEPA, 2004]. This method was intended to facilitate comparison of canopy cover among phases and among years, but only within the Riparian Zone of each phase. The performance standard for woody species canopy cover (hereafter referred to as "Canopy cover") is specific to the Riparian Zone and to planted, rather than naturally recruited, woody plants. Therefore, sampling units for this metric are restricted to the Riparian Zone and to areas where containerized plants were planted.

Within each phase, a systematic sampling design was used to identify planting units for sampling. Five sampling units (100-m^2; 10x10 m) were located entirely within the Riparian Zone on each side of the stream. Sample units were located at approximately 10, 30, 50, 70, and 90 percent of the linear distance from the phase origin and terminus (i.e., the upstream and downstream ends of each phase where the river passes through the phase boundary), in the nearest planting unit from those locations.[27] The final canopy cover monitoring plot locations for Phase 1 are depicted in Figure 6-2.

6.2.2 Monitoring Parameters

Monitoring in 2022 was conducted to evaluate ground cover and canopy cover in Phase 1. The performance targets for those metrics in Year-7 are specific to the Riparian Zone (Table 6-1) but data was also collected in the Transition and Upland Zones in 2022 and those results are also presented in this report.

6.2.3 Monitoring Schedule

Vegetation monitoring in Phase 1 for Year-7 occurred on July 20, 2022.

6.2.4 Sample Collection and Analysis

6.2.4.1 Ground Cover

Within each transect subplot, the vegetation zone was determined (i.e., Riparian, Transition, or Upland) and visual estimates of cover percentage were made for each perennial plant species present. A photograph was taken of each transect subplot after each cover estimate was made. Vegetation monitoring photographs are available to view in Appendix G.

[27] These points were determined prior to visiting the site using standard GIS tools and layers. Field biologists will navigate to these points using field GPS units.

6.2.4.2 Canopy Cover

Each 100-m² canopy cover monitoring plot was sampled using a 121-point grid to provide a total cover estimate for the entire plot (Figure 6-3). Sampling grid lines were evenly spaced (11 per side including the plot boundaries) along each plot side. Samples were collected at each gridline intersection (red dots) for a total of 121 cover measurements per floodplain plot. At each grid point, a vegetation surveyor determined if an imaginary survey rod extended vertically from the ground to the forest canopy would contact (i.e., be covered by) any portion of a shrub or tree species and the proportion of points covered was calculated as the total cover estimate for each plot. Photos of each canopy cover monitoring plot are available to view in Appendix G.

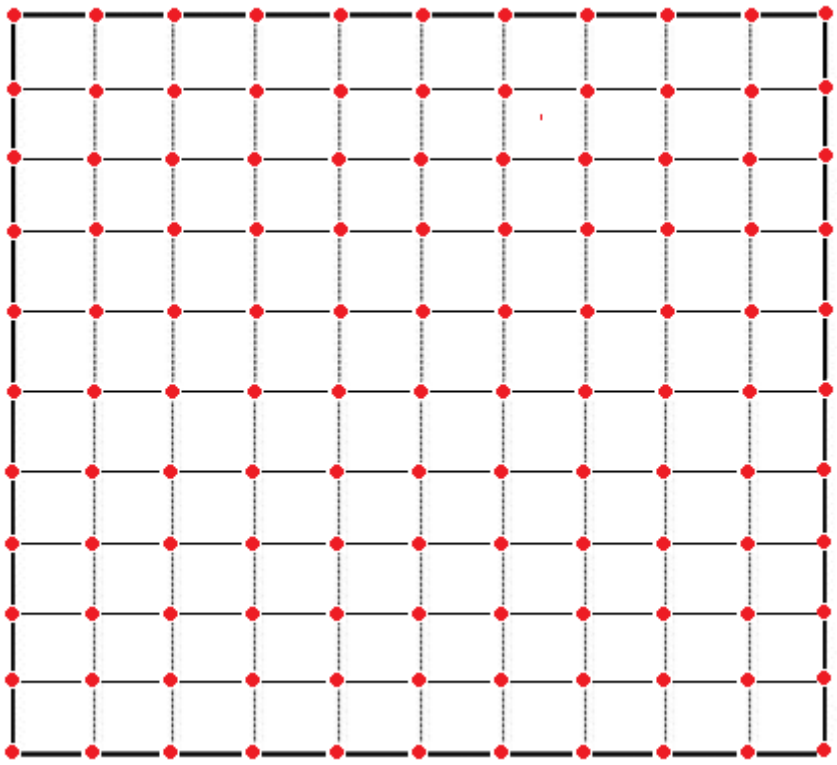


Figure 6-3. Schematic sampling grid for estimating shrub cover within each 100-m² Riparian Zone plot.

6.2.5 Data Analysis

6.2.5.1 Precipitation

Climate and precipitation data were gathered from available sources and summarized to provide context for the 2022 vegetation monitoring results.

6.2.5.2 Ground Cover

All identified perennial plant species in each transect subplot were classified as "desirable", "undesirable", or "noxious". Desirable species were defined as: (1) any native plant according to MNHP [2020]; (2) any non-native plant identified by the Montana Natural Heritage Program (MNHP) that was determined to be "relatively benign" based on the MNHP assigned *C*-value[28]; or (3) any plant identified in a seed-mix for the CFROU. Undesirable species were defined as: (1) any species listed as a weed in Deer Lodge, Powell, or Granite Counties; (2) any species listed on the Montana Department of Agriculture Noxious Weed list as "Rank 3"[29]; or (3) any species with an MNHP *C*-value corresponding to "invasive". Noxious weeds were defined as any species identified as a noxious plant by MDA [2019]. Based on these classifications, average cover percentages for each vegetation class within each vegetation zone were calculated and compared to the performance target for each zone.

6.2.5.3 Canopy Cover

Average (mean) canopy cover from each plot monitored within Phase 1 was calculated and compared to the Year-7 performance target.

[28] The *C*-value is the Montana Coefficient of Conservatism value and are defined in: http://fieldguide.mt.gov/statusCodes.aspx?scrollto=cvalue)

[29] A "regulated plant" but not a "noxious weed" according to MDA [2019].

6.3 RESULTS

6.3.1 Precipitation

The Deer Lodge valley is classified as having a "Continental, warm-summer" or "Dfb" climate [Weatherbase, 2020] according to the widely accepted Koppenen climate classification scale [Kottek et al., 2006]. This climate type is common in western plains and mountain states of the U.S. and is similar to "cold semi-arid steppe" or "BSk" climates [Kottek et al., 2006]. The Deer Lodge valley tends to have low annual precipitation averaging 11.1 inches from 2000-2021 [NWS, 2023]. Most precipitation tends to accumulate during the months of May and June (Figure 6-4).

Annual precipitation in Deer Lodge was 16.8 inches in 2022 which was 51 percent higher than the long-term average. Precipitation during the months of May and June, which are critical for establishment of vegetation in this region [Prodgers, 2021], was a little low in May compared to the long-term average but almost double the long-term average in June (Figure 6-4). Precipitation was well above the long-term average during the fall and winter months of 2022 (Figure 6-4). The relatively wet 2022 winter was in-line with the prediction for Montana due to the prolonged (2020-2023) "La Niña" period, when the surface water temperature of the Pacific Ocean near the equator is cooler than normal [NOAA, 2022].

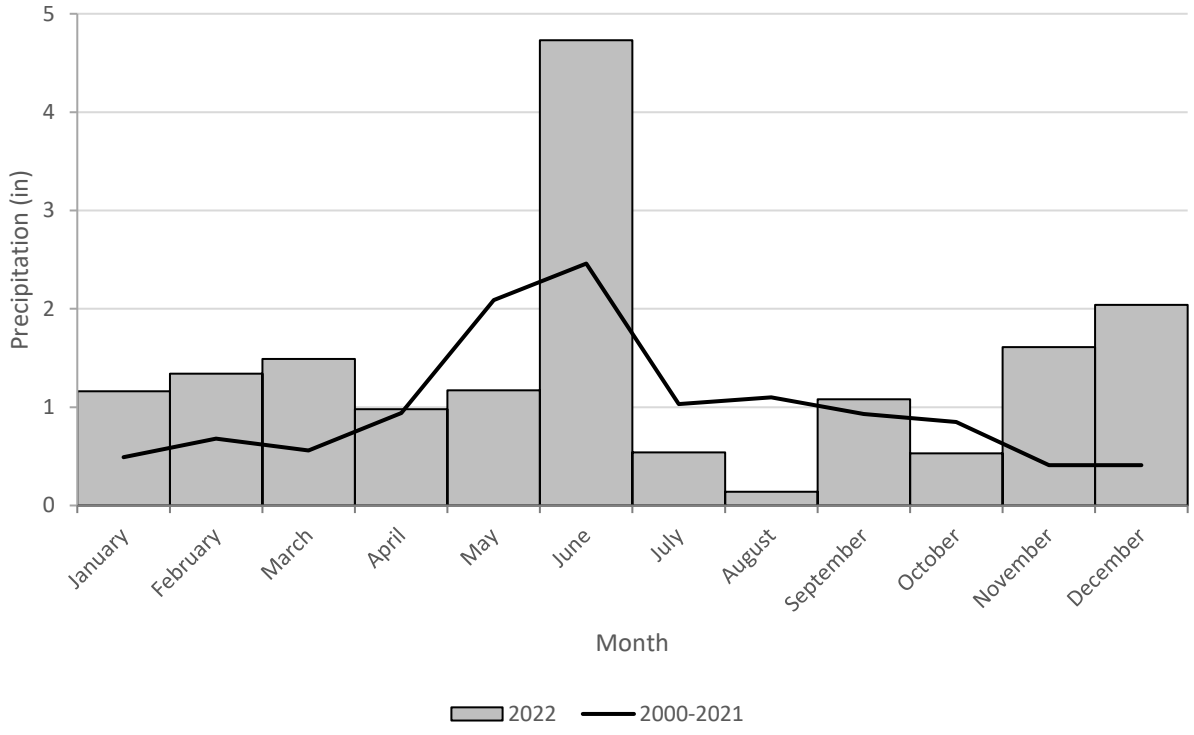


Figure 6-4. Monthly precipitation at Deer Lodge, Montana in 2020 compared to the recent long-term average [NWS, 2023].

6.3.2 Ground Cover

6.3.2.1 Sample Size

Ground cover monitoring under the current monitoring methods[30], occurred in Phase 1 in 2019 and 2022. In total, the sample size for each phase was 60 one square meter subplots. The number of subplots sampled within each vegetation zone differed among years within phases due to minor variation in transect placement from year to year (Table 6-2).

Table 6-2. Sample size (count of 1-m² plots monitored) for ground cover in each vegetation zone of Phase 1 in the Clark Fork River Operable Unit.

Phase	Calendar Year	Monitoring Year (since remedy completed)	Sample size (number of 1-m² plots monitored)		
			Riparian Zone	Transition Zone	Upland Zone
Phase 1	2019	Year-5	20	34	6
	2022	Year-7	18	40	2

[30] Prior to 2019, ground cover was also monitored in Phase 1 [RESPEC, 2015; 2016] but the monitoring methods during those early periods differed from those described in this report and are not necessarily comparable. During the earlier monitoring periods, monitoring protocols were those recommended by Geum and AGI [2015] and were primarily intended to provide insight to the remedial managers and design team about the most effective methods for revegetation in the CFROU. After 2016, vegetation monitoring in the CFROU has been adjusted to focus more specifically on evaluation of revegetation performance targets as defined in the CFROU ROD. Since 2016, monitoring of vegetation in all CFROU phases (with the exception of Phases 15 and 16, which are part of the Grant-Kohrs National Park) have followed the methods described in this report.

6.3.2.2 Riparian Zone

In the Phase 1 Riparian Zone, ground cover was 68.2 percent in Year-7 which was an increase of 10.0 percent over Year-5 (**Figure 6-5**). No noxious weed cover was observed during either monitoring period (**Table 6-3**). Ground cover from desirable species increased by 25.8 percent from Year-5 to Year-7 and cover from undesirable species decreased by 16.0 percent (**Figure 6-5**).

Overall, 17 desirable species and 6 undesirable species have been observed in the Riparian Zone of Phase 1 as of Year-7 (**Table 6-3**). The species responsible for the greatest ground cover in the Phase 1 Riparian Zone were slender wheatgrass (32.5 percent), narrowleaf willow (13.1 percent), and foxtail barley (4.7 percent) (**Table 6-3**). Cover from slender wheatgrass and narrowleaf willow increased by 18.1 percent and 9.5 percent, for each respectively, between Year-5 and Year-7 (**Table 6-3**). Cover provided by redtop (an undesirable species) and mustard declined by 16.6 percent and 5.0 percent, for each respectively, between Year-5 and Year-7 (**Table 6-3**).

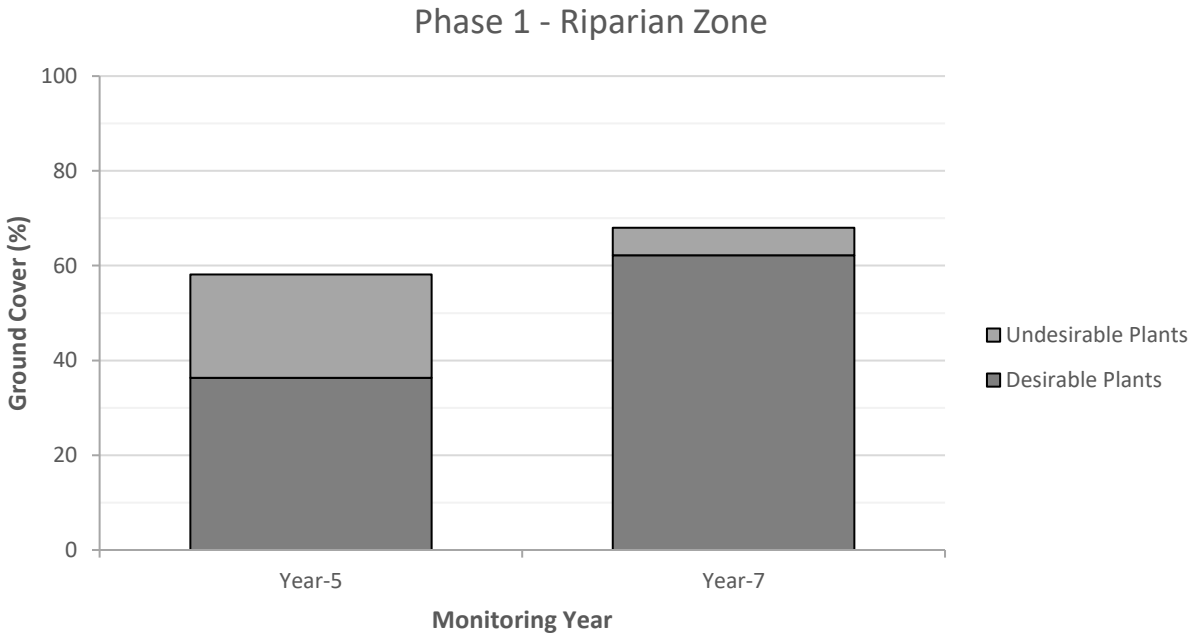


Figure 6-5. Mean ground cover of perennial plants in the Phase 1 Riparian Zone of the Clark Fork River Operable Unit.

Table 6-3. Mean ground cover (%) of perennial plants in the Riparian Zone of Phase 1 in the Clark Fork River Operable Unit.

Common Name	Taxonomic Name	Monitoring Year (post- revegetation)	
		Year-5	Year-7
Desirable Plants			
Birch	*Betula occidentalis*	0.4	0
Common yarrow	*Achillea millefolium*	2.5	1.1
Drummond willow	*Salix drummondiana*	0.4	0
Fescue	*Festuca*	0	2.2
Foxtail barley	*Hordeum jubatum*	3.0	4.7
Fringed sagebrush	*Artemisia frigida*	0.3	0
Goosefoot	*Chenopodium*	0.3	0
Grass (unkown species)	*Poaceae*	0.8	3.3
Great Basin wildrye	*Elymus cinereus*	1.0	1.4
Hairy willowherb	*Epilobium ciliatum*	0.9	0
Kentucky bluegrass	*Poa pratensis*	1.0	0
Mustard	*Brassica*	5.0	0
Narrowleaf willow	*Salix exigua*	3.6	13.1
Red fescue	*Festuca rubra*	0	2.8
Slender wheatgrass	*Elymus trachycaulus*	14.4	32.5
Speckled alder	*Alnus incana*	0	1.1
Western wheatgrass	*Agropyron smithii*	3.0	0
Undesirable Plants			
Common dandelion	*Taraxacum officinale*	0.2	0
Creeping foxtail	*Alopecurus arundinaceus*	0.5	1.1
Meadow foxtail	*Alopecurus pratensis*	0	0.2
Mexican kochia	*Kochia scoparia*	1.0	0
Prickly lettuce	*Lactuca serriola*	0	0.8
Redtop	*Agropryon stolonifera*	20.2	3.6
Unknown Plants			
Unknown forb	-	0	0.2
Group Totals			
Desirable Plants		36.4	62.2
Undesirable Plants		21.8	5.8
Noxious Plants		0	1.0
Unknown Plants		0	0.2
All plants (minus noxious species)		**58.2**	**68.2**

6.3.2.3 Transition Zone

In the Phase 1 Transition Zone, ground cover was 73.0 percent in Year-7, which was an increase of 36.5 percent over Year-5 (Figure 6-6). No noxious weed cover was observed during either monitoring period (Table 6-4). Ground cover from desirable species increased by 37.1 percent from Year-5 to Year-7 and cover from undesirable species decreased by 0.1 percent (Figure 6-6).

Overall, 27 desirable species and 8 undesirable species have been observed in the Transition Zone of Phase 1 as of Year-7 (Table 6-4). The species responsible for the greatest ground cover in the Phase 1 Transition Zone were slender wheatgrass (30.8 percent), narrowleaf willow (6.3 percent), and Baltic rush (5.5 percent) (Table 6-4). Cover from several species increased between Year-5 and Year-7, including slender wheatgrass (by 14.0 percent), Baltic rush (by 5.5 percent), creeping spikerush (by 4.4 percent), creeping foxtail and narrowleaf willow (by 4.1 percent), and Great Basin wildrye (by 4.0 percent) (**Table 6-4**). Several of the species that became more prevalent over time are associated with wetlands (i.e., Baltic rush, creeping spikerush, creeping foxtail, and narrowleaf willow). Cover provided by redtop (an undesirable species) declined by 4.3 percent between Year-5 and Year-7 (**Table 6-4**).

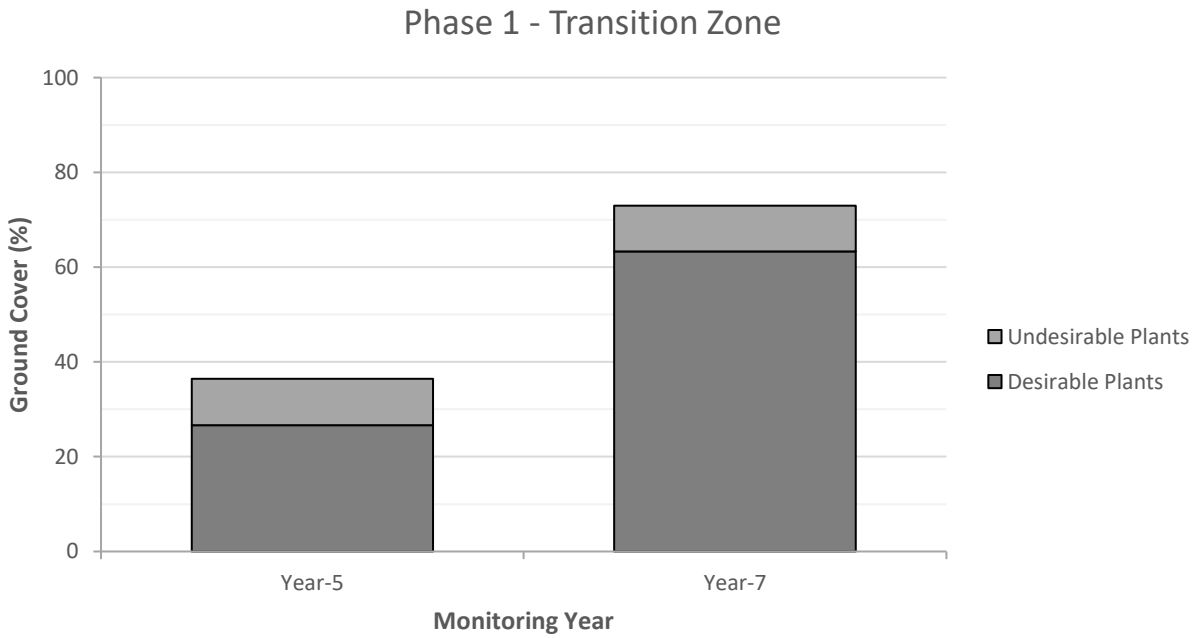


Figure 6-6. Mean ground cover of perennial plants in the Phase 1 Transition Zone of the Clark Fork River Operable Unit.

Table 6-4. Mean ground cover (%) of perennial plants in the Transition Zone of Phase 1 in the Clark Fork River Operable Unit.

Common Name	Taxonomic Name	Monitoring Year (post- revegetation)	
		Year-5	Year-7
Desirable Plants			
Baltic rush	*Juncus balticus*	0	5.5
Bebb willow	*Salix bebbiana*	0	0.8
Bulrush	*Schoenoplectus*	0	2.9
Cattail	*Typha latifolia*	0	0.1
Common yarrow	*Achillea millefolium*	0	0.8
Creeping spikerush	*Eleocharis palustris*	0	4.1
Foxtail barley	*Hordeum jubatum*	0	1.4
Fringed sagebrush	*Artemisia frigida*	0	0.1
Grass	*Poaceae*	0	0.4
Great Basin wildrye	*Elymus cinereus*	0	4.0
Hairy willowherb	*Epilobium ciliatum*	0.8	0
Juncus	*Juncus*	0.1	0
Narrowleaf willow	*Salix exigua*	1.2	6.3
Nebraska sedge	*Carex nebrascensis*	0	0.3
Red fescue	*Festuca rubra*	1.3	2.1
Red-oiser dogwood	*Cornus stolonifera*	0.1	0
Rubber rabbitbrush	*Ericameria nauseosa*	1.5	0
Sedge	*Carex*	0	2.0
Silverweed cinquefoil	*Potentilla anserina*	1.3	0
Slender wheatgrass	*Elymus trachycaulus*	16.8	30.8
Tufted hairgrass	*Deschampsia cespitosa*	0.3	0
Western wheatgrass	*Agropyron smithii*	1.7	0
Wild mint	*Mentha arvensis*	0.4	0
Wild oats	*Avena fatua*	0	0.2
Willow	*Salix*	0	1.6
Wood's rose	*Rosa woodsii*	0.1	0
Undesirable Plants			
Common dandelion	*Taraxacum officinale*	0.6	0
Creeping foxtail	*Alopecurus arundinaceus*	0.5	4.9
Field pennycress	*Thlaspi arvense*	0.3	0
Prickly lettuce	*Lactuca serriola*	0	1.9
Redtop	*Agropryon stolonifera*	7.1	2.8
Smooth brome	*Bromus inermis*	0.9	0.1
White sweetclover	*Melilotus albus*	0.1	0
Yellow sweetclover	*Melilotus officinalis*	0.3	0

Common Name	Taxonomic Name	Monitoring Year (post- revegetation)	
		Year-5	Year-7
Group Totals			
Desirable Plants		25.7	63.2
Undesirable Plants		9.8	9.7
Noxious Plants		0	0
Unknown Plants		0	0
Total (minus noxious)		**35.6**	**72.9**

6.3.2.4 Upland Zone

In the Phase 1 Upland Zone, ground cover was 65.0 percent in Year-7, which was an increase of 21.8 percent over Year-5 (**Figure 6-7**). No noxious weed cover was observed in Year-7 although Canada thistle and leafy spurge were observed in Year-5 (**Table 6-5**). Ground cover from desirable species increased by 22.5 percent from Year-5 to Year-7 and cover from undesirable species decreased by 6.3 percent (**Figure 6-7**).

Overall, 5 desirable species, 2 undesirable species, 2 noxious species, and 1 unknown species have been observed in the Upland Zone of Phase 1 as of Year-7 (**Table 6-5**). The species responsible for the greatest ground cover in the Phase 1 Upland Zone were slender wheatgrass (52.5 percent) and Great Basin wildrye (7.5 percent) (**Table 6-5**). Cover from slender wheatgrass and Great Basin wildrye increased between Year-5 and Year-7 by 24.2 percent and 7.5 percent, for each respectively (**Table 6-5**). Cover provided by smooth brome (an undesirable species) declined by 6.3 percent between Year-5 and Year-7 (**Table 6-5**).

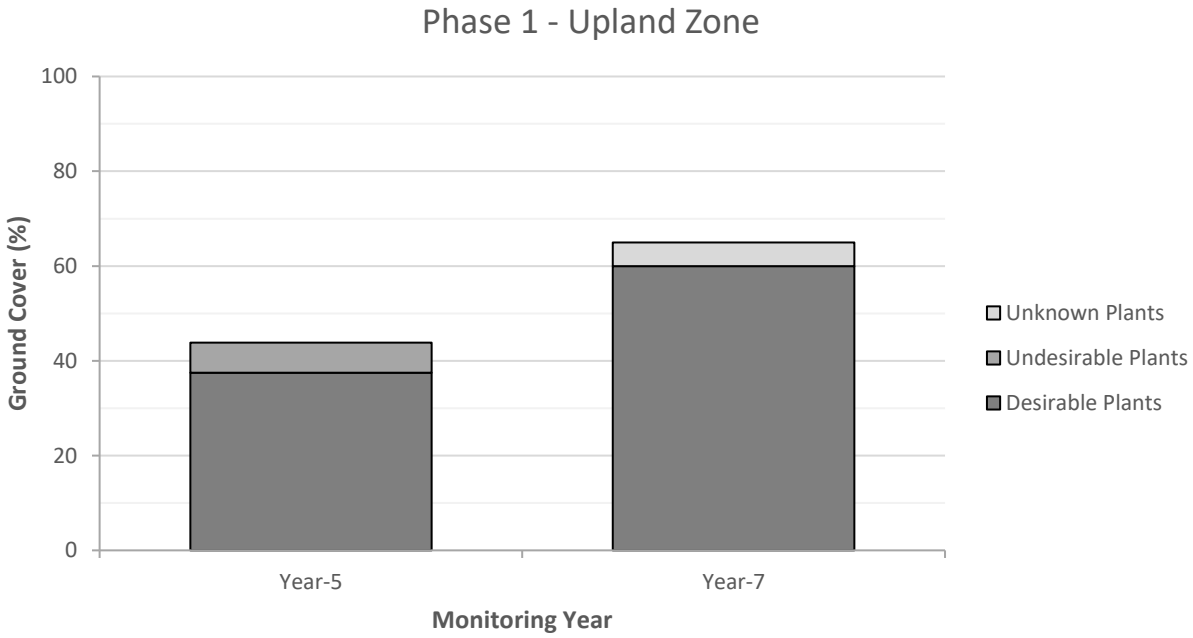


Figure 6-7. Mean ground cover of perennial plants in the Phase 1 Upland Zone of the Clark Fork River Operable Unit.

Table 6-5. Mean ground cover (%) of perennial plants in the Upland Zone of Phase 1 in the Clark Fork River Operable Unit.

Common Name	Taxonomic Name	Monitoring Year	
		Year-5	Year-7
Desirable Plants			
Hairy willowherb	*Epilobium ciliatum*	0.3	0
Great Basin wildrye	*Elymus cinereus*	0	7.5
Slender wheatgrass	*Elymus trachycaulus*	28.3	52.5
Western wheatgrass	*Agropyron smithii*	2.5	0
Undesirable Plants			
Smooth brome	*Bromus inermis*	6.3	0
Noxious Plants			
Canada thistle	*Cirsium arvense*	0.3	0
Leafy spurge	*Euphorbia esula*	0.3	0
Unknown Plants			
Unknown forb	-	0	5.0
Group Totals			
Desirable Plants		31.1	60.0
Undesirable Plants		6.3	0
Noxious Plants		0.7	0
Unknown Plants		0	5.0
Total (minus noxious)		**36.9**	**65.0**

6.3.3 Canopy Cover

Average canopy cover was 72.0 percent in Phase 1 in Year-7, which exceeded the performance target of 60 percent. Canopy cover was monitored in ten plots in Year-7 with individual plot cover estimates ranging from 30-100 percent. Canopy cover in Phase 1 in Year-7 increased by 38.8 percent over Year-5.

6.4 DISCUSSION

Vegetation monitoring occurred in Phase 1 in the CFROU in 2022 representing Year-7 post-revegetation conditions in this remedial phase. Monitoring focused on estimation of ground cover and canopy cover. Ground cover was estimated in each vegetation habitat zone (i.e., Riparian, Transition, and Upland Zones) and canopy cover monitoring was restricted to the Riparian Zone. For each metric, the performance standard is technically restricted to the Riparian Zone. The Year-7 performance standards are 98 percent for ground cover and 60 percent for canopy cover [USEPA, 2004].

There were multiple positive results indicating that ground cover and canopy cover are expanding over time in Phase 1 and the species assemblage is changing toward a more desirable plant assemblage. Although ground cover did not meet the Year-7 performance standard, there was substantial improvement between Year-5 and Year-7 in the extent of total ground cover and the extent of ground cover from desirable species in all habitat zones. Total ground cover increased by 10.0 percent in the Riparian Zone, by 36.5 percent in the Transition Zone, and by 21.8 percent in the Upland Zone. Similarly, ground cover from desirable species increased by 25.8 percent in the Riparian Zone, by 37.1 percent in the Transition Zone, and by 22.5 percent in the Upland Zone. These results indicate that, although not yet meeting the target, ground cover is increasing rapidly over time. Overall, the species responsible for the greatest increase in ground cover from Year-5 to Year-7 was slender wheatgrass. Ground cover from several wetland-associated species also increased including narrowleaf willow, Baltic rush, creeping spikerush, and creeping foxtail. Ground cover from redtop, an undesirable species, declined.

Canopy cover, which has generally been low in prior monitoring periods throughout the CFROU, exceeded the Year-7 performance target. Canopy cover in Year-7 was only 8 percent lower than the final Year-10 performance target of 80 percent and showed a substantial increase from Year-5 to Year-7. Cover was particularly high in the northern-most (downstream) half of Phase 1, which was an area noted for extensive flooding during the runoff period in 2014, when the remedy was still in progress [RESPEC, 2015].

Finally, noxious weeds were well controlled in Phase 1 in Year-7. No noxious weeds were observed in any of the 60 ground cover monitoring sites. Since vegetation monitoring began in the

CFROU, noxious weeds have occasionally been observed but estimated ground cover from these weeds has consistently been well below the performance standard (less than 5 percent).

7.0 BIRDS[31]

7.1 INTRODUCTION

Bird assemblages were monitored in the Clark Fork River Operable Unit (CFROU) during the spring of 2022. This report provides an assessment of the most recent bird monitoring data for the CFROU. Special attention is paid to species richness by project phase and to special status species (e.g., Montana Species of Concern [MNHP, 2020]). Results provide information relevant to remedial design and construction teams to assess if remedial actions influence bird use of the CFROU and to minimize disturbance to bird habitat during construction and revegetation activities. Additionally, results will evaluate current CFROU bird occupation trends for comparison to prior remedial activities.

7.2 METHODS

7.2.1 Monitoring Locations

Birds were monitored at 13 sites distributed among eight CFROU phases in 2022 (Phases 1, 2, 3, 4, 5, 6, 7, and 15; Table 7-1; Figure 7-1). Results in this report are generally summarized by phase. Observations from sites within Phases 3 and 4 were combined, as were observations from sites within Phases 5 and 6. All monitoring sites were located within the floodplain riparian zone adjacent to the river or nearby water features such as constructed ponds. Monitoring sites were located in habitats that were representative of a large proportion of the prevailing bird habitat within each phase. Monitoring site locations have been consistent each year since 2016.

Construction-related remedial actions were completed in the fall of 2014 in Phase 1 (60 acres). Phase 1 was the first phase remediated in the CFROU. Revegetation actions continued in Phase 1 through the winter of 2015. Phase 1 consists of 1.6 river miles. Several features adjacent to this phase likely influence bird use within its boundaries. The Warm Springs Wildlife Management Area is located on the southern boundary of Phase 1. In addition, the confluence of Warm Springs Creek and Silver Bow Creek is located within the phase near the upstream (southern) boundary. Two sites were monitored in Phase 1: Sites 1-A and 1-B (Table 7-1; Figure 7-1).

Phase 2 (88 acres) was under construction from the summer of 2015 through the fall of 2016. Phase 2 consists of 1.9 river miles immediately downstream from Phase 1. Two sites were monitored in Phase 2: Sites 2-A and 2-B (Table 7-1; Figure 7-1).

[31] Chapter 7 was completed by GoBirdMontana and RESPEC.

Remediation was in progress in Phase 3 during the 2022 monitoring period, but Phase 4 had not been remediated. Phases 3 and 4 (261 acres combined) had not been remediated as of 2021. Combined, these phases consist of 261 acres and 4.5 river miles and are located downstream from Phase 2. Three sites have been monitored in Phases 3 and 4: Sites 3/4-A, 3/4-B, and 3/4-C (Table 7-1; Figure 7-1). However in 2022, due to active remediation at Sites 3/4-A and 3/4-B, only Site 3/4-C was monitored.

Remediation began in Phases 5 and 6 (125 acres combined) in the summer of 2014 and construction and revegetation actions were completed in 2016. Combined, these phases consist of 4.3 river miles and are located immediately downstream from Phase 4. The Racetrack Pond, located immediately downstream, is a feature adjacent to Phase 6 which may influence bird use. Three sites were monitored in Phases 5 and 6: Sites 5/6-A, 5/6-B, and 5/6-C (Table 7-1; Figure 7-1).

Phase 7 (84 acres) had not been remediated as of 2022. This phase consists of a 1.9-mile river reach located immediately downstream from Phase 6. Phase 7 is adjacent to the Racetrack Pond, which likely provides a strong influence on the bird assemblage and bird use within the phase. Two sites were monitored in Phase 7: Sites 7-A and 7-B (Table 7-1; Figure 7-1). Site 7-A is located along the shoreline of the Racetrack Pond.

Phase 15 construction was complete while monitoring occurred in the spring of 2022. Construction began Phase 15 during the fall of 2019. Phase 15 is located within the Grant-Kohrs National Historic Site just north of Deer Lodge. The Grant-Kohrs National Historic Site is a 1,600-acre working cattle ranch maintained by the National Park Service. Three sites were monitored in Phase 15: Sites 15-A, 15-B, and 15-C (Table 7-1; Figure 7-1).

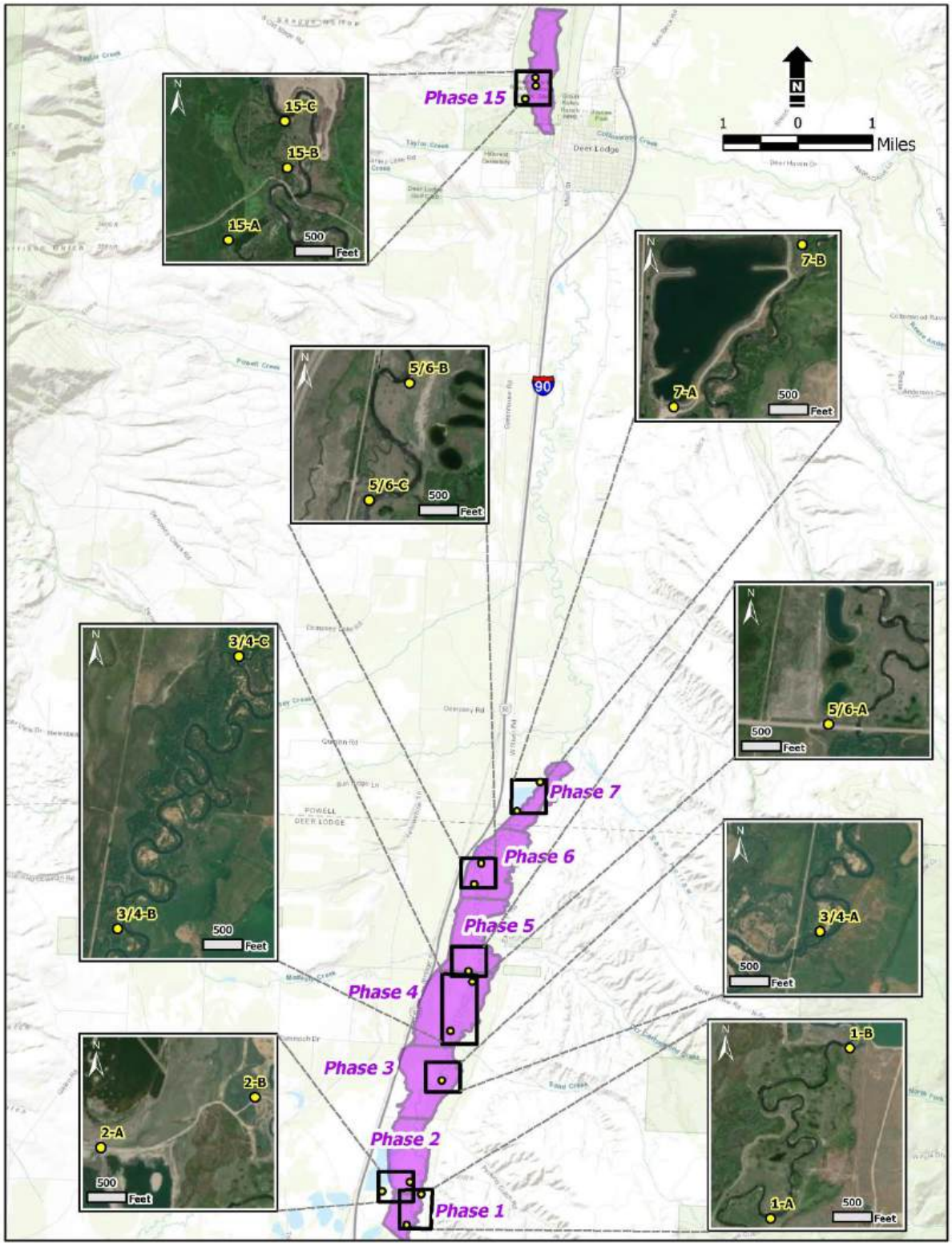


Figure 7-1. Bird monitoring locations in the Clark Fork River Operable Unit, 2022.

Table 7-1. Bird monitoring sites in the Clark Fork River Operable Unit, 2022.

Phase	Site	Latitude	Longitude
1	1-A	46.18778	112.76891
	1-B	46.19385	112.76527
2	2-A	46.19414	112.77627
	2-B	46.19612	112.76863
3/4[32]	3/4-A	46.21611	112.76078
	3/4-B	46.22576	112.75906
	3/4-C	46.23546	112.75351
5/6	5/6-A	46.23748	112.75464
	5/6-B	46.25855	112.75230
	5/6-C	46.25441	112.75408
7	7-A	46.26893	112.74296
	7-B	46.27479	112.73683
15	15-A	46.40708	112.74887
	15-B	46.40968	112.74604
	15-C	46.41131	112.74627

7.2.2 Monitoring Schedule

The 2022 monitoring year constituted the eighth year of bird monitoring in the CFROU; monitoring has occurred annually since 2015. Monitoring each year has occurred during the spring and early summer months of April, May, and June. In 2022, monitoring occurred weekly at each site from April through June. Each site was visited 13 times during the monitoring period. Each monitoring site visit (i.e., "point-count") lasted ten minutes.

7.2.3 Monitoring Parameters

Birds were observed following standard point-count methods similar to Hutto et al., [1986] and Buckland et al. [2001]. Birds were counted by species during each point-count. Types of individual bird observations were distinguished and classified separately as: (1) observed by sight within a 40-m radius, (2) identified by call or song, (3) identified by sight flying within a 40-m radius, or (4) identified by sight flying outside 40 m.

7.2.4 Monitoring Methods

At each monitoring site, counts were conducted after a two-minute period following the surveyor's arrival, to allow birds to become accustomed to the surveyor's presence. Each bird

[32] Sites 3/4-A and 3/4-B were not monitored in 2022 due to active remediation near those sites.

observed was recorded using a four-letter abbreviation commonly referred to as an "ALPHA" code [IBP, 2018].

7.2.5 Data Analysis

This report compares bird species richness (i.e., species counts) and relative abundance (i.e., the count of observed individuals of a certain species in proportion to the count of observed individuals of all species) among phases and among years in the CFROU. All bird observations within each phase were pooled, and variation due to sample site (within each phase), time period, and observation type (e.g., within 40 m or beyond 40 m) were disregarded in order to make general conclusions related to each monitoring phase.

Species richness (i.e., counts of species) was compared among phases and through time for groups of species that we believe may be influenced by the remedy and revegetation actions. First, we evaluated the richness of species known to be "riparian-dependent" or "riparian-obligate" breeders [Rich, 2002] among phases and through time in order to evaluate if these species appear to be responding to the remedial actions.[33] We also assessed the richness of species classified under a variety of special status designations (i.e., Species of Concern, Potential Species of Concern, or Special Status Species [MNHP, 2020]) to assess if the remedy appears to be having an influence on the diversity of these sensitive species in the CFROU.

Annual relative abundance trends for each species were evaluated in each phase through the full monitoring period of each phase. Relative abundance was evaluated on a "catch-per-unit-effort" (CPUE) metric as the average number of individuals observed per site visit to control for variance in sampling effort among phases and among years. CPUE is an indirect measure of abundance and therefore variation in CPUE may not necessarily represent true differences in species abundance, but it does offer an approximation of abundance and is the best available means to estimate density from these data. In each phase, we summarized mean CPUE for each species by phase and by monitoring year and developed simple linear regressions to evaluate temporal trends. As of 2022, each phase has been monitored up to eight years. Evaluation of annual trends are difficult when sample sizes are low; therefore, the ability to detect trends is limited. We disregarded all trends that were not statistically significant ($\alpha = 0.05$) and consider even statistically significant results to be preliminary.

[33] Riparian-dependent species are defined as those that place 60-90 percent of their nests in riparian vegetation and riparian-obligate species are those that place more than 90 percent of their nests in riparian vegetation [Rich, 2002].

7.3 RESULTS

7.3.1 Effort and Observations

Point-counts were conducted at 13 sites in 2022. Each site was visited on 13 occasions (weekly) during a three-month monitoring period from April through June. In total, 169 site visits and point-counts were conducted in 2022 (Table 7-2). Among all 169 point-counts conducted in 2022, 16,396 individual birds were observed from 141 different species, or about 32 percent of the 445 species inhabiting Montana [MNHP, 2020] (Table 7-3). Most of the bird observations occurred from a distance of less than 40 m from the point-count site. The greatest number of individual birds (5,056), and species (94), observed in 2022 were in Phase 7 (Table 7-3). The lowest number of individuals (926), and species (52), were observed in Phases 3 and 4 (Table 7-3), presumably as a result of the low sampling effort in Phases 3 and 4 in 2022 due to active construction at two of the three monitoring sites within those phases (Table 7-3).

Over the entire period of bird monitoring in the CFROU (2015-2022), 1,254 point-counts have occurred (Table 7-2) and 175 bird species have been observed, representing 40 percent of the 445 bird species observed in Montana [MBRC, 2021]. Over the entire period of record in this monitoring program, a total of 86,922 individual birds have been observed and identified (Table 7-3). Although bird assemblages have been abundant and diverse in all phases, Phase 7 has uniquely high diversity (137 species observed) and abundance (27,380 individuals observed) and accounts for nearly a third of all bird observations in the CFROU since 2015 (Table 7-3).

Six species were observed in the CFROU in 2022 which had not been observed previously American Redstart, Prairie Falcon, Red-necked Phalarope, Semipalmated Sandpiper, Ferruginous Hawk, and Grasshopper Sparrow.

Table 7-2. Monitoring effort (point-counts) in each phase of the Clark Fork River Operable Unit by year.

Year	Phase							Total
	1	2	3/4	5/6	7	8	15	
2015	34	0	0	0	34	0	32	100
2016	23	0	31	0	24	35	31	144
2017	18	17	25	24	18	0	29	131
2018	20	20	28	29	16	0	29	142
2019	24	25	35	36	24	0	36	180
2020	26	26	39	39	26	0	39	195
2021	26	26	37	39	26	0	39	193
2022	26	26	13	39	26	0	39	169

Table 7-3. Bird richness and frequency of individual bird observations by phase in the Clark Fork River Operable Unit, 2015-2022. The monitoring period of record and level of effort has varied among phases and is summarized in Table 7-2.

Phase	2022		Period of Record	
	Species	Individuals	Species	Individuals
1	71	2,457	110	9,075
2	74	2,297	107	13,132
3/4	49	987	118	12,435
5/6	93	3,654	129	13,767
7	94	5,056	137	27,380
8	-	-	52	926
15	91	1,945	124	10,207
Total[34]	141	16,396	175	86,922

7.3.2 Habitat Specialists

Thirty-three species observed in the CFROU from 2015-2022 are classified as either "riparian-dependent" or "riparian-obligate" species by Rich [2002] and 25 of those species were observed in 2022. Riparian-dependent species observed in the CFROU to date include: American Dipper, American Goldfinch, Bald Eagle, Bank Swallow, Belted Kingfisher, Black-capped Chickadee, Black-headed Grosbeak, Bullock's Oriole, Common Yellowthroat, Cooper's Hawk, Cordilleran Flycatcher, Eastern Kingbird, Fox Sparrow, Gray Catbird, House Wren, Lazuli Bunting, Lewis's Woodpecker, Lincoln's Sparrow, MacGillivary's Warbler, Orange-crowned Warbler, Red-eyed Vireo, Red-naped Sapsucker, Song Sparrow, Swainson's Hawk, Swainson's Thrush, Tree Swallow, Veery, Warbling Vireo, Western Wood-Pewee, Willow Flycatcher, Wilson's Warbler, Yellow Warbler, and Yellow-breasted Chat.

Species richness of riparian-dependent and riparian-obligate species increased markedly in most CFROU phases monitored between 2019 and 2020 (Figure 7-2). This result was consistent among all phases whether the remedy was complete (i.e., Phases 1, 2, 5/6), in progress (Phase 15), or had not begun (Phases 3/4 and 7) (Figure 7-2). Since 2019, richness of these riparian-dependent and riparian-obligate species has remained relatively high in all phases (Table 7-3). There was a decrease, from 22 species to 10 species, in Phases 3 and 4 between 2021 and 2022 but this decrease was likely due to the decrease in the sampling effort in those phases in 2022 and active construction related to the remedy.

Abundance of some of riparian-dependent and -obligate species appears to be increasing through time in some phases. In Phase 1, where remediation was completed in 2015, American Goldfinch, Common Yellowthroat, Eastern Kingbird, Willow Flycatcher, and Yellow Warbler

[34] Most species were observed in more than one phase, so the total number of species observed in the Operable Unit is not cumulative among phases. Total individual bird counts, however, are cumulative among phases.

abundance appears to be increasing through time (Table 7-4). In Phase 2, where remediation was completed in 2016, American Goldfinch, Bank Swallow, Common Yellowthroat, Song Sparrow, and Willow Flycatcher abundance appeared to be increasing through time (Table 7-5). In Phases 3 and 4, American Goldfinch, Bank Swallow, Common Yellowthroat, House Wren, and Willow Flycatcher abundance appeared to be increasing through time (Table 7-6). In Phases 5 and 6, where remediation was complete by 2016, American Goldfinch, Black-capped Chickadee, Belted Kingfisher, and Black-headed Grosbeak abundance appeared to be increasing through time (Table 7-7). In Phase 7, which had not yet been remediated as of 2022, American Goldfinch, Bank Swallow, Tree Swallow, and Yellow Warbler abundance appeared to be increasing through time (Table 7-8). In Phase 15, which was completely remediated as of 2022, Bald Eagle, Belted Kingfisher, Common Yellowthroat, Eastern Kingbird, Orange-crowned Warbler, Willow Flycatcher, and Yellow Warbler abundance appeared to be increasing through time (Table 7-9). Abundance appears to be declining over time for only one riparian-dependent and -obligate species: Tree Swallow in Phases 5 and 6 (Table 7-7).

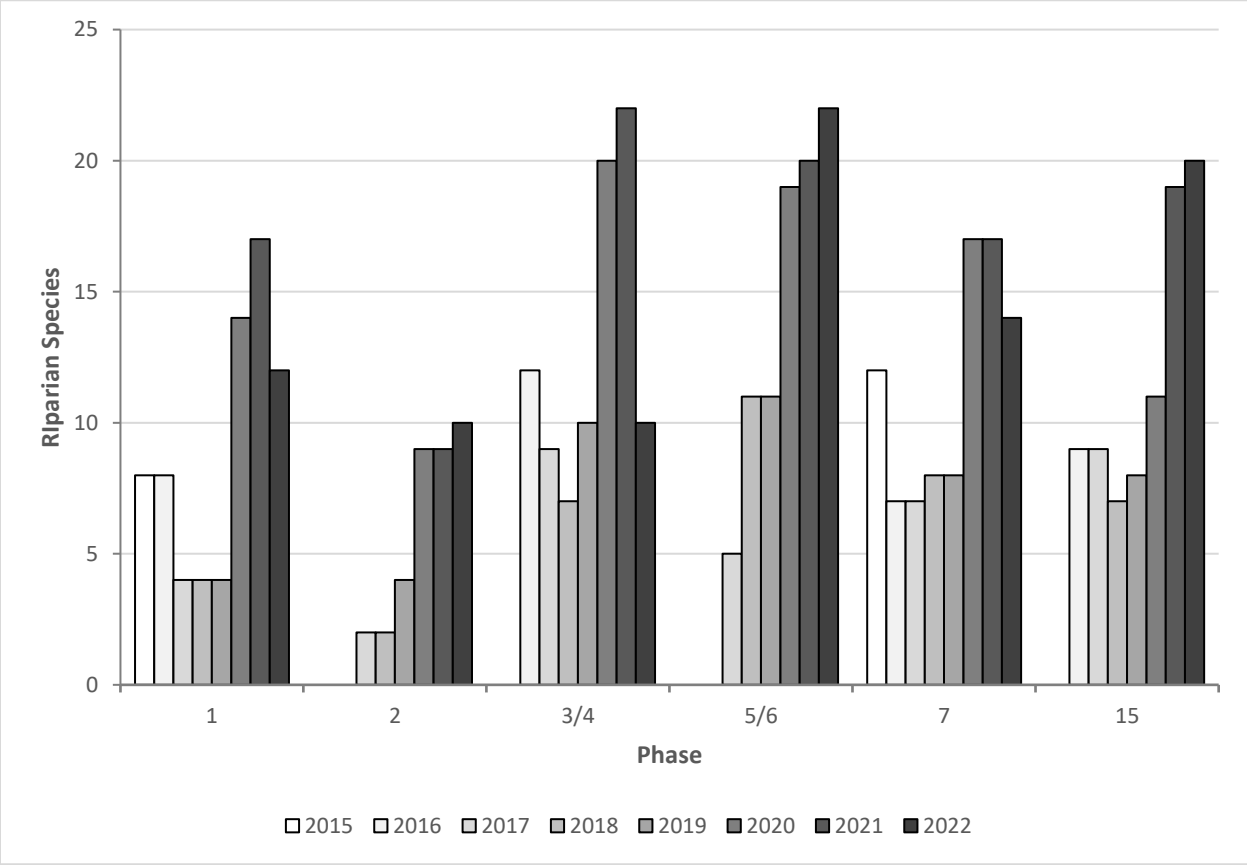


Figure 7-2. Richness of bird species identified as "riparian-dependent" or "riparian-obligate" by phase and monitoring year in the Clark Fork River Operable Unit. Species habitat use based on designations by Rich [2002].

7.3.3 Special Status Species

Twenty-three species observed in CFROU since 2015 are classified as special status species by MNHP [2020]. Special status species observed to date include American White Pelican, Bald Eagle, Barrow's Goldeneye, Black-necked Stilt, Bobolink, Brewer's Sparrow, Cassin's Finch, Common Loon, Common Tern, Forster's Tern, Franklin's Gull, Golden Eagle, Great Blue Heron, Hooded Merganser, Horned Grebe, Lewis's Woodpecker, Long-billed Curlew, Peregrine Falcon, Sage Thrasher, Trumpeter Swan, Veery, and White-faced Ibis. One of these species (Ferruginous Hawk) was observed for the first time in the CFROU in 2022 (Figure 7-3).

Abundance of some special status species appeared to be increasing through time in some phases. Long-billed Curlew (in Phases 1 and 2), Barrow's Goldeneye (in Phases 3 and 4), Hooded Merganser (in Phases 3 and 4), Common Loon (in Phase 7), and Bald Eagle (in Phase 15) abundance appears to have increased over time through the monitoring period of record in those phases (Table 7-4; Table 7-5; Table 7-6; Table 7-8; Table 7-9). None of these species appeared to be declining in abundance in any phase during the monitoring period of record.

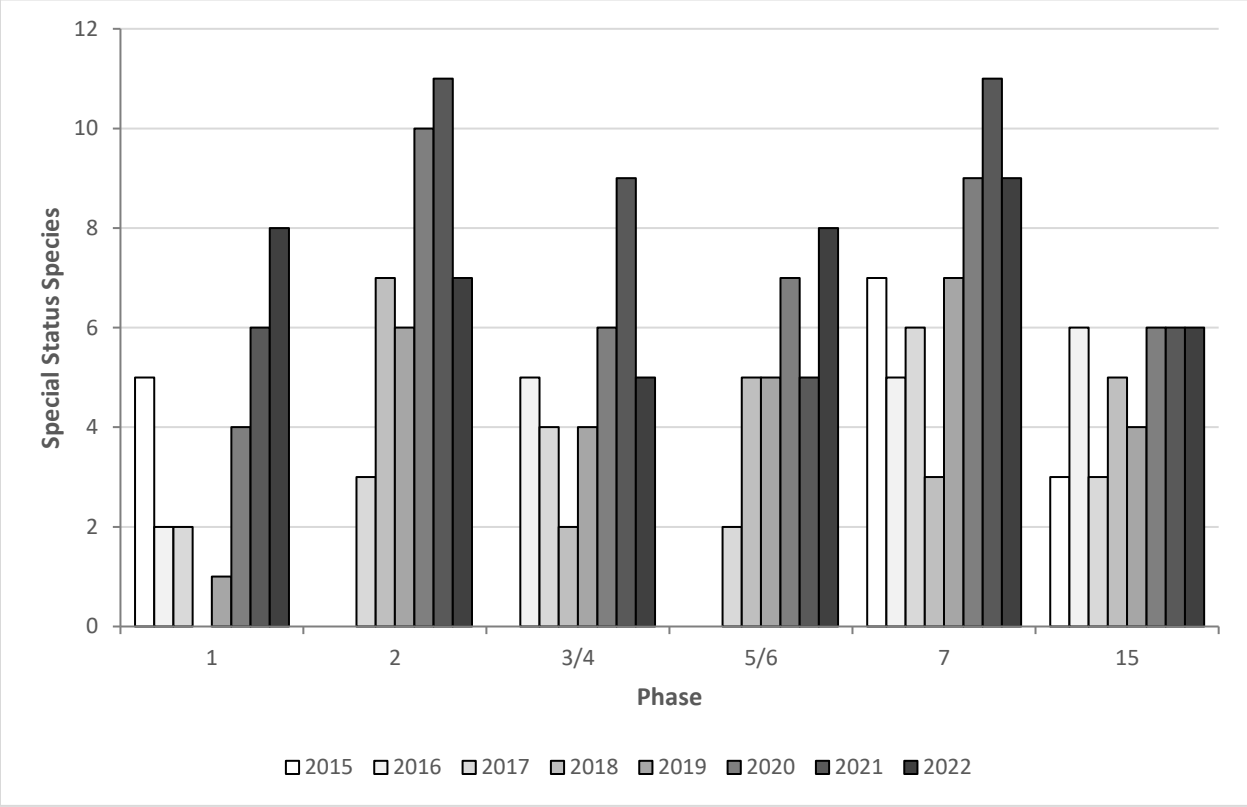


Figure 7-3. Richness of bird Species of Concern, Potential Species of Concern, and other species with special status designations in Montana, by phase and year in the Clark Fork River Operable Unit.

7.3.4 Richness and Relative Abundance by Species and Phase

7.3.4.1 Phase 1

Phase 1 has been monitored continuously for eight years from 2015-2022. During that period, 110 bird species have been observed and 71 of those species were observed in 2022 (Table 7-4). Six species were observed in 2022 for the first time in Phase 1, including: Ferruginous Hawk, Hooded Merganser, Wood Duck, Wilson's Phalarope, Olive-sided Flycatcher, and Western Kingbird (Table 7-4). Ferruginous Hawk had never previously been observed in the Clark Fork River Operable Unit in this monitoring program.

Species that were commonly observed (i.e., at least one individual was observed per point-count on average) in Phase 1 in 2022 included: American Wigeon, Canada Goose, Gadwall, Green-winged Teal, Mallard, California Gull, Ring-billed Gull, American Crow, Black-billed Magpie, Brown-headed Cowbird, European Starling, Northern Rough-winged Swallow, Red-winged Blackbird, Savannah Sparrow, Tree Swallow, Western Meadowlark, Yellow-headed Blackbird, Yellow-rumped Warbler, and Double-crested Cormorant (Table 7-4). Two species (Canada Goose and Ring-billed Gull) were very commonly observed (i.e., more than 10 individuals were observed per point-count on average) in 2022 (Table 7-4).

There is evidence that multiple species have increased in abundance over time (between 2015-2022) in Phase 1, including: Canada Goose, Cinnamon Teal, Gadwall, Long-billed Curlew, Ring-billed Gull, Rock Pigeon, American Crow, American Goldfinch, Common Yellowthroat, Eastern Kingbird, Northern Rough-winged Swallow, Red-winged Blackbird, Savannah Sparrow, Western Meadowlark, Willow Flycatcher, Yellow Warbler, and Yellow-headed Blackbird (Table 7-4). Only one species (Killdeer) appears to have declined in abundance over time (Table 7-4).

Table 7-4. Relative abundance of bird species observed in Phase 1 of the Clark Fork River Operable Unit, 2015-2022.

Species	Observations per point-count								
	2015	2016	2017	2018	2019	2020	2021	2022	Trend
Hawks, kites, and eagles									
Bald Eagle#	0.03	0.17	0.06	0	0	0.04	0.23	0.15	
Ferruginous Hawk^!	0	0	0	0	0	0	0	0.04	
Northern Harrier	0.12	0.61	0.06	0.05	0	0.23	0.15	0.15	
Osprey	0	0.04	0	0.25	0.08	0.04	0.23	0.15	
Red-tailed Hawk	0.03	0	0	0	0	0.12	0.04	0.15	
Sharp-shinned Hawk	0.06	0	0	0	0	0	0.04	0	
Swainson's Hawk	0	0	0	0	0	0	0.04	0	
Ducks and geese									
American Wigeon	0	0	0	0.05	0	0	0.08	2.69	
Barrow's Goldeneye#	0.09	0	0	0	0.08	0	0.04	0.50	
Blue-winged Teal	0	0	0	0	0	0	0.12	0	

Species	Observations per point-count								
	2015	2016	2017	2018	2019	2020	2021	2022	Trend
Bufflehead	0.06	0	0	0	0	0	0	0	
Canada Goose	6.59	2.00	0.11	3.80	2.92	12.88	14.81	15.65	1.99 *
Canvasback	0	0	0	0	0.46	0	0	0	
Cinnamon Teal	0.09	0.09	0	0.35	0.29	0.38	0.31	0.77	0.08 **
Common Goldeneye	0.21	0	1.11	0.05	0.04	0.12	0	0	
Common Merganser	0	0	0.06	0.10	0	0	0.38	0.12	
Gadwall	0.32	0	0	0.15	0.25	1.42	0.85	1.62	0.21 *
Green-winged Teal	0.09	0	0.11	0.20	0	0.08	0.19	2.15	
Hooded Merganser#^	0	0	0	0	0	0	0	0.04	
Lesser Scaup	0.65	0.13	0	0.15	0.54	0.69	0.12	0.38	
Mallard	2.15	1.22	0.94	2.00	1.21	2.50	2.27	3.00	
Northern Pintail	0	0	0	0.05	0	0.23	0	0	
Northern Shoveler	0.21	0.22	0	1.00	0	0.19	0.54	0.58	
Redhead	0	0	0	0.10	0	0	0	0.08	
Ring-necked Duck	0	0	0	0.10	0	0	0	0.50	
Snow Goose	0	0	0	0	0	0	0.04	0	
Wood Duck^	0	0	0	0	0	0	0	0.04	
Vultures									
Turkey Vulture	0.03	0.04	0	0	0	0	0.04	0	
Shorebirds									
American Avocet	0.41	0	0	0	0	0.19	0	0	
Bonaparte's Gull	0.06	0	0	0	0	0	0	0	
California Gull	2.85	0.83	4.33	0.10	0.21	2.50	1.19	5.04	
Franklin's Gull#	0.06	0	0	0	0	0	0	0	
Killdeer	0.91	0.52	0.28	0	0.17	0.04	0.08	0.08	-0.10 *
Long-billed Curlew#	0	0	0	0	0	0.04	0.04	0.04	0.01 **
Ring-billed Gull	2.53	4.52	2.50	2.55	1.33	8.50	9.15	18.54	1.83 *
Spotted Sandpiper	0.65	0.43	0.28	0.10	0.21	0.38	0.12	0.31	
Wilson's Phalarope^	0	0	0	0	0	0	0	0.12	
Wilson's Snipe	0	0	0.11	0	0	0.04	0	0.04	
Pigeons and doves									
Eurasian Collared-Dove	0	0	0	0	0	0.04	0	0.08	
Mourning Dove	0.12	0.17	0.11	0	0.08	0	0.12	0.08	
Rock Pigeon	0	0	0	0	0	0.04	0.04	0.15	0.02 *
Kingfishers									
Belted Kingfisher	0.03	0.04	0	0.10	0	0	0.08	0.15	
Falcons									
American Kestrel	0	0.04	0	0.05	0	0.08	0.15	0.08	
Merlin	0	0	0	0	0	0	0.04	0	
Upland game birds									
Gray Partridge	0	0	0	0	0	0.04	0	0	
Rails									

Species	Observations per point-count								
	2015	2016	2017	2018	2019	2020	2021	2022	Trend
American Coot	0.56	0.04	0	0.50	0	0	0	0	
Sandhill Crane	0	0.09	0.11	0.20	0.08	0.15	0.08	0.27	
Sora	0	0	0	0	0	0.15	0.08	0	
Songbirds									
American Crow	0.03	0	0	0	0	0.73	0.85	1.38	0.20 **
American Dipper	0	0	0	0	0	0.04	0	0	
American Goldfinch	0	0	0	0	0	0.04	0.04	0.12	0.01 *
American Pipit	0	0	0	0	0	0	0.23	0	
American Robin	0.03	0.22	0.06	0	0.04	0.04	0.23	0.46	
American Tree Sparrow	0.12	0	0	0.05	0	0	0	0	
Bank Swallow	0	0.09	0	0	0	0.04	0.38	0.08	
Barn Swallow	0	0	0	0	0.04	0	0.15	0	
Black-billed Magpie	1.62	1.22	0.50	1.20	0.75	1.42	3.38	2.27	
Black-capped Chickadee	0.09	0	0	0	0	0.35	0.08	0.23	
Black-headed Grosbeak	0	0	0	0	0	0	0.04	0	
Brewer's Blackbird	0.03	0.48	0.44	0	0.54	1.46	0.04	0.50	
Brewer's Sparrow#	0	0	0	0	0	0.04	0	0.04	
Brown-headed Cowbird	1.29	1.26	0.83	0.70	0.25	3.54	2.92	3.46	
Bullock's Oriole	0	0.04	0	0	0	0	0.04	0	
Cedar Waxwing	0	0.17	0.06	0.50	0	0.35	0.08	0.12	
Chipping Sparrow	0	0	0	0	0	0.08	0.08	0	
Clay-colored Sparrow	0.68	0.35	0.06	0.10	0.13	1.08	0.85	0.81	
Cliff Swallow	0	0	0.44	0	0.25	1.69	2.92	0.08	
Common Grackle	0	0	0	0	0	0.04	0.08	0	
Common Raven	1.06	0.70	0.50	0.60	0.21	1.00	0.50	0.31	
Common Yellowthroat	0.09	0	0	0	0	0.54	0.35	0.69	0.09 *
Dark-eyed Junco	0	0	0	0	0	0.96	0	0.08	
Eastern Kingbird	0.06	0.09	0.11	0.20	0.21	0.27	0.92	0.85	0.12 **
European Starling	0.03	0.39	3.83	0.40	0.04	1.62	0.73	2.38	
Gray Catbird	0	0.09	0	0	0	0.04	0	0.08	
Hermit Thrush	0	0	0	0	0	0	0.04	0	
Horned Lark	0	0	0	0	0	0	0.19	0	
House Finch	0	0	0	0	0	0	0.04	0	
House Sparrow	0	0	0	0	0	0	0.35	0	
Lark Sparrow	0	0	0	0	0	0	0.04	0	
Lazuli Bunting	0	0	0	0	0	0	0.04	0	
Marsh Wren	0	0.04	0	0	0.04	0	0	0	
Mountain Bluebird	0.18	0	0	0	0	0.12	0.04	0	
Northern Rough-winged Swallow	0.12	0	0	0	0	0.50	0.54	1.27	0.15 *
Northern Waterthrush	0	0.04	0	0	0.04	0	0	0	
Olive-sided Flycatcher^	0	0	0	0	0	0	0	0.04	

Species	Observations per point-count								
	2015	2016	2017	2018	2019	2020	2021	2022	Trend
Orange-crowned Warbler	0	0	0	0	0	0.08	0	0	
Red-winged Blackbird	1.65	0.87	1.39	2.15	2.75	4.81	7.12	8.04	1.06 **
Ruby-crowned Kinglet	0	0	0	0	0	0.19	0	0.08	
Savannah Sparrow	0.53	0.04	0.39	0.15	0.04	2.42	1.54	1.88	0.27 *
Song Sparrow	0.18	0.26	0.06	0.05	0.04	0.27	0.62	0.73	
Swainson's Thrush	0	0	0	0	0	0	0.19	0	
Tree Swallow	0.65	1.83	1.50	1.70	0.92	1.73	14.50	1.42	
Vesper Sparrow	0.09	0.09	0	0.05	0	0.46	2.19	0.85	
Violet-green Swallow	0	0	0	0	0	0	0.08	0.04	
Western Kingbird^	0	0	0	0	0	0	0	0.04	
Western Meadowlark	0.35	0.30	1.00	0.65	0.42	1.15	1.42	1.31	0.16 *
Western Tanager	0	0	0	0	0	0.08	0.15	0.04	
Western Wood-Pewee	0	0	0	0	0	0.04	0	0	
White-crowned Sparrow	0	0	0	0.10	0	0.04	0.38	0	
Willow Flycatcher	0	0	0	0	0	0.23	0.15	0.23	0.04 *
Yellow Warbler	0	0	0	0	0.04	0.15	0.08	0.12	0.02 *
Yellow-headed Blackbird	1.06	2.52	1.00	2.10	1.67	3.23	2.42	5.62	0.45 *
Yellow-rumped Warbler	0	0	0	0.30	0.08	0.69	0.12	2.50	
Pelicans, herons, bitterns, and ibises									
American White Pelican#	0.03	0	0	0	0	0	0.12	0.12	
Great Blue Heron#	0.21	0.26	0.22	0	0	0.27	0.23	0.23	
Woodpeckers									
Lewis's Woodpecker#	0	0	0	0	0	0	0.04	0	
Northern Flicker	0.06	0.04	0.06	0.05	0	0.15	0.04	0.38	
Red-naped Sapsucker	0.03	0	0	0	0	0	0	0	
Grebes									
Red-necked Grebe	0	0	0	0	0	0.04	0	0	
Cormorants									
Double-crested Cormorant	0.94	0.83	0.72	0.60	0.25	1.15	1.27	1.88	

^ Species never observed in phase prior to 2022.

! Species never observed in Clark Fork River Operable Unit prior to 2022.

Special status species.

* Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.

7.3.4.2 Phase 2

Phase 2 has been monitored continuously for six years from 2017-2022. During that period, 107 bird species have been observed and 74 of those species were observed in 2022 (Table 7-5). Three species were observed in 2022 for the first time in Phase 2, including: Prairie Falcon, Hooded Merganser, and Semipalmated Sandpiper (Table 7-5). Prairie Falcon and Semipalmated Sandpiper had never previously been observed in the Clark Fork River Operable Unit in this monitoring program.

Species that were commonly observed (i.e., at least one individual was observed per point-count on average) in Phase 2 in 2022 included: Canada Goose, Canvasback, Common Goldeneye, Gadwall, Green-winged Teal, Lesser Scaup, Mallard, Redhead, Ring-necked Duck, American Avocet, California Gull, Ring-billed Gull, American Crow, Black-billed Magpie, Brown-headed Cowbird, Northern Rough-winged Swallow, Red-winged Blackbird, Savannah Sparrow, Tree Swallow, Vesper Sparrow, Yellow-headed Blackbird, Yellow-rumped Warbler, and White-faced Ibis (Table 7-5). Two species (Canada Goose and Ring-billed Gull) were very commonly observed (i.e., more than 10 individuals were observed per point-count on average) in 2022 (Table 7-5).

There is evidence that multiple species have increased in abundance over time (between 2017-2022) in Phase 2, including: Common Goldeneye, Gadwall, Northern Pintail, American Avocet, Long-billed Curlew, Wilson's Phalarope, American Crow, American Goldfinch, Bank Swallow, Common Yellowthroat, Northern Rough-winged Swallow, Savannah Sparrow, Song Sparrow, Vesper Sparrow, and Willow Flycatcher (Table 7-5). There were no species that appeared to have declined in abundance over time (Table 7-5).

Table 7-5. Relative abundance of bird species observed in Phase 2 of the Clark Fork River Operable Unit, 2017-2022.

Species	Observations per point-count						
	2017	2018	2019	2020	2021	2022	Trend
Hawks, kites, and eagles							
Bald Eagle#	0	0	0	0.12	0	0.08	
Golden Eagle#	0	0	0	0.08	0.04	0	
Northern Harrier	0	0.10	0.16	0.04	0.15	0.12	
Osprey	0.12	0	0	0.38	0.69	0.27	
Red-tailed Hawk	0	0.10	0.24	0	0	0	
Ducks and geese							
American Wigeon	0.12	1.05	0.72	12.88	3.31	0.69	
Barrow's Goldeneye#	0.24	0	0.08	0.08	0.23	0	
Blue-winged Teal	0	0	0	0.19	0	0.04	
Bufflehead	0	0	0.64	0.92	0.23	0.38	
Canada Goose	0	3.50	2.44	8.31	10.77	5.65	
Canvasback	0.24	4.85	0.64	7.19	10.62	1.73	

Species	Observations per point-count						
	2017	2018	2019	2020	2021	2022	Trend
Cinnamon Teal	0.06	0	0.32	1.50	0.62	0.23	
Common Goldeneye	1.47	2.80	0.76	3.31	5.58	5.77	0.92 *
Common Merganser	0	0.15	0.08	0	0	0	
Gadwall	0.94	0.60	0.76	5.58	5.27	4.65	1.07 *
Green-winged Teal	0.18	0.10	0	1.77	0.69	2.54	
Hooded Merganser#^	0	0.05	0	0.04	0	0.04	
Lesser Scaup	0	1.65	3.08	12.00	4.65	6.58	
Mallard	1.24	0.95	0.72	3.31	2.69	1.81	
Northern Pintail	0	0	0	0	0.08	0.15	0.03 *
Northern Shoveler	0.12	0.45	1.44	4.08	0.88	1.00	
Redhead	0.06	1.90	3.08	20.15	26.38	2.96	
Ring-necked Duck	0	3.40	1.24	13.46	32.77	6.92	
Ruddy Duck	0	0	0.80	0.50	0.12	0.42	
Snow Goose	0	0.75	0	2.69	7.00	0	
Trumpeter Swan#	0	0	0	0.54	1.15	0	
Tundra Swan	0	0.10	0.52	0.58	0.42	0	
Wood Duck	0	0	0	0	0.08	0	
Vultures							
Turkey Vulture	0.06	0	0	0	0.04	0	
Shorebirds							
American Avocet	0.53	2.65	1.32	4.92	4.96	4.42	0.86 *
Baird's Sandpiper	0	0	0	0	0.08	0.12	
Black-necked Stilt#	0	0.30	0.04	0.73	0.73	0.04	
Bonaparte's Gull	0	0	0.12	0	0	0.38	
California Gull	5.29	0.05	0.16	1.85	0.69	1.42	
Common Tern#	0	0.10	0	0	0.50	0	
Forster's Tern#	0	0.05	0.12	0	0.35	0	
Franklin's Gull#	0	0.60	0.08	0	0.27	0	
Greater Yellowlegs	0	0	0.04	0	0.19	0	
Killdeer	0.29	0.10	0.20	0.85	0.31	0.23	
Lesser Yellowlegs	0	0	0.04	0	0	0	
Long-billed Curlew#	0	0	0	0.04	0.04	0.04	0.01 *
Long-billed Dowitcher	0	0.30	0.36	0.35	0.04	0	
Marbled Godwit	0	1.00	0.56	0.04	0.08	0.15	
Ring-billed Gull	10.88	6.80	4.48	4.50	5.31	5.46	
Semipalmated Sandpiper^|	0	0	0	0	0	0.04	
Spotted Sandpiper	0	0	0.08	0.65	0.35	0.35	
Willet	0	0	0	0	0.12	0	
Wilson's Phalarope	0	0.10	0.04	0.27	0.92	0.85	0.20 *
Wilson's Snipe	0.12	0	0	0	0	0	
Pigeons and doves							

Species	Observations per point-count						
	2017	2018	2019	2020	2021	2022	Trend
Mourning Dove	0.24	0.05	0	0.04	0.08	0.19	
Rock Pigeon^	0	0	0	0	0	0.04	
Falcons							
American Kestrel	0	0	0	0.08	0.04	0	
Merlin	0	0	0	0.04	0	0	
Peregrine Falcon#	0.06	0	0	0	0.04	0	
Prairie Falcon^!	0	0	0	0	0	0.04	
Loons							
Common Loon#	0	0	0.04	0	0	0	
Rails							
American Coot	0	4.55	2.60	8.19	5.85	0.35	
Sandhill Crane	0.12	1.05	0.20	0.19	0	0.31	
Sora	0	0	0	0.04	0	0	
Songbirds							
American Crow	0.18	0.15	0.16	1.04	1.12	2.19	0.40 *
American Goldfinch	0	0	0	0.04	0.04	0.04	0.01 *
American Pipit	0	0	0	0.08	0.73	0.12	
American Robin	0	0	0	0.08	0.12	0.04	
Bank Swallow	0	0	0	0.04	0.23	0.58	0.10 *
Barn Swallow	0	0	0	0.38	0.38	0	
Black-billed Magpie	1.82	1.30	0.88	2.31	2.42	1.69	
Black-capped Chickadee	0	0	0.08	0.04	0	0.12	
Brewer's Blackbird	0.24	0	0.48	0.12	0	0.08	
Brown-headed Cowbird	0.06	0.55	0.52	0.27	0.62	1.08	
Cedar Waxwing	0	0	0	0	0.23	0.65	
Clay-colored Sparrow	0.24	0.45	0.64	0.81	0.73	0.65	
Cliff Swallow	0	0	0.16	4.46	2.77	0.12	
Common Raven	1.47	0.55	1.16	0.12	0.35	0.23	
Common Yellowthroat	0	0	0	0.35	0.42	0.62	0.13 **
Dark-eyed Junco	0	0.30	0	0.23	0	0.08	
Eastern Kingbird	0	0.10	0.08	0	0.23	0.27	
European Starling	0	0	0.24	1.58	0.04	0	
Gray Catbird	0	0	0	0	0.04	0	
Hermit Thrush	0	0	0	0	0.04	0	
Horned Lark	0	0	0	0.08	0	0	
Lark Sparrow^	0	0	0	0	0	0.04	
Marsh Wren^	0	0	0	0	0	0.04	
Northern Rough-winged Swallow	0	0	0	1.19	0.65	1.15	0.25 *
Red-winged Blackbird	0	0.50	0.72	12.19	3.81	7.23	
Ruby-crowned Kinglet	0	0	0.04	0	0	0	
Savannah Sparrow	0.59	0.30	1.16	4.04	4.12	4.15	0.92 *
Song Sparrow	0.06	0	0.20	0.19	0.23	0.23	0.04 *

Species	Observations per point-count						
	2017	2018	2019	2020	2021	2022	Trend
Swainson's Thrush	0	0	0	0	0.35	0	
Tree Swallow	0.53	0.65	1.32	4.85	1.73	2.96	
Vesper Sparrow	0	0	0.16	0.15	0.85	1.12	0.23 *
Violet-green Swallow	0	0	0	0.04	0	0	
Western Meadowlark	0.06	0.20	0.12	0.38	0.69	0.35	
Western Tanager^	0	0	0	0	0	0.27	
White-crowned Sparrow	0	0	0	0	0.08	0	
Willow Flycatcher	0	0	0	0.04	0.04	0.08	0.02 *
Yellow Warbler	0	0	0	0.08	0	0.04	
Yellow-headed Blackbird	0.24	0.55	0.20	2.08	3.00	1.46	
Yellow-rumped Warbler	0	0.40	0.24	0.19	0.12	1.92	
Pelicans, herons, bitterns, and ibises							
American White Pelican#	0.18	0	0	0.04	0	0.15	
Great Blue Heron#	0	0.20	0.08	0.15	0.12	0.12	
White-faced Ibis#	0	0.05	0	0.08	3.38	1.15	
Woodpeckers							
Northern Flicker	0	0.05	0.08	0	0.04	0.12	
Grebes							
Eared Grebe	0	0	0.04	0	0	0	
Red-necked Grebe	0.06	0	0	0.04	0.12	0	
Cormorants							
Double-crested Cormorant	0.29	0.75	0.20	0.42	0.62	0.65	

^ Species never observed in phase prior to 2022.

! Species never observed in Clark Fork River Operable Unit prior to 2022.

Special status species.

* Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.

7.3.4.3 Phases 3 and 4

Phases 3 and 4 has been monitored continuously for seven years from 2016-2022. During that period, 118 bird species have been observed and 49 of those species were observed in 2022 (Table 7-6).

Species that were commonly observed (i.e., at least one individual was observed per point-count on average) in Phases 3 and 4 in 2022 included: Canada Goose, Green-winged Teal, Lesser Scaup, Mallard, Ring-billed Gull, Bank Swallow, Brown-headed Cowbird, Cliff Swallow, European Starling, Horned Lark, Red-winged Blackbird, Savannah Sparrow, Song Sparrow, Yellow Warbler, and Yellow-headed Blackbird (Table 7-6). One species (Cliff Swallow) was very commonly observed (i.e., more than 10 individuals were observed per point-count on average) in 2022 (Table 7-6).

There is evidence that multiple species have increased in abundance over time (between 2016-2022) in Phases 3 and 4, including: Barrow's Goldeneye, Green-winged Teal, Hooded Merganser, Ring-billed Gull, American Goldfinch, Bank Swallow, Brown-headed Cowbird, Clay-colored Sparrow, Common Yellowthroat, European Starling, House Wren, Willow Flycatcher, and Yellow-rumped Warbler (Table 7-6). There were no species that appeared to have declined in abundance over time (Table 7-6).

Table 7-6. Relative abundance of bird species observed in Phases 3 and 4 of the Clark Fork River Operable Unit, 2016-2022.

Species	Observations per point-count							Trend
	2016	2017	2018	2019	2020	2021	2022	
Hawks, kites, and eagles								
Bald Eagle#	0.13	0.04	0.18	0.17	0.10	0.11	0	
Cooper's Hawk	0	0	0	0.03	0	0	0	
Golden Eagle#	0	0.04	0.04	0.03	0	0.03	0	
Northern Harrier	0.13	0	0.07	0	0.21	0.30	0.08	
Osprey	0.13	0.20	0.11	0.09	0.08	0.08	0.23	
Red-tailed Hawk	0.29	0.24	0.21	0.40	0.67	0.81	0.38	
Sharp-shinned Hawk	0	0	0	0	0.05	0.03	0	
Swainson's Hawk	0.06	0.04	0.04	0	0	0.08	0	
Ducks and geese								
American Wigeon	0.13	0.08	0.39	0.09	1.79	2.97	0	
Barrow's Goldeneye#	0	0	0	0	0.03	0.14	0.31	0.04 *
Blue-winged Teal	0	0	0	0.06	0.05	0	0	
Canada Goose	5.00	0	3.25	4.54	6.90	9.30	5.92	
Canvasback	0	0	0	0	0.08	0	0	
Cinnamon Teal	0.03	0.08	0	0.54	2.05	0.05	0	
Common Goldeneye	0.10	0.04	0.54	0.09	0.05	0.11	0	
Common Merganser	0.03	0	0	0	0.18	0.30	0.15	
Gadwall	0	0	0	0	0.38	0.57	0.15	

Species	Observations per point-count							Trend
	2016	2017	2018	2019	2020	2021	2022	
Green-winged Teal	0	0	0	0	0.31	1.11	1.62	0.27 *
Hooded Merganser#	0	0	0	0	0.08	0.22	0.23	0.04 **
Lesser Scaup	0.13	0	0.07	0.11	0.21	0.16	0	
Mallard	1.77	1.84	2.07	2.43	5.26	10.27	1.54	
Northern Pintail	0	0.32	0	0	0	0.30	0	
Northern Shoveler	0	0	0	0.26	0.41	0.14	0	
Redhead	0	0	0	0	0.26	0	0	
Ross's Goose	0.13	0.04	0	0	0	0	0	
Snow Goose	0	0.28	45.71	0	0.72	3.46	0	
Tundra Swan	0	0	0.21	0	0	0	0	
Wood Duck	0	0	0	0.06	0.21	0.05	0	
Nightjars								
Common Nighthawk	0.0	0.04	0	0	0	0	0	
Vultures								
Turkey Vulture	0.10	0	0.04	0.0	0.03	0.05	0.0	
Shorebirds								
American Avocet	0.03	0	0	0	0	0	0	
California Gull	0.10	4.56	0.0	0.17	0.90	0.49	0.85	
Forster's Tern#	0.03	0	0	0	0	0	0.08	
Greater Yellowlegs	0	0	0	0	0	0.05	0	
Killdeer	0.19	0.16	0.14	0.17	0.49	0.38	0.08	
Long-billed Curlew#	0.06	0	0	0	0.03	0.08	0	
Marbled Godwit	0	0	0	0	0	1.95	0	
Ring-billed Gull	0.65	0.20	0.61	0.60	2.74	1.41	3.54	0.47 *
Solitary Sandpiper	0.03	0	0	0	0.03	0	0	
Spotted Sandpiper	0.10	0.12	0.07	0	0.31	0.35	0.23	
Wilson's Phalarope	0	0	0.14	0	0.03	0	0	
Wilson's Snipe	0.06	0	0.21	0.06	0.08	0.08	0	
Pigeons and doves								
Mourning Dove	0.10	0.28	0.11	0.14	0.10	0.19	0.15	
Rock Pigeon	0.42	0.40	0.43	0	0.54	0.92	0	
Kingfishers								
Belted Kingfisher	0.03	0	0	0.03	0.18	0.24	0	
Falcons								
American Kestrel	0.10	0	0.07	0.06	0.15	0.14	0.15	
Merlin	0.03	0	0	0	0.03	0	0	
Peregrine Falcon#^	0	0	0	0	0	0	0.08	
Upland game birds								
Gray Partridge	0.06	0	0	0	0	0	0	
Rails								
American Coot	0.10	0	0.18	0	0.03	0	0	
Sandhill Crane	0.13	0.08	0.32	0.11	0.08	0.32	0	
Sora	0	0	0	0.03	0	0	0	

Species	Observations per point-count							Trend
	2016	2017	2018	2019	2020	2021	2022	
Songbirds								
American Crow	0	0	0.18	0.09	0.49	0.86	0.31	
American Goldfinch	0	0	0	0	0.31	0.38	0.69	0.11 **
American Pipit	0	0	0	0	0	0.54	0	
American Robin	0.29	0.28	0.18	0.23	0.33	0.57	0.38	
Bank Swallow	0.03	0.20	0.04	0.37	0.23	0.59	1.15	0.16 *
Barn Swallow	0.06	0.04	0	0.03	0.33	0.24	0	
Black-billed Magpie	0.87	0.84	0.64	0.83	3.46	3.05	0.92	
Black-capped Chickadee	0.13	0	0	0.06	0.46	0.14	0.31	
Black-headed Grosbeak	0	0	0	0	0.03	0.03	0	
Bobolink#	0	0	0	0	0	0.03	0	
Brewer's Blackbird	0.26	0.28	0.18	0.40	0.05	0.30	0.23	
Brewer's Sparrow#	0	0	0	0	0	0.03	0	
Brown-headed Cowbird	1.42	0.76	0.64	1.17	4.33	2.65	3.85	0.53 *
Bullock's Oriole	0	0	0	0	0.15	0.05	0	
Cassin's Finch#	0	0	0	0.03	0	0	0	
Cedar Waxwing	0	0	0	0	0.41	0	0.38	
Chipping Sparrow	0	0	0	0	0.05	0	0	
Clay-colored Sparrow	0.19	0.12	0.14	0.31	0.23	0.27	0.46	0.04 *
Cliff Swallow	3.71	5.68	2.00	0.43	4.54	7.38	28.69	
Common Grackle	0.06	0	0	0.03	0	0	0	
Common Raven	0.39	1.36	0.25	0.37	0.41	0.27	0.08	
Common Yellowthroat	0	0	0	0	0.10	0.11	0.15	0.03 **
Dark-eyed Junco	0	0	0.21	0	0.54	0.05	0	
Dusky Flycatcher	0	0	0	0	0.03	0	0	
Eastern Kingbird	0.52	0.16	0	0.20	0.51	0.43	0.54	
European Starling	0.26	0.40	1.89	0.43	3.46	3.08	5.46	1.23 *
Fox Sparrow	0.03	0	0	0	0.03	0.03	0	
Gray Catbird	0.03	0.08	0	0	0.21	0.14	0	
Hermit Thrush	0	0	0	0	0	0.03	0	
Horned Lark	0	0	0	0	0	0.03	1.08	
House Finch	0	0	0	0	0	0.03	0	
House Wren	0	0	0	0	0.05	0.03	0.08	0.01 *
Least Flycatcher	0	0	0	0.03	0.03	0	0	
Lincoln's Sparrow	0	0	0	0	0.10	0.03	0	
MacGillivray's Warbler	0	0	0	0	0	0.03	0	
Marsh Wren	0	0	0	0.06	0.05	0	0	
Mountain Bluebird	0	0.04	0	0	0	0	0	
Northern Rough-winged Swallow	0	0.08	0.04	0.03	1.26	1.68	0.54	
Northern Waterthrush	0	0	0	0.03	0.03	0	0	
Orange-crowned Warbler	0	0	0	0	0.05	0	0	
Red-winged Blackbird	0.42	0.32	1.54	1.46	11.28	18.89	1.08	
Ruby-crowned Kinglet	0	0	0	0	0.13	0	0.08	

Species	Observations per point-count							Trend
	2016	2017	2018	2019	2020	2021	2022	
Savannah Sparrow	0.58	0.24	0.18	0.54	3.56	2.86	1.54	
Song Sparrow	0.87	0.84	0.14	0.34	0.56	0.97	1.69	
Swainson's Thrush	0	0	0	0	0.03	0.35	0	
Tree Swallow	4.81	4.40	6.18	4.03	9.72	4.97	0.46	
Veery#	0	0	0	0	0	0.03	0	
Vesper Sparrow	0.06	0.08	0.14	0.26	0	0.41	0	
Violet-green Swallow	0	0.56	0	0	0.15	0.08	0	
Western Kingbird	0	0	0	0	0.13	0.05	0	
Western Meadowlark	1.10	0.40	0.57	0.14	0.85	0.57	0.62	
Western Tanager	0	0	0	0	0	0.65	0	
Western Wood-Pewee	0	0	0	0	0.08	0	0	
White-crowned Sparrow	0	0	0	0	0.05	0.03	0	
Willow Flycatcher	0.19	0.08	0.07	0.26	0.67	0.38	0.85	0.11 *
Wilson's Warbler	0	0	0	0	0	0.05	0	
Yellow Warbler	0.42	0.12	0.21	0.20	1.15	0.59	1.38	
Yellow-headed Blackbird	0.06	0.16	0.11	0.14	12.13	4.41	4.38	
Yellow-rumped Warbler	0	0.08	0.04	0	0.38	0.92	0.85	0.16 *
Pelicans, herons, bitterns, and ibises								
American White Pelican#	0.29	0	0	0	0	0	0	
Great Blue Heron#	0.10	0.08	0	0.06	0.10	0.11	0.23	
White-faced Ibis#	0	0.04	0	0	0.03	0	0	
Woodpeckers								
Downy Woodpecker	0	0	0	0.03	0	0	0	
Northern Flicker	0.03	0.36	0.18	0.14	0.21	0.32	0.77	
Owls								
Great Horned Owl	0	0.04	0	0	0.03	0	0	
Cormorants								
Double-crested Cormorant	0.77	0.80	0.29	0.37	1.00	0.70	0.92	

^ Species never observed in phase prior to 2022.

! Species never observed in Clark Fork River Operable Unit prior to 2022.

Special status species.

* Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.

7.3.4.4 Phases 5 and 6

Phases 5 and 6 have been monitored continuously for six years from 2017-2022. During that period, 129 bird species have been observed and 93 of those species were observed in 2022 (Table 7-7). Two species were observed in 2022 for the first time in Phases 5 and 6, as well as in the Clark Fork River Operable Unit overall, including: Red-necked Phalarope and American Redstart (Table 7-7).

Species that were commonly observed (i.e., at least one individual was observed per point-count on average) in Phases 5 and 6 in 2022 included: American Wigeon, Canada Goose, Cinnamon Teal, Gadwall, Green-winged Teal, Lesser Scaup, Mallard, Ring-necked Duck, California Gull, Ring-billed Gull, California Gull, American Robin, Bank Swallow, Black-billed Magpie, Brown-headed Cowbird, Cliff Swallow, European Starling, Red-winged Blackbird, Savannah Sparrow, Tree Swallow, Western Meadowlark, Yellow Warbler, and Yellow-rumped Warbler (Table 7-7). One species (Cliff Swallow) was very commonly observed (i.e., more than 10 individuals were observed per point-count on average) in 2022 (Table 7-5).

There is evidence that multiple species have increased in abundance over time (between 2017-2022) in Phases 5 and 6, including: Blue-winged Teal, Cinnamon Teal, Green-winged Teal, Redhead, Ring-billed Gull, Wilson's Snipe, Belted Kingfisher, American Kestrel, American Crow, American Goldfinch, American Robin, Black-billed Magpie, Black-capped Chickadee, Chipping Sparrow, Cliff Swallow, Common Raven, Gray Catbird, Red-winged Blackbird, Ruby-crowned Kinglet, Western Meadowlark, Yellow-rumped Warbler, and Double-crested Cormorant (Table 7-7). One species (Tree Swallow) appeared to have declined in abundance over time (Table 7-7).

Table 7-7. Relative abundance of bird species observed in Phases 5 and 6 of the Clark Fork River Operable Unit, 2017-2022.

Species	Observations per point-count						Trend
	2017	2018	2019	2020	2021	2022	
Hawks, kites, and eagles							
Bald Eagle#	0.08	0.07	0.03	0.26	0.44	0.26	
Cooper's Hawk^	0	0	0	0	0	0.03	
Golden Eagle#	0	0.03	0	0	0	0	
Northern Harrier	0	0.07	0.22	0.36	0.31	0.21	
Osprey	0	0.10	0.03	0	0.15	0.18	
Red-tailed Hawk	0	0.10	0.17	0.23	0.26	0.10	
Rough-legged Hawk	0	0	0	0	0.03	0	
Sharp-shinned Hawk	0	0	0.03	0	0.05	0.05	
Swainson's Hawk	0	0.03	0.08	0.05	0	0.03	
Ducks and geese							
American Wigeon	0.54	3.93	0.75	2.69	4.64	3.87	
Barrow's Goldeneye#	0	0.24	0.19	0.28	0.49	0.28	
Blue-winged Teal	0	0	0	0	0.03	0.03	0.01 *

Species	Observations per point-count						Trend
	2017	2018	2019	2020	2021	2022	
Bufflehead	0	0.14	0.28	0.21	0.10	0.79	
Canada Goose	0	5.03	1.81	10.87	2.44	4.72	
Canvasback	0	1.03	0	0.13	0	0.77	
Cinnamon Teal	0	0.72	0.36	0.87	0.64	1.77	0.26 *
Common Goldeneye	1.38	0.79	0.44	2.03	0.15	0.77	
Common Merganser	0.08	0.62	0.06	0.31	0.59	0.03	
Gadwall	0.08	0.52	1.31	0.97	0.85	1.08	
Green-winged Teal	0.08	0.86	0.28	0.90	0.97	1.56	0.24 *
Hooded Merganser#	0	0	0.36	0.21	0.10	0.05	
Lesser Scaup	0.54	2.59	1.00	1.51	1.77	2.23	
Mallard	1.50	3.72	1.92	4.26	1.95	2.15	
Northern Pintail	0.17	2.90	0	1.49	0.05	0	
Northern Shoveler	0.04	1.52	0.19	0.62	0.59	0.74	
Red-breasted Merganser	0	0	0	0	0.05	0	
Redhead	0	0	0	0.36	0.54	0.36	0.11 *
Ring-necked Duck	0	2.76	0.67	3.59	6.10	3.03	
Ross's Goose	0.17	0	0	0	0	0	
Ruddy Duck	0.25	0	0.17	0	0	0.15	
Snow Goose	2.71	0.41	0	0	0	0	
Trumpeter Swan#	0	0	0	0.10	0.77	0.08	
Tundra Swan	0	3.48	0.36	0	0.10	0	
Wood Duck	0	0	0	0.05	0	0	
Nightjars							
Common Nighthawk	0	0	0.03	0	0	0	
Vultures							
Turkey Vulture	0	0.07	0.11	0.03	0.08	0.03	
Shorebirds							
American Avocet^	0	0	0	0	0	0.05	
California Gull	2.38	0	0	0.59	0.41	1.31	
Greater Yellowlegs^	0	0	0	0	0	0.03	
Killdeer	0.29	0.17	0.06	0.36	0.21	0.46	
Lesser Yellowlegs	0.08	0	0	0	0	0	
Long-billed Curlew#	0	0	0	0.03	0	0.08	
Red-necked Phalarope^!	0	0	0	0	0	0.21	
Ring-billed Gull	0.33	0.34	0	0.97	1.54	3.10	0.53 *
Spotted Sandpiper	0.63	0.28	0.28	1.36	0.46	0.33	
Wilson's Phalarope	0	0.07	0	0	0	0.21	
Wilson's Snipe	0	0.07	0.03	0.08	0.08	0.18	0.03 *
Pigeons and doves							
Eurasian Collared-Dove	0	0	0	0.05	0	0	
Mourning Dove	0.75	0.55	0.50	0.56	0.56	0.56	
Kingfishers							
Belted Kingfisher	0	0.03	0	0.13	0.15	0.13	0.03 *

Species	Observations per point-count						Trend
	2017	2018	2019	2020	2021	2022	
Falcons							
American Kestrel	0.08	0.10	0.11	0.13	0.15	0.21	0.02 **
Upland game birds							
Gray Partridge	0.08	0	0	0	0	0	
Loons							
Common Loon#	0	0	0.03	0.05	0	0	
Rails							
American Coot	0	0.48	0.50	0	1.15	0	
Sandhill Crane	0.08	0	0.06	0.26	0.23	0.10	
Sora	0	0	0	0.08	0.05	0	
Songbirds							
American Crow	0.04	0.07	0	0.23	0.23	0.28	0.05 *
American Goldfinch	0	0.03	0.11	0.56	0.44	0.59	0.13 *
American Pipit	0	0	0	0.03	0.28	0.03	
American Redstart^!	0	0	0	0	0	0.08	
American Robin	0.29	0.03	0.22	0.85	1.15	1.13	0.23 *
American Tree Sparrow	0	0	0	0.13	0	0.10	
Bank Swallow	0	2.00	0.25	2.72	1.08	1.49	
Barn Swallow	0.21	0.07	0.25	1.41	0.85	1.00	
Black-billed Magpie	0.71	0.59	0.94	1.79	1.62	1.95	0.29 **
Black-capped Chickadee	0	0	0	0.74	0.56	0.74	0.18 *
Black-headed Grosbeak	0	0	0	0.03	0.10	0.03	
Brewer's Blackbird	0.38	0.17	0.42	0	0	0.72	
Brown-headed Cowbird	0.50	0.41	0.97	4.10	2.36	3.85	0.73 *
Bullock's Oriole	0	0	0	0.10	0.05	0.05	
Cassin's Finch#	0	0.07	0	0	0	0	
Cedar Waxwing	0	0	0	0.51	0.18	0.13	
Chipping Sparrow	0	0.03	0	0.03	0.28	0.56	0.10 *
Clay-colored Sparrow	0	0	0	0.64	0.23	0.44	
Cliff Swallow	0.08	1.90	3.64	12.10	8.46	17.46	3.29 **
Common Grackle	0.08	0.14	0	0	0	0	
Common Raven	0.13	0.10	0.19	0.31	0.21	0.38	0.05 *
Common Redpoll	0	0.34	0	0	0	0	
Common Yellowthroat	0	0	0	0.46	0.44	0.26	
Dark-eyed Junco	0	0.03	0	0.54	0.03	0	
Eastern Kingbird	0.29	0.24	0.36	0.77	0.36	0.62	
European Starling	1.58	1.34	0.42	6.59	1.92	6.23	
Fox Sparrow	0	0	0	0	0.03	0	
Gray Catbird	0.04	0.03	0	0.28	0.21	0.49	0.09 *
Horned Lark	0	0	0	0	0.03	0	
House Finch	0	0	0	0	0.08	0	
House Sparrow	0	0	0	0	0	0	
House Wren	0	0	0	0	0.08	0.03	

Species	Observations per point-count						Trend
	2017	2018	2019	2020	2021	2022	
Least Flycatcher	0	0	0	0.08	0.03	0	
Lincoln's Sparrow	0	0	0.06	0.03	0	0.05	
MacGillivray's Warbler^	0	0	0	0	0	0.05	
Marsh Wren	0	0	0.03	0.23	0.03	0	
Northern Rough-winged Swallow	0.17	0.10	0.25	1.51	1.49	0.87	
Northern Waterthrush	0	0	0.06	0	0.03	0	
Orange-crowned Warbler	0	0	0.06	0	0	0	
Red-winged Blackbird	0.54	0.66	0.92	6.74	6.74	5.26	1.36 *
Ruby-crowned Kinglet	0	0	0	0	0.03	0.05	0.01 *
Savannah Sparrow	0.13	0.17	0.36	4.95	3.77	2.41	
Song Sparrow	0.08	0.07	0	0.64	0.33	0.44	
Spotted Towhee	0	0	0	0.03	0	0	
Swainson's Thrush	0	0	0	0.03	0.46	0.13	
Tree Swallow	9.67	7.97	5.89	6.97	5.00	5.64	-0.80 *
Vesper Sparrow	0.17	0.14	0	0	0.38	0.13	
Violet-green Swallow	0.04	0.41	0	0.38	0	0.08	
Warbling Vireo	0	0	0	0.03	0	0	
Western Meadowlark	0.42	0.21	0.19	0.92	0.87	2.10	0.32 *
Western Tanager	0	0	0	0.05	0.26	0.28	
Western Wood-Pewee	0	0	0.11	0.10	0.03	0	
White-crowned Sparrow	0	0	0	0.03	0.38	0.15	
Willow Flycatcher	0	0.07	0.19	1.03	0.56	0.82	
Wilson's Warbler	0	0	0	0	0.03	0.10	
Yellow Warbler	0	0.03	0.22	1.79	0.82	1.08	
Yellow-breasted Chat	0	0	0	0	0.03	0	
Yellow-headed Blackbird	0	0.03	0.03	2.23	0.87	0.67	
Yellow-rumped Warbler	0	0.03	0.22	0.79	0.36	1.23	0.22 *
Pelicans, herons, bitterns, and ibises							
American White Pelican#^	0	0	0	0	0	0.05	
Great Blue Heron#	0.04	0.10	0.08	0.05	0	0.03	
White-faced Ibis#	0	0	0	0	0.62	0.13	
Woodpeckers							
Downy Woodpecker	0	0	0	0.03	0.03	0	
Northern Flicker	0	0.03	0.11	0.15	0.41	0.15	
Red-naped Sapsucker^	0	0	0	0	0	0.05	
Grebes							
Eared Grebe	0	0	0.14	0	0.03	0.03	
Pied-billed Grebe	0	0	0	0.03	0.03	0	
Western Grebe	0	0.07	0	0	0	0	
Owls							
Great Horned Owl	0	0.07	0	0	0.03	0	
Cormorants							
Double-crested Cormorant	0.21	0.03	0.17	0.85	0.69	0.79	0.16 *

Species	Observations per point-count						Trend
	2017	2018	2019	2020	2021	2022	
^	Species never observed in phase prior to 2022.						
!	Species never observed in Clark Fork River Operable Unit prior to 2022.						
#	Special status species.						
*	Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.						

7.3.4.5 Phase 7

Phase 7 has been monitored continuously for eight years from 2015-2022. During that period, 137 bird species have been observed and 94 of those species were observed in 2022 (Table 7-8). Four species were observed in 2022 for the first time in Phase 7, including: Bonaparte's Gull, Lesser Yellowlegs, Cassin's Finch, and House Wren (Table 7-8). Grasshopper Sparrow were observed in 2022 in Phase 7 and this species had never previously been observed in the Clark Fork Operable Unit.

Many species were commonly observed (i.e., at least one individual was observed per point-count on average) in Phase 7 in 2022, including: American Wigeon, Canada Goose, Common Goldeneye, Common Merganser, Gadwall, Green-winged Teal, Mallard, Northern Shoveler, Ruddy Duck, Snow Goose, California Gull, Marbled Godwit, Ring-billed Gull, Spotted Sandpiper, Wilson's Phalarope, American Coot, American Crow, American Robin, Bank Swallow, Black-billed Magpie, Brewer's Blackbird, Brown-headed Cowbird, Cliff Swallow, European Starling, Northern Rough-winged Swallow, Red-winged Blackbird, Savannah Sparrow, Tree Swallow, Vesper Sparrow, Violet-green Swallow, Western Meadowlark, and Yellow-rumped Warbler (Table 7-8). Two species (Cliff Swallow and Tree Swallow) were very commonly observed (i.e., more than 10 individuals were observed per point-count on average) in 2022 (Table 7-8).

There is evidence that multiple species have increased in abundance over time (between 2015-2022) in Phase 7, including: Canvasback, Common Merganser, Gadwall, Green-winged Teal, Northern Shoveler, Redhead, Ring-billed Gull, Wilson's Phalarope, Rock Pigeon, Common Loon, Sandhill Crane, American Crow, American Goldfinch, American Robin, Bank Swallow, Black-billed Magpie, European Starling, Northern Waterthrush, Tree Swallow, Vesper Sparrow, Violet-green Swallow, Yellow Warbler, and Yellow-headed Blackbird (Table 7-8). There were no species that appeared to have declined in abundance over time (Table 7-8).

Table 7-8. Relative abundance of bird species observed in Phase 7 of the Clark Fork River Operable Unit, 2015-2022.

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Hawks, kites, and eagles									
Bald Eagle#	0.12	0	0.11	0.13	0.08	0.08	0.31	0.15	
Cooper's Hawk	0	0	0	0	0	0	0.04	0	
Golden Eagle#	0	0	0	0.06	0	0	0	0	
Northern Harrier	0	0	0	0.06	0.08	0.08	0.08	0.04	
Osprey	0.62	0.88	0.83	0.50	0.67	0.88	0.96	0.88	
Red-tailed Hawk	0.03	0.08	0.06	0.06	0.08	0.15	0.12	0.08	
Sharp-shinned Hawk	0	0	0	0	0	0.04	0	0	
Swainson's Hawk	0.09	0	0	0	0	0	0	0	
Ducks and geese									
American Wigeon	0.21	0	0.44	0.06	1.00	62.62	6.38	6.73	

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Barrow's Goldeneye#	0.06	0	0.11	0	0.08	0.15	0	0	
Blue-winged Teal	0.06	0	0	0	0	0	0.08	0.31	
Bufflehead	0.15	0	0.11	0	0	1.38	0.54	0.50	
Canada Goose	17.68	6.50	0	9.75	22.25	22.73	13.50	14.69	
Canvasback	0	0	0	0	0	0	0.12	0.12	0.02 *
Cinnamon Teal	0.24	0.38	0.61	0.13	0	0.69	0.85	0.88	
Common Goldeneye	0.24	0	0.78	0.06	0.33	3.54	0.42	1.77	
Common Merganser	0.21	0.29	0.06	0	0.25	1.12	1.85	1.12	0.21 *
Gadwall	0.68	0.71	0.56	0.69	1.17	1.15	1.69	2.19	0.21 **
Green-winged Teal	0.26	0.42	0.78	0.44	0.54	2.23	4.08	4.92	0.66 **
Hooded Merganser#	0.82	0.33	0.78	0.31	0.33	0.50	0.73	0.85	
Lesser Scaup	0.06	0.21	0.33	0	0	0.35	0.42	0.54	
Mallard	1.85	2.08	1.50	1.88	0.83	50.27	1.73	4.19	
Northern Pintail	0	0	0	0.13	0	8.85	0	0.12	
Northern Shoveler	0.44	0	0.50	0.69	1.88	5.85	2.19	6.50	0.84 *
Red-breasted Merganser	0.18	0	0.17	0	0.17	0.04	0.04	0.12	
Redhead	0.06	0	0	0	0	0.27	0.46	0.54	0.08 *
Ring-necked Duck	0.12	0	0.22	0	0	0.08	1.31	0.38	
Ross's Goose	0	0.04	0	0	0	1.19	0.12	0	
Ruddy Duck	0.53	9.04	0	0	0.08	2.65	0.65	1.88	
Snow Goose	0	0.04	0.39	3.44	0	86.62	6.42	1.08	
Trumpeter Swan#	0	0	0	0	0	0.23	0.92	0.12	
Tundra Swan	0	0	0	0	0	0	0.12	0	
Wood Duck	0	0	0	0	0	0.04	0	0	
Vultures									
Turkey Vulture	0.15	0	0	0.19	0	0.08	0.38	0.15	
Shorebirds									
American Avocet	0.88	0.29	0.22	0	0.58	0.46	0.46	0.65	
Baird's Sandpiper	0	0	0	0	0	0.46	0.12	0	
Black-necked Stilt#	0	0	0	0	0	0.23	0.54	0	
Bonaparte's Gull^	0	0	0	0	0	0	0	0.04	
California Gull	0.15	0.04	34.78	0.25	0.13	1.27	3.00	1.88	
Greater Yellowlegs	0	0.08	0	0	0	0	0.08	0.12	
Killdeer	0.21	0.33	0.11	0.31	0.46	1.42	0.81	0.77	
Least Sandpiper	0	0	0	0	0	0	0.15	0	
Lesser Yellowlegs^	0	0	0	0	0	0	0	0.19	
Long-billed Curlew#	0	0	0	0	0.04	0.15	0.15	0.04	
Long-billed Dowitcher	0	0	0	0	0	0.04	0.38	0	
Marbled Godwit	0	0	0	0	1.00	0	0	3.81	
Ring-billed Gull	0.94	0.63	7.67	1.81	2.71	3.62	6.81	11.54	1.12 *
Solitary Sandpiper	0.06	0.04	0	0	0	0.04	0.04	0	
Spotted Sandpiper	0.79	0.29	0.44	0.13	0.58	2.23	1.85	1.38	

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Willet	0	0	0	0	0	0.04	0	0	
Wilson's Phalarope	0	0	0	0	0	0.65	3.12	2.27	0.40 *
Wilson's Snipe	0.09	0.04	0.11	0	0	0.04	0	0.04	
Pigeons and doves									
Eurasian Collared-Dove	0	0	0	0	0	0.04	0.12	0.04	
Mourning Dove	0.26	0.29	0	0.13	0	0.19	0.19	0.08	
Rock Pigeon	0	0	0	0	0	0.04	0.08	0.12	0.02 **
Kingfishers									
Belted Kingfisher	0	0	0	0	0	0.15	0.12	0	
Falcons									
American Kestrel	0.06	0	0	0	0	0.04	0	0.04	
Merlin	0	0	0	0	0.04	0	0	0	
Upland game birds									
Gray Partridge	0	0	0	0	0	0.12	0	0	
Loons									
Common Loon#	0.03	0.13	0.06	0	0.17	0.58	0.35	0.42	0.07 *
Rails									
American Coot	0.91	0.46	0.56	2.19	2.83	27.50	18.04	2.15	
Sandhill Crane	0	0	0.11	0.06	0.21	0.42	0.23	0.46	0.07 **
Songbirds									
American Crow	0.03	0	0.39	0.06	0.38	2.31	3.19	4.50	0.63 **
American Goldfinch	0.03	0	0	0	0	0.15	0.31	0.35	0.05 **
American Pipit	0	0	0	0	0.04	0	1.96	0	
American Robin	0.79	0.58	0.33	0.19	0.38	1.31	1.38	2.00	0.19 *
American Tree Sparrow	0	0	0	0	0	0.04	0	0	
Bank Swallow	0.56	0	0	0	0.17	8.81	4.31	11.58	1.49 *
Barn Swallow	0.29	0.17	0	0	0.04	2.15	0.92	0.65	
Black-billed Magpie	1.03	0.79	1.17	0.94	0.50	1.50	2.96	2.69	0.27 *
Black-capped Chickadee	0.18	0.04	0.28	0	0	1.08	0.42	0.35	
Bobolink#	0	0.04	0	0	0	0	0	0	
Brewer's Blackbird	0.12	0.17	0.22	0.06	0.25	0.08	0.54	3.12	
Brewer's Sparrow#	0	0	0	0	0	0.12	0.04	0.08	
Brown-headed Cowbird	1.41	1.38	0.39	0.38	0.25	2.58	1.69	2.65	
Bullock's Oriole	0	0	0	0	0	0	0.12	0.04	
Cassin's Finch#^	0	0	0	0	0	0	0	0.08	
Cedar Waxwing	0	0	0	0	0	1.00	0.31	0.08	
Chipping Sparrow	0	0	0	0	0	0.23	1.46	0	
Clay-colored Sparrow	0.21	0.04	0	0	0	0.15	0.04	0.12	
Cliff Swallow	0.35	0	0	0	0.63	17.69	3.08	13.00	
Common Grackle	0.15	0.08	0	0	0	0	0.08	0.04	
Common Raven	1.35	0.38	0.72	0.44	0.50	0.85	0.42	0.19	
Common Yellowthroat	0	0	0	0.06	0	0.12	0.23	0.04	
Dark-eyed Junco	0	0	0	0.19	0	0.04	0.04	0.38	

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Dusky Flycatcher	0	0	0	0	0	0.04	0	0	
Eastern Kingbird	0.44	0.29	0.22	0	0.29	0.54	0.50	0.73	
European Starling	0.85	0.46	0.11	0.50	3.13	7.73	5.19	6.81	1.08 **
Fox Sparrow	0	0	0	0.13	0	0.04	0	0	
Grasshopper Sparrow^!	0	0	0	0	0	0	0	0.04	
Gray Catbird	0.15	0.17	0.06	0.13	0.08	0.08	0.04	0.19	
Hermit Thrush	0	0	0	0	0	0	0.04	0	
Horned Lark	0	0	0	0	0	0	0.04	0.12	
House Finch	0	0	0	0	0	0	0.08	0	
House Sparrow	0	0	0	0	0	0	0.08	0.31	
House Wren^	0	0	0	0	0	0	0	0.31	
Lark Sparrow	0.03	0	0	0	0	0	0.08	0	
Least Flycatcher	0	0.04	0	0	0	0	0	0	
Marsh Wren	0	0	0	0	0	0	0.08	0.04	
Mountain Bluebird	0.38	0.13	0	0.06	0.04	0.08	0.04	0.42	
Northern Rough-winged Swallow	1.15	0	0.06	0.06	0.17	13.12	3.69	9.35	
Northern Shrike	0	0	0	0	0	0	0.04	0	
Northern Waterthrush	0	0	0	0	0	0	0.04	0.12	0.01 *
Orange-crowned Warbler	0.03	0	0	0	0	0.08	0	0	
Red-winged Blackbird	2.59	1.33	0.33	0.81	0.50	22.69	8.65	8.85	
Sage Thrasher#	0	0	0	0	0	0.04	0	0	
Savannah Sparrow	0.15	0	0.22	0.06	0.25	3.77	2.35	1.50	
Song Sparrow	0.41	0.42	0.28	0.38	0.04	0.65	0.35	0.50	
Swainson's Thrush	0	0.08	0	0	0	0.04	0.08	0	
Tree Swallow	7.06	15.50	4.89	5.63	21.46	42.65	37.19	35.35	5.19 *
Vesper Sparrow	0	0.04	0	0.25	0.13	1.50	4.12	1.81	0.45 *
Violet-green Swallow	0	0.08	0	0	0	1.69	3.38	2.73	0.48 **
Warbling Vireo	0	0	0	0	0	0.23	0.08	0.04	
Western Kingbird	0	0	0	0	0	0.04	0.08	0	
Western Meadowlark	1.29	0.67	0.56	0.88	0.42	1.35	1.38	1.19	
Western Wood-Pewee	0	0	0	0	0	0.08	0.04	0	
White-crowned Sparrow	0	0	0	0	0	0	0.04	0	
Willow Flycatcher	0.44	0.25	0	0.06	0.21	0.38	0.15	0.19	
Yellow Warbler	0.15	0	0	0	0.17	1.38	0.65	0.85	0.15 *
Yellow-headed Blackbird	0.03	0	0	0	0	0.04	0.12	0.15	0.02 *
Yellow-rumped Warbler	0.06	0.13	0.11	0	0.08	2.15	0.35	2.31	
Pelicans, herons, bitterns, and ibises									
American White Pelican#	0.59	0.58	0.22	0	0.04	0	0.12	0.27	
Great Blue Heron#	0.09	0.04	0.06	0	0.08	0	0.15	0.04	
White-faced Ibis#	0	0	0	0	0	0	1.12	0	
Woodpeckers									
Northern Flicker	0.21	0.42	0.06	0.13	0.13	0.27	0.38	0.27	

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Grebes									
Eared Grebe	0	0	0	0	0	0.04	1.04	0.19	
Horned Grebe#	0.03	0	0	0	0	0	0.04	0	
Pied-billed Grebe	0	0	0	0	0	0	0.04	0	
Red-necked Grebe	0	0.08	0	0	0	0	0.08	0.04	
Western Grebe	0.03	0	0.06	0	0.17	0	0.23	0.15	
Owls									
Great Horned Owl	0	0	0	0	0	0.04	0	0	
Cormorants									
Double-crested Cormorant	0.62	0.54	0.28	0.25	0.08	1.04	1.04	0.81	

^	Species never observed in phase prior to 2022.
!	Species never observed in Clark Fork River Operable Unit prior to 2022.
#	Special status species.
*	Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.

7.3.4.6 Phase 15

Phase 15 has been monitored continuously for eight years from 2015-2022. During that period, 124 bird species have been observed and 91 of those species were observed in 2022 (Table 7-9). Six species were observed for the first time in Phase 15 in this monitoring program: Cooper's Hawk, Hooded Merganser, Baird's Sandpiper, Greater Yellowlegs, Gray Partridge, and Great Horned Owl.

Species that were commonly observed (i.e., at least one individual was observed per point-count on average) in Phase 15 in 2022 included: Canada Goose, Green-winged Teal, Mallard, Northern Shoveler, Mourning Dove, Black-billed Magpie, Brown-headed Cowbird, European Starling, Red-winged Blackbird, Savannah Sparrow, Tree Swallow, and Western Meadowlark (Table 7-9).

There is evidence that multiple species have increased in abundance over time (between 2015-2022) in Phase 15, including: Bald Eagle, Killdeer, Spotted Sandpiper, Belted Kingfisher, Common Yellowthroat, Eastern Kingbird, European Starling, Hermit Thrush, Lincoln's Sparrow, Nashville Warbler, Orange-crowned Warbler, Red-winged Blackbird, Vesper Sparrow, Willow Flycatcher, Yellow Warbler, and Yellow-rumped Warbler (Table 7-9). There were no species that appeared to have declined in abundance over time (Table 7-9).

Table 7-9. Relative abundance of bird species observed in Phase 15 of the Clark Fork River Operable Unit, 2015-2022.

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Hawks, kites, and eagles									
Bald Eagle#	0	0	0.03	0.10	0.03	0.05	0.08	0.13	0.01 *
Cooper's Hawk^	0	0	0	0	0	0	0	0.03	
Golden Eagle#	0	0	0	0.03	0	0	0	0	
Northern Harrier	0.06	0.10	0.03	0	0	0.10	0	0	
Osprey	0.06	0.03	0.14	0.10	0.06	0.03	0.03	0.05	
Red-tailed Hawk	0.16	0.23	0.21	0.24	0	0.51	0.51	0.41	
Sharp-shinned Hawk	0.03	0	0	0	0	0	0	0.05	
Swainson's Hawk	0	0	0	0.03	0	0	0	0.03	
Ducks and geese									
American Wigeon	0.41	0.03	0.38	4.48	0.47	0.31	0.21	0.08	
Barrow's Goldeneye#	0	0.13	0.28	0.10	0.06	0.05	0.10	0.08	
Blue-winged Teal	0.03	0	0	0	0	0.05	0.15	0.05	
Bufflehead	0	0.13	0	0.03	0	0.05	0.03	0	
Canada Goose	2.53	0.71	0	1.79	2.19	3.79	6.97	3.82	
Canvasback	0	0	0	0.55	0.19	0	0	0	
Cinnamon Teal	0.81	1.19	0.24	0.31	0.47	0.49	0.41	0.67	
Common Goldeneye	0	0.19	0	0.41	0.11	0.05	0.05	0.08	
Common Merganser	0.25	0.13	0	0.07	0	0	0.31	0.10	

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Gadwall	0.56	0.10	0.14	0.07	0	0.59	0.54	0.59	
Green-winged Teal	1.34	0.45	0.34	0.28	0.69	1.05	2.41	1.36	
Hooded Merganser#^	0	0.16	0	0	0.06	0	0	0	
Lesser Scaup	0.06	0.32	0.10	0.28	0	0	0.05	0.21	
Mallard	5.69	3.29	2.03	16.76	2.83	4.49	3.85	3.85	
Northern Pintail	0.03	0.03	0	2.55	0	0.10	0.21	0.10	
Northern Shoveler	0	0.13	0.14	3.79	0.86	1.64	0.46	1.33	
Red-breasted Merganser	0	0	0.21	0	0	0	0	0	
Ring-necked Duck	0	0	0.21	0.07	0	0	0	0	
Snow Goose	0	0	0	2.59	1.53	2.05	0	0.85	
Trumpeter Swan#	0	0.13	0	0	0	0	0	0.03	
Tundra Swan	0	0	0	0	0.06	0.28	0	0.03	
Wood Duck	0	0	0	0	0.06	0.05	0	0	
Nightjars									
Common Nighthawk	0	0.03	0	0	0	0.18	0	0.08	
Vultures									
Turkey Vulture	0	0	0	0.10	0	0	0	0.03	
Shorebirds									
Baird's Sandpiper^	0	0	0	0	0	0	0	0.05	
Black-necked Stilt#	0	0	0	0	0	0.03	0	0	
California Gull	0	0	3.10	0	0	0	0.03	0.10	
Greater Yellowlegs^	0	0	0	0	0	0	0	0.03	
Killdeer	0.16	0.23	0.03	0	0.28	1.23	1.33	0.85	0.17 *
Lesser Yellowlegs	0	0	0	0	0	0	0.05	0	
Long-billed Curlew#	0	0	0	0.03	0	0.28	0.03	0.23	
Ring-billed Gull	0.09	0.03	0.90	0	0.17	0	0.05	0.08	
Solitary Sandpiper	0	0	0	0	0	0	0.08	0	
Spotted Sandpiper	0.13	0.10	0.03	0.03	0.11	0.44	0.77	0.49	0.09 *
Wilson's Phalarope	0	0	0	0	0	0	1.13	0.59	
Wilson's Snipe	0.31	0.03	0.10	0.10	0	0.23	0.49	0.41	
Eurasian Collared-Dove	0	0	0	0	0	0.05	0	0	
Mourning Dove	0.16	0.16	0.10	0.21	0.03	0.10	0.05	2.41	
Rock Pigeon	0	0	0.41	0	0	0.05	0.10	0	
Kingfishers									
Belted Kingfisher	0	0	0	0	0	0.03	0.03	0.03	0.005 **
Falcons									
American Kestrel	0.09	0	0	0.03	0	0	0.03	0.05	
Merlin	0	0	0	0	0	0.03	0	0	
Upland game birds									
Gray Partridge^	0	0	0	0	0	0	0	0.05	
Rails									

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
American Coot	0.09	0.35	0.14	0.59	1.00	0.18	0.13	0	
Sandhill Crane	0.47	0.23	0.10	0.45	0.39	0.28	0.54	0.56	
Sora	0	0	0.03	0	0	0	0.03	0.03	
Virginia Rail	0	0	0	0.03	0	0	0	0	
Songbirds									
American Crow	0.06	0	0.07	0.10	0	0.36	0.21	0.10	
American Goldfinch	0	0	0	0	0	0.05	0	0.03	
American Pipit	0	0	0	0	0	0	0.23	0.13	
American Robin	0.34	0.45	0.24	0.14	0.03	0.46	0.69	0.31	
American Tree Sparrow	0.03	0	0	0.21	0	0	0	0.28	
Bank Swallow	0.38	0.06	0	0	0	0.03	0.08	0.15	
Barn Swallow	0	0.10	0.17	0.03	0	0.10	0.33	0.23	
Black-billed Magpie	4.31	2.52	2.55	2.52	1.56	5.62	3.26	3.05	
Black-capped Chickadee	0.84	0.16	0	0.14	0.42	0.51	0.56	0.49	
Black-headed Grosbeak	0	0	0.07	0	0	0.03	0.05	0	
Bobolink#	0.16	0.32	0.38	0.24	0.17	0.90	0.67	0.56	
Brewer's Blackbird	0.03	0.10	0.21	0.28	0.22	1.21	0.67	0.46	
Brown-headed Cowbird	0.81	0.26	0.14	0.21	0.14	2.95	1.92	1.64	
Bullock's Oriole	0.06	0.06	0	0.03	0.03	0.15	0	0.13	
Cedar Waxwing	0	0	0	0	0	0.13	0	0.10	
Chipping Sparrow	0	0	0	0	0	0	0.69	0	
Clay-colored Sparrow	0.03	0.10	0	0.03	0.08	0	0	0.05	
Cliff Swallow	0	0	0.03	0	0	0.10	0.23	0	
Common Grackle	0	0.06	0	0	0	0.03	0	0	
Common Raven	0.78	0.45	0.52	0.10	0.14	0.31	0.36	0.18	
Common Yellowthroat	0	0.03	0	0	0	0.26	0.21	0.41	0.05 *
Dark-eyed Junco	0	0	0	0	0	0.31	0	0.03	
Dusky Flycatcher	0	0	0	0	0.03	0	0	0.05	
Eastern Kingbird	0.09	0.23	0.07	0.07	0.19	0.38	0.54	0.62	0.07 **
European Starling	0.63	0.35	0.14	0.14	0	6.82	3.21	6.59	0.90 *
Gray Catbird	0.03	0	0	0	0	0.21	0.03	0.08	
Hermit Thrush	0	0	0	0	0	0	0.03	0.05	0.01 *
Horned Lark	0	0	0	0	0	0.03	0	0.08	
House Finch	0	0	0	0	0	0	0.05	0	
House Wren	0	0	0.03	0	0.03	0.03	0	0.03	
Least Flycatcher	0	0	0	0	0.06	0.05	0	0	
Lincoln's Sparrow	0	0	0	0	0	0	0.03	0.03	0.004 *
Marsh Wren	0	0.06	0	0.07	0	1.67	0.64	0.54	
Nashville Warbler	0	0	0	0	0	0	0.03	0.03	0.004 *
Northern Rough-winged Swallow	0.31	0.03	0	0	0	0.13	0.49	0.10	
Northern Waterthrush	0	0	0	0	0	0.03	0.05	0	
Olive-sided Flycatcher	0	0	0	0	0	0	0.03	0	
Orange-crowned Warbler	0	0	0	0	0.03	0.05	0.03	0.08	0.01 **

Species	Observations per point-count								Trend
	2015	2016	2017	2018	2019	2020	2021	2022	
Pine Siskin	0	0	0	0	0	0	0.15	0	
Red-eyed Vireo	0	0	0	0	0	0	0.03	0	
Red-winged Blackbird	0.91	0.52	0.86	1.07	0.44	3.36	4.38	4.72	0.63 **
Ruby-crowned Kinglet	0.09	0	0	0.07	0.11	0.10	0.13	0.10	
Savannah Sparrow	0.31	0.23	0.24	0.24	0.36	3.18	1.87	1.54	
Song Sparrow	0.09	0.23	0.14	0.03	0.06	0.26	0.21	0.36	
Spotted Towhee	0	0	0	0	0	0.03	0	0	
Swainson's Thrush	0	0	0	0	0	0.03	0.13	0	
Tree Swallow	2.38	3.74	1.90	3.62	3.33	1.85	1.56	1.51	
Vesper Sparrow	0.13	0.10	0.07	0.10	0.22	0.18	0.21	0.26	0.02 *
Warbling Vireo	0	0	0	0	0	0.15	0	0.03	
Western Kingbird	0	0	0	0	0	0.03	0	0.08	
Western Meadowlark	1.41	1.65	0.79	0.52	0.22	0.97	1.38	2.23	
Western Tanager	0	0	0	0	0	0.03	0.21	0.05	
Western Wood-Pewee	0	0	0	0	0	0.15	0.13	0	
White-crowned Sparrow	0.06	0	0	0	0.06	0.05	0.28	0.05	
Willow Flycatcher	0.03	0.03	0	0	0.14	0.13	0.21	0.23	0.03 **
Wilson's Warbler	0	0	0	0	0.03	0	0.10	0.05	
Yellow Warbler	0.03	0.26	0.07	0.14	0.08	0.51	0.44	0.41	0.06 *
Yellow-headed Blackbird	0.09	0	0.03	0	0	0.08	0.13	0.26	
Yellow-rumped Warbler	0.06	0	0	0.03	0.22	1.10	1.72	0.82	0.21 *
Pelicans, herons, bitterns, and ibises									
American White Pelican#	0.03	0.03	0	0	0	0	0	0.10	
Great Blue Heron#	0.03	0.06	0	0	0	0.08	0.13	0	
White-faced Ibis#	0	0	0	0	0	0	0.72	0	
Woodpeckers									
Downy Woodpecker	0.06	0	0	0	0	0	0	0	
Northern Flicker	0.28	0.23	0.10	0.28	0.08	0.36	0.26	0.21	
Owls									
Great Horned Owl^	0	0	0	0	0	0	0	0.03	
Cormorants									
Double-crested Cormorant	0.19	0.10	0.07	0.03	0.06	0.56	0.26	0.21	

^ Species never observed in phase prior to 2022.

! Species never observed in Clark Fork River Operable Unit prior to 2022.

Special status species.

* Asterisks indicates *p*-value from simple linear regression: * = 0.01-0.05, ** = 0.01-0.001, *** = <0.001.

7.4 DISCUSSION

The CFROU provides habitat for a diverse array of bird species. Over the last eight years 175 distinct bird species, representing 18 taxonomic orders and 48 families, have been observed in the CFROU. This diversity is all the more remarkable given that this sizable proportion of Montana species has been observed in a river corridor monitoring area of about 40 square miles, which accounts for about 0.03 percent of Montana's geographic area. The most diverse taxonomic orders include Passeriformes (perching birds; 79 species), Anseriformes (waterfowl; 27 species), Charadriiformes (shorebirds and waders; 25 species), and Accipitriformes (birds of prey; 10 species). Thirty-three species considered dependent or obligated to aquatic and riparian habitats have also been observed which underscores the value of those habitats. In addition, 23 species with special status designations have been observed.

Monitoring results for completed and in-progress remedial actions are encouraging for bird diversity. Overall, richness of riparian-dependent and riparian-obligate bird species has generally increased in each phase where remedial actions have been completed (Phases, 1, 2, 5, 6, and 15). Richness of these species has also increased in Phase 7, which had not yet been remediated as of 2022, although perhaps to a lower degree. Results suggest that displacement of disturbance-sensitive species due to construction actions have been offset by effects of the remedy that have been beneficial, at least in the short-term. For example, revegetation may provide abundant food sources that were not available in more mature, albeit metals-impaired, riparian areas. In addition, during construction predatory mammals such as skunks may be temporarily displaced resulting in increased bird use of habitats vacated by those predators. Over the long-term, remedial actions would potentially result in increased species richness, as contamination is reduced and habitat is restored, provided that overall habitat diversity remains the same.

In Phases 3 and 4, monitoring effort was reduced in 2022 because of active remediation. As would be expected, the lower monitoring effort resulted in lower numbers of species and individuals observed, but even despite the reduced monitoring effort, no species appear to be declining in abundance in Phases 3 and 4 based on the 2022 results.

As in prior monitoring years, birds of prey were diverse and abundant in the CFROU in 2022. Generally, we presume that predators avoid competition and are sparsely distributed on the landscape. However, interspecific (between species) competition was evidently quite common given the relatively high density of species in these phases. These raptors (e.g., Swainson's Hawk and Red-Tailed Hawk) likely feed on similar prey and yet were commonly observed throughout the CFROU, suggesting that intraspecific (within species) competition was also high. The apparent tolerance of these predatory species for each other, within these relatively small areas, suggests that the availability of prey (e.g., small mammals, waterfowl, and passerine birds) was also high. The diversity and abundance of birds of prey in the CFROU is likely a positive reflection on the overall health of the system's trophic structure.

The CFROU also provides prime habitat for waterfowl. Overall, waterfowl were some of the most abundant species observed and waterfowl observations were extremely common. For example, on average the number of individual waterfowl birds observed per 10-minute point-count was 49.6 in Phase 7, 41.6 in Phase 3, 28.1 in Phase 1, and 24.5 in Phases 5 and 6. Even in Phases 3, 4, and 15, where waterfowl abundance was relatively low, the average number of individuals observed during each point count was at least 10. Waterfowl richness was also high in each phase ranging from a low of 7 species in Phases 3 and 4 (with limited monitoring effort) to 21 species in Phase 7.

Finally, we provided analyses of relative abundance trends through time for each species in each phase. Overall, 107 of 714 (15.0 percent) of these analyses resulted in statistically significant positive trends at a significance level of 5 percent. At that level, one would expect that about 5 percent of the tests would have resulted in erroneous significant results due to the likelihood of making a Type I Error (i.e., if there were no actual changes in the abundance of a particular species in a particular phase over time, but the statistical test indicated that there was). Therefore, since well over 5 percent of the tests provided evidence of increasing abundance, it appears that these trends in the data reflect real increases in species abundance. In addition, only 2 of 714 (0.2 percent) of the trend evaluations indicated that a particular species was declining in abundance over time in a particular phase. In combination, these results suggest that bird habitat in the CFROU is improving substantially (and rapidly) and has already resulted in direct increases in bird abundance since monitoring began in 2015.

Finally, in regard to the observed trends of increased abundance, it is worth offering a further note of caution. We should reiterate that in this report we estimate abundance by calculating "catch-per-unit-effort" (CPUE) metrics as the average number of individuals observed per site visit in order to control for variance in sampling effort among years. Despite these efforts to control for the confounding influence of variance in effort, we must reiterate that variance in CPUE may at times be explained by factors other than variance in true abundance. For example, if the ability to detect birds improved over time due to reduced vegetation density, which would improve the surveyor's ability to spot and identify birds, then CPUE could increase despite when no actual change in abundance occurred. For these reasons, we recommend caution in the interpretation of the abundance trends for bird species in each phase.

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APPENDIX A

QUALITY ASSURANCE AND QUALITY CONTROL REVIEW AND SUMMARY: SURFACE WATER AND INSTREAM SEDIMENT

A.1 INTRODUCTION

Specific quality assurance and quality control (QA/QC) requirements for field measurements, sample collection, laboratory analysis, and the reporting of resulting data were established by protocols contained in the quality assurance project plan (QAPP), a component of the approved sampling and analysis plan (SAP) for the Clark Fork River Operable Unit (CFROU). The following quality control checklist is a component of the Montana Department of Environmental Quality QA/QC protocols and provides review and validation of water chemistry and related data generated under the CFROU environmental monitoring program in 2022. This checklist provides an outline for reviewing and assessing some factors potentially affecting data quality and assists in identifying data that may be invalid or require additional documentation.

A.2 QUALITY CONTROL

Work order receipt checklists were completed by Energy Labs for each batch of quarterly samples delivered. These checklists are provided in Appendix B. Specific quality control issues identified included the following:

- First Quarter (Q1): Minor labeling discrepancies between two sample bottles and the chain of custody (COC) form were noted. Each discrepancy was corrected after consultation between lab and field sampling staff.
- Second Quarter (Q2): No quality control issues were identified.
- Third Quarter (Q3): No quality control issues were identified.
- Fourth Quarter (Q4):): One sample bottle which was marked as “dissolved metals” did not also specify that the sample had been filtered. The discrepancy was corrected after consultation between lab and field sampling staff.

A.3 SUMMARY OF QUALITY CONTROL AND ANALYSIS RESULTS

Summarized in this appendix are quality control measures performed on field and laboratory data generated from surface water and instream sediment samples collected from the CFROU monitoring events. Assessed under the DEQ standard quality assurance and quality control protocols are data quality objectives (DQOs), including categories for: “representativeness”, “comparability”, and “completeness”. Also assessed under the DEQ standard quality assurance and quality control protocols are data quality indicators (DQIs) including categories for: ”sensitivity”, “lab precision”, “overall precision”, and “bias and accuracy”.

Overall, DQOs and DQIs were generally met at all monitoring sites in the CFROU. Surface water samples were collected and analyzed for total suspended sediment, nutrients, metals

(dissolved and total recoverable), and common ions at sample sites on four occasions. Instream sediment samples were collected and analyzed for metals (total) during the first (Q1) and third (Q3) quarters.

A.3.1 Representativeness

All surface water and instream sediment monitoring sites in the CFROU sampled met stated objectives for "spatial representativeness". That is, all monitoring sites were sampled at the established locations specified in the project SAP.

Surface water sediment monitoring was conducted quarterly. Q1 monitoring occurred during base streamflow conditions prior to the onset of spring runoff. Q2 monitoring occurred during spring runoff. Biological monitoring was conducted in conjunction with Q3 surface water and instream sediment sampling, during low streamflows near the seasonal minimum, within the specified index period for sampling biota. Q4 monitoring occurred during base streamflow conditions as late in the season as possible, prior to winter ice up. Sampling activities occurred during the last month of each respective quarter, and all data met specified CFROU criteria for temporal representativeness.

A.3.2 Comparability

Comparability is the applicability of project data to the remedial performance goals specified in the SAP for the various environmental media monitored under the project. The performance goal for surface water quality is for all contaminants of concern (COC) to meet water quality performance goals as described in the Record of Decision. Data acquired by the monitoring are applicable to assessing attainment of project performance goals.

A.3.3 Completeness

An overall data completeness goal of 85 percent was specified for the CFROU project and an evaluation table for data completeness is not required if the goal is met or exceeded. Data completeness for surface water and instream sediment samples from the CFROU monitoring sites was near 100 percent, with all chemical and physical parameters collected and analyzed during each of the four quarterly monitoring events.

A.3.4 Sensitivity

The method detection limit (MDL) established by Energy Laboratories through laboratory blank analyses is an expression of sensitivity. The MDL documented in QA/QC summary reports that accompany each set of laboratory analytical reports was less than the project-required reporting limit (RL), and was often below detection, for all analytical methods pertaining to CFROU monitoring (Appendix B).

Sensitivity of field methods for surface water samples was determined through deionized water field blank analyses. Results for all metals, common ions and suspended sediment parameters in field blanks were below the analytical reporting limits for 99 percent (95 of 96) of the surface water field blank analytes. Associated results which were less than ten times the RL concentrations have been qualified in the project database. Analytes detected in surface water field blanks included the following:

- Dissolved zinc was detected in one field blank sample with a detectable concentration of 0.025 mg/L (RL = 0.008 mg/L).

A.3.5 Precision

A.3.5.1 Laboratory

Laboratory precision was assessed by the relative percent difference (RPD) metric comparing laboratory samples with duplicates. RPD comparisons were made for all analytes measured in this program. Established criteria allow a maximum of 20 percent RPD for water sample results which are at least five times greater than the RL, and 35 percent RPD for sediment samples which are at least five times greater than the RL. Results of laboratory quality control procedures are available in Appendix B.

A.3.5.2 Overall

The overall precision of surface water and instream sediment sample analyses from the CFROU was assessed with RPD comparisons between samples and paired field duplicates. Established criteria allow a maximum of 25 percent RPD for water sample results at least 5 times the RL, and 40 percent RPD for sediment samples at least 5 times the RL. All associated data which exceeds these criteria have been J-flagged in the project database.

One surface water sample and duplicate pair was collected in each quarterly sampling event, and these were analyzed for dissolved and total recoverable metals, nutrients, and common ions. Results of RPD comparisons for all metal, common ion and suspended sediment parameters in the field duplicate and field sample pairs were within the established criteria in 88 percent (84 of 96) of the sample and duplicate pairs. Field duplicate and field sample pairs with RPD exceeding 25 percent are identified in Table A-1.

Table A-1. Field sample and field duplicate pairs with relative percent differences greater than 25 percent in the Clark Fork River Operable Unit, 2022.

Station ID	Date	Characteristic Name	Sample Fraction	Routine Sample Result (mg/L)	Duplicate Sample Result (mg/L)	Reporting Limit (mg/L)	Relative Percent Difference (%)
FC-CFR	1-Sep-22	Alkalinity, total	Total	170	230	4	30.0
FC-CFR	1-Sep-22	Arsenic	Dissolved	0.014	0.01	0.001	33.3
FC-CFR	1-Sep-22	Arsenic	Total Recv	0.014	0.01	0.001	33.3
FC-CFR	1-Sep-22	Bicarbonate	Total	190	270	4	34.8
FC-CFR	1-Sep-22	Cadmium	Total Recv	0.00027	Not Detected	0.00003	100.0
FC-CFR	1-Sep-22	Chloride	Total	11	6	1	58.8
FC-CFR	1-Sep-22	Copper	Dissolved	0.006	0.001	0.001	142.9
FC-CFR	1-Sep-22	Copper	Total Recv	0.008	0.001	0.001	155.6
FC-CFR	1-Sep-22	Mercury	Total Recv	0.000003	0.000046	0.000005	175.5
FC-CFR	1-Sep-22	Sulfate	Total	87	28	1	102.6
FC-CFR	1-Sep-22	Total nitrogen	Unfiltered	0.21	0.36	0.05	52.6
FC-CFR	1-Sep-22	Total Phosphorus	Unfiltered	0.021	0.083	0.003	119.2

One instream sediment sample and duplicate pair was collected during each sampling event, and these were analyzed for total metals. Among all analytes, 10 field sample and field duplicate results were compared and 10 (100 percent) were within the established criteria.

A.3.5.3 Bias and Accuracy

Bias is defined as directional error from the true value of individual measurements. For field measurements (water temperature, pH, specific conductance, dissolved oxygen [DO] concentration, DO percent saturation, and turbidity), potential bias was addressed through frequent calibration of field instruments documented in calibration logs, and consistent field procedures. For water chemistry and sediment results, potential bias was minimized by adherence to approved field procedures for sample collection and handling, and decontamination of sampling equipment.

Accuracy is the combination of high precision and low bias. Accuracy of laboratory results was assessed by reviewing the analytical method controls (i.e., lab control sample, continuing calibration verification, lab fortified blank, standard reference material) and analytical batch controls (i.e., matrix spike and matrix spike duplicate). Limits established by the laboratory through control charting of each method's performance served as assessment criteria. Any analytical method controls or analytical batch controls that had values outside of the acceptable recovery range were re-analyzed, as detailed in the analytical QC summary provided by Energy Laboratories and included with each analytical summary report (Appendix B).

APPENDIX B

ANALYTICAL LABORATORY RESULTS

APPENDIX B1
ANALYTICAL LABORATORY RESULTS
1ST QUARTER MONITORING

ANALYTICAL SUMMARY REPORT

April 28, 2022

MT DEQ-Federal Superfund
PO Box 200901
Helena, MT 59620-0901

Work Order: H22030470 Quote ID: H1525

Project Name: CFROU Monitoring

Energy Laboratories Inc Helena MT received the following 20 samples for MT DEQ-Federal Superfund on 3/16/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H22030470-001	Field Blank #1 FC-CFR	03/15/22 10:05	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Mercury, Total Recoverable Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended Subcontracted, Analytics
H22030470-002	FC-CFR	03/15/22 10:30	03/16/22	Surface Water	Same As Above
H22030470-003	FC-CFR Duplicate	03/15/22 10:30	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Mercury, Total Recoverable Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Preparation, Dissolved Filtration MCAWW Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended Subcontracted, Analytics

ANALYTICAL SUMMARY REPORT

H22030470-004	CFR-34	03/15/22 12:00	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22030470-005	CFR-27H	03/15/22 12:50	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22030470-006	CFR-11F	03/15/22 13:45	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22030470-007	CFR-07D	03/15/22 14:30	03/16/22	Surface Water	Same As Above
H22030470-008	CFR-03A	03/15/22 15:00	03/16/22	Surface Water	Same As Above
H22030470-009	WSC-SBC	03/15/22 15:45	03/16/22	Surface Water	Same As Above
H22030470-010	SS-25	03/15/22 16:15	03/16/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended

ANALYTICAL SUMMARY REPORT

H22030470-011	CFR-34 Sediment <0.063mm	03/15/22 12:00	03/16/22	Sediment	Metals by ICP/ICPMS, Total Percent Moisture Total Metals Digestion by SW3050B Sieve Analysis, Wet Soil Preparation USDA1
H22030470-012	CFR-27H Sediment <0.063mm	03/15/22 12:50	03/16/22	Sediment	Metals by ICP/ICPMS, Total Percent Moisture Total Metals Digestion by SW3050B Sieve Analysis, Wet
H22030470-013	CFR-11F Sediment <0.063mm	03/15/22 13:45	03/16/22	Sediment	Same As Above
H22030470-014	CFR-07D Sediment <0.063mm	03/15/22 14:30	03/16/22	Sediment	Same As Above
H22030470-015	CFR-03A Sediment <0.063mm	03/15/22 15:00	03/16/22	Sediment	Same As Above
H22030470-016	WSC-SBC Sediment <0.063mm	03/15/22 15:45	03/16/22	Sediment	Same As Above
H22030470-017	SS-25 Sediment <0.063mm	03/15/22 16:15	03/16/22	Sediment	Same As Above
H22030470-018	SS-25 Duplicate Sediment <0.063	03/15/22 16:15	03/16/22	Sediment	Same As Above
H22030470-019	CFR-84F	03/15/22 9:15	03/16/22	Surface Water	Mercury, Total Recoverable Mercury Digestion by E245.1 Subcontracted, Analytics
H22030470-020	Trip Blank	03/15/22 9:15	03/16/22	Surface Water	Subcontracted, Analytics

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: MT DEQ-Federal Superfund
Project: CFROU Monitoring
Work Order: H22030470

Report Date: 04/28/22

CASE NARRATIVE

Sample FC-CFR Duplicate was refiltered and preserved in the laboroatory due to particulate present in the field filtered dissolved metals container. Contacted T. Traxler and per instruction, refiltered in the lab. abc 3/21/22

Samples for methylmercury analysis were subcontracted to BrooksApplied Labs. The associated report is attached. abc 4/28/2022

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the calculated method detection limit (MDL). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: Field Blank #1 FC-CFR
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-001
Collection Date: 03/15/22 10:05
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	ND	mg/L		1	0.8	A2540 D	03/18/22 15:42 / JAR			-124 (14410200)_220318B	3	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	3	mg/L	J	4	2	A2320 B	03/23/22 18:02 / JAR			PHSC_101-H_220323A	71	R173135
Bicarbonate as HCO3	3	mg/L	J	4	3	A2320 B	03/23/22 18:02 / JAR			PHSC_101-H_220323A	71	R173135
Chloride	ND	mg/L		1	0.02	E300.0	03/22/22 16:07 / JAR			IC METROHM_220321A	90	R173107
Sulfate	ND	mg/L		1	0.06	E300.0	03/22/22 16:07 / JAR			IC METROHM_220321A	90	R173107
Hardness as CaCO3	ND	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	12	R173235
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	03/21/22 14:08 / GE			FIA203-HE_220321B	69	R173081
Nitrogen, Total	ND	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:19 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	45	60530
Phosphorus, Total as P	0.003	mg/L	J	0.003	0.001	E365.1	03/23/22 14:19 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	37	60567
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.001	0.0002	E200.8	03/23/22 03:09 / dck			ICPMS205-H_220322B	114	R173122
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	03/23/22 03:09 / dck			ICPMS205-H_220322B	114	R173122
Copper	ND	mg/L		0.001	0.0001	E200.8	03/23/22 03:09 / dck			ICPMS205-H_220322B	114	R173122
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	03/25/22 02:57 / dck			ICPMS205-H_220323A	319	R173177
Zinc	ND	mg/L		0.008	0.001	E200.8	03/25/22 02:57 / dck			ICPMS205-H_220323A	319	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	ND	mg/L		0.001	0.0001	E200.8	03/25/22 05:35 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	363	60570
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	03/25/22 05:35 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	363	60570
Calcium	ND	mg/L		1	0.1	E200.7	03/23/22 01:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	74	60570
Copper	ND	mg/L		0.001	0.0003	E200.8	03/25/22 05:35 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	363	60570
Lead	ND	mg/L		0.0003	0.0001	E200.8	03/25/22 05:35 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	363	60570
Magnesium	ND	mg/L		1	0.05	E200.7	03/23/22 01:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	74	60570
Mercury	ND	ug/L		0.005	0.002	E245.1	03/18/22 17:19 / cfg	03/18/22 12:38	E245.1	HGCV203-H_220318A	52	60538
Potassium	ND	mg/L		1	0.1	E200.7	03/23/22 01:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	74	60570
Sodium	ND	mg/L		1	0.1	E200.7	03/23/22 01:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	74	60570
Zinc	ND	mg/L		0.008	0.001	E200.8	03/25/22 05:35 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	363	60570

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-002
Collection Date: 03/15/22 10:30
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	36	mg/L	D	5	0.8	A2540 D	03/18/22 15:43 / JAR			-124 (14410200)_220318B	4	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	03/23/22 18:08 / JAR			PHSC_101-H_220323A	73	R173135
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	03/23/22 18:08 / JAR			PHSC_101-H_220323A	73	R173135
Chloride	4	mg/L		1	0.02	E300.0	03/22/22 16:22 / JAR			IC METROHM_220321A	91	R173107
Sulfate	16	mg/L		1	0.06	E300.0	03/22/22 16:22 / JAR			IC METROHM_220321A	91	R173107
Hardness as CaCO3	141	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	13	R173235
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.10	mg/L		0.02	0.008	E353.2	03/21/22 14:12 / GE			FIA203-HE_220321B	72	R173081
Nitrogen, Total	0.31	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:13 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	40	60530
Phosphorus, Total as P	0.059	mg/L		0.003	0.001	E365.1	03/23/22 14:24 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	41	60567
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	03/23/22 03:12 / dck			ICPMS205-H_220322B	115	R173122
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	03/23/22 03:12 / dck			ICPMS205-H_220322B	115	R173122
Copper	0.0005	mg/L	J	0.001	0.0001	E200.8	03/23/22 03:12 / dck			ICPMS205-H_220322B	115	R173122
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:12 / dck			ICPMS205-H_220322B	115	R173122
Zinc	ND	mg/L		0.008	0.001	E200.8	03/25/22 03:01 / dck			ICPMS205-H_220323A	320	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.012	mg/L		0.001	0.0001	E200.8	03/23/22 13:06 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220322B	183	60570
Cadmium	0.00009	mg/L		0.00003	0.00002	E200.8	03/23/22 13:06 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220322B	183	60570
Calcium	38	mg/L		1	0.1	E200.7	03/23/22 01:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	75	60570
Copper	0.004	mg/L		0.001	0.0003	E200.8	03/23/22 13:06 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220322B	183	60570
Lead	0.0093	mg/L		0.0003	0.0001	E200.8	03/23/22 13:06 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220322B	183	60570
Magnesium	12	mg/L		1	0.05	E200.7	03/23/22 01:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	75	60570
Mercury	0.34	ug/L	D	0.01	0.008	E245.1	03/18/22 17:38 / cfg	03/18/22 12:38	E245.1	HGCV203-H_220318A	56	60538
Potassium	3	mg/L		1	0.1	E200.7	03/23/22 01:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	75	60570
Sodium	8	mg/L		1	0.1	E200.7	03/23/22 01:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	75	60570
Zinc	0.025	mg/L		0.008	0.001	E200.8	03/23/22 13:06 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220322B	183	60570

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR Duplicate
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-003
Collection Date: 03/15/22 10:30
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	40	mg/L	D	4	0.8	A2540 D	03/18/22 15:43 / JAR			-124 (14410200)_220318B	6	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	03/23/22 18:20 / JAR			PHSC_101-H_220323A	77	R173135
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	03/23/22 18:20 / JAR			PHSC_101-H_220323A	77	R173135
Chloride	4	mg/L		1	0.02	E300.0	03/22/22 16:36 / JAR			IC METROHM_220321A	92	R173107
Sulfate	16	mg/L		1	0.06	E300.0	03/22/22 16:36 / JAR			IC METROHM_220321A	92	R173107
Hardness as CaCO3	145	mg/L		1	1	A2340 B	03/23/22 01:39 / SR			CALC_220325A	201	R173236
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.10	mg/L		0.02	0.008	E353.2	03/21/22 14:16 / GE			FIA203-HE_220321B	75	R173081
Nitrogen, Total	0.31	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:15 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	41	60530
Phosphorus, Total as P	0.059	mg/L		0.003	0.001	E365.1	03/23/22 14:25 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	42	60567
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	04/23/22 00:21 / dck	03/21/22 15:02		ICPMS205-H_220422C	74	R174274
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	04/23/22 00:21 / dck	03/21/22 15:02		ICPMS205-H_220422C	74	R174274
Copper	0.001	mg/L		0.001	0.0001	E200.8	04/23/22 00:21 / dck	03/21/22 15:02		ICPMS205-H_220422C	74	R174274
Lead	0.0009	mg/L		0.0003	0.0001	E200.8	04/25/22 19:08 / dck	04/25/22 12:13		ICPMS205-H_220425B	137	R174294
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	04/23/22 00:21 / dck	03/21/22 15:02		ICPMS205-H_220422C	74	R174274
METALS, TOTAL RECOVERABLE												
Arsenic	0.012	mg/L		0.001	0.0001	E200.8	03/25/22 05:42 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	365	60570
Cadmium	0.00012	mg/L		0.00003	0.00003	E200.8	03/28/22 19:42 / sld	03/22/22 08:38	E200.2	ICPMS205-H_220328B	58	60570
Calcium	39	mg/L		1	0.1	E200.7	03/23/22 01:39 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	82	60570
Copper	0.004	mg/L		0.001	0.0003	E200.8	03/28/22 19:42 / sld	03/22/22 08:38	E200.2	ICPMS205-H_220328B	58	60570
Lead	0.0095	mg/L		0.0003	0.0001	E200.8	03/25/22 05:42 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	365	60570
Magnesium	12	mg/L		1	0.05	E200.7	03/23/22 01:39 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	82	60570
Mercury	0.38	ug/L	D	0.01	0.008	E245.1	03/18/22 17:41 / cfg	03/18/22 12:38	E245.1	HGCV203-H_220318A	57	60538
Potassium	3	mg/L		1	0.1	E200.7	03/23/22 01:39 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	82	60570
Sodium	8	mg/L		1	0.1	E200.7	03/23/22 01:39 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	82	60570
Zinc	0.026	mg/L		0.008	0.001	E200.8	03/25/22 05:42 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	365	60570

Report Definitions:
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MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-004
Collection Date: 03/15/22 12:00
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	25	mg/L	D	4	0.8	A2540 D	03/18/22 15:43 / JAR			-124 (14410200)_220318B	7	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	150	mg/L		4	2	A2320 B	03/23/22 18:26 / JAR			PHSC_101-H_220323A	79	R173135
Bicarbonate as HCO3	180	mg/L		4	3	A2320 B	03/23/22 18:26 / JAR			PHSC_101-H_220323A	79	R173135
Chloride	12	mg/L		1	0.02	E300.0	03/22/22 16:50 / JAR			IC METROHM_220321A	93	R173107
Sulfate	123	mg/L		1	0.06	E300.0	03/22/22 16:50 / JAR			IC METROHM_220321A	93	R173107
Hardness as CaCO3	247	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	14	R173235
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.22	mg/L		0.02	0.008	E353.2	03/21/22 14:17 / GE			FIA203-HE_220321B	76	R173081
Nitrogen, Total	0.45	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:16 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	42	60530
Phosphorus, Total as P	0.032	mg/L		0.003	0.001	E365.1	03/23/22 14:26 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	43	60567
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	03/23/22 03:15 / dck			ICPMS205-H_220322B	116	R173122
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	03/23/22 03:15 / dck			ICPMS205-H_220322B	116	R173122
Copper	0.005	mg/L		0.001	0.0001	E200.8	03/23/22 03:15 / dck			ICPMS205-H_220322B	116	R173122
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:15 / dck			ICPMS205-H_220322B	116	R173122
Zinc	0.008	mg/L	J	0.008	0.001	E200.8	03/25/22 03:04 / dck			ICPMS205-H_220323A	321	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.011	mg/L		0.001	0.0001	E200.8	03/25/22 05:46 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	366	60570
Cadmium	0.00018	mg/L		0.00003	0.00003	E200.8	03/25/22 05:46 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	366	60570
Calcium	76	mg/L		1	0.1	E200.7	03/23/22 01:43 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	83	60570
Copper	0.038	mg/L		0.001	0.0003	E200.8	03/25/22 05:46 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	366	60570
Lead	0.0043	mg/L		0.0003	0.0001	E200.8	03/25/22 05:46 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	366	60570
Magnesium	14	mg/L		1	0.05	E200.7	03/23/22 01:43 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	83	60570
Potassium	4	mg/L		1	0.1	E200.7	03/23/22 01:43 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	83	60570
Sodium	18	mg/L		1	0.1	E200.7	03/23/22 01:43 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	83	60570
Zinc	0.037	mg/L		0.008	0.001	E200.8	03/25/22 05:46 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	366	60570

Report Definitions:
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MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-005
Collection Date: 03/15/22 12:50
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	23	mg/L	D	2	0.8	A2540 D	03/18/22 15:43 / JAR			-124 (14410200)_220318B	8	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	03/23/22 18:32 / JAR			PHSC_101-H_220323A	81	R173135
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	03/23/22 18:32 / JAR			PHSC_101-H_220323A	81	R173135
Chloride	12	mg/L		1	0.02	E300.0	03/22/22 17:05 / JAR			IC METROHM_220321A	94	R173107
Sulfate	130	mg/L		1	0.06	E300.0	03/22/22 17:05 / JAR			IC METROHM_220321A	94	R173107
Hardness as CaCO3	248	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	15	R173235
NUTRIENTS												
Nitrogen, Ammonia as N	ND	mg/L		0.05	0.03	E350.1	03/18/22 11:36 / GE			FIA203-HE_220318B	51	R173037
Nitrogen, Nitrate+Nitrite as N	0.22	mg/L		0.02	0.008	E353.2	03/21/22 14:18 / GE			FIA203-HE_220321B	77	R173081
Nitrogen, Total	0.41	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:23 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	48	60530
Phosphorus, Total as P	0.030	mg/L		0.003	0.001	E365.1	03/23/22 14:27 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	44	60567
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	03/23/22 03:18 / dck			ICPMS205-H_220322B	117	R173122
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	03/23/22 03:18 / dck			ICPMS205-H_220322B	117	R173122
Copper	0.005	mg/L		0.001	0.0001	E200.8	03/23/22 03:18 / dck			ICPMS205-H_220322B	117	R173122
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:18 / dck			ICPMS205-H_220322B	117	R173122
Zinc	0.007	mg/L	J	0.008	0.001	E200.8	03/25/22 03:08 / dck			ICPMS205-H_220323A	322	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.010	mg/L		0.001	0.0001	E200.8	03/25/22 05:50 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	367	60570
Cadmium	0.00018	mg/L		0.00003	0.00003	E200.8	03/25/22 05:50 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	367	60570
Calcium	77	mg/L		1	0.1	E200.7	03/23/22 01:46 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	84	60570
Copper	0.037	mg/L		0.001	0.0003	E200.8	03/25/22 05:50 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	367	60570
Lead	0.0040	mg/L		0.0003	0.0001	E200.8	03/25/22 05:50 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	367	60570
Magnesium	14	mg/L		1	0.05	E200.7	03/23/22 01:46 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	84	60570
Potassium	4	mg/L		1	0.1	E200.7	03/23/22 01:46 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	84	60570
Sodium	17	mg/L		1	0.1	E200.7	03/23/22 01:46 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	84	60570
Zinc	0.032	mg/L		0.008	0.001	E200.8	03/25/22 05:50 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	367	60570

Report Definitions:
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MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-006
Collection Date: 03/15/22 13:45
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	12	mg/L	D	2	0.8	A2540 D	03/18/22 15:43 / JAR			-124 (14410200)_220318B	9	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	03/23/22 18:38 / JAR			PHSC_101-H_220323A	83	R173135
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	03/23/22 18:38 / JAR			PHSC_101-H_220323A	83	R173135
Chloride	14	mg/L		1	0.02	E300.0	03/22/22 18:31 / JAR			IC METROHM_220321A	99	R173107
Sulfate	169	mg/L		1	0.06	E300.0	03/22/22 18:31 / JAR			IC METROHM_220321A	99	R173107
Hardness as CaCO3	289	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	16	R173235
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.15	mg/L		0.02	0.008	E353.2	03/21/22 14:19 / GE			FIA203-HE_220321B	78	R173081
Nitrogen, Total	0.33	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:24 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	49	60530
Phosphorus, Total as P	0.018	mg/L		0.003	0.001	E365.1	03/23/22 14:28 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	45	60567
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	03/23/22 03:21 / dck			ICPMS205-H_220322B	118	R173122
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	03/23/22 03:21 / dck			ICPMS205-H_220322B	118	R173122
Copper	0.003	mg/L		0.001	0.0001	E200.8	03/23/22 03:21 / dck			ICPMS205-H_220322B	118	R173122
Lead	0.0006	mg/L		0.0003	0.0001	E200.8	03/23/22 03:21 / dck			ICPMS205-H_220322B	118	R173122
Zinc	0.007	mg/L	J	0.008	0.001	E200.8	03/25/22 03:11 / dck			ICPMS205-H_220323A	323	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.008	mg/L		0.001	0.0001	E200.8	03/25/22 05:53 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	368	60570
Cadmium	0.00010	mg/L		0.00003	0.00003	E200.8	03/25/22 05:53 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	368	60570
Calcium	90	mg/L		1	0.1	E200.7	03/23/22 01:50 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	85	60570
Copper	0.014	mg/L		0.001	0.0003	E200.8	03/25/22 05:53 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	368	60570
Lead	0.0016	mg/L		0.0003	0.0001	E200.8	03/25/22 05:53 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	368	60570
Magnesium	16	mg/L		1	0.05	E200.7	03/23/22 01:50 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	85	60570
Potassium	5	mg/L		1	0.1	E200.7	03/23/22 01:50 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	85	60570
Sodium	19	mg/L		1	0.1	E200.7	03/23/22 01:50 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	85	60570
Zinc	0.018	mg/L		0.008	0.001	E200.8	03/25/22 05:53 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	368	60570

Report Definitions:
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MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-007
Collection Date: 03/15/22 14:30
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	11	mg/L	D	2	0.8	A2540 D	03/18/22 15:44 / JAR			124 (14410200)_220318B	10	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		4	2	A2320 B	03/23/22 18:45 / JAR			PHSC_101-H_220323A	85	R173135
Bicarbonate as HCO3	160	mg/L		4	3	A2320 B	03/23/22 18:45 / JAR			PHSC_101-H_220323A	85	R173135
Chloride	15	mg/L		1	0.02	E300.0	03/22/22 18:45 / JAR			IC METROHM_220321A	100	R173107
Sulfate	176	mg/L		1	0.06	E300.0	03/22/22 18:45 / JAR			IC METROHM_220321A	100	R173107
Hardness as CaCO3	286	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	17	R173235
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.15	mg/L		0.02	0.008	E353.2	03/21/22 14:20 / GE			FIA203-HE_220321B	79	R173081
Nitrogen, Total	0.33	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:25 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	50	60530
Phosphorus, Total as P	0.015	mg/L		0.003	0.001	E365.1	03/23/22 14:29 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	46	60567
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	03/23/22 03:24 / dck			ICPMS205-H_220322B	119	R173122
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	03/23/22 03:24 / dck			ICPMS205-H_220322B	119	R173122
Copper	0.003	mg/L		0.001	0.0001	E200.8	03/23/22 03:24 / dck			ICPMS205-H_220322B	119	R173122
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:24 / dck			ICPMS205-H_220322B	119	R173122
Zinc	0.006	mg/L	J	0.008	0.001	E200.8	03/25/22 03:15 / dck			ICPMS205-H_220323A	324	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.008	mg/L		0.001	0.0001	E200.8	03/25/22 05:57 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	369	60570
Cadmium	0.00010	mg/L		0.00003	0.00003	E200.8	03/25/22 05:57 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	369	60570
Calcium	89	mg/L		1	0.1	E200.7	03/23/22 01:54 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	86	60570
Copper	0.012	mg/L		0.001	0.0003	E200.8	03/25/22 05:57 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	369	60570
Lead	0.0012	mg/L		0.0003	0.0001	E200.8	03/25/22 05:57 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	369	60570
Magnesium	15	mg/L		1	0.05	E200.7	03/23/22 01:54 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	86	60570
Potassium	5	mg/L		1	0.1	E200.7	03/23/22 01:54 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	86	60570
Sodium	19	mg/L		1	0.1	E200.7	03/23/22 01:54 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	86	60570
Zinc	0.015	mg/L		0.008	0.001	E200.8	03/25/22 05:57 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	369	60570

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-008
Collection Date: 03/15/22 15:00
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	3	mg/L		1	0.8	A2540 D	03/18/22 15:44 / JAR			124 (14410200)_220318B	11	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	110	mg/L		4	2	A2320 B	03/23/22 18:50 / JAR			PHSC_101-H_220323A	87	R173135
Bicarbonate as HCO3	140	mg/L		4	3	A2320 B	03/23/22 18:50 / JAR			PHSC_101-H_220323A	87	R173135
Chloride	20	mg/L		1	0.02	E300.0	03/22/22 19:00 / JAR			IC METROHM_220321A	101	R173107
Sulfate	206	mg/L		1	0.06	E300.0	03/22/22 19:00 / JAR			IC METROHM_220321A	101	R173107
Hardness as CaCO3	291	mg/L		1	1	A2340 B	03/23/22 01:58 / SR			CALC_220325A	256	R173236
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.02	0.008	E353.2	03/21/22 14:21 / GE			FIA203-HE_220321B	80	R173081
Nitrogen, Total	0.23	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:26 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	51	60530
Phosphorus, Total as P	0.013	mg/L		0.003	0.001	E365.1	03/23/22 14:30 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	47	60567
METALS, DISSOLVED												
Arsenic	0.005	mg/L		0.001	0.0002	E200.8	03/23/22 03:27 / dck			ICPMS205-H_220322B	120	R173122
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	03/23/22 03:27 / dck			ICPMS205-H_220322B	120	R173122
Copper	0.002	mg/L		0.001	0.0001	E200.8	03/23/22 03:27 / dck			ICPMS205-H_220322B	120	R173122
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:27 / dck			ICPMS205-H_220322B	120	R173122
Zinc	0.008	mg/L	J	0.008	0.001	E200.8	03/25/22 03:19 / dck			ICPMS205-H_220323A	325	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.006	mg/L		0.001	0.0001	E200.8	03/25/22 06:01 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	370	60570
Cadmium	0.00013	mg/L		0.00003	0.00003	E200.8	03/28/22 19:45 / sld	03/22/22 08:38	E200.2	ICPMS205-H_220328B	59	60570
Calcium	93	mg/L		1	0.1	E200.7	03/23/22 01:58 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	87	60570
Copper	0.005	mg/L		0.001	0.0003	E200.8	03/25/22 06:01 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	370	60570
Lead	0.0003	mg/L		0.0003	0.0001	E200.8	03/25/22 06:01 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	370	60570
Magnesium	14	mg/L		1	0.05	E200.7	03/23/22 01:58 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	87	60570
Potassium	6	mg/L		1	0.1	E200.7	03/23/22 01:58 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	87	60570
Sodium	24	mg/L		1	0.1	E200.7	03/23/22 01:58 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	87	60570
Zinc	0.014	mg/L		0.008	0.001	E200.8	03/25/22 06:01 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	370	60570

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-009
Collection Date: 03/15/22 15:45
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	4	mg/L		1	0.8	A2540 D	03/18/22 15:44 / JAR			124 (14410200)_220318B	12	TSS220318A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	03/23/22 18:56 / JAR			PHSC_101-H_220323A	89	R173135
Bicarbonate as HCO3	160	mg/L		4	3	A2320 B	03/23/22 18:56 / JAR			PHSC_101-H_220323A	89	R173135
Chloride	1	mg/L		1	0.02	E300.0	03/22/22 19:14 / JAR			IC METROHM_220321A	102	R173107
Sulfate	34	mg/L		1	0.06	E300.0	03/22/22 19:14 / JAR			IC METROHM_220321A	102	R173107
Hardness as CaCO3	160	mg/L		1	1	A2340 B	03/23/22 02:09 / SR			CALC_220325A	267	R173236
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.013	mg/L	J	0.02	0.008	E353.2	03/21/22 14:23 / GE			FIA203-HE_220321B	81	R173081
Nitrogen, Total	0.08	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:28 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	52	60530
Phosphorus, Total as P	0.005	mg/L		0.003	0.001	E365.1	03/23/22 14:31 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	48	60567
METALS, DISSOLVED												
Arsenic	0.003	mg/L		0.001	0.0002	E200.8	03/23/22 03:30 / dck			ICPMS205-H_220322B	121	R173122
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	03/23/22 03:30 / dck			ICPMS205-H_220322B	121	R173122
Copper	0.001	mg/L		0.001	0.0001	E200.8	03/28/22 21:01 / sld			ICPMS205-H_220328B	80	R173309
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	03/23/22 03:30 / dck			ICPMS205-H_220322B	121	R173122
Zinc	ND	mg/L		0.008	0.001	E200.8	03/25/22 03:22 / dck			ICPMS205-H_220323A	326	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.003	mg/L		0.001	0.0001	E200.8	03/25/22 06:04 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	371	60570
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	03/25/22 06:04 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	371	60570
Calcium	47	mg/L		1	0.1	E200.7	03/23/22 02:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	90	60570
Copper	0.004	mg/L		0.001	0.0003	E200.8	03/28/22 19:49 / sld	03/22/22 08:38	E200.2	ICPMS205-H_220328B	60	60570
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	03/25/22 06:04 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	371	60570
Magnesium	11	mg/L		1	0.05	E200.7	03/23/22 02:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	90	60570
Potassium	2	mg/L		1	0.1	E200.7	03/23/22 02:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	90	60570
Sodium	4	mg/L		1	0.1	E200.7	03/23/22 02:09 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	90	60570
Zinc	ND	mg/L		0.008	0.001	E200.8	03/25/22 06:04 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	371	60570

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-010
Collection Date: 03/15/22 16:15
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	2	mg/L		1	0.8	A2540 D	03/18/22 15:44 / JAR			124 (14410200)_220318B	13	TSS220318A
- TSS did not obtain the minimum residue requirement of 2.5 mg residue.												
INORGANICS												
Alkalinity, Total as CaCO3	98	mg/L		4	2	A2320 B	03/23/22 19:02 / JAR			PHSC_101-H_220323A	91	R173135
Bicarbonate as HCO3	120	mg/L		4	3	A2320 B	03/23/22 19:02 / JAR			PHSC_101-H_220323A	91	R173135
Chloride	32	mg/L		1	0.02	E300.0	03/22/22 19:29 / JAR			IC METROHM_220321A	103	R173107
Sulfate	314	mg/L		1	0.06	E300.0	03/22/22 19:29 / JAR			IC METROHM_220321A	103	R173107
Hardness as CaCO3	370	mg/L		1	1	A2340 B	03/25/22 10:19 / sld			WATERCALC_220325A	18	R173235
NUTRIENTS												
Nitrogen, Ammonia as N	ND	mg/L		0.05	0.03	E350.1	03/18/22 11:47 / GE			FIA203-HE_220318B	60	R173037
Nitrogen, Nitrate+Nitrite as N	0.05	mg/L		0.02	0.008	E353.2	03/21/22 14:24 / GE			FIA203-HE_220321B	82	R173081
Nitrogen, Total	0.30	mg/L		0.05	0.03	A4500 N-C	03/18/22 13:29 / GE	03/18/22 08:32	A4500 N-	FIA203-HE_220318C	53	60530
Phosphorus, Total as P	0.013	mg/L		0.003	0.001	E365.1	03/23/22 14:39 / GE	03/21/22 17:03	E365.1	SEAL AA500_220323A	53	60568
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	03/23/22 03:33 / dck			ICPMS205-H_220322B	122	R173122
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	03/23/22 03:33 / dck			ICPMS205-H_220322B	122	R173122
Copper	0.003	mg/L		0.001	0.0001	E200.8	03/23/22 03:33 / dck			ICPMS205-H_220322B	122	R173122
Lead	0.0006	mg/L		0.0003	0.0001	E200.8	03/23/22 03:33 / dck			ICPMS205-H_220322B	122	R173122
Zinc	0.017	mg/L		0.008	0.001	E200.8	03/25/22 03:26 / dck			ICPMS205-H_220323A	327	R173177
METALS, TOTAL RECOVERABLE												
Arsenic	0.009	mg/L		0.001	0.0001	E200.8	03/25/22 06:30 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	378	60570
Cadmium	0.00013	mg/L		0.00003	0.00003	E200.8	03/25/22 06:30 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	378	60570
Calcium	121	mg/L		1	0.1	E200.7	03/23/22 02:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	91	60570
Copper	0.004	mg/L		0.001	0.0003	E200.8	03/25/22 06:30 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	378	60570
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	03/25/22 06:30 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	378	60570
Magnesium	17	mg/L		1	0.05	E200.7	03/23/22 02:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	91	60570
Potassium	8	mg/L		1	0.1	E200.7	03/23/22 02:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	91	60570
Sodium	35	mg/L		1	0.1	E200.7	03/23/22 02:13 / sld	03/22/22 08:38	E200.2	ICP2-HE_220322A	91	60570
Zinc	0.024	mg/L		0.008	0.001	E200.8	03/25/22 06:30 / dck	03/22/22 08:38	E200.2	ICPMS205-H_220323A	378	60570

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34 Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-011
Collection Date: 03/15/22 12:00
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	58.1	wt%		0.2	0.02	D2974	04/04/22 12:17 / jjp			RYING OVEN 2_220405A	19	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	2.4	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	28	R173702
3050 EXTRACTABLE METALS												
Arsenic	98	mg/kg-dry		1	0.9	SW6020	04/02/22 05:49 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	128	60707
Cadmium	4.9	mg/kg-dry		0.2	0.2	SW6020	04/02/22 05:49 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	128	60707
Copper	1170	mg/kg-dry		8	8	SW6020	04/02/22 05:49 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	128	60707
Lead	158	mg/kg-dry		5	3	SW6020	04/02/22 05:49 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	128	60707
Zinc	929	mg/kg-dry	D	20	20	SW6020	04/02/22 05:49 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	128	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-012
Collection Date: 03/15/22 12:50
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	56.3	wt%		0.2	0.02	D2974	04/04/22 12:18 / jjp			RYING OVEN 2_220405A	21	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	35.2	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	29	R173702
3050 EXTRACTABLE METALS												
Arsenic	180	mg/kg-dry		1	0.9	SW6020	04/02/22 05:53 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	129	60707
Cadmium	6.9	mg/kg-dry		0.2	0.2	SW6020	04/02/22 05:53 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	129	60707
Copper	1640	mg/kg-dry		7	7	SW6020	04/02/22 05:53 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	129	60707
Lead	208	mg/kg-dry		5	3	SW6020	04/02/22 05:53 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	129	60707
Zinc	1620	mg/kg-dry	D	20	20	SW6020	04/02/22 05:53 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	129	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-013
Collection Date: 03/15/22 13:45
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	67.6	wt%		0.2	0.02	D2974	04/05/22 11:10 / jjp			RYING OVEN 2_220406A	13	PMOIST_220405_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	12.2	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	30	R173702
3050 EXTRACTABLE METALS												
Arsenic	119	mg/kg-dry		1	1	SW6020	04/02/22 06:18 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	136	60707
Cadmium	6.6	mg/kg-dry		0.3	0.3	SW6020	04/02/22 06:18 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	136	60707
Copper	1170	mg/kg-dry		10	10	SW6020	04/02/22 06:18 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	136	60707
Lead	154	mg/kg-dry		5	4	SW6020	04/02/22 06:18 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	136	60707
Zinc	1010	mg/kg-dry	D	20	20	SW6020	04/02/22 06:18 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	136	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-014
Collection Date: 03/15/22 14:30
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	55.7	wt%		0.2	0.02	D2974	04/04/22 12:18 / jjp			RYING OVEN 2_220405A	27	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	19.4	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	31	R173702
3050 EXTRACTABLE METALS												
Arsenic	143	mg/kg-dry		1	0.9	SW6020	04/02/22 06:22 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	137	60707
Cadmium	3.8	mg/kg-dry		0.2	0.2	SW6020	04/02/22 06:22 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	137	60707
Copper	1270	mg/kg-dry		7	7	SW6020	04/02/22 06:22 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	137	60707
Lead	143	mg/kg-dry		5	3	SW6020	04/02/22 06:22 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	137	60707
Zinc	840	mg/kg-dry	D	20	20	SW6020	04/02/22 06:22 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	137	60707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-015
Collection Date: 03/15/22 15:00
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	67.2	wt%		0.2	0.02	D2974	04/04/22 12:18 / jjp			RYING OVEN 2_220405A	29	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	11.6	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	32	R173702
3050 EXTRACTABLE METALS												
Arsenic	100	mg/kg-dry		1	1	SW6020	04/02/22 06:25 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	138	60707
Cadmium	4.3	mg/kg-dry		0.3	0.3	SW6020	04/02/22 06:25 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	138	60707
Copper	715	mg/kg-dry		10	10	SW6020	04/02/22 06:25 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	138	60707
Lead	103	mg/kg-dry		5	4	SW6020	04/02/22 06:25 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	138	60707
Zinc	904	mg/kg-dry	D	20	20	SW6020	04/02/22 06:25 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	138	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-016
Collection Date: 03/15/22 15:45
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	66.2	wt%		0.2	0.02	D2974	04/04/22 12:18 / jjp			RYING OVEN 2_220405A	31	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	11.9	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	33	R173702
3050 EXTRACTABLE METALS												
Arsenic	79	mg/kg-dry		1	1	SW6020	04/02/22 06:29 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	139	60707
Cadmium	3.2	mg/kg-dry		0.3	0.3	SW6020	04/02/22 06:29 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	139	60707
Copper	830	mg/kg-dry		9	9	SW6020	04/02/22 06:29 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	139	60707
Lead	104	mg/kg-dry		5	4	SW6020	04/02/22 06:29 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	139	60707
Zinc	348	mg/kg-dry	D	20	20	SW6020	04/02/22 06:29 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	139	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25 Sediment <0.063mm
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-017
Collection Date: 03/15/22 16:15
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	75.0	wt%		0.2	0.02	D2974	04/04/22 12:18 / jjp			RYING OVEN 2_220405A	33	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	1.5	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	34	R173702
3050 EXTRACTABLE METALS												
Arsenic	208	mg/kg-dry		2	2	SW6020	04/02/22 06:33 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	140	60707
Cadmium	9.2	mg/kg-dry		0.4	0.4	SW6020	04/02/22 06:33 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	140	60707
Copper	309	mg/kg-dry		10	10	SW6020	04/02/22 06:33 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	140	60707
Lead	137	mg/kg-dry		5	5	SW6020	04/02/22 06:33 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	140	60707
Zinc	1250	mg/kg-dry	D	30	30	SW6020	04/02/22 06:33 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	140	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25 Duplicate Sediment <0.063
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22030470-018
Collection Date: 03/15/22 16:15
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	77.8	wt%		0.2	0.02	D2974	04/04/22 12:19 / jjp			RYING OVEN 2_220405A	35	PMOIST_220404_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	1.8	wt%-wet		0.1		SSSA 15-2	04/12/22 12:06 / jjp			MISC SOILS_220412A	35	R173702
3050 EXTRACTABLE METALS												
Arsenic	197	mg/kg-dry		2	2	SW6020	04/02/22 06:36 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	141	60707
Cadmium	10.5	mg/kg-dry		0.4	0.4	SW6020	04/02/22 06:36 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	141	60707
Copper	380	mg/kg-dry		10	10	SW6020	04/02/22 06:36 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	141	60707
Lead	154	mg/kg-dry		6	6	SW6020	04/02/22 06:36 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	141	60707
Zinc	1290	mg/kg-dry	D	30	30	SW6020	04/02/22 06:36 / sld	03/31/22 08:13	SW3050 B	ICPMS205-H_220401D	141	60707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-84F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-019
Collection Date: 03/15/22 09:15
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, TOTAL RECOVERABLE												
Mercury	0.063	ug/L		0.005	0.002	E245.1	03/18/22 17:28 / cfg	03/18/22 12:38	E245.1	HGCV203-H_220318A	55	60538

Report Definitions: RL - Analyte Reporting Limit | MCL - Maximum Contaminant Level | ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: Trip Blank
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22030470-020
Collection Date: 03/15/22 09:15
DateReceived: 03/16/22
Report Date: 04/28/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID

Report Definitions: RL - Analyte Reporting Limit | MCL - Maximum Contaminant Level | ND - Not detected at the Reporting Limit (RL)

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: 220318waLL-hg203
Date: *28-Apr-22*

Run ID :Run Order: **HGCV203-H_220318A: 10** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E245.1**
Analysis Date: **03/18/22 14:56** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0915	0.0050	0.1	0	**91**	90	110				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Run ID :Run Order: **HGCV203-H_220318A: 11** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV1** Method: **E245.1**
Analysis Date: **03/18/22 14:59** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.100	0.0050	0.1	0	**100**	95	105				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: 42595
Date: *28-Apr-22*

Run ID :Run Order: **SEAL AA500_220323A: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E365.1**

Analysis Date: **03/23/22 13:52** Units: **mg/L** **Prep Info:** Prep Date: **8/7/2018** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.241	0.010	0.25	0	96	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 50660** **Date:** *28-Apr-22*

Run ID :Run Order: **SEAL AA500_220323A: 34** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **03/23/22 14:14** Units: **mg/L** **Prep Info:** Prep Date: **3/20/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.102	0.010	0.1	0	**102**	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **SEAL AA500_220323A: 49** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **03/23/22 14:32** Units: **mg/L** **Prep Info:** Prep Date: **3/20/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.101	0.010	0.1	0	**101**	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 50868** **Date:** *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318C: 29** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **03/18/22 13:00** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.505	0.10	0.5	0	**101**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **FIA203-HE_220318C: 43** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **03/18/22 13:17** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.510	0.10	0.5	0	**102**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** 60530 **Date:** *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318C: 11** SampType: **Method Blank** Lab ID: **MB-60530** Method: **A4500 N-C**

Analysis Date: **03/18/22 12:39** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	ND	0.03									

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **FIA203-HE_220318C: 13** SampType: **Laboratory Control Sample** Lab ID: **LCS-60530** Method: **A4500 N-C**

Analysis Date: **03/18/22 12:41** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	11.2	0.30	11.2	0	100	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **FIA203-HE_220318C: 15** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-60530** Method: **A4500 N-C**

Analysis Date: **03/18/22 12:44** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.03	0.10	1	0	103	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **FIA203-HE_220318C: 46** SampType: **Sample Matrix Spike** Lab ID: **H22030470-001AMS** Method: **A4500 N-C**

Analysis Date: **03/18/22 13:20** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.06	0.10	1	0	106	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **FIA203-HE_220318C: 47** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-001AMSD** Method: **A4500 N-C**

Analysis Date: **03/18/22 13:22** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.07	0.10	1	0	107	90	110	1.064	0.3	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: 60530
Date: *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318C: 47** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-001AMSD** Method: **A4500 N-C**

Analysis Date: **03/18/22 13:22** Units: **mg/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60538** **Date:** *28-Apr-22*

Run ID :Run Order: **HGCV203-H_220318A: 46** SampType: **Method Blank** Lab ID: **MB-60538** Method: **E245.1**
Analysis Date: **03/18/22 16:59** Units: **ug/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.002									

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Run ID :Run Order: **HGCV203-H_220318A: 47** SampType: **Laboratory Control Sample** Lab ID: **LCS-60538** Method: **E245.1**
Analysis Date: **03/18/22 17:02** Units: **ug/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0478	0.0050	0.05	0	96	90	110				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Run ID :Run Order: **HGCV203-H_220318A: 49** SampType: **Sample Matrix Spike** Lab ID: **H22030459-010BMS** Method: **E245.1**
Analysis Date: **03/18/22 17:09** Units: **ug/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0513	0.0050	0.05	0.00482	93	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Run ID :Run Order: **HGCV203-H_220318A: 50** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030459-010BMSD** Method: **E245.1**
Analysis Date: **03/18/22 17:12** Units: **ug/L** **Prep Info:** Prep Date: **3/18/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0513	0.0050	0.05	0.00482	93	70	130	0.05134	0.1	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-019A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60567** **Date:** *28-Apr-22*

Run ID :Run Order: **SEAL AA500_220323A: 16** SampType: **Method Blank** Lab ID: **MB-60567** Method: **E365.1**

Analysis Date: **03/23/22 13:55** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	ND	0.001									

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D**

Run ID :Run Order: **SEAL AA500_220323A: 18** SampType: **Laboratory Control Sample** Lab ID: **LCS-60567** Method: **E365.1**

Analysis Date: **03/23/22 13:57** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.425	0.010	0.4	0	106	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D**

Run ID :Run Order: **SEAL AA500_220323A: 39** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-001DMSD** Method: **E365.1**

Analysis Date: **03/23/22 14:22** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.208	0.010	0.2	0.0026	103	90	110	0.2218	6.4	20	

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D**

Run ID :Run Order: **SEAL AA500_220323A: 56** SampType: **Sample Matrix Spike** Lab ID: **H22030470-001DMS** Method: **E365.1**

Analysis Date: **03/23/22 14:42** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.219	0.010	0.2	0.0027	108	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60568** **Date:** *28-Apr-22*

Run ID :Run Order: **SEAL AA500_220323A: 17** SampType: **Method Blank** Lab ID: **MB-60568** Method: **E365.1**
Analysis Date: **03/23/22 13:56** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	ND	0.001									

Associated samples: **H22030470-010D**

Run ID :Run Order: **SEAL AA500_220323A: 19** SampType: **Laboratory Control Sample** Lab ID: **LCS-60568** Method: **E365.1**
Analysis Date: **03/23/22 13:58** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.408	0.010	0.4	0	**102**	90	110				

Associated samples: **H22030470-010D**

Run ID :Run Order: **SEAL AA500_220323A: 54** SampType: **Sample Matrix Spike** Lab ID: **H22030470-010DMS** Method: **E365.1**
Analysis Date: **03/23/22 14:40** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.231	0.010	0.2	0.0126	**109**	90	110				

Associated samples: **H22030470-010D**

Run ID :Run Order: **SEAL AA500_220323A: 55** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-010DMSD** Method: **E365.1**
Analysis Date: **03/23/22 14:41** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.231	0.010	0.2	0.0126	**109**	90	110	0.2313	**0**	20	

Associated samples: **H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60570** **Date:** *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 72** SampType: **Method Blank** Lab ID: **MB-60570** Method: **E200.7**

Analysis Date: **03/23/22 01:02** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.1									
Magnesium	ND	0.05									
Potassium	ND	0.1									
Sodium	ND	0.1									

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 73** SampType: **Laboratory Control Sample** Lab ID: **LCS-60570** Method: **E200.7**

Analysis Date: **03/23/22 01:05** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.7	1.0	25	0	99	85	115				
Magnesium	24.4	1.0	25	0	98	85	115				
Potassium	24.5	1.0	25	0	98	85	115				
Sodium	24.4	1.0	25	0	97	85	115				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 78** SampType: **Serial Dilution** Lab ID: **H22030470-002CDIL** Method: **E200.7**

Analysis Date: **03/23/22 01:24** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	38.2	1.0		0		0	0	37.53	1.7	10	
Magnesium	11.6	1.0		0		0	0	11.54	0.5	10	
Potassium	2.85	1.0		0		0	0	3.026		10	N
Sodium	7.44	1.0		0		0	0	7.782	4.5	10	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 80** SampType: **Sample Matrix Spike** Lab ID: **H22030470-002CMS3** Method: **E200.7**

Analysis Date: **03/23/22 01:32** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	62.7	1.0	25	37.53	101	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** 60570 **Date:** *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 80** SampType: **Sample Matrix Spike** Lab ID: **H22030470-002CMS3** Method: **E200.7**

Analysis Date: **03/23/22 01:32** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	36.3	1.0	25	11.54	99	70	130				
Potassium	28.2	1.0	25	3.026	101	70	130				
Sodium	32.5	1.0	25	7.782	99	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 81** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-002CMSD3** Method: **E200.7**

Analysis Date: **03/23/22 01:35** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	62.3	1.0	25	37.53	99	70	130	62.71	0.7	20	
Magnesium	36.1	1.0	25	11.54	98	70	130	36.34	0.7	20	
Potassium	28.0	1.0	25	3.026	100	70	130	28.2	0.6	20	
Sodium	32.3	1.0	25	7.782	98	70	130	32.51	0.5	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 98** SampType: **Sample Matrix Spike** Lab ID: **H22030500-003AMS3** Method: **E200.7**

Analysis Date: **03/23/22 02:39** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	502	1.3	250	246.9	102	70	130				
Magnesium	402	1.0	250	145.6	103	70	130				
Potassium	463	1.0	250	203.2	104	70	130				
Sodium	339	1.4	250	72.72	107	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 99** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030500-003AMSD3** Method: **E200.7**

Analysis Date: **03/23/22 02:43** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	495	1.3	250	246.9	99	70	130	502.2	1.4	20	
Magnesium	402	1.0	250	145.6	103	70	130	402.5	0.1	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: 60570
Date: *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 99** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030500-003AMSD3** Method: **E200.7**
Analysis Date: **03/23/22 02:43** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	449	1.0	250	203.2	**98**	70	130	463.2	**3.0**	20	
Sodium	329	1.4	250	72.72	**102**	70	130	339.2	**3.2**	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220323A: 38** SampType: **Sample Matrix Spike** Lab ID: **H22030470-002CMS3** Method: **E200.7**
Analysis Date: **03/23/22 11:56** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	61.3	1.0	25	37.2	**96**	70	130				
Magnesium	38.3	1.0	25	12.01	**105**	70	130				
Potassium	30.4	1.0	25	2.994	**110**	70	130				
Sodium	35.6	1.0	25	7.86	**111**	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220323A: 39** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-002CMSD3** Method: **E200.7**
Analysis Date: **03/23/22 12:00** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	61.0	1.0	25	37.2	**95**	70	130	61.27	**0.5**	20	
Magnesium	37.8	1.0	25	12.01	**103**	70	130	38.34	**1.4**	20	
Potassium	30.0	1.0	25	2.994	**108**	70	130	30.41	**1.2**	20	
Sodium	35.0	1.0	25	7.86	**109**	70	130	35.59	**1.6**	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60570** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 137** SampType: **Method Blank** Lab ID: **MB-60570** Method: **E200.8**

Analysis Date: **03/23/22 06:18** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220322B: 185** SampType: **Sample Matrix Spike** Lab ID: **H22030470-002CMS3** Method: **E200.8**

Analysis Date: **03/23/22 13:13** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.506	0.0010	0.5	0.01193	99	70	130				
Cadmium	0.244	0.0010	0.25	0.0001069	98	70	130				
Copper	0.479	0.0050	0.5	0.003928	95	70	130				
Lead	0.503	0.0010	0.5	0.00909	99	70	130				
Zinc	0.496	0.010	0.5	0.02485	94	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220322B: 186** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-002CMSD3** Method: **E200.8**

Analysis Date: **03/23/22 13:17** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.512	0.0010	0.5	0.01193	100	70	130	0.514	0.5	20	
Cadmium	0.244	0.0010	0.25	0.0001069	97	70	130	0.2431	0.2	20	
Copper	0.484	0.0050	0.5	0.003928	96	70	130	0.4914	1.5	20	
Lead	0.506	0.0010	0.5	0.00909	99	70	130	0.5069	0.1	20	
Zinc	0.500	0.010	0.5	0.02485	95	70	130	0.4961	0.9	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** 60570 **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220323A: 360** SampType: **Method Blank** Lab ID: **MB-60570** Method: **E200.8**

Analysis Date: **03/25/22 05:24** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220323A: 344** SampType: **Sample Matrix Spike** Lab ID: **H22030500-003AMS3** Method: **E200.8**

Analysis Date: **03/25/22 08:54** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.04	0.0014	5	0.02658	**100**	70	130				
Cadmium	2.47	0.0010	2.5	0.01348	**98**	70	130				
Copper	11.4	0.0050	5	5.519	**117**	70	130				
Lead	4.09	0.0011	5	0.08664	**80**	70	130				
Zinc	12.7	0.012	5	7.98	**95**	70	130				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220323A: 345** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030500-003AMSD3** Method: **E200.8**

Analysis Date: **03/25/22 08:58** Units: **mg/L** **Prep Info:** Prep Date: **3/21/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.03	0.0014	5	0.02658	**100**	70	130	5.045	**0.2**	20	
Cadmium	2.45	0.0010	2.5	0.01348	**97**	70	130	2.473	**1.0**	20	
Copper	11.2	0.0050	5	5.519	**114**	70	130	11.39	**1.7**	20	
Lead	4.09	0.0011	5	0.08664	**80**	70	130	4.09	**0**	20	
Zinc	12.6	0.012	5	7.98	**93**	70	130	12.73	**0.6**	20	

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60570** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220328B: 56** SampType: **Method Blank** Lab ID: **MB-60570** Method: **E200.8**

Analysis Date: **03/28/22 19:35** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	0.0002	0.0001									
Zinc	ND	0.001									

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220328B: 62** SampType: **Laboratory Control Sample** Lab ID: **LCS-60570** Method: **E200.8**

Analysis Date: **03/28/22 19:56** Units: **mg/L** **Prep Info:** Prep Date: **3/22/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.489	0.0010	0.5	0	**98**	85	115				
Cadmium	0.244	0.0010	0.25	0	**97**	85	115				
Copper	0.486	0.0050	0.5	0	**97**	85	115				
Lead	0.502	0.0010	0.5	0	**100**	85	115				
Zinc	0.476	0.010	0.5	0	**95**	85	115				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60707** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220401D: 127** SampType: **Method Blank** Lab ID: **MB-60707** Method: **SW6020**

Analysis Date: **04/02/22 05:46** Units: **mg/kg** **Prep Info:** Prep Date: **3/31/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.2									
Cadmium	ND	0.04									
Copper	ND	1									
Lead	ND	0.5									
Zinc	ND	3									

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 130** SampType: **Serial Dilution** Lab ID: **H22030470-012ADIL** Method: **SW6020**

Analysis Date: **04/02/22 05:57** Units: **mg/kg-dry** **Prep Info:** Prep Date: **3/31/2022** Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	184	4.5		0		0	0	180.3	**2.0**	10	
Cadmium	6.93	1.0		0		0	0	6.862		10	N
Copper	1600	36		0		0	0	1639	**2.4**	10	
Lead	217	15		0		0	0	208.3	**3.9**	10	
Zinc	1710	88		0		0	0	1616	**5.4**	10	

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 131** SampType: **Post Digestion/Distillation Spike** Lab ID: **H22030470-012APDS1** Method: **SW6020**

Analysis Date: **04/02/22 06:00** Units: **mg/kg-dry** **Prep Info:** Prep Date: **3/31/2022** Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	205	1.0	28.5	180.3		75	125				A
Cadmium	35.3	1.0	28.5	6.862	**100**	75	125				
Copper	1650	7.3	28.5	1639		75	125				A
Lead	232	2.9	28.5	208.3		75	125				A
Zinc	1620	18	28.5	1616		75	125				A

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60707** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220401D: 132** SampType: **Sample Matrix Spike** Lab ID: **H22030470-012AMS** Method: **SW6020**

Analysis Date: **04/02/22 06:04** Units: **mg/kg-dry** **Prep Info:** Prep Date: **3/31/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	300	1.0	114.2	180.3	**105**	75	125				
Cadmium	63.6	1.0	57.11	6.862	**99**	75	125				
Copper	1780	7.3	114.2	1639		75	125				A
Lead	327	2.9	114.2	208.3	**104**	75	125				
Zinc	1700	18	114.2	1616		75	125				A

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 133** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-012AMSD** Method: **SW6020**

Analysis Date: **04/02/22 06:07** Units: **mg/kg-dry** **Prep Info:** Prep Date: **3/31/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	306	1.0	113.5	180.3	**111**	75	125	300.4	**1.8**	20	
Cadmium	63.8	1.0	56.76	6.862	**100**	75	125	63.62	**0.3**	20	
Copper	1840	7.3	113.5	1639		75	125	1785	**3.2**	20	A
Lead	325	2.9	113.5	208.3	**103**	75	125	326.5	**0.4**	20	
Zinc	1800	18	113.5	1616		75	125	1701	**5.5**	20	A

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 142** SampType: **Laboratory Control Sample** Lab ID: **LCS-60707** Method: **SW6020**

Analysis Date: **04/02/22 06:40** Units: **mg/kg** **Prep Info:** Prep Date: **3/31/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	168	1.0	196	0	**86**	71.4	105.1				
Cadmium	98.0	1.0	99	0	**99**	73.9	106.1				
Copper	128	3.2	137	0	**94**	76.6	108.8				
Lead	107	1.3	105	0	**102**	74.4	108.6				
Zinc	236	7.7	231	0	**102**	75.3	111.7				

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: 60707** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220401D: 143** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-60707** Method: **SW6020**

Analysis Date: **04/02/22 06:43** Units: **mg/kg** **Prep Info:** Prep Date: **3/31/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.3	1.0	50	0	**105**	80	120				
Cadmium	26.2	1.0	25	0	**105**	80	120				
Copper	53.1	3.2	50	0	**106**	80	120				
Lead	52.0	1.3	50	0	**104**	80	120				
Zinc	50.3	7.7	50	0	**101**	80	120				

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: **PMOIST_220404_A**
Date: *28-Apr-22*

Run ID :Run Order: **SOIL DRYING OVEN 2_220405A: 5** SampType: **Sample Duplicate** Lab ID: **H22030459-020A DUP** Method: **D2974**

Analysis Date: **04/04/22 13:08** Units: **wt%** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Moisture	67.9	0.20		0				76.01	**11**	20	

Associated samples: **H22030470-011A, H22030470-012A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: PMOIST_220405_A
Date: *28-Apr-22*

Run ID :Run Order: **SOIL DRYING OVEN 2_220406A: 1** SampType: **Sample Duplicate** Lab ID: **H22030470-013A DUP** Method: **D2974**

Analysis Date: **04/05/22 11:10** Units: **wt%** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Moisture	56.2	0.20		0				67.62	**18**	20	

Associated samples: **H22030470-013A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173037
Date: *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318B: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**
Analysis Date: **03/18/22 10:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.03	0.050	1	0	103	90	110				

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 10** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**
Analysis Date: **03/18/22 10:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**
Analysis Date: **03/18/22 10:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.02	0.050	1	0	102	90	110				

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 41** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E350.1**
Analysis Date: **03/18/22 11:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.486	0.050	0.5	0	97	90	110				

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 46** SampType: **Sample Matrix Spike** Lab ID: **H22030459-007DMS** Method: **E350.1**
Analysis Date: **03/18/22 11:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.00	0.050	1	0.0473	95	80	120				

Associated samples: **H22030470-005D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173037
Date: *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318B: 47** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030459-007DMSD** Method: **E350.1**

Analysis Date: **03/18/22 11:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.965	0.050	1	0.0473	**92**	80	120	1	**3.6**	10	

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 58** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **03/18/22 11:45** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.481	0.050	0.5	0	**96**	90	110				

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 61** SampType: **Sample Matrix Spike** Lab ID: **H22030470-010DMS** Method: **E350.1**

Analysis Date: **03/18/22 11:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.898	0.050	1	0	**90**	80	120				

Associated samples: **H22030470-005D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220318B: 62** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-010DMSD** Method: **E350.1**

Analysis Date: **03/18/22 11:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.894	0.050	1	0	**89**	80	120	0.8985	**0.5**	10	

Associated samples: **H22030470-005D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173045
Date: *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220318C: 9** SampType: **Initial Calibration Blank, Instrument Blank** Lab ID: **ICB** Method: **A4500 N-C**

Analysis Date: **03/18/22 12:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	-0.00190	0.10		0		0	0				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173081
Date: *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220321B: 10** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E353.2**

Analysis Date: **03/21/22 11:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.992	0.010	1	0	99	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 11** SampType: **Method Blank** Lab ID: **MBLK** Method: **E353.2**

Analysis Date: **03/21/22 11:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	ND	0.008									

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E353.2**

Analysis Date: **03/21/22 11:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.958	0.011	1	0	96	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 56** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **03/21/22 13:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.469	0.010	0.5	0	94	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 65** SampType: **Sample Matrix Spike** Lab ID: **H22030467-001AMS** Method: **E353.2**

Analysis Date: **03/21/22 14:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.08	0.011	1	0.1307	95	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** R173081 **Date:** *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220321B: 65** SampType: **Sample Matrix Spike** Lab ID: **H22030467-001AMS** Method: **E353.2**

Analysis Date: **03/21/22 14:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 66** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030467-001AMSD** Method: **E353.2**

Analysis Date: **03/21/22 14:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.10	0.011	1	0.1307	97	90	110	1.083	1.2	10	

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 70** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **03/21/22 14:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.464	0.010	0.5	0	93	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 73** SampType: **Sample Matrix Spike** Lab ID: **H22030470-002DMS** Method: **E353.2**

Analysis Date: **03/21/22 14:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.03	0.011	1	0.1018	92	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 74** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-002DMSD** Method: **E353.2**

Analysis Date: **03/21/22 14:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.06	0.011	1	0.1018	95	90	110	1.025	2.9	10	

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173081** **Date:** *28-Apr-22*

Run ID :Run Order: **FIA203-HE_220321B: 89** SampType: **Sample Matrix Spike** Lab ID: **H22030500-006AMS** Method: **E353.2**

Analysis Date: **03/21/22 14:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.05	0.011	1	0.1029	**95**	90	110				

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Run ID :Run Order: **FIA203-HE_220321B: 90** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030500-006AMSD** Method: **E353.2**

Analysis Date: **03/21/22 14:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.05	0.011	1	0.1029	**94**	90	110	1.052	**0.6**	10	

Associated samples: **H22030470-001D, H22030470-002D, H22030470-003D, H22030470-004D, H22030470-005D, H22030470-006D, H22030470-007D, H22030470-008D, H22030470-009D, H22030470-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173107** **Date:** *28-Apr-22*

Run ID :Run Order: **IC METROHM_220321A: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**

Analysis Date: **03/21/22 13:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.06									

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 3** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**

Analysis Date: **03/21/22 13:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	101	1.0	100	0	**101**	90	110				
Sulfate	401	1.0	400	0	**100**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**

Analysis Date: **03/21/22 14:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.2	1.0	25	0	**97**	90	110				
Sulfate	101	1.0	100	0	**101**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 83** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **03/22/22 14:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	50.4	1.0	50	0	**101**	90	110				
Sulfate	208	1.0	200	0	**104**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173107** **Date:** *28-Apr-22*

Run ID :Run Order: **IC METROHM_220321A: 95** SampType: **Sample Matrix Spike** Lab ID: **H22030470-005AMS** Method: **E300.0**

Analysis Date: **03/22/22 17:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37.8	1.0	25	12.48	**101**	90	110				
Sulfate	232	1.0	100	130.4	**102**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 96** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-005AMSD** Method: **E300.0**

Analysis Date: **03/22/22 17:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37.9	1.0	25	12.48	**102**	90	110	37.84	**0.1**	20	
Sulfate	234	1.0	100	130.4	**103**	90	110	232.2	**0.6**	20	

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 97** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **03/22/22 17:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	54.5	1.0	50	0	**109**	90	110				
Sulfate	217	1.0	200	0	**108**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **IC METROHM_220321A: 109** SampType: **Sample Matrix Spike** Lab ID: **H22030441-006AMS** Method: **E300.0**

Analysis Date: **03/22/22 20:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	63.5	1.0	25	38.19	**101**	90	110				
Sulfate	171	1.0	100	67.83	**103**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173107
Date: *28-Apr-22*

Run ID :Run Order: **IC METROHM_220321A: 110** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030441-006AMSD** Method: **E300.0**

Analysis Date: **03/22/22 21:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	63.5	1.0	25	38.19	**101**	90	110	63.54	**0**	20	
Sulfate	171	1.0	100	67.83	**103**	90	110	170.7	**0.3**	20	

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173122** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 13** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **03/22/22 09:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0614	0.0050	0.06	0	102	90	110				
Cadmium	0.0316	0.0010	0.03	0	105	90	110				
Copper	0.0609	0.010	0.06	0	102	90	110				
Lead	0.0580	0.010	0.06	0	97	90	110				
Zinc	0.0612	0.010	0.06	0	102	90	110				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 15** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **03/22/22 09:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000972	0.0050		0							
Cadmium	0.000821	0.0010		0							
Copper	0.00154	0.010		0							
Lead	0.000118	0.010		0							
Zinc	0.00121	0.010		0							

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 17** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **03/22/22 09:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.00989	0.0050	0.01	0	99	70	130				
Cadmium	0.0105	0.0010	0.01	0	105	70	130				
Copper	0.0200	0.010	0.02	0	100	70	130				
Lead	0.000104	0.010		0		0	0				
Zinc	0.0105	0.010	0.01	0	105	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173122** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 89** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **03/23/22 01:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0633	0.0050	0.06	0	106	90	110				
Cadmium	0.0309	0.0010	0.03	0	103	90	110				
Copper	0.0603	0.010	0.06	0	101	90	110				
Lead	0.0595	0.010	0.06	0	99	90	110				
Zinc	0.0623	0.010	0.06	0	104	90	110				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 91** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **03/23/22 01:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000707	0.0050		0							
Cadmium	0.000122	0.0010		0							
Copper	-0.0000507	0.010		0							
Lead	0.000466	0.010		0							
Zinc	0.000472	0.010		0							

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 93** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **03/23/22 02:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0106	0.0050	0.01	0	105	70	130				
Cadmium	0.0104	0.0010	0.01	0	104	70	130				
Copper	0.0200	0.010	0.02	0	100	70	130				
Lead	0.000574	0.010		0		0	0				
Zinc	0.0105	0.010	0.01	0	105	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-002C, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173122** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 97** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **03/23/22 02:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Lead	ND	0.0001									

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 98** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **03/23/22 02:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0490	0.0050	0.05	0	**98**	85	115				
Cadmium	0.0491	0.0010	0.05	0	**98**	85	115				
Copper	0.0498	0.010	0.05	0	**100**	85	115				
Lead	0.0491	0.010	0.05	0	**98**	85	115				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 110** SampType: **Sample Matrix Spike** Lab ID: **H22030459-008BMS** Method: **E200.8**

Analysis Date: **03/23/22 02:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0552	0.0010	0.05	0.004369	**102**	70	130				
Cadmium	0.0492	0.0010	0.05	0.0001785	**98**	70	130				
Copper	0.0552	0.0050	0.05	0.006418	**97**	70	130				
Lead	0.0488	0.0010	0.05	0.0007893	**96**	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 111** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030459-008BMSD** Method: **E200.8**

Analysis Date: **03/23/22 03:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0559	0.0010	0.05	0.004369	**103**	70	130	0.0552	**1.3**	20	
Cadmium	0.0510	0.0010	0.05	0.0001785	**102**	70	130	0.04921	**3.7**	20	
Copper	0.0559	0.0050	0.05	0.006418	**99**	70	130	0.05516	**1.3**	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173122
Date: *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 111** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030459-008BMSD** Method: **E200.8**

Analysis Date: **03/23/22 03:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0512	0.0010	0.05	0.0007893	101	70	130	0.04883	4.7	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 123** SampType: **Sample Matrix Spike** Lab ID: **H22030470-009BMS** Method: **E200.8**

Analysis Date: **03/23/22 03:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0539	0.0010	0.05	0.002746	102	70	130				
Cadmium	0.0502	0.0010	0.05	0	100	70	130				
Copper	0.0499	0.0050	0.05	0.001043	98	70	130				
Lead	0.0487	0.0010	0.05	0.0006733	96	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 124** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-009BMSD** Method: **E200.8**

Analysis Date: **03/23/22 03:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0537	0.0010	0.05	0.002746	102	70	130	0.05391	0.3	20	
Cadmium	0.0513	0.0010	0.05	0	103	70	130	0.05024	2.1	20	
Copper	0.0502	0.0050	0.05	0.001043	98	70	130	0.04987	0.8	20	
Lead	0.0502	0.0010	0.05	0.0006733	99	70	130	0.04869	3.1	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220322B: 131** SampType: **Sample Matrix Spike** Lab ID: **H22030465-001BMS** Method: **E200.8**

Analysis Date: **03/23/22 04:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0549	0.0010	0.05	0.003826	102	70	130				
Cadmium	0.0508	0.0010	0.05	0	102	70	130				
Copper	0.101	0.0050	0.05	0.05093	100	70	130				
Lead	0.0494	0.0010	0.05	0.0004648	98	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173122** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220322B: 132** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030465-001BMSD** Method: **E200.8**

Analysis Date: **03/23/22 04:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0551	0.0010	0.05	0.003826	**102**	70	130	0.05494	**0.2**	20	
Cadmium	0.0508	0.0010	0.05	0	**102**	70	130	0.05082	**0.1**	20	
Copper	0.0994	0.0050	0.05	0.05093	**97**	70	130	0.101	**1.6**	20	
Lead	0.0492	0.0010	0.05	0.0004648	**97**	70	130	0.04935	**0.3**	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173126** **Date:** *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 6** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.7**

Analysis Date: **03/22/22 10:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	39.0	1.0	40	0	97	95	105				
Magnesium	39.6	1.0	40	0	99	95	105				
Potassium	39.1	1.0	40	0	98	95	105				
Sodium	39.1	1.0	40	0	98	95	105				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 7** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV-1** Method: **E200.7**

Analysis Date: **03/22/22 10:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.1	1.0	25	0	97	95	105				
Magnesium	25.0	1.0	25	0	100	95	105				
Potassium	25.5	1.0	25	0	102	95	105				
Sodium	25.6	1.0	25	0	102	95	105				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 10** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.7**

Analysis Date: **03/22/22 10:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	445	1.0	500	0	89	80	120				
Magnesium	428	1.0	500	0	86	80	120				
Potassium	0.00355	1.0		0		0	0				
Sodium	0.0618	1.0		0		0	0				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 11** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.7**

Analysis Date: **03/22/22 10:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	461	1.0	500	0	92	80	120				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173126
Date: *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 11** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.7**

Analysis Date: **03/22/22 10:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	429	1.0	500	0	86	80	120				
Potassium	19.1	1.0	20	0	96	80	120				
Sodium	19.1	1.0	20	0	95	80	120				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 64** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **03/23/22 00:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.3	1.0	25	0	101	90	110				
Magnesium	24.9	1.0	25	0	99	90	110				
Potassium	23.8	1.0	25	0	95	90	110				
Sodium	23.5	1.0	25	0	94	90	110				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 76** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **03/23/22 01:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.1	1.0	25	0	100	90	110				
Magnesium	24.9	1.0	25	0	100	90	110				
Potassium	24.7	1.0	25	0	99	90	110				
Sodium	24.7	1.0	25	0	99	90	110				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Run ID :Run Order: **ICP2-HE_220322A: 88** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **03/23/22 02:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.0	1.0	25	0	100	90	110				
Magnesium	25.0	1.0	25	0	100	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: R173126
Date: *28-Apr-22*

Run ID :Run Order: **ICP2-HE_220322A: 88** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **03/23/22 02:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	24.7	1.0	25	0	99	90	110				
Sodium	24.7	1.0	25	0	99	90	110				

Associated samples: **H22030470-001C, H22030470-002C, H22030470-003C, H22030470-004C, H22030470-005C, H22030470-006C, H22030470-007C, H22030470-008C, H22030470-009C, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173135** **Date:** *28-Apr-22*

Run ID :Run Order: **PHSC_101-H_220323A: 47** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **03/23/22 16:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **PHSC_101-H_220323A: 48** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **03/23/22 16:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	610	4.0	600	0	**101**	90	110				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **PHSC_101-H_220323A: 51** SampType: **Sample Duplicate** Lab ID: **H22030459-001ADUP** Method: **A2320 B**

Analysis Date: **03/23/22 17:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	91	4.0		0				89.75	**1.4**	10	
Bicarbonate as HCO3	110	4.0		0				108.9	**1.4**	10	

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **PHSC_101-H_220323A: 75** SampType: **Sample Duplicate** Lab ID: **H22030470-002ADUP** Method: **A2320 B**

Analysis Date: **03/23/22 18:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	140	4.0		0				138.2	**0.7**	10	
Bicarbonate as HCO3	170	4.0		0				168	**0.7**	10	

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173177** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220323A: 238** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **03/24/22 21:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0661	0.0050	0.06	0	110	90	110				
Cadmium	0.0322	0.0010	0.03	0	107	90	110				
Copper	0.0640	0.010	0.06	0	107	90	110				
Lead	0.0629	0.010	0.06	0	105	90	110				
Zinc	0.0638	0.010	0.06	0	106	90	110				

Associated samples: **H22030470-001B, H22030470-001C, H22030470-002B, H22030470-003C, H22030470-004B, H22030470-004C, H22030470-005B, H22030470-005C, H22030470-006B, H22030470-006C, H22030470-007B, H22030470-007C, H22030470-008B, H22030470-008C, H22030470-009B, H22030470-009C, H22030470-010B, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220323A: 240** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **03/24/22 22:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000516	0.0050		0							
Cadmium	0.000132	0.0010		0							
Copper	0.0000484	0.010		0							
Lead	0.000442	0.010		0							
Zinc	-0.0000728	0.010		0							

Associated samples: **H22030470-001B, H22030470-001C, H22030470-002B, H22030470-003C, H22030470-004B, H22030470-004C, H22030470-005B, H22030470-005C, H22030470-006B, H22030470-006C, H22030470-007B, H22030470-007C, H22030470-008B, H22030470-008C, H22030470-009B, H22030470-009C, H22030470-010B, H22030470-010C**

Run ID :Run Order: **ICPMS205-H_220323A: 242** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **03/24/22 22:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0108	0.0050	0.01	0	108	70	130				
Cadmium	0.0111	0.0010	0.01	0	111	70	130				
Copper	0.0213	0.010	0.02	0	106	70	130				
Lead	0.000373	0.010		0		0	0				
Zinc	0.0106	0.010	0.01	0	106	70	130				

Associated samples: **H22030470-001B, H22030470-001C, H22030470-002B, H22030470-003C, H22030470-004B, H22030470-004C, H22030470-005B, H22030470-005C, H22030470-006B, H22030470-006C, H22030470-007B, H22030470-007C, H22030470-008B, H22030470-008C, H22030470-009B, H22030470-009C, H22030470-010B, H22030470-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** R173177 **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220323A: 246** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **03/24/22 22:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 247** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **03/24/22 22:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0497	0.010	0.05	0	99	85	115				
Zinc	0.0527	0.010	0.05	0	105	85	115				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 315** SampType: **Sample Matrix Spike** Lab ID: **H22030459-001BMS** Method: **E200.8**

Analysis Date: **03/25/22 02:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0493	0.0010	0.05	0.0002763	98	70	130				
Zinc	0.0857	0.010	0.05	0.03568	100	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 316** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030459-001BMSD** Method: **E200.8**

Analysis Date: **03/25/22 02:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0494	0.0010	0.05	0.0002763	98	70	130	0.0493	0.2	20	
Zinc	0.0875	0.010	0.05	0.03568	104	70	130	0.08571	2.1	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 328** SampType: **Sample Matrix Spike** Lab ID: **H22030470-001BMS** Method: **E200.8**

Analysis Date: **03/25/22 03:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0486	0.0010	0.05	0.0002117	97	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** R173177 **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220323A: 328** SampType: **Sample Matrix Spike** Lab ID: **H22030470-001BMS** Method: **E200.8**

Analysis Date: **03/25/22 03:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0559	0.010	0.05	0	**112**	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 329** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-001BMSD** Method: **E200.8**

Analysis Date: **03/25/22 03:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0492	0.0010	0.05	0.0002117	**98**	70	130	0.04863	**1.1**	20	
Zinc	0.0555	0.010	0.05	0	**111**	70	130	0.05587	**0.7**	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 386** SampType: **Sample Matrix Spike** Lab ID: **H22030563-001BMS** Method: **E200.8**

Analysis Date: **03/25/22 06:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0481	0.0010	0.05	0.0005747	**95**	70	130				
Zinc	0.0739	0.010	0.05	0.0237	**100**	70	130				

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Run ID :Run Order: **ICPMS205-H_220323A: 387** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030563-001BMSD** Method: **E200.8**

Analysis Date: **03/25/22 07:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0485	0.0010	0.05	0.0005747	**96**	70	130	0.04814	**0.7**	20	
Zinc	0.0733	0.010	0.05	0.0237	**99**	70	130	0.07387	**0.8**	20	

Associated samples: **H22030470-001B, H22030470-002B, H22030470-004B, H22030470-005B, H22030470-006B, H22030470-007B, H22030470-008B, H22030470-009B, H22030470-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R173309** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220328B: 33** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **03/28/22 18:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.0310	0.0010	0.03	0	**103**	90	110				
Copper	0.0607	0.010	0.06	0	**101**	90	110				

Associated samples: **H22030470-003C, H22030470-008C, H22030470-009B, H22030470-009C**

Run ID :Run Order: **ICPMS205-H_220328B: 36** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **03/28/22 18:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.000117	0.0010		0							
Copper	0.000138	0.010		0							

Associated samples: **H22030470-003C, H22030470-008C, H22030470-009B, H22030470-009C**

Run ID :Run Order: **ICPMS205-H_220328B: 38** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **03/28/22 18:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.00973	0.0010	0.01	0	**97**	70	130				
Copper	0.0189	0.010	0.02	0	**94**	70	130				

Associated samples: **H22030470-003C, H22030470-008C, H22030470-009B, H22030470-009C**

Run ID :Run Order: **ICPMS205-H_220328B: 44** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **03/28/22 18:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.0001									

Associated samples: **H22030470-009B**

Run ID :Run Order: **ICPMS205-H_220328B: 45** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **03/28/22 18:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0506	0.010	0.05	0	**101**	85	115				

Associated samples: **H22030470-009B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** R173309 **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220328B: 52** SampType: **Sample Matrix Spike** Lab ID: **H22030634-001BMS** Method: **E200.8**
Analysis Date: **03/28/22 19:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0620	0.0050	0.05	0.01256	99	70	130				

Associated samples: **H22030470-009B**

Run ID :Run Order: **ICPMS205-H_220328B: 53** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030634-001BMSD** Method: **E200.8**
Analysis Date: **03/28/22 19:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0614	0.0050	0.05	0.01256	98	70	130	0.06204	1.1	20	

Associated samples: **H22030470-009B**

Run ID :Run Order: **ICPMS205-H_220328B: 88** SampType: **Sample Matrix Spike** Lab ID: **H22030470-009BMS** Method: **E200.8**
Analysis Date: **03/28/22 21:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0513	0.0050	0.05	0.001284	100	70	130				

Associated samples: **H22030470-009B**

Run ID :Run Order: **ICPMS205-H_220328B: 89** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-009BMSD** Method: **E200.8**
Analysis Date: **03/28/22 21:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0510	0.0050	0.05	0.001284	100	70	130	0.05133	0.6	20	

Associated samples: **H22030470-009B**

Run ID :Run Order: **ICPMS205-H_220328B: 98** SampType: **Sample Matrix Spike** Lab ID: **H22030667-001BMS** Method: **E200.8**
Analysis Date: **03/28/22 22:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0508	0.0050	0.05	0.000344	101	70	130				

Associated samples: **H22030470-009B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470
BatchID: R173309
Date: *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220328B: 99** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030667-001BMSD** Method: **E200.8**

Analysis Date: **03/28/22 22:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0498	0.0050	0.05	0.000344	**99**	70	130	0.05076	**1.9**	20	

Associated samples: **H22030470-009B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22030470
BatchID: R173447
Date: *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220401D: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **SW6020**
Analysis Date: **04/01/22 22:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0607	0.0010	0.06	0	101	90	110				
Cadmium	0.0299	0.0010	0.03	0	100	90	110				
Copper	0.0603	0.0010	0.06	0	100	90	110				
Lead	0.0591	0.0010	0.06	0	98	90	110				
Zinc	0.0596	0.0013	0.06	0	99	90	110				

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 15** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **SW6020**
Analysis Date: **04/01/22 23:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000716	0.0010		0							
Cadmium	0.000141	0.0010		0							
Copper	-0.0000629	0.0010		0							
Lead	0.000319	0.0010		0							
Zinc	0.000160	0.0013		0							

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Run ID :Run Order: **ICPMS205-H_220401D: 17** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **SW6020**
Analysis Date: **04/01/22 23:09** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.00992	0.0010	0.01	0	99	70	130				
Cadmium	0.00970	0.0010	0.01	0	97	70	130				
Copper	0.0190	0.0010	0.02	0	95	70	130				
Lead	0.000325	0.0010		0		0	0				
Zinc	0.00950	0.0013	0.01	0	95	70	130				

Associated samples: **H22030470-011A, H22030470-012A, H22030470-013A, H22030470-014A, H22030470-015A, H22030470-016A, H22030470-017A, H22030470-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R174274** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220422C: 59** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **04/22/22 23:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0628	0.0050	0.06	0	**105**	90	110				
Cadmium	0.0312	0.0010	0.03	0	**104**	90	110				
Copper	0.0618	0.010	0.06	0	**103**	90	110				
Zinc	0.0636	0.010	0.06	0	**106**	90	110				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 62** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **04/22/22 23:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000298	0.0050		0							
Cadmium	0.000169	0.0010		0							
Copper	0.000421	0.010		0							
Zinc	0.000702	0.010		0							

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 64** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **04/22/22 23:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0107	0.0050	0.01	0	**107**	70	130				
Cadmium	0.0106	0.0010	0.01	0	**106**	70	130				
Copper	0.0214	0.010	0.02	0	**107**	70	130				
Zinc	0.0112	0.010	0.01	0	**112**	70	130				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 69** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **04/23/22 00:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID:** R174274 **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220422C: 69** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **04/23/22 00:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	ND	0.001									

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 70** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **04/23/22 00:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0500	0.0050	0.05	0	100	85	115				
Cadmium	0.0504	0.0010	0.05	0	101	85	115				
Copper	0.0507	0.010	0.05	0	101	85	115				
Zinc	0.0544	0.010	0.05	0	109	85	115				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 84** SampType: **Sample Matrix Spike** Lab ID: **H22030470-003BMS** Method: **E200.8**

Analysis Date: **04/23/22 00:45** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0599	0.0010	0.05	0.007051	106	70	130				
Cadmium	0.0513	0.0010	0.05	0	103	70	130				
Copper	0.0524	0.0050	0.05	0.001143	102	70	130				
Zinc	0.0562	0.010	0.05	0.003415	106	70	130				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220422C: 85** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22030470-003BMSD** Method: **E200.8**

Analysis Date: **04/23/22 00:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0593	0.0010	0.05	0.007051	105	70	130	0.05991	1.0	20	
Cadmium	0.0511	0.0010	0.05	0	102	70	130	0.05129	0.4	20	
Copper	0.0513	0.0050	0.05	0.001143	100	70	130	0.05235	2.1	20	
Zinc	0.0566	0.010	0.05	0.003415	106	70	130	0.05623	0.6	20	

Associated samples: **H22030470-003B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R174294** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220425B: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**
Analysis Date: **04/25/22 09:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0593	0.010	0.06	0	99	90	110				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 14** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**
Analysis Date: **04/25/22 09:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0000314	0.010		0							

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 16** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**
Analysis Date: **04/25/22 09:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0000160	0.010		0		0	0				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 96** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**
Analysis Date: **04/25/22 15:38** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0592	0.010	0.06	0	99	90	110				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 98** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**
Analysis Date: **04/25/22 15:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.000114	0.010		0							

Associated samples: **H22030470-003B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: R174294** **Date:** *28-Apr-22*

Run ID :Run Order: **ICPMS205-H_220425B: 100** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**
Analysis Date: **04/25/22 15:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.000111	0.010		0		0	0				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 131** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**
Analysis Date: **04/25/22 18:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.0001									

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 132** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**
Analysis Date: **04/25/22 18:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0499	0.010	0.05	0	100	85	115				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 146** SampType: **Sample Matrix Spike** Lab ID: **H22040194-001BMS** Method: **E200.8**
Analysis Date: **04/25/22 19:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0481	0.0010	0.05	0	96	70	130				

Associated samples: **H22030470-003B**

Run ID :Run Order: **ICPMS205-H_220425B: 147** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22040194-001BMSD** Method: **E200.8**
Analysis Date: **04/25/22 19:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0479	0.0010	0.05	0	96	70	130	0.0481	0.4	20	

Associated samples: **H22030470-003B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22030470 **BatchID: TSS220318A** **Date:** *28-Apr-22*

Run ID :Run Order: **ACCU-124 (14410200)_220318B: 1** SampType: **Method Blank** Lab ID: **MB-1_220318A** Method: **A2540 D**

Analysis Date: **03/18/22 15:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.8									

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220318B: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-2_220318A** Method: **A2540 D**

Analysis Date: **03/18/22 15:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	119	10	100	0	**119**	80	120				

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220318B: 5** SampType: **Sample Duplicate** Lab ID: **H22030470-002A DUP** Method: **A2540 D**

Analysis Date: **03/18/22 15:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	38.0	10		0				36.5	**4.0**	5	

Associated samples: **H22030470-001A, H22030470-002A, H22030470-003A, H22030470-004A, H22030470-005A, H22030470-006A, H22030470-007A, H22030470-008A, H22030470-009A, H22030470-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

April 15, 2022

Energy Laboratories, Inc.
ATTN: Wanda Johnson
3161 E Lyndale
Helena, MT 59602
wjohnson@energylab.com

RE: Project ENL-HL1901 Client Project: H22030470

Dear Wanda Johnson,

On March 22, 2022, Brooks Applied Labs (BAL) received five (5) water samples. The samples were logged-in for the analyses of methyl mercury (MeHg) according to the chain-of-custody form. All samples were received and stored according to BAL SOPs and EPA methodology.

Methyl Mercury using MERX
Water samples were pre-preserved with hydrochloric acid. The preserved samples were distilled and analyzed via EPA Method 1630.

All samples were originally analyzed in sequence S220386. The matrix spike duplicate (MSD) B220696-MSD1 performed on sample 2203302-04 had a recovery below the acceptance limit due to a suspected ethylation issue during the analysis. Sample 2203302-04 was not reported from the original analysis and was reanalyzed in sequence S220406 along with their associated batch QC samples. In the reanalysis, the matrix spike and matrix spike duplicate were renamed B220696-MS2/MSD2 from the original names of B220696-MS1/MSD1.

The results were method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. This report should be used in its entirety for interpretation of results.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,



Amy Goodall
Project Manager
Brooks Applied Labs
amy@brooksapplied.com

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 3/23/2020)

E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Please see narrative for explanation.
J Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1 Estimated value. A full explanation is presented in the narrative.
M Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)
SM2340B	Non-Potable Waters	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
H22030470-001E	2203302-01	Surface Water	Sample	03/15/2022	03/22/2022
H22030470-002E	2203302-02	Surface Water	Sample	03/15/2022	03/22/2022
H22030470-003E	2203302-03	Surface Water	Sample	03/15/2022	03/22/2022
H22030470-019B	2203302-04	Surface Water	Sample	03/15/2022	03/22/2022
H22030470-020A	2203302-05	Surface Water	Trip Blank	03/15/2022	03/22/2022

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
MeHg	Water	EPA 1630	03/29/2022	03/30/2022	B220696	S220386
MeHg	Water	EPA 1630	03/29/2022	04/05/2022	B220696	S220406

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
H22030470-001E										
2203302-01	MeHg	Surface Water	TR	≤ 0.023	U	0.023	0.051	ng/L	B220696	S220386
H22030470-002E										
2203302-02	MeHg	Surface Water	TR	1.92		0.023	0.050	ng/L	B220696	S220386
H22030470-003E										
2203302-03	MeHg	Surface Water	TR	2.02		0.022	0.049	ng/L	B220696	S220386
H22030470-019B										
2203302-04	MeHg	Surface Water	TR	0.556		0.028	0.060	ng/L	B220696	S220406
H22030470-020A										
2203302-05	MeHg	Surface Water	TR	≤ 0.023	U	0.023	0.050	ng/L	B220696	S220386

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Accuracy & Precision Summary

Batch: B220696
Lab Matrix: Water
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B220696-BS1	**Blank Spike, (2213015)**						
	MeHg		4.000	3.832	ng/L	96% 67-133	
B220696-BS2	**Blank Spike, (2213015)**						
	MeHg		4.000	4.025	ng/L	101% 67-133	
B220696-MS2	**Matrix Spike (2203302-04)**						
	MeHg	0.556	4.000	4.551	ng/L	100% 65-135	
B220696-MSD2	**Matrix Spike Duplicate (2203302-04)**						
	MeHg	0.556	4.000	5.048	ng/L	112% 65-135	10% 35

Method Blanks & Reporting Limits

Batch: B220696
Matrix: Water
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B220696-BLK1	0.018	ng/L
B220696-BLK2	0.022	ng/L
B220696-BLK3	0.015	ng/L
B220696-BLK4	0.016	ng/L

Average: 0.018
Limit: 0.048

Standard Deviation: 0.003
Limit: 0.022

MDL: 0.022
MRL: 0.048

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Sample Containers

Lab ID: 2203302-01 **Report Matrix:** Surface Water **Collected:** 03/15/2022
Sample: H22030470-001E **Sample Type:** Sample **Received:** 03/22/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250 mL	21-0121	2 mL 6N HCl (PP)	unknown	<2	Cooler - 2203302

Lab ID: 2203302-02 **Report Matrix:** Surface Water **Collected:** 03/15/2022
Sample: H22030470-002E **Sample Type:** Sample **Received:** 03/22/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250 mL	21-0121	2 mL 6N HCl (PP)	unknown	<2	Cooler - 2203302

Lab ID: 2203302-03 **Report Matrix:** Surface Water **Collected:** 03/15/2022
Sample: H22030470-003E **Sample Type:** Sample **Received:** 03/22/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250 mL	21-0121	2 mL 6N HCl (PP)	unknown	<2	Cooler - 2203302

Lab ID: 2203302-04 **Report Matrix:** Surface Water **Collected:** 03/15/2022
Sample: H22030470-019B **Sample Type:** Sample **Received:** 03/22/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250 mL	21-0121	2 mL 6N HCl (PP)	unknown	<2	Cooler - 2203302

Lab ID: 2203302-05 **Report Matrix:** Surface Water **Collected:** 03/15/2022
Sample: H22030470-020A **Sample Type:** Trip Blank **Received:** 03/22/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250 mL	21-0121	0.4% HCl (BAL)	2125068	<2	Cooler - 2203302

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Jonathan Dee Hager
Client Project: H22030470

Shipping Containers

Cooler - 2203302

Received: March 22, 2022 10:18
Tracking No: 1Z 37E W97 01 6168 3976 via UP
Coolant Type: Ice
Temperature: 1.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR #33, Temp. Blank: 1.6°C

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

Energy Laboratories Inc
3161 East Lyndale Avenue
Helena, MT 59601
4064420711

H22030470

CHAIN-OF-CUSTODY RECORD

17-Mar-22

PO: H22030470
–

Earliest HT Expires: Tue, 3/22/2022 0915
Test Codes: Sub-BrooksRand

Earliest Due Date: 3/25/2022
 # Bus. Days Until Due: 6

Subcontractor:
Brooks Applied Labs
18804 North Creek Parkway
Bothell, WA 98011
TEL: 2066326206
FAX: 2066326017
Acct #: 2066326206

Subcontractor's Client

					Requested Tests
					Sub-BrooksRand
☐	H22030470-001E	Surface Water	03/15/22 10:05 A	1 - CLIENT-SLD	1
☐	H22030470-002E	Surface Water	03/15/22 10:30 A	1 - CLIENT-SLD	1
☐	H22030470-003E	Surface Water	03/15/22 10:30 A	1 - CLIENT-SLD	1
☐	H22030470-019B	Surface Water	03/15/22 09:15 A	1 - CLIENT-SLD	1
☐	H22030470-020A	Surface Water	03/15/22 09:15 A	1 - CLIENT-SLD	1

Comments:

QC Level:
STD

Relinquished by: Shaya Foesdal	**Date/Time** 3/21/22 1331	**Received by:**	**Date/Time** 3/22/22 10:18
Relinquished by:		**Received by:**	

Shipped By:	Custody Seal Y N	Intact Y N	Receipt Temp: °C	Temp Blank Y N	On Ice Y N

Work Order Receipt Checklist

MT DEQ-Federal Superfund

H22030470

Login completed by: Wanda Johnson
Date Received: 3/16/2022

Reviewed by: BL2000\acarlson
Received by: JCS

Reviewed Date: 4/22/2022
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The temperature of the sample(s) for shipping container 1 was 0.0°C, shipping container 2 was 0.0°C, shipping container 3 was 2.7°C all coolers received on ice. Sample container states "Field Blank FC-CFR", used information from COC. Sample "CFR-07A" on metals unfiltered container, used ID from COC. wjj 3/17/2022

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 3

Account Information *(Billing information)*

Company/Name	MTDEQ (RESPEC)
Contact	Ben Quinones (Joe Naughton)
Phone	(406) 841-5709
Mailing Address	P.O.Box 200901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov; joe.naughton@respec.com
Receive Invoice	■Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	H1525
Bottle Order	39864

Report Information *(if different than Account Information)*

Company/Name	MTDEQ/RESPEC
Contact	Ben Quinones, Joe Naughton; Megan Burke
Phone	(406) 444-6593
Mailing Address	MT DEQ, P.O. Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	joe.naughton@respec.com; megan.burke@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

All dissolved samples field filtered

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	Tanner Traxler
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	TR As, Cd, Cu Pb, Zn	Diss As, Cd, Cu, Pb, Zn	TPN	NO3+2, TP	NH3	TSS	Tot. Alk. ,Sulfate, Chloride	Hardness (TR Ca & Mg)		See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	Field Blank #1 FC-CFR C2	3/15/22	1035	5	W	✓	✓	✓	✓		✓	✓	✓				H220360470
2	FC-CFR C2	3/15/22	1030	5	W	✓	✓	✓	✓		✓	✓	✓				
3	FC-CFR Duplicate C2	3/15/22	1030	5	W	✓	✓	✓	✓		✓	✓	✓				
4	CFR-34 C2	3/15/22	1200	5	W	✓	✓	✓	✓		✓	✓	✓				
5	CFR-27H C2	3/15/22	1250	5	W	✓	✓	✓	✓		✓	✓	✓				
6	CFR-11F C1	3/15/22	1345	5	W	✓	✓	✓	✓		✓	✓	✓				
7	CFR-07D C1	3/15/22	1430	5	W	✓	✓	✓	✓		✓	✓	✓				
8	CFR-03A C1	3/15/22	1500	5	W	✓	✓	✓	✓		✓	✓	✓				
9	WSC-SBC C1	3/15/22	1545	5	W	✓	✓	✓	✓		✓	✓	✓				
10	SS-25 C1	3/15/22	1615	5	W	✓	✓	✓	✓	✓	✓	✓	✓				

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	3/16/22 17:37				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				JESSICA SMITH	03/16/2022 1737	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
HAND	Y	Y (N) C B	Y N	C1 0.0 °C C2 0.0 C3 2.7	(Y) N C3	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Account Information *(Billing Information)*

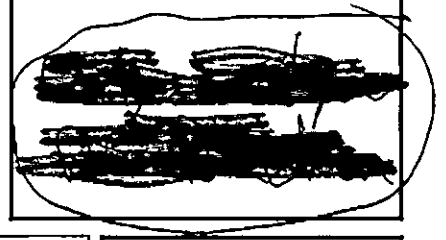
Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O Box 200901-0901
City State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☒Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	H1525
Bottle Order	39864

Report Information *(if different than Account Information)*

Company/Name	MTDEQ/RESPEC
Contact	Ben Quinones; Joe Naughton; Megan Burke
Phone	(406) 444-6593
Mailing Address	MT DEQ, P.O. Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	joe.naughton@respec.com; megan.burke@respec.com
Receive Report	☐Hard Copy ☒Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

sieve sediment for <0.063 mm fraction only, analyze for total metals as dry weight



Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	Tanner Traxler
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested: Total As, Cd, Cu, Pb, Zn	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	CFR-34 C3	3/15/22	1200	1	S	✓			H22030470
2	CFR-27H C3	3/15/22	1250	1	S	✓			
3	CFR-11F C3	3/15/22	1345	1	S	✓			
4	CFR-07D C3	3/15/22	1430	1	S	✓			
5	CFR-03A C3	3/15/22	1500	1	S	✓			
6	WSC-SBC C3	3/15/22	1545	1	S	✓			
7	SS-25 C3	3/15/22	1615	1	S	✓			
8	SS-25 Duplicate C3	3/15/22	1615	1	S	✓			
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	3/16/22 17:37	Tanner Traxler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Essa Smith	03/16/2022 1737	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
HAND	Y	Y (N) C B	Y N	C1 0.6 °C C2 0.0 C3 2.7	(Y) N C3	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Account Information *(Billing information)*

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	■Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	H1525
Bottle Order	39864

Report Information *(if different than Account Information)*

Company/Name	MTDEQ/RESPEC
Contact	Ben Quinones; Joe Naughton; Megan Burke
Phone	(406) 444-6593
Mailing Address	MT DEQ, P.O. Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	joe.naughton@respec.com, megan.burke@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

All dissolved samples field filtered

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	Tanner Traxler
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A Air
W- Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling
See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Total Mercury, low level	Methyl Mercury (contract)	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	CFR-84F C2	3/15/22	0915	1	W	✓	✓			L22030470
2	Field Blank #1 FC-CFR C1 ✓	3/15/22	1005	1	W	✓	✓			
3	FC-CFR C1 ✓	3/15/22	1030	1	W	✓	✓			
4	FC-CFR Duplicate C1 ✓	3/15/22	1030	1	W	✓	✓			
5										
6										
7										
8										
9										
10										

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	3/16/22 1757	Tanner Traxler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				JESSICA SMITH	03/16/2022 1757	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
HAND	Y	Y (N) C B	Y N	C1 0.0 °C C2 0.0 C3 2.7	(Y) N C3	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility All subcontracted data will be clearly notated on your analytical report.

APPENDIX B2
ANALYTICAL LABORATORY RESULTS
2ND QUARTER MONITORING

ANALYTICAL SUMMARY REPORT

July 13, 2022

MT DEQ-Federal Superfund
PO Box 200901
Helena, MT 59620-0901

Work Order: H22060313 Quote ID: H1525

Project Name: CFROU Monitoring

Energy Laboratories Inc Helena MT received the following 12 samples for MT DEQ-Federal Superfund on 6/9/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H22060313-001	Field Blank #1 FC-CFR	06/07/22 9:45	06/09/22	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Mercury, Total Recoverable Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended Subcontracted, Analytics
H22060313-002	FC-CFR	06/07/22 10:15	06/09/22	Aqueous	Same As Above
H22060313-003	FC-CFR Duplicate	06/07/22 10:15	06/09/22	Aqueous	Same As Above
H22060313-004	CFR-34	06/07/22 11:45	06/09/22	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22060313-005	CFR-27H	06/07/22 12:40	06/09/22	Aqueous	Same As Above
H22060313-006	CFR-11F	06/07/22 13:30	06/09/22	Aqueous	Same As Above
H22060313-007	CFR-07D	06/07/22 14:00	06/09/22	Aqueous	Same As Above
H22060313-008	CFR-03A	06/07/22 14:45	06/09/22	Aqueous	Same As Above
H22060313-009	WSC-SBC	06/07/22 15:30	06/09/22	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

H22060313-010	SS-25	06/07/22 16:15	06/09/22	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22060313-011	CFR-84F	06/07/22 9:00	06/09/22	Aqueous	Mercury, Total Recoverable Mercury Digestion by E245.1 Subcontracted, Analytics
H22060313-012	Trip Blank	06/07/22 9:45	06/09/22	Aqueous	Subcontracted, Analytics

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: MT DEQ-Federal Superfund
Project: CFROU Monitoring
Work Order: H22060313

Report Date: 07/13/22

CASE NARRATIVE

Samples for methylmercury were subcontracted to BrooksApplied Labs. The associated report is attached. abc 7/9/22

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the calculated method detection limit (MDL). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: Field Blank #1 FC-CFR
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-001
Collection Date: 06/07/22 09:45
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	ND	mg/L		1	0.3	A2540 D	06/09/22 15:52 / JAR			U-124 (14410200)_220609A : 15		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		4	2	A2320 B	06/14/22 17:03 / JAR			PHSC_101-H_220614A : 44		R175603
Bicarbonate as HCO3	ND	mg/L		4	3	A2320 B	06/14/22 17:03 / JAR			PHSC_101-H_220614A : 44		R175603
Chloride	ND	mg/L		1	0.02	E300.0	06/17/22 00:52 / JAR			IC METROHM_220615A : 146		R175738
Sulfate	ND	mg/L		1	0.06	E300.0	06/17/22 00:52 / JAR			IC METROHM_220615A : 146		R175738
Hardness as CaCO3	ND	mg/L		1	1	A2340 B	06/14/22 17:36 / sld			WATERCALC_220614B : 1		R175653
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	06/10/22 16:10 / GE			FIA203-HE_220610C : 122		R175567
Nitrogen, Total	ND	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:36 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 33		61861
Phosphorus, Total as P	ND	mg/L		0.003	0.001	E365.1	06/14/22 11:32 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 54		61822
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.001	0.0002	E200.8	06/14/22 19:56 / sld			ICPMS205-H_220614B : 110		R175652
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	06/14/22 19:56 / sld			ICPMS205-H_220614B : 110		R175652
Copper	ND	mg/L		0.001	0.0001	E200.8	06/14/22 19:56 / sld			ICPMS205-H_220614B : 110		R175652
Lead	0.0003	mg/L	J	0.0003	0.0001	E200.8	06/15/22 18:21 / sld			ICPMS205-H_220615C : 57		R175694
Zinc	0.025	mg/L		0.008	0.001	E200.8	06/16/22 16:23 / dck			ICPMS205-H_220616B : 42		R175744
METALS, TOTAL RECOVERABLE												
Arsenic	ND	mg/L		0.001	0.0001	E200.8	06/14/22 17:06 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 38		61802
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	06/14/22 17:06 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 38		61802
Calcium	ND	mg/L		1	0.1	E200.7	06/13/22 17:38 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 55		61802
Copper	ND	mg/L		0.001	0.0003	E200.8	06/14/22 17:06 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 38		61802
Lead	ND	mg/L		0.0003	0.0001	E200.8	06/14/22 17:06 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 38		61802
Magnesium	ND	mg/L		1	0.05	E200.7	06/13/22 17:38 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 55		61802
Mercury	ND	ug/L		0.005	0.001	E245.1	06/15/22 13:04 / kjb	06/14/22 14:20	E245.1	HGCV205-H_220615A : 51		61852
Potassium	ND	mg/L		1	0.1	E200.7	06/13/22 17:38 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 55		61802
Sodium	ND	mg/L		1	0.1	E200.7	06/13/22 17:38 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 55		61802
Zinc	ND	mg/L		0.008	0.001	E200.8	06/14/22 17:06 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 38		61802

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-002
Collection Date: 06/07/22 10:15
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	38	mg/L	D	5	0.3	A2540 D	06/09/22 15:52 / JAR			U-124 (14410200)_220609A : 16		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	92	mg/L		4	2	A2320 B	06/14/22 17:09 / JAR			PHSC_101-H_220614A : 46		R175603
Bicarbonate as HCO3	110	mg/L		4	3	A2320 B	06/14/22 17:09 / JAR			PHSC_101-H_220614A : 46		R175603
Chloride	2	mg/L		1	0.02	E300.0	06/17/22 01:07 / JAR			IC METROHM_220615A : 147		R175738
Sulfate	9	mg/L		1	0.06	E300.0	06/17/22 01:07 / JAR			IC METROHM_220615A : 147		R175738
Hardness as CaCO3	100	mg/L		1	1	A2340 B	06/14/22 17:36 / sld			WATERCALC_220614B : 2		R175653
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.04	mg/L		0.02	0.008	E353.2	06/10/22 16:11 / GE			FIA203-HE_220610C : 123		R175567
Nitrogen, Total	0.26	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:40 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 36		61861
Phosphorus, Total as P	0.077	mg/L		0.003	0.001	E365.1	06/14/22 11:37 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 58		61822
METALS, DISSOLVED												
Arsenic	0.007	mg/L		0.001	0.0002	E200.8	06/16/22 16:25 / dck			ICPMS205-H_220616B : 43		R175744
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	06/14/22 19:58 / sld			ICPMS205-H_220614B : 111		R175652
Copper	0.001	mg/L		0.001	0.0001	E200.8	06/16/22 16:25 / dck			ICPMS205-H_220616B : 43		R175744
Lead	0.0006	mg/L		0.0003	0.0001	E200.8	06/14/22 19:58 / sld			ICPMS205-H_220614B : 111		R175652
Zinc	0.020	mg/L		0.008	0.001	E200.8	06/16/22 16:25 / dck			ICPMS205-H_220616B : 43		R175744
METALS, TOTAL RECOVERABLE												
Arsenic	0.014	mg/L		0.001	0.0001	E200.8	06/14/22 17:08 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 39		61802
Cadmium	0.00015	mg/L		0.00003	0.00003	E200.8	06/14/22 17:08 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 39		61802
Calcium	28	mg/L		1	0.1	E200.7	06/13/22 17:42 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 56		61802
Copper	0.005	mg/L		0.001	0.0003	E200.8	06/14/22 17:08 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 39		61802
Lead	0.0118	mg/L		0.0003	0.0001	E200.8	06/14/22 17:08 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 39		61802
Magnesium	7	mg/L		1	0.05	E200.7	06/13/22 17:42 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 56		61802
Mercury	0.47	ug/L	D	0.01	0.006	E245.1	06/15/22 14:54 / kjb	06/14/22 14:20	E245.1	HGCV205-H_220615A : 72		61852
Potassium	2	mg/L		1	0.1	E200.7	06/13/22 17:42 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 56		61802
Sodium	5	mg/L		1	0.1	E200.7	06/13/22 17:42 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 56		61802
Zinc	0.037	mg/L		0.008	0.001	E200.8	06/14/22 17:08 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 39		61802

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR Duplicate
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-003
Collection Date: 06/07/22 10:15
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	46	mg/L	D	5	0.3	A2540 D	06/09/22 15:53 / JAR			U-124 (14410200)_220609A : 17		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	90	mg/L		4	2	A2320 B	06/14/22 17:15 / JAR			PHSC_101-H_220614A : 48		R175603
Bicarbonate as HCO3	110	mg/L		4	3	A2320 B	06/14/22 17:15 / JAR			PHSC_101-H_220614A : 48		R175603
Chloride	2	mg/L		1	0.02	E300.0	06/17/22 01:21 / JAR			IC METROHM_220615A : 148		R175738
Sulfate	9	mg/L		1	0.06	E300.0	06/17/22 01:21 / JAR			IC METROHM_220615A : 148		R175738
Hardness as CaCO3	98	mg/L		1	1	A2340 B	06/14/22 17:36 / sld			WATERCALC_220614B : 3		R175653
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.02	0.008	E353.2	06/10/22 16:12 / GE			FIA203-HE_220610C : 124		R175567
Nitrogen, Total	0.27	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:41 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 37		61861
Phosphorus, Total as P	0.078	mg/L		0.003	0.001	E365.1	06/14/22 11:38 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 59		61822
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	06/14/22 20:10 / sld			ICPMS205-H_220614B : 116		R175652
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	06/14/22 20:10 / sld			ICPMS205-H_220614B : 116		R175652
Copper	0.001	mg/L		0.001	0.0001	E200.8	06/16/22 16:28 / dck			ICPMS205-H_220616B : 44		R175744
Lead	0.0006	mg/L		0.0003	0.0001	E200.8	06/15/22 18:25 / sld			ICPMS205-H_220615C : 59		R175694
Zinc	0.026	mg/L		0.008	0.001	E200.8	06/14/22 20:10 / sld			ICPMS205-H_220614B : 116		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.013	mg/L		0.001	0.0001	E200.8	06/14/22 17:10 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 40		61802
Cadmium	0.00010	mg/L		0.00003	0.00003	E200.8	06/14/22 17:10 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 40		61802
Calcium	27	mg/L		1	0.1	E200.7	06/13/22 17:46 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 57		61802
Copper	0.005	mg/L		0.001	0.0003	E200.8	06/14/22 17:10 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 40		61802
Lead	0.0104	mg/L		0.0003	0.0001	E200.8	06/14/22 17:10 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 40		61802
Magnesium	7	mg/L		1	0.05	E200.7	06/13/22 17:46 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 57		61802
Mercury	0.38	ug/L	D	0.01	0.006	E245.1	06/15/22 14:57 / kjb	06/14/22 14:20	E245.1	HGCV205-H_220615A : 73		61852
Potassium	2	mg/L		1	0.1	E200.7	06/13/22 17:46 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 57		61802
Sodium	5	mg/L		1	0.1	E200.7	06/13/22 17:46 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 57		61802
Zinc	0.031	mg/L		0.008	0.001	E200.8	06/14/22 17:10 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 40		61802

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-004
Collection Date: 06/07/22 11:45
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	118	mg/L	D	20	0.3	A2540 D	06/09/22 15:53 / JAR			U-124 (14410200)_220609A : 19		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	100	mg/L		4	2	A2320 B	06/14/22 17:26 / JAR			PHSC_101-H_220614A : 52		R175603
Bicarbonate as HCO3	120	mg/L		4	3	A2320 B	06/14/22 17:26 / JAR			PHSC_101-H_220614A : 52		R175603
Chloride	10	mg/L		1	0.02	E300.0	06/17/22 01:35 / JAR			IC METROHM_220615A : 149		R175738
Sulfate	103	mg/L		1	0.06	E300.0	06/17/22 01:35 / JAR			IC METROHM_220615A : 149		R175738
Hardness as CaCO3	209	mg/L		1	1	A2340 B	06/14/22 17:36 / sld			WATERCALC_220614B : 4		R175653
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.11	mg/L		0.02	0.008	E353.2	06/10/22 16:16 / GE			FIA203-HE_220610C : 127		R175567
Nitrogen, Total	0.40	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:42 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 38		61861
Phosphorus, Total as P	0.178	mg/L		0.003	0.001	E365.1	06/14/22 11:39 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 60		61822
METALS, DISSOLVED												
Arsenic	0.016	mg/L		0.001	0.0002	E200.8	06/14/22 20:12 / sld			ICPMS205-H_220614B : 117		R175652
Cadmium	0.00005	mg/L		0.00003	0.00002	E200.8	06/14/22 20:12 / sld			ICPMS205-H_220614B : 117		R175652
Copper	0.009	mg/L		0.001	0.0001	E200.8	06/14/22 20:12 / sld			ICPMS205-H_220614B : 117		R175652
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	06/14/22 20:12 / sld			ICPMS205-H_220614B : 117		R175652
Zinc	0.020	mg/L		0.008	0.001	E200.8	06/14/22 20:12 / sld			ICPMS205-H_220614B : 117		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.035	mg/L		0.001	0.0001	E200.8	06/14/22 17:13 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 41		61802
Cadmium	0.00077	mg/L		0.00003	0.00003	E200.8	06/14/22 17:13 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 41		61802
Calcium	65	mg/L		1	0.1	E200.7	06/13/22 17:50 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 58		61802
Copper	0.172	mg/L		0.001	0.0003	E200.8	06/14/22 17:13 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 41		61802
Lead	0.0235	mg/L		0.0003	0.0001	E200.8	06/14/22 17:13 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 41		61802
Magnesium	11	mg/L		1	0.05	E200.7	06/13/22 17:50 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 58		61802
Potassium	5	mg/L		1	0.1	E200.7	06/13/22 17:50 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 58		61802
Sodium	17	mg/L		1	0.1	E200.7	06/13/22 17:50 / sld	06/10/22 10:11	E200.2	ICP2-HE_220613B : 58		61802
Zinc	0.140	mg/L		0.008	0.001	E200.8	06/14/22 17:13 / sld	06/10/22 10:11	E200.2	ICPMS205-H_220614B : 41		61802

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-005
Collection Date: 06/07/22 12:40
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	104	mg/L	D	20	0.3	A2540 D	06/09/22 15:53 / JAR			U-124 (14410200)_220609A : 20		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	96	mg/L		4	2	A2320 B	06/14/22 17:32 / JAR			PHSC_101-H_220614A : 54		R175603
Bicarbonate as HCO3	120	mg/L		4	3	A2320 B	06/14/22 17:32 / JAR			PHSC_101-H_220614A : 54		R175603
Chloride	10	mg/L		1	0.02	E300.0	06/17/22 01:50 / JAR			IC METROHM_220615A : 150		R175738
Sulfate	112	mg/L		1	0.06	E300.0	06/17/22 01:50 / JAR			IC METROHM_220615A : 150		R175738
Hardness as CaCO3	206	mg/L		1	1	A2340 B	06/15/22 10:19 / sld			WATERCALC_220615A : 1		R175667
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.09	mg/L		0.02	0.008	E353.2	06/10/22 16:19 / GE			FIA203-HE_220610C : 130		R175567
Nitrogen, Total	0.38	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:43 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 39		61861
Phosphorus, Total as P	0.169	mg/L		0.003	0.001	E365.1	06/14/22 11:40 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 61		61822
METALS, DISSOLVED												
Arsenic	0.016	mg/L		0.001	0.0002	E200.8	06/14/22 20:15 / sld			ICPMS205-H_220614B : 118		R175652
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	06/14/22 20:15 / sld			ICPMS205-H_220614B : 118		R175652
Copper	0.009	mg/L		0.001	0.0001	E200.8	06/14/22 20:15 / sld			ICPMS205-H_220614B : 118		R175652
Lead	0.0006	mg/L		0.0003	0.0001	E200.8	06/14/22 20:15 / sld			ICPMS205-H_220614B : 118		R175652
Zinc	0.017	mg/L		0.008	0.001	E200.8	06/14/22 20:15 / sld			ICPMS205-H_220614B : 118		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.034	mg/L		0.001	0.0001	E200.8	06/14/22 17:27 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 47		61802
Cadmium	0.00065	mg/L		0.00003	0.00003	E200.8	06/14/22 17:27 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 47		61802
Calcium	65	mg/L		1	0.1	E200.7	06/13/22 18:16 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 65		61802
Copper	0.158	mg/L		0.001	0.0003	E200.8	06/14/22 17:27 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 47		61802
Lead	0.0216	mg/L		0.0003	0.0001	E200.8	06/14/22 17:27 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 47		61802
Magnesium	11	mg/L		1	0.05	E200.7	06/13/22 18:16 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 65		61802
Potassium	5	mg/L		1	0.1	E200.7	06/13/22 18:16 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 65		61802
Sodium	16	mg/L		1	0.1	E200.7	06/13/22 18:16 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 65		61802
Zinc	0.127	mg/L		0.008	0.001	E200.8	06/14/22 17:27 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 47		61802

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-006
Collection Date: 06/07/22 13:30
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	47	mg/L	D	10	0.3	A2540 D	06/09/22 15:54 / JAR			U-124 (14410200)_220609A : 21		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	82	mg/L		4	2	A2320 B	06/14/22 17:39 / JAR			PHSC_101-H_220614A : 56		R175603
Bicarbonate as HCO3	100	mg/L		4	3	A2320 B	06/14/22 17:39 / JAR			PHSC_101-H_220614A : 56		R175603
Chloride	10	mg/L		1	0.02	E300.0	06/17/22 02:04 / JAR			IC METROHM_220615A : 151		R175738
Sulfate	119	mg/L		1	0.06	E300.0	06/17/22 02:04 / JAR			IC METROHM_220615A : 151		R175738
Hardness as CaCO3	198	mg/L		1	1	A2340 B	06/15/22 10:19 / sld			WATERCALC_220615A : 2		R175667
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.02	0.008	E353.2	06/10/22 16:20 / GE			FIA203-HE_220610C : 131		R175567
Nitrogen, Total	0.29	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:44 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 40		61861
Phosphorus, Total as P	0.093	mg/L		0.003	0.001	E365.1	06/14/22 11:41 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 62		61822
METALS, DISSOLVED												
Arsenic	0.015	mg/L		0.001	0.0002	E200.8	06/14/22 20:17 / sld			ICPMS205-H_220614B : 119		R175652
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	06/14/22 20:17 / sld			ICPMS205-H_220614B : 119		R175652
Copper	0.005	mg/L		0.001	0.0001	E200.8	06/14/22 20:17 / sld			ICPMS205-H_220614B : 119		R175652
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	06/16/22 19:33 / dck			ICPMS205-H_220616B : 113		R175744
Zinc	0.017	mg/L		0.008	0.001	E200.8	06/14/22 20:17 / sld			ICPMS205-H_220614B : 119		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.021	mg/L		0.001	0.0001	E200.8	06/14/22 17:29 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 48		61802
Cadmium	0.00028	mg/L		0.00003	0.00003	E200.8	06/14/22 17:29 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 48		61802
Calcium	63	mg/L		1	0.1	E200.7	06/13/22 18:19 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 66		61802
Copper	0.052	mg/L		0.001	0.0003	E200.8	06/14/22 17:29 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 48		61802
Lead	0.0069	mg/L		0.0003	0.0001	E200.8	06/14/22 17:29 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 48		61802
Magnesium	10	mg/L		1	0.05	E200.7	06/13/22 18:19 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 66		61802
Potassium	4	mg/L		1	0.1	E200.7	06/13/22 18:19 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 66		61802
Sodium	16	mg/L		1	0.1	E200.7	06/13/22 18:19 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 66		61802
Zinc	0.049	mg/L		0.008	0.001	E200.8	06/14/22 17:29 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 48		61802

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-007
Collection Date: 06/07/22 14:00
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	34	mg/L	D	5	0.3	A2540 D	06/09/22 15:54 / JAR			U-124 (14410200)_220609A : 22		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	79	mg/L		4	2	A2320 B	06/14/22 17:44 / JAR			PHSC_101-H_220614A : 58		R175603
Bicarbonate as HCO3	96	mg/L		4	3	A2320 B	06/14/22 17:44 / JAR			PHSC_101-H_220614A : 58		R175603
Chloride	10	mg/L		1	0.02	E300.0	06/17/22 02:19 / JAR			IC METROHM_220615A : 152		R175738
Sulfate	118	mg/L		1	0.06	E300.0	06/17/22 02:19 / JAR			IC METROHM_220615A : 152		R175738
Hardness as CaCO3	191	mg/L		1	1	A2340 B	06/15/22 10:19 / sld			WATERCALC_220615A : 3		R175667
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.02	0.008	E353.2	06/10/22 16:21 / GE			FIA203-HE_220610C : 132		R175567
Nitrogen, Total	0.24	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:45 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 41		61861
Phosphorus, Total as P	0.085	mg/L		0.003	0.001	E365.1	06/14/22 11:42 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 63		61822
METALS, DISSOLVED												
Arsenic	0.014	mg/L		0.001	0.0002	E200.8	06/14/22 20:20 / sld			ICPMS205-H_220614B : 120		R175652
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	06/14/22 20:20 / sld			ICPMS205-H_220614B : 120		R175652
Copper	0.004	mg/L		0.001	0.0001	E200.8	06/14/22 20:20 / sld			ICPMS205-H_220614B : 120		R175652
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	06/16/22 19:36 / dck			ICPMS205-H_220616B : 114		R175744
Zinc	0.015	mg/L		0.008	0.001	E200.8	06/14/22 20:20 / sld			ICPMS205-H_220614B : 120		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.020	mg/L		0.001	0.0001	E200.8	06/14/22 17:32 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 49		61802
Cadmium	0.00023	mg/L		0.00003	0.00003	E200.8	06/14/22 17:32 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 49		61802
Calcium	62	mg/L		1	0.1	E200.7	06/13/22 18:23 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 67		61802
Copper	0.045	mg/L		0.001	0.0003	E200.8	06/14/22 17:32 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 49		61802
Lead	0.0084	mg/L		0.0003	0.0001	E200.8	06/14/22 17:32 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 49		61802
Magnesium	9	mg/L		1	0.05	E200.7	06/13/22 18:23 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 67		61802
Potassium	4	mg/L		1	0.1	E200.7	06/13/22 18:23 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 67		61802
Sodium	15	mg/L		1	0.1	E200.7	06/13/22 18:23 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 67		61802
Zinc	0.036	mg/L		0.008	0.001	E200.8	06/14/22 17:32 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 49		61802

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-008
Collection Date: 06/07/22 14:45
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	20	mg/L	D	3	0.3	A2540 D	06/09/22 15:54 / JAR			U-124 (14410200)_220609A : 23		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	73	mg/L		4	2	A2320 B	06/14/22 17:50 / JAR			PHSC_101-H_220614A : 60		R175603
Bicarbonate as HCO3	89	mg/L		4	3	A2320 B	06/14/22 17:50 / JAR			PHSC_101-H_220614A : 60		R175603
Chloride	10	mg/L		1	0.02	E300.0	06/17/22 02:33 / JAR			IC METROHM_220615A : 153		R175738
Sulfate	116	mg/L		1	0.06	E300.0	06/17/22 02:33 / JAR			IC METROHM_220615A : 153		R175738
Hardness as CaCO3	184	mg/L		1	1	A2340 B	06/15/22 10:19 / sld			WATERCALC_220615A : 4		R175667
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.013	mg/L	J	0.02	0.008	E353.2	06/10/22 16:23 / GE			FIA203-HE_220610C : 133		R175567
Nitrogen, Total	0.22	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:50 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 45		61861
Phosphorus, Total as P	0.078	mg/L		0.003	0.001	E365.1	06/14/22 11:43 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 64		61822
METALS, DISSOLVED												
Arsenic	0.014	mg/L		0.001	0.0002	E200.8	06/14/22 20:22 / sld			ICPMS205-H_220614B : 121		R175652
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	06/14/22 20:22 / sld			ICPMS205-H_220614B : 121		R175652
Copper	0.003	mg/L		0.001	0.0001	E200.8	06/14/22 20:22 / sld			ICPMS205-H_220614B : 121		R175652
Lead	0.0001	mg/L	J	0.0003	0.0001	E200.8	06/16/22 19:38 / dck			ICPMS205-H_220616B : 115		R175744
Zinc	0.013	mg/L		0.008	0.001	E200.8	06/14/22 20:22 / sld			ICPMS205-H_220614B : 121		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.016	mg/L		0.001	0.0001	E200.8	06/14/22 17:34 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 50		61802
Cadmium	0.00017	mg/L		0.00003	0.00003	E200.8	06/14/22 17:34 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 50		61802
Calcium	61	mg/L		1	0.1	E200.7	06/13/22 18:27 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 68		61802
Copper	0.016	mg/L		0.001	0.0003	E200.8	06/14/22 17:34 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 50		61802
Lead	0.0024	mg/L		0.0003	0.0001	E200.8	06/14/22 17:34 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 50		61802
Magnesium	8	mg/L		1	0.05	E200.7	06/13/22 18:27 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 68		61802
Potassium	4	mg/L		1	0.1	E200.7	06/13/22 18:27 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 68		61802
Sodium	14	mg/L		1	0.1	E200.7	06/13/22 18:27 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 68		61802
Zinc	0.018	mg/L		0.008	0.001	E200.8	06/14/22 17:34 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 50		61802

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-009
Collection Date: 06/07/22 15:30
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	17	mg/L	D	3	0.3	A2540 D	06/09/22 15:55 / JAR			U-124 (14410200)_220609A : 24		TSS220609A
INORGANICS												
Alkalinity, Total as CaCO3	73	mg/L		4	2	A2320 B	06/15/22 13:09 / JAR			PHSC_101-H_220615A : 81		R175655
Bicarbonate as HCO3	89	mg/L		4	3	A2320 B	06/15/22 13:09 / JAR			PHSC_101-H_220615A : 81		R175655
Chloride	0.91	mg/L	J	1	0.02	E300.0	06/17/22 04:00 / JAR			IC METROHM_220615A : 158		R175738
Sulfate	14	mg/L		1	0.06	E300.0	06/17/22 04:00 / JAR			IC METROHM_220615A : 158		R175738
Hardness as CaCO3	84	mg/L		1	1	A2340 B	06/16/22 08:39 / sld			WATERCALC_220616A : 1		R175696
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.016	mg/L	J	0.02	0.008	E353.2	06/10/22 16:24 / GE			FIA203-HE_220610C : 134		R175567
Nitrogen, Total	0.10	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:51 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 46		61861
Phosphorus, Total as P	0.025	mg/L		0.003	0.001	E365.1	06/14/22 11:44 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 65		61822
METALS, DISSOLVED												
Arsenic	0.003	mg/L		0.001	0.0002	E200.8	06/16/22 16:37 / dck			ICPMS205-H_220616B : 48		R175744
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	06/14/22 20:24 / sld			ICPMS205-H_220614B : 122		R175652
Copper	0.003	mg/L		0.001	0.0001	E200.8	06/16/22 16:37 / dck			ICPMS205-H_220616B : 48		R175744
Lead	0.0003	mg/L	J	0.0003	0.0001	E200.8	06/15/22 18:44 / sld			ICPMS205-H_220615C : 67		R175694
Zinc	0.014	mg/L		0.008	0.001	E200.8	06/16/22 16:37 / dck			ICPMS205-H_220616B : 48		R175744
METALS, TOTAL RECOVERABLE												
Arsenic	0.004	mg/L		0.001	0.0001	E200.8	06/14/22 17:36 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 51		61802
Cadmium	0.00006	mg/L		0.00003	0.00003	E200.8	06/14/22 17:36 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 51		61802
Calcium	26	mg/L		1	0.1	E200.7	06/13/22 18:31 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 69		61802
Copper	0.017	mg/L		0.001	0.0003	E200.8	06/14/22 17:36 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 51		61802
Lead	0.0015	mg/L		0.0003	0.0001	E200.8	06/14/22 17:36 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 51		61802
Magnesium	5	mg/L		1	0.05	E200.7	06/13/22 18:31 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 69		61802
Potassium	0.9	mg/L	J	1	0.1	E200.7	06/13/22 18:31 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 69		61802
Sodium	2	mg/L		1	0.1	E200.7	06/13/22 18:31 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 69		61802
Zinc	0.009	mg/L		0.008	0.001	E200.8	06/15/22 17:19 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220615C : 31		61802

Report Definitions:

RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-010
Collection Date: 06/07/22 16:15
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	9	mg/L	D	3	0.3	A2540 D	06/10/22 08:58 / ljs			U-124 (14410200)_220610B : 22		TSS220610A
INORGANICS												
Alkalinity, Total as CaCO3	47	mg/L		4	2	A2320 B	06/15/22 13:14 / JAR			PHSC_101-H_220615A : 83		R175655
Bicarbonate as HCO3	57	mg/L		4	3	A2320 B	06/15/22 13:14 / JAR			PHSC_101-H_220615A : 83		R175655
Chloride	31	mg/L		1	0.02	E300.0	06/17/22 04:14 / JAR			IC METROHM_220615A : 159		R175738
Sulfate	164	mg/L		1	0.06	E300.0	06/17/22 04:14 / JAR			IC METROHM_220615A : 159		R175738
Hardness as CaCO3	225	mg/L		1	1	A2340 B	06/15/22 10:19 / sld			WATERCALC_220615A : 5		R175667
NUTRIENTS												
Nitrogen, Ammonia as N	ND	mg/L		0.05	0.03	E350.1	06/14/22 14:31 / GE			FIA203-HE_220614B : 17		R175659
Nitrogen, Nitrate+Nitrite as N	0.019	mg/L	J	0.02	0.008	E353.2	06/10/22 16:25 / GE			FIA203-HE_220610C : 135		R175567
Nitrogen, Total	0.35	mg/L		0.05	0.02	A4500 N-C	06/16/22 10:53 / GE	06/15/22 10:29	A4500 N-	FIA203-HE_220616B : 47		61861
Phosphorus, Total as P	0.088	mg/L		0.003	0.001	E365.1	06/14/22 11:45 / GE	06/13/22 09:18	E365.1	SEAL AA500_220614A : 66		61822
METALS, DISSOLVED												
Arsenic	0.019	mg/L		0.001	0.0002	E200.8	06/14/22 20:27 / sld			ICPMS205-H_220614B : 123		R175652
Cadmium	0.00005	mg/L		0.00003	0.00002	E200.8	06/14/22 20:27 / sld			ICPMS205-H_220614B : 123		R175652
Copper	0.003	mg/L		0.001	0.0001	E200.8	06/14/22 20:27 / sld			ICPMS205-H_220614B : 123		R175652
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	06/16/22 19:43 / dck			ICPMS205-H_220616B : 117		R175744
Zinc	0.029	mg/L		0.008	0.001	E200.8	06/14/22 20:27 / sld			ICPMS205-H_220614B : 123		R175652
METALS, TOTAL RECOVERABLE												
Arsenic	0.021	mg/L		0.001	0.0001	E200.8	06/14/22 17:39 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 52		61802
Cadmium	0.00013	mg/L		0.00003	0.00003	E200.8	06/14/22 17:39 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 52		61802
Calcium	75	mg/L		1	0.1	E200.7	06/13/22 18:35 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 70		61802
Copper	0.008	mg/L		0.001	0.0003	E200.8	06/14/22 17:39 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 52		61802
Lead	0.0017	mg/L		0.0003	0.0001	E200.8	06/14/22 17:39 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 52		61802
Magnesium	9	mg/L		1	0.05	E200.7	06/13/22 18:35 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 70		61802
Potassium	5	mg/L		1	0.1	E200.7	06/13/22 18:35 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 70		61802
Sodium	21	mg/L		1	0.1	E200.7	06/13/22 18:35 / sld	06/10/22 10:12	E200.2	ICP2-HE_220613B : 70		61802
Zinc	0.015	mg/L		0.008	0.001	E200.8	06/14/22 17:39 / sld	06/10/22 10:12	E200.2	ICPMS205-H_220614B : 52		61802

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-84F
Project: CFROU Monitoring
Matrix: Aqueous

Lab ID: H22060313-011
Collection Date: 06/07/22 09:00
DateReceived: 06/09/22
Report Date: 07/13/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, TOTAL RECOVERABLE												
Mercury	0.28	ug/L	D	0.01	0.006	E245.1	06/15/22 15:01 / kjb	06/14/22 14:20	E245.1	HGCV205-H_220615A	74	61852

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: 2200615waLL-hg205
Date: *13-Jul-22*

Run ID :Run Order: **HGCV205-H_220615A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E245.1**
Analysis Date: **06/15/22 10:41** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.100	0.0050	0.1	0	100	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 40** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E245.1**
Analysis Date: **06/15/22 12:29** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0987	0.0050	0.1	0	99	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 69** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E245.1**
Analysis Date: **06/15/22 14:09** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0983	0.0050	0.1	0	98	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: 42595
Date: *13-Jul-22*

Run ID :Run Order: **SEAL AA500_220614A: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E365.1**

Analysis Date: **06/14/22 10:47** Units: **mg/L** **Prep Info:** Prep Date: **8/7/2018** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.248	0.010	0.25	0	99	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: 50660
Date: *13-Jul-22*

Run ID :Run Order: **SEAL AA500_220614A: 52** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **06/14/22 11:30** Units: **mg/L** **Prep Info:** Prep Date: **3/20/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.0994	0.010	0.1	0	**99**	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: 50868
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220616B: 43** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:48** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.480	0.10	0.5	0	96	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: 52305
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220616B: 29** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**
Analysis Date: **06/16/22 10:31** Units: **mg/L** **Prep Info:** Prep Date: **7/22/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.489	0.10	0.5	0	98	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61802** **Date:** *13-Jul-22*

Run ID :Run Order: **ICP2-HE_220613B: 46** SampType: **Method Blank** Lab ID: **MB-61802** Method: **E200.7**

Analysis Date: **06/13/22 17:05** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.1									
Magnesium	ND	0.05									
Potassium	ND	0.1									
Sodium	ND	0.1									

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 47** SampType: **Laboratory Control Sample** Lab ID: **LCS-61802** Method: **E200.7**

Analysis Date: **06/13/22 17:09** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.4	1.0	25	0	**101**	85	115				
Magnesium	25.4	1.0	25	0	**102**	85	115				
Potassium	26.6	1.0	25	0	**106**	85	115				
Sodium	26.7	1.0	25	0	**107**	85	115				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 51** SampType: **Serial Dilution** Lab ID: **H22060224-001ADIL** Method: **E200.7**

Analysis Date: **06/13/22 17:24** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	34.7	1.0		0		0	0	36.14	**4.2**	10	
Magnesium	8.93	1.0		0		0	0	9.448	**5.6**	10	
Potassium	17.7	1.0		0		0	0	18.57	**4.6**	10	
Sodium	49.7	1.0		0		0	0	52.27	**5.0**	10	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 53** SampType: **Sample Matrix Spike** Lab ID: **H22060224-001AMS3** Method: **E200.7**

Analysis Date: **06/13/22 17:31** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	60.5	1.0	25	36.14	**97**	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61802** **Date:** *13-Jul-22*

Run ID :Run Order: **ICP2-HE_220613B: 53** SampType: **Sample Matrix Spike** Lab ID: **H22060224-001AMS3** Method: **E200.7**

Analysis Date: **06/13/22 17:31** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	34.4	1.0	25	9.448	100	70	130				
Potassium	44.6	1.0	25	18.57	104	70	130				
Sodium	77.5	1.0	25	52.27	101	70	130				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 54** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060224-001AMSD3** Method: **E200.7**

Analysis Date: **06/13/22 17:35** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	60.0	1.0	25	36.14	96	70	130	60.47	0.7	20	
Magnesium	34.4	1.0	25	9.448	100	70	130	34.45	0	20	
Potassium	43.7	1.0	25	18.57	101	70	130	44.61	2.0	20	
Sodium	75.9	1.0	25	52.27	95	70	130	77.54	2.1	20	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 59** SampType: **Serial Dilution** Lab ID: **H22060313-004CDIL** Method: **E200.7**

Analysis Date: **06/13/22 17:54** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	64.3	1.0		0		0	0	65.01	1.1	10	
Magnesium	11.0	1.0		0		0	0	11.29	2.5	10	
Potassium	4.59	1.0		0		0	0	4.884		10	N
Sodium	16.1	1.0		0		0	0	16.75	3.6	10	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 63** SampType: **Sample Matrix Spike** Lab ID: **H22060313-004CMS3** Method: **E200.7**

Analysis Date: **06/13/22 18:08** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	89.6	1.0	25	65.01	99	70	130				
Magnesium	35.9	1.0	25	11.29	99	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: 61802
Date: *13-Jul-22*

Run ID :Run Order: **ICP2-HE_220613B: 63** SampType: **Sample Matrix Spike** Lab ID: **H22060313-004CMS3** Method: **E200.7**
Analysis Date: **06/13/22 18:08** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	30.6	1.0	25	4.884	**103**	70	130				
Sodium	42.4	1.0	25	16.75	**102**	70	130				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 64** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-004CMSD3** Method: **E200.7**
Analysis Date: **06/13/22 18:12** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	87.1	1.0	25	65.01	**88**	70	130	89.65	**2.9**	20	
Magnesium	35.5	1.0	25	11.29	**97**	70	130	35.92	**1.2**	20	
Potassium	29.9	1.0	25	4.884	**100**	70	130	30.58	**2.3**	20	
Sodium	41.5	1.0	25	16.75	**99**	70	130	42.37	**2.2**	20	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61802** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 28** SampType: **Method Blank** Lab ID: **MB-61802** Method: **E200.8**

Analysis Date: **06/14/22 16:42** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220614B: 42** SampType: **Laboratory Control Sample** Lab ID: **LCS-61802** Method: **E200.8**

Analysis Date: **06/14/22 17:15** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.482	0.0010	0.5	0	96	85	115				
Cadmium	0.247	0.0010	0.25	0	99	85	115				
Copper	0.482	0.0050	0.5	0	96	85	115				
Lead	0.511	0.0010	0.5	0	102	85	115				
Zinc	0.475	0.010	0.5	0	95	85	115				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220614B: 43** SampType: **Sample Matrix Spike** Lab ID: **H22060313-004CMS3** Method: **E200.8**

Analysis Date: **06/14/22 17:17** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.525	0.0010	0.5	0.0352	98	70	130				
Cadmium	0.246	0.0010	0.25	0.0007667	98	70	130				
Copper	0.667	0.0050	0.5	0.172	99	70	130				
Lead	0.532	0.0010	0.5	0.02346	102	70	130				
Zinc	0.598	0.010	0.5	0.1401	92	70	130				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61802** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 44** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-004CMSD3** Method: **E200.8**

Analysis Date: **06/14/22 17:20** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.524	0.0010	0.5	0.0352	**98**	70	130	0.5246	**0.2**	20	
Cadmium	0.246	0.0010	0.25	0.0007667	**98**	70	130	0.2463	**0.3**	20	
Copper	0.664	0.0050	0.5	0.172	**98**	70	130	0.6669	**0.5**	20	
Lead	0.534	0.0010	0.5	0.02346	**102**	70	130	0.5315	**0.4**	20	
Zinc	0.599	0.010	0.5	0.1401	**92**	70	130	0.598	**0.1**	20	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220615C: 30** SampType: **Method Blank** Lab ID: **MB-61802** Method: **E200.8**

Analysis Date: **06/15/22 17:17** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	0.0004	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61822** **Date:** *13-Jul-22*

Run ID :Run Order: **SEAL AA500_220614A: 17** SampType: **Method Blank** Lab ID: **MB-61822** Method: **E365.1**

Analysis Date: **06/14/22 10:50** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	ND	0.001									

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **SEAL AA500_220614A: 20** SampType: **Laboratory Control Sample** Lab ID: **LCS-61822** Method: **E365.1**

Analysis Date: **06/14/22 10:53** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.416	0.010	0.4	0	104	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **SEAL AA500_220614A: 55** SampType: **Sample Matrix Spike** Lab ID: **H22060313-001DMS** Method: **E365.1**

Analysis Date: **06/14/22 11:33** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.218	0.010	0.2	0	109	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **SEAL AA500_220614A: 56** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-001DMSD** Method: **E365.1**

Analysis Date: **06/14/22 11:34** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.218	0.010	0.2	0	109	90	110	0.218	0.1	20	

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **SEAL AA500_220614A: 76** SampType: **Sample Matrix Spike** Lab ID: **H22060318-002CMS** Method: **E365.1**

Analysis Date: **06/14/22 11:58** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.222	0.010	0.2	0.0023	110	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61822** **Date:** *13-Jul-22*

Run ID :Run Order: **SEAL AA500_220614A: 76** SampType: **Sample Matrix Spike** Lab ID: **H22060318-002CMS** Method: **E365.1**

Analysis Date: **06/14/22 11:58** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **SEAL AA500_220614A: 77** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060318-002CMSD** Method: **E365.1**

Analysis Date: **06/14/22 11:59** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.223	0.010	0.2	0.0023	**110**	90	110	0.222	**0.5**	20	

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: 61852
Date: *13-Jul-22*

Run ID :Run Order: **HGCV205-H_220615A: 42** SampType: **Method Blank** Lab ID: **MB-61852** Method: **E245.1**
Analysis Date: **06/15/22 12:35** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.001									

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 43** SampType: **Laboratory Control Sample** Lab ID: **LCS-61852** Method: **E245.1**
Analysis Date: **06/15/22 12:38** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0469	0.0050	0.05	0	94	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 49** SampType: **Sample Matrix Spike** Lab ID: **H22060298-002DMS** Method: **E245.1**
Analysis Date: **06/15/22 12:58** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0512	0.0050	0.05	0.003775	95	70	130				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 50** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060298-002DMSD** Method: **E245.1**
Analysis Date: **06/15/22 13:01** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0512	0.0050	0.05	0.003775	95	70	130	0.05123	0.1	20	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Run ID :Run Order: **HGCV205-H_220615A: 64** SampType: **Sample Matrix Spike** Lab ID: **H22060351-009BMS** Method: **E245.1**
Analysis Date: **06/15/22 13:46** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0501	0.0050	0.05	0.002436	95	70	130				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: 61852
Date: *13-Jul-22*

Run ID :Run Order: **HGCV205-H_220615A: 65** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060351-009BMSD** Method: **E245.1**
Analysis Date: **06/15/22 13:49** Units: **ug/L** **Prep Info:** Prep Date: **6/14/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0498	0.0050	0.05	0.002436	**95**	70	130	0.05009	**0.6**	20	

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61861** **Date:** *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220616B: 11** SampType: **Method Blank** Lab ID: **MB-61861** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:10** Units: **mg/L** **Prep Info:** Prep Date: **6/15/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	ND	0.02									

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 17** SampType: **Laboratory Control Sample** Lab ID: **LCS-61861** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:17** Units: **mg/L** **Prep Info:** Prep Date: **6/15/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	10.7	0.30	11.2	0	95	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 23** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-61861** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:24** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.960	0.10	1	0	96	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 34** SampType: **Sample Matrix Spike** Lab ID: **H22060313-001AMS** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:37** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.950	0.10	1	0	95	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-001AMSD** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:38** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.949	0.10	1	0	95	90	110	0.9502	0.1	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: 61861** **Date:** *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220616B: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-001AMSD** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:38** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 49** SampType: **Sample Matrix Spike** Lab ID: **H22060326-001AMS** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:55** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.74	0.10	1	0.8529	89	90	110				S

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **FIA203-HE_220616B: 50** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060326-001AMSD** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:56** Units: **mg/L** **Prep Info:** Prep Date: **6/16/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.74	0.10	1	0.8529	89	90	110	1.744	0.3	20	S

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175567
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220610C: 23** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E353.2**

Analysis Date: **06/10/22 13:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.07	0.010	1	0	107	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 24** SampType: **Method Blank** Lab ID: **MBLK** Method: **E353.2**

Analysis Date: **06/10/22 13:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	ND	0.008									

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 25** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E353.2**

Analysis Date: **06/10/22 13:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.01	0.011	1	0	101	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 111** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **06/10/22 15:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.471	0.010	0.5	0	94	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 125** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **06/10/22 16:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.469	0.010	0.5	0	94	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175567
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220610C: 125** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **06/10/22 16:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 128** SampType: **Sample Matrix Spike** Lab ID: **H22060313-004DMS** Method: **E353.2**

Analysis Date: **06/10/22 16:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.05	0.011	1	0.1065	**94**	90	110				

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Run ID :Run Order: **FIA203-HE_220610C: 129** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-004DMSD** Method: **E353.2**

Analysis Date: **06/10/22 16:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.05	0.011	1	0.1065	**94**	90	110	1.048	**0.3**	10	

Associated samples: **H22060313-001D, H22060313-002D, H22060313-003D, H22060313-004D, H22060313-005D, H22060313-006D, H22060313-007D, H22060313-008D, H22060313-009D, H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID:** R175603 **Date:** *13-Jul-22*

Run ID :Run Order: **PHSC_101-H_220614A: 16** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **06/14/22 13:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A**

Run ID :Run Order: **PHSC_101-H_220614A: 17** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **06/14/22 13:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	620	4.0	600	0	**103**	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A**

Run ID :Run Order: **PHSC_101-H_220614A: 20** SampType: **Sample Duplicate** Lab ID: **H22050974-001ADUP** Method: **A2320 B**

Analysis Date: **06/14/22 15:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	230	4.0		0				226	**2.2**	10	
Bicarbonate as HCO3	280	4.0		0				272.1	**2.1**	10	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A**

Run ID :Run Order: **PHSC_101-H_220614A: 50** SampType: **Sample Duplicate** Lab ID: **H22060313-003ADUP** Method: **A2320 B**

Analysis Date: **06/14/22 17:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	91	4.0		0				90.05	**1.4**	10	
Bicarbonate as HCO3	110	4.0		0				109.3	**1.4**	10	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175604** **Date:** *13-Jul-22*

Run ID :Run Order: **ICP2-HE_220613B: 13** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.7**

Analysis Date: **06/13/22 11:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.5	1.0	40	0	101	95	105				
Magnesium	39.6	1.0	40	0	99	95	105				
Potassium	38.9	1.0	40	0	97	95	105				
Sodium	38.9	1.0	40	0	97	95	105				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 14** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV-1** Method: **E200.7**

Analysis Date: **06/13/22 11:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.2	1.0	25	0	101	95	105				
Magnesium	25.1	1.0	25	0	100	95	105				
Potassium	25.1	1.0	25	0	101	95	105				
Sodium	25.1	1.0	25	0	100	95	105				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 48** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **06/13/22 17:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.8	1.0	25	0	103	90	110				
Magnesium	25.6	1.0	25	0	102	90	110				
Potassium	26.9	1.0	25	0	107	90	110				
Sodium	27.0	1.0	25	0	108	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Run ID :Run Order: **ICP2-HE_220613B: 60** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **06/13/22 17:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.1	1.0	25	0	100	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175604
Date: *13-Jul-22*

Run ID :Run Order: **ICP2-HE_220613B: 60** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **06/13/22 17:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	25.1	1.0	25	0	**100**	90	110				
Potassium	26.3	1.0	25	0	**105**	90	110				
Sodium	26.6	1.0	25	0	**106**	90	110				

Associated samples: **H22060313-001C, H22060313-002C, H22060313-003C, H22060313-004C, H22060313-005C, H22060313-006C, H22060313-007C, H22060313-008C, H22060313-009C, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175652
Date: *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **06/14/22 16:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0617	0.0050	0.06	0	103	90	110				
Cadmium	0.0299	0.0010	0.03	0	100	90	110				
Copper	0.0606	0.010	0.06	0	101	90	110				
Lead	0.0587	0.010	0.06	0	98	90	110				
Zinc	0.0617	0.010	0.06	0	103	90	110				

Associated samples: **H22060313-001B, H22060313-001C, H22060313-002B, H22060313-002C, H22060313-003B, H22060313-003C, H22060313-004B, H22060313-004C, H22060313-005B, H22060313-005C, H22060313-006B, H22060313-006C, H22060313-007B, H22060313-007C, H22060313-008B, H22060313-008C, H22060313-009B, H22060313-009C, H22060313-010B, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220614B: 24** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **06/14/22 16:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220614B: 25** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **06/14/22 16:35** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0494	0.0050	0.05	0	99	85	115				
Cadmium	0.0502	0.0010	0.05	0	100	85	115				
Copper	0.0496	0.010	0.05	0	99	85	115				
Lead	0.0482	0.010	0.05	0	96	85	115				
Zinc	0.0517	0.010	0.05	0	103	85	115				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175652** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 34** SampType: **Sample Matrix Spike** Lab ID: **H22060227-001CMS** Method: **E200.8**

Analysis Date: **06/14/22 16:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.147	0.0010	0.05	0.1002	94	70	130				
Cadmium	0.0447	0.0010	0.05	0.00008979	89	70	130				
Copper	0.0538	0.0050	0.05	0.008692	90	70	130				
Lead	0.0506	0.0010	0.05	0	101	70	130				
Zinc	0.0452	0.010	0.05	0.004331	82	70	130				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220614B: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060227-001CMSD** Method: **E200.8**

Analysis Date: **06/14/22 16:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.148	0.0010	0.05	0.1002	95	70	130	0.1473	0.3	20	
Cadmium	0.0437	0.0010	0.05	0.00008979	87	70	130	0.04468	2.2	20	
Copper	0.0536	0.0050	0.05	0.008692	90	70	130	0.0538	0.5	20	
Lead	0.0498	0.0010	0.05	0	100	70	130	0.05055	1.6	20	
Zinc	0.0450	0.010	0.05	0.004331	81	70	130	0.0452	0.5	20	

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220614B: 36** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/14/22 17:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0507	0.0050	0.05	0	101	90	110				
Cadmium	0.0505	0.0010	0.05	0	101	90	110				
Copper	0.0506	0.010	0.05	0	101	90	110				
Lead	0.0484	0.010	0.05	0	97	90	110				
Zinc	0.0502	0.010	0.05	0	100	90	110				

Associated samples: **H22060313-001B, H22060313-001C, H22060313-002B, H22060313-002C, H22060313-003B, H22060313-003C, H22060313-004B, H22060313-004C, H22060313-005B, H22060313-005C, H22060313-006B, H22060313-006C, H22060313-007B, H22060313-007C, H22060313-008B, H22060313-008C, H22060313-009B, H22060313-009C, H22060313-010B, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175652** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 45** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/14/22 17:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0496	0.0050	0.05	0	**99**	90	110				
Cadmium	0.0505	0.0010	0.05	0	**101**	90	110				
Copper	0.0506	0.010	0.05	0	**101**	90	110				
Lead	0.0495	0.010	0.05	0	**99**	90	110				
Zinc	0.0508	0.010	0.05	0	**101**	90	110				

Associated samples: **H22060313-001B, H22060313-001C, H22060313-002B, H22060313-002C, H22060313-003B, H22060313-003C, H22060313-004B, H22060313-004C, H22060313-005B, H22060313-005C, H22060313-006B, H22060313-006C, H22060313-007B, H22060313-007C, H22060313-008B, H22060313-008C, H22060313-009B, H22060313-009C, H22060313-010B, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220614B: 102** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/14/22 19:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0503	0.0050	0.05	0	**101**	90	110				
Cadmium	0.0505	0.0010	0.05	0	**101**	90	110				
Copper	0.0509	0.010	0.05	0	**102**	90	110				
Lead	0.0488	0.010	0.05	0	**98**	90	110				
Zinc	0.0510	0.010	0.05	0	**102**	90	110				

Associated samples: **H22060313-001B, H22060313-001C, H22060313-002B, H22060313-002C, H22060313-003B, H22060313-003C, H22060313-004B, H22060313-004C, H22060313-005B, H22060313-005C, H22060313-006B, H22060313-006C, H22060313-007B, H22060313-007C, H22060313-008B, H22060313-008C, H22060313-009B, H22060313-009C, H22060313-010B, H22060313-010C**

Run ID :Run Order: **ICPMS205-H_220614B: 112** SampType: **Sample Matrix Spike** Lab ID: **H22060313-002BMS** Method: **E200.8**

Analysis Date: **06/14/22 20:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0572	0.0010	0.05	0.006189	**102**	70	130				
Cadmium	0.0506	0.0010	0.05	0	**101**	70	130				
Copper	0.0503	0.0050	0.05	0.001137	**98**	70	130				
Lead	0.0485	0.0010	0.05	0.0006023	**96**	70	130				
Zinc	0.0686	0.010	0.05	0.01786	**101**	70	130				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175652** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220614B: 113** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-002BMSD** Method: **E200.8**

Analysis Date: **06/14/22 20:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0576	0.0010	0.05	0.006189	**103**	70	130	0.05716	**0.7**	20	
Cadmium	0.0503	0.0010	0.05	0	**101**	70	130	0.0506	**0.6**	20	
Copper	0.0505	0.0050	0.05	0.001137	**99**	70	130	0.05031	**0.3**	20	
Lead	0.0491	0.0010	0.05	0.0006023	**97**	70	130	0.04854	**1.1**	20	
Zinc	0.0686	0.010	0.05	0.01786	**102**	70	130	0.06859	**0.1**	20	

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-004B, H22060313-005B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220614B: 114** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/14/22 20:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0503	0.0050	0.05	0	**101**	90	110				
Cadmium	0.0507	0.0010	0.05	0	**101**	90	110				
Copper	0.0504	0.010	0.05	0	**101**	90	110				
Lead	0.0489	0.010	0.05	0	**98**	90	110				
Zinc	0.0516	0.010	0.05	0	**103**	90	110				

Associated samples: **H22060313-001B, H22060313-001C, H22060313-002B, H22060313-002C, H22060313-003B, H22060313-003C, H22060313-004B, H22060313-004C, H22060313-005B, H22060313-005C, H22060313-006B, H22060313-006C, H22060313-007B, H22060313-007C, H22060313-008B, H22060313-008C, H22060313-009B, H22060313-009C, H22060313-010B, H22060313-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID:** R175655 **Date:** *13-Jul-22*

Run ID :Run Order: **PHSC_101-H_220615A: 68** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **06/15/22 11:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H22060313-009A, H22060313-010A**

Run ID :Run Order: **PHSC_101-H_220615A: 69** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **06/15/22 11:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	610	4.0	600	0	**102**	90	110				

Associated samples: **H22060313-009A, H22060313-010A**

Run ID :Run Order: **PHSC_101-H_220615A: 77** SampType: **Sample Duplicate** Lab ID: **H22050912-001ADUP** Method: **A2320 B**

Analysis Date: **06/15/22 12:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	130	4.0		0				129.8	**0.5**	10	
Bicarbonate as HCO3	160	4.0		0				157.7	**0.5**	10	

Associated samples: **H22060313-009A, H22060313-010A**

Run ID :Run Order: **PHSC_101-H_220615A: 115** SampType: **Sample Duplicate** Lab ID: **H22060326-004ADUP** Method: **A2320 B**

Analysis Date: **06/15/22 14:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	85	4.0		0				83.1	**1.8**	10	
Bicarbonate as HCO3	100	4.0		0				100.8	**1.8**	10	

Associated samples: **H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175659
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220614B: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**
Analysis Date: **06/14/22 14:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.970	0.050	1	0	97	90	110				

Associated samples: **H22060313-010D**

Run ID :Run Order: **FIA203-HE_220614B: 10** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**
Analysis Date: **06/14/22 14:23** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H22060313-010D**

Run ID :Run Order: **FIA203-HE_220614B: 11** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E350.1**
Analysis Date: **06/14/22 14:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.489	0.050	0.5	0	98	90	110				

Associated samples: **H22060313-010D**

Run ID :Run Order: **FIA203-HE_220614B: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**
Analysis Date: **06/14/22 14:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.961	0.050	1	0	96	90	110				

Associated samples: **H22060313-010D**

Run ID :Run Order: **FIA203-HE_220614B: 18** SampType: **Sample Matrix Spike** Lab ID: **H22060313-010DMS** Method: **E350.1**
Analysis Date: **06/14/22 14:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.962	0.050	1	0	96	80	120				

Associated samples: **H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: R175659
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220614B: 19** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-010DMSD** Method: **E350.1**

Analysis Date: **06/14/22 14:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.964	0.050	1	0	**96**	80	120	0.9622	**0.2**	10	

Associated samples: **H22060313-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175694
Date: *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220615C: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**
Analysis Date: **06/15/22 16:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0592	0.010	0.06	0	99	90	110				
Zinc	0.0612	0.010	0.06	0	102	90	110				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B, H22060313-009C**

Run ID :Run Order: **ICPMS205-H_220615C: 22** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**
Analysis Date: **06/15/22 16:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.0001									

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 23** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**
Analysis Date: **06/15/22 17:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0488	0.010	0.05	0	98	85	115				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 28** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**
Analysis Date: **06/15/22 17:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0494	0.010	0.05	0	99	90	110				
Zinc	0.0512	0.010	0.05	0	102	90	110				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B, H22060313-009C**

Run ID :Run Order: **ICPMS205-H_220615C: 49** SampType: **Sample Matrix Spike** Lab ID: **H22060462-001BMS** Method: **E200.8**
Analysis Date: **06/15/22 18:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0483	0.0010	0.05	0	97	70	130				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175694** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220615C: 50** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060462-001BMSD** Method: **E200.8**

Analysis Date: **06/15/22 18:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0490	0.0010	0.05	0	**98**	70	130	0.04831	**1.5**	20	

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 51** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/15/22 18:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0488	0.010	0.05	0	**98**	90	110				
Zinc	0.0510	0.010	0.05	0	**102**	90	110				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B, H22060313-009C**

Run ID :Run Order: **ICPMS205-H_220615C: 61** SampType: **Sample Matrix Spike** Lab ID: **H22060299-007BMS** Method: **E200.8**

Analysis Date: **06/15/22 18:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0483	0.0010	0.05	0.0002069	**96**	70	130				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 62** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060299-007BMSD** Method: **E200.8**

Analysis Date: **06/15/22 18:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0489	0.0010	0.05	0.0002069	**97**	70	130	0.04826	**1.3**	20	

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 63** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/15/22 18:35** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0488	0.010	0.05	0	**98**	90	110				
Zinc	0.0516	0.010	0.05	0	**103**	90	110				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B, H22060313-009C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175694
Date: *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220615C: 69** SampType: **Sample Matrix Spike** Lab ID: **H22060313-010BMS** Method: **E200.8**

Analysis Date: **06/15/22 18:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0497	0.0010	0.05	0.0004703	**98**	70	130				

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Run ID :Run Order: **ICPMS205-H_220615C: 70** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-010BMSD** Method: **E200.8**

Analysis Date: **06/15/22 18:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0489	0.0010	0.05	0.0004703	**97**	70	130	0.04971	**1.7**	20	

Associated samples: **H22060313-001B, H22060313-003B, H22060313-009B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175729
Date: *13-Jul-22*

Run ID :Run Order: **FIA203-HE_220616B: 9** SampType: **Initial Calibration Blank, Instrument Blank** Lab ID: **ICB** Method: **A4500 N-C**

Analysis Date: **06/16/22 10:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	-0.000700	0.10		0		0	0				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID:** R175738 **Date:** *13-Jul-22*

Run ID :Run Order: **IC METROHM_220615A: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**

Analysis Date: **06/15/22 11:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.06									

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 3** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**

Analysis Date: **06/15/22 11:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.6	1.0	100	0	99	90	110				
Sulfate	381	1.0	400	0	95	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**

Analysis Date: **06/15/22 11:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.3	1.0	25	0	97	90	110				
Sulfate	98.6	1.0	100	0	99	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 140** SampType: **Sample Matrix Spike** Lab ID: **H22060312-014AMS** Method: **E300.0**

Analysis Date: **06/16/22 23:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	191	1.0	25	171		90	110				A
Sulfate	371	1.0	100	275.6	96	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175738** **Date:** *13-Jul-22*

Run ID :Run Order: **IC METROHM_220615A: 141** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060312-014AMSD** Method: **E300.0**

Analysis Date: **06/16/22 23:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	191	1.0	25	171		90	110	190.6	0.4	20	A
Sulfate	374	1.0	100	275.6	99	90	110	371.4	0.8	20	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 142** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **06/16/22 23:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	48.8	1.0	50	0	98	90	110				
Sulfate	198	1.0	200	0	99	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 154** SampType: **Sample Matrix Spike** Lab ID: **H22060313-008AMS** Method: **E300.0**

Analysis Date: **06/17/22 02:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	34.7	1.0	25	10.28	98	90	110				
Sulfate	211	1.0	100	116	95	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Run ID :Run Order: **IC METROHM_220615A: 155** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-008AMSD** Method: **E300.0**

Analysis Date: **06/17/22 03:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	34.5	1.0	25	10.28	97	90	110	34.66	0.4	20	
Sulfate	213	1.0	100	116	97	90	110	211.3	0.6	20	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: R175738
Date: *13-Jul-22*

Run ID :Run Order: **IC METROHM_220615A: 156** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **06/17/22 03:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.4	1.0	50	0	99	90	110				
Sulfate	197	1.0	200	0	99	90	110				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A, H22060313-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: R175744
Date: *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220616B: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **06/16/22 14:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0607	0.0050	0.06	0	**101**	90	110				
Copper	0.0595	0.010	0.06	0	**99**	90	110				
Lead	0.0578	0.010	0.06	0	**96**	90	110				
Zinc	0.0616	0.010	0.06	0	**103**	90	110				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 22** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **06/16/22 15:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Copper	ND	0.0001									
Lead	0.0007	0.0001									
Zinc	ND	0.001									

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 23** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **06/16/22 15:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0508	0.0050	0.05	0	**101**	85	115				
Copper	0.0506	0.010	0.05	0	**101**	85	115				
Lead	0.0496	0.010	0.05	0	**99**	85	115				
Zinc	0.0540	0.010	0.05	0	**108**	85	115				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 34** SampType: **Sample Matrix Spike** Lab ID: **H22060289-005CMS** Method: **E200.8**

Analysis Date: **06/16/22 16:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0616	0.0010	0.05	0.00497	**113**	70	130				
Copper	0.0537	0.0050	0.05	0.0004561	**106**	70	130				
Lead	0.0530	0.0010	0.05	0.0001966	**106**	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313 **BatchID: R175744** **Date:** *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220616B: 34** SampType: **Sample Matrix Spike** Lab ID: **H22060289-005CMS** Method: **E200.8**

Analysis Date: **06/16/22 16:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0576	0.010	0.05	0	115	70	130				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060289-005CMSD** Method: **E200.8**

Analysis Date: **06/16/22 16:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0619	0.0010	0.05	0.00497	114	70	130	0.06161	0.5	20	
Copper	0.0542	0.0050	0.05	0.0004561	107	70	130	0.05367	1.0	20	
Lead	0.0535	0.0010	0.05	0.0001966	107	70	130	0.05302	1.0	20	
Zinc	0.0578	0.010	0.05	0	116	70	130	0.05761	0.3	20	

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 38** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **06/16/22 16:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0522	0.0050	0.05	0	104	90	110				
Copper	0.0522	0.010	0.05	0	104	90	110				
Lead	0.0506	0.010	0.05	0	101	90	110				
Zinc	0.0527	0.010	0.05	0	105	90	110				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 70** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **06/16/22 17:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0639	0.0050	0.06	0	106	90	110				
Copper	0.0621	0.010	0.06	0	103	90	110				
Lead	0.0603	0.010	0.06	0	101	90	110				
Zinc	0.0640	0.010	0.06	0	107	90	110				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: R175744
Date: *13-Jul-22*

Run ID :Run Order: **ICPMS205-H_220616B: 108** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**
Analysis Date: **06/16/22 19:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0508	0.0050	0.05	0	102	90	110				
Copper	0.0505	0.010	0.05	0	101	90	110				
Lead	0.0488	0.010	0.05	0	98	90	110				
Zinc	0.0509	0.010	0.05	0	102	90	110				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 122** SampType: **Sample Matrix Spike** Lab ID: **H22060313-010BMS** Method: **E200.8**
Analysis Date: **06/16/22 19:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0713	0.0010	0.05	0.0191	104	70	130				
Copper	0.0535	0.0050	0.05	0.003433	100	70	130				
Lead	0.0497	0.0010	0.05	0.0001607	99	70	130				
Zinc	0.0828	0.010	0.05	0.03078	104	70	130				

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Run ID :Run Order: **ICPMS205-H_220616B: 123** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22060313-010BMSD** Method: **E200.8**
Analysis Date: **06/16/22 19:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 4	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0706	0.0010	0.05	0.0191	103	70	130	0.07128	1.0	20	
Copper	0.0535	0.0050	0.05	0.003433	100	70	130	0.05353	0.0	20	
Lead	0.0500	0.0010	0.05	0.0001607	100	70	130	0.04968	0.7	20	
Zinc	0.0825	0.010	0.05	0.03078	103	70	130	0.08275	0.3	20	

Associated samples: **H22060313-001B, H22060313-002B, H22060313-003B, H22060313-006B, H22060313-007B, H22060313-008B, H22060313-009B, H22060313-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22060313
BatchID: **TSS220609A**
Date: *13-Jul-22*

Run ID :Run Order: **ACCU-124 (14410200)_220609A: 1** SampType: **Method Blank** Lab ID: **MB-1_220609A** Method: **A2540 D**
Analysis Date: **06/09/22 15:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.3									

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A**

Run ID :Run Order: **ACCU-124 (14410200)_220609A: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-2_220609A** Method: **A2540 D**
Analysis Date: **06/09/22 15:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	92.0	10	100	0	92	80	120				

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A**

Run ID :Run Order: **ACCU-124 (14410200)_220609A: 5** SampType: **Sample Duplicate** Lab ID: **H22060285-002A DUP** Method: **A2540 D**
Analysis Date: **06/09/22 15:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	174	29		0				182.9	4.8	5	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A**

Run ID :Run Order: **ACCU-124 (14410200)_220609A: 18** SampType: **Sample Duplicate** Lab ID: **H22060313-003A DUP** Method: **A2540 D**
Analysis Date: **06/09/22 15:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	47.0	10		0				46	2.2	5	

Associated samples: **H22060313-001A, H22060313-002A, H22060313-003A, H22060313-004A, H22060313-005A, H22060313-006A, H22060313-007A, H22060313-008A, H22060313-009A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22060313
BatchID: **TSS220610A**
Date: *13-Jul-22*

Run ID :Run Order: **ACCU-124 (14410200)_220610B: 1** SampType: **Method Blank** Lab ID: **MB-1_220610A** Method: **A2540 D**
Analysis Date: **06/10/22 08:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.3									

Associated samples: **H22060313-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220610B: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-2_220610A** Method: **A2540 D**
Analysis Date: **06/10/22 08:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	81.0	10	100	0	**81**	80	120				

Associated samples: **H22060313-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220610B: 8** SampType: **Sample Duplicate** Lab ID: **H22060289-005A DUP** Method: **A2540 D**
Analysis Date: **06/10/22 08:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	579	10		0				577	**0.3**	5	

Associated samples: **H22060313-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220610B: 2** SampType: **Sample Duplicate** Lab ID: **H22060293-001A DUP** Method: **A2540 D**
Analysis Date: **06/10/22 08:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	71.4	29		0				82.86	**15**	5	R

Associated samples: **H22060313-010A**

- Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

BROOKS APPLIED LABS
13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

July 12, 2022

Energy Laboratories, Inc.
ATTN: Wanda Johnson
3161 E Lyndale
Helena, MT 59602
wjohnson@energylab.com

RE: Project ENL-HL1901 Client Project: H22060313

Dear Wanda Johnson,

On June 15, Brooks Applied Labs (BAL) received five (5) water samples. The samples were logged-in for the analyses of methyl mercury (MeHg) according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

Only three samples were listed on the COC, but five samples were received. Client confirmed via email that all five samples should be analyzed for MeHg. The two samples that were not included on the COC were logged in with the sample ID and sampled date/time listed on the sample labels.

Methyl Mercury using MERX
Water samples were pre-preserved with hydrochloric acid. The preserved samples were distilled and analyzed via EPA Method 1630.

The results were method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. This report should be used in its entirety for interpretation of results.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,



Amy Goodall
Project Manager
Brooks Applied Labs
amy@brooksapplied.com

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22060313

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received
BAL	Brooks Applied Labs
BLK	method blank
BS	blank spike
CAL	calibration standard
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain of custody record
D	dissolved fraction
DUP	duplicate
IBL	instrument blank
ICV	initial calibration verification
MDL	method detection limit
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
NR	non-reportable
N/C	not calculated
PS	post preparation spike
REC	percent recovery
RPD	relative percent difference
SCV	secondary calibration verification
SOP	standard operating procedure
SRM	reference material
T	total fraction
TR	total recoverable fraction

Definition of Data Qualifiers

(Effective 3/23/2020)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)
SM2340B	Non-Potable Waters	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22060313

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
H22060313-001E	2206226-01	Surface Water	Sample	06/07/2022	06/15/2022
H22060313-002E	2206226-02	Surface Water	Sample	06/07/2022	06/15/2022
H22060313-003E	2206226-03	Surface Water	Sample	06/07/2022	06/15/2022
H22060313-011B	2206226-04	Surface Water	Sample	06/07/2022	06/15/2022
H22060313-012A	2206226-05	Surface Water	Trip Blank	06/07/2022	06/15/2022

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
MeHg	Water	EPA 1630	06/29/2022	06/30/2022	B221297	S220671
MeHg	Water	EPA 1630	06/29/2022	07/01/2022	B221297	S220692

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22060313

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
H22060313-001E										
2206226-01	MeHg	Surface Water	TR	≤ 0.023	U	0.023	0.050	ng/L	B221297	S220692
H22060313-002E										
2206226-02	MeHg	Surface Water	TR	2.13		0.023	0.049	ng/L	B221297	S220692
H22060313-003E										
2206226-03	MeHg	Surface Water	TR	1.98		0.023	0.051	ng/L	B221297	S220692
H22060313-011B										
2206226-04	MeHg	Surface Water	TR	≤ 0.023	U	0.023	0.050	ng/L	B221297	S220692
H22060313-012A										
2206226-05	MeHg	Surface Water	TR	≤ 0.022	U	0.022	0.048	ng/L	B221297	S220671

Accuracy & Precision Summary

Batch: B221297
Lab Matrix: Water
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B221297-BS1	**Blank Spike, (2227003)**						
	MeHg		1.000	0.705	ng/L	71% 67-133	
B221297-BS2	**Blank Spike, (2227003)**						
	MeHg		1.000	0.748	ng/L	75% 67-133	
B221297-MS2	**Matrix Spike (2206113-12)**						
	MeHg	0.056	1.000	0.775	ng/L	72% 65-135	
B221297-MSD2	**Matrix Spike Duplicate (2206113-12)**						
	MeHg	0.056	1.000	0.771	ng/L	72% 65-135	0.5% 35

Method Blanks & Reporting Limits

Batch: B221297
Matrix: Water
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B221297-BLK1	0.006	ng/L
B221297-BLK2	0.011	ng/L
B221297-BLK3	0.004	ng/L
B221297-BLK4	0.004	ng/L

Average: 0.006
Limit: 0.050

Standard Deviation: 0.003
Limit: 0.023

MDL: 0.023
MRL: 0.050

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22060313

Sample Containers

Lab ID: 2206226-01
Sample: H22060313-001E
Report Matrix: Surface Water
Sample Type: Sample
Collected: 06/07/2022
Received: 06/15/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250ml	21-0121	2ml 6N HCl (PP)	2150013	1	Cooler - 2206226

Lab ID: 2206226-02
Sample: H22060313-002E
Report Matrix: Surface Water
Sample Type: Sample
Collected: 06/07/2022
Received: 06/15/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250ml	21-0121	2ml 6N HCl (PP)	2150013	1	Cooler - 2206226

Lab ID: 2206226-03
Sample: H22060313-003E
Report Matrix: Surface Water
Sample Type: Sample
Collected: 06/07/2022
Received: 06/15/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250ml	21-0121	2ml 6N HCl (PP)	2150013	1	Cooler - 2206226

Lab ID: 2206226-04
Sample: H22060313-011B
Report Matrix: Surface Water
Sample Type: Sample
Collected: 06/07/2022
Received: 06/15/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250ml	21-0121	2ml 6N HCl (PP)	2150013	1	Cooler - 2206226

Lab ID: 2206226-05
Sample: H22060313-012A
Report Matrix: Surface Water
Sample Type: Trip Blank
Collected: 06/07/2022
Received: 06/15/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250ml	21-0121	2ml 6N HCl (PP)	2150013	1	Cooler - 2206226

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22060313

Shipping Containers

Cooler - 2206226

Received: June 15, 2022 9:56
Tracking No: 1Z 37E W97 01 6281 5483 via UP
Coolant Type: Ice
Temperature: 2.1 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#33, Temp Blank: 3.4

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

Energy Laboratories Inc
3161 East Lyndale Avenue
Helena, MT 59601
4064420711

H22060313

CHAIN-OF-CUSTODY RECORD

09-Jun-22

PO: H22060313
–

Earliest HT Expires: Tue, 6/14/2022 0945
Test Codes: Sub-BrooksRand

Earliest Due Date: 6/20/2022
 # Bus. Days Until Due: 7

Subcontractor:
Brooks Applied Labs
18804 North Creek Parkway
Bothell, WA 98011
TEL: 2066326206
FAX: 2066326017
Acct #: 2066326206

Subcontractor's Client

					Requested Tests
					Sub-BrooksRand
	H22060313-001E	Surface Water	06/07/22 09:45 A	1 - CLIENT-SLD	1
	H22060313-002E	Surface Water	06/07/22 10:15 A	1 - CLIENT-SLD	1
	H22060313-003E	Surface Water	06/07/22 10:15 A	1 - CLIENT-SLD	1

Comments:

QC Level:
STD

Relinquished by: Wanda Johnson	**Date/Time** 6/09/2022 3:01	**Received by:** spencer m. yake	**Date/Time** 06/15/22 9:56
Relinquished by:		**Received by:**	

Shipped By:	Custody Seal Y N	Intact Y N	Receipt Temp: °C	Temp Blank Y N	On Ice Y N

Work Order Receipt Checklist

MT DEQ-Federal Superfund

H22060313

Login completed by: Wanda Johnson
Date Received: 6/9/2022

Reviewed by: BL2000\acarlson
Received by: amh

Reviewed Date: 7/13/2022
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Samples left in locked entry. Cooler 1 was received at 3.9C and Cooler 2 at 3.2C both coolers received on ice. wjj 6/09/2022

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 2

Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MT DEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	■Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; megan.burke@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

C1 - 3.9
C2 - 3.2

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T. Traxler J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	TR As, Cd, Cu Pb, Zn	Diss As, Cd, Cu, Pb, Zn	TPN	NO3+2, TP	NH3	TSS	Tot. Alk., Sulfate, Chloride	Hardness (TR Ca & Mg)		See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 Field Blank #1 FC-CFR	6/7/22	0945	5	W	✓	✓	✓	✓		✓	✓	✓				1t22060313
2 FC-CFR	6/7/22	1015	5	W	✓	✓	✓	✓		✓	✓	✓				
3 FC-CFR Duplicate	6/7/22	1015	5	W	✓	✓	✓	✓		✓	✓	✓				
4 CFR-34	6/7/22	1145	5	W	✓	✓	✓	✓		✓	✓	✓				
5 CFR-27H	6/7/22	1240	5	W	✓	✓	✓	✓		✓	✓	✓				
6 CFR-11F	6/7/22	1330	5	W	✓	✓	✓	✓		✓	✓	✓				
7 CFR-07D	6/7/22	1400	5	W	✓	✓	✓	✓		✓	✓	✓				
8 CFR-03A	6/7/22	1445	5	W	✓	✓	✓	✓		✓	✓	✓				
9 WSC-SBC	6/7/22	1530	5	W	✓	✓	✓	✓		✓	✓	✓				
10 SS-25	6/7/22	1615	5	W	✓	✓	✓	✓	✓	✓	✓	✓				

C1 C1 C1 C1 C1 C1 C1 C2 C2 C2 C2 C2 C2 C2

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	6/8/22 1825	Tanner Traxler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				A Sanchez	6/9/22 0900	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand	4	Y N C B	Y N	°C Comments	Y N	Y N	CC Cash Check_____	$	

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In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

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Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MT DEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	■Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; megan.burke@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

CI - 3.9

CI - 3.2

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T. Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Total Mercury, low level	Methyl Mercury (contract)	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	CFR-84F	6/7/22	0900	1	W	✓	✓			1+2206031 3
2	Field Blank #1 FC-CFR	6/7/22	0945	1	W	✓	✓			
3	FC-CFR	6/7/22	1015	1	W	✓	✓			
4	FC-CFR Duplicate	6/7/22	1015	1	W	✓	✓			
5										
6										
7										
8										
9										
10										

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tournet Traxler	6/8/22 1825				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Margaret	6/9/22 0850	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand	Y	Y N C B	Y N	°C	Y N	Y N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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APPENDIX B3
ANALYTICAL LABORATORY RESULTS
3RD QUARTER MONITORING

ANALYTICAL SUMMARY REPORT

October 31, 2022

MT DEQ-Federal Superfund
PO Box 200901
Helena, MT 59620-0901

Work Order: H22090073 Quote ID: H1525

Project Name: CFROU Monitoring

Energy Laboratories Inc Helena MT received the following 20 samples for MT DEQ-Federal Superfund on 9/6/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H22090073-001	Field Blank #1 FC-CFR	09/01/22 11:10	09/06/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Mercury, Total Recoverable Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended Subcontracted, Analytics
H22090073-002	FC-CFR	09/01/22 11:45	09/06/22	Surface Water	Same As Above
H22090073-003	FC-CFR Duplicate	09/01/22 11:45	09/06/22	Surface Water	Same As Above
H22090073-004	CFR-34	09/01/22 13:00	09/06/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22090073-005	CFR-27H	09/01/22 13:50	09/06/22	Surface Water	Same As Above
H22090073-006	CFR-11F	09/01/22 14:45	09/06/22	Surface Water	Same As Above
H22090073-007	CFR-07D	09/01/22 15:30	09/06/22	Surface Water	Same As Above
H22090073-008	CFR-03A	09/01/22 16:30	09/06/22	Surface Water	Same As Above
H22090073-009	WSC-SBC	09/01/22 17:15	09/06/22	Surface Water	Same As Above

ANALYTICAL SUMMARY REPORT

H22090073-010	SS-25	09/01/22 17:50	09/06/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22090073-011	CFR-34	09/01/22 13:00	09/06/22	Sediment	Metals by ICP/ICPMS, Total Percent Moisture Total Metals Digestion by SW3050B Sieve Analysis, Wet Soil Preparation USDA1
H22090073-012	CFR-27H	09/01/22 13:50	09/06/22	Sediment	Metals by ICP/ICPMS, Total Percent Moisture Total Metals Digestion by SW3050B Sieve Analysis, Wet
H22090073-013	CFR-11F	09/01/22 14:45	09/06/22	Sediment	Same As Above
H22090073-014	CFR-07D	09/01/22 15:30	09/06/22	Sediment	Same As Above
H22090073-015	CFR-07D Duplicate	09/01/22 15:30	09/06/22	Sediment	Same As Above
H22090073-016	CFR-03A	09/01/22 16:30	09/06/22	Sediment	Same As Above
H22090073-017	WSC-SBC	09/01/22 17:15	09/06/22	Sediment	Same As Above
H22090073-018	SS-25	09/01/22 17:50	09/06/22	Sediment	Same As Above
H22090073-019	CFR-84F	09/01/22 8:30	09/06/22	Surface Water	Mercury, Total Recoverable Mercury Digestion by E245.1 Subcontracted, Analytics
H22090073-020	Trip Blank	09/01/22 8:30	09/06/22	Surface Water	Subcontracted, Analytics

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: MT DEQ-Federal Superfund
Project: CFROU Monitoring
Work Order: H22090073

Report Date: 10/31/22

CASE NARRATIVE

Samples for methylmercury were subcontracted to Brooks Applied Labs in Seattle, WA. Samples were received at Brooks Applied at a temperature of 18.4C. J. Naughton was contacted regarding this issue and indicated to proceed with analysis per email with W. Johnson. The associated report is attached. abc 10/27/2022

Sample FC-CFR and FC-CFR Duplicate were confirmed for mercury. The results of the confirmation analysis were within duplication of the reported values.

Sample CFR-11F was reviewed for dissolved and total constituents. For analytes where the dissolved concentration was greater than the corresponding total the values were compared to verify if they were within method specified RPD criteria. Duplicate data was reviewed as a second verification, if necessary, to verify the reported values were confirmed by a second analysis. abc 10/31/2022

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the calculated method detection limit (MDL). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: Field Blank #1 FC-CFR
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-001
Collection Date: 09/01/22 11:10
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	ND	mg/L		1	0.3	A2540 D	09/06/22 13:13 / am			U-124 (14410200)_220906A : 24		TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		4	2	A2320 B	09/07/22 15:08 / SR			PHSC_101-H_220907A : 56		R178009
Bicarbonate as HCO3	ND	mg/L		4	3	A2320 B	09/07/22 15:08 / SR			PHSC_101-H_220907A : 56		R178009
Chloride	ND	mg/L		1	0.02	E300.0	09/07/22 13:26 / SR			IC METROHM_220907A : 12		R178042
Sulfate	ND	mg/L		1	0.06	E300.0	09/07/22 13:26 / SR			IC METROHM_220907A : 12		R178042
Hardness as CaCO3	ND	mg/L		1	1	A2340 B	09/14/22 09:47 / sld			WATERCALC_220914A : 2		R178208
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:06 / JAR			FIA203-HE_220908A : 77		R178065
Nitrogen, Total	ND	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:01 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A : 183		63261
Phosphorus, Total as P	0.002	mg/L	J	0.003	0.001	E365.1	09/14/22 15:57 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A : 185		63334
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.001	0.0002	E200.8	09/13/22 19:14 / dck			ICPMS205-H_220913A : 71		R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 19:14 / dck			ICPMS205-H_220913A : 71		R178196
Copper	ND	mg/L		0.001	0.0001	E200.8	09/13/22 19:14 / dck			ICPMS205-H_220913A : 71		R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:14 / dck			ICPMS205-H_220913A : 71		R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 19:14 / dck			ICPMS205-H_220913A : 71		R178196
METALS, TOTAL RECOVERABLE												
Arsenic	ND	mg/L		0.001	0.0001	E200.8	09/13/22 19:26 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 76		63287
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 19:26 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 76		63287
Calcium	ND	mg/L		1	0.1	E200.7	09/08/22 00:51 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 149		63287
Copper	ND	mg/L		0.001	0.0003	E200.8	09/13/22 19:26 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 76		63287
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:26 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 76		63287
Magnesium	ND	mg/L		1	0.05	E200.7	09/08/22 00:51 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 149		63287
Mercury	ND	ug/L		0.005	0.002	E245.1	09/07/22 09:58 / cfg	09/07/22 08:08	E245.1	HGCV203-H_220907A : 14		63270
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 19:26 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 76		63287

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-002
Collection Date: 09/01/22 11:45
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	0.8	mg/L	J	1	0.3	A2540 D	09/06/22 13:13 / am			U-124 (14410200)_220906A : 25		TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	170	mg/L		4	2	A2320 B	09/07/22 15:47 / SR			PHSC_101-H_220907A : 60		R178009
Bicarbonate as HCO3	190	mg/L		4	3	A2320 B	09/07/22 15:47 / SR			PHSC_101-H_220907A : 60		R178009
Chloride	11	mg/L		1	0.02	E300.0	09/07/22 13:41 / SR			IC METROHM_220907A : 13		R178042
Sulfate	87	mg/L		1	0.06	E300.0	09/07/22 13:41 / SR			IC METROHM_220907A : 13		R178042
Hardness as CaCO3	218	mg/L		1	1	A2340 B	09/08/22 00:55 / abc			CALC_220912C : 454		R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.019	mg/L	J	0.02	0.008	E353.2	09/08/22 13:10 / JAR			FIA203-HE_220908A : 80		R178065
Nitrogen, Total	0.21	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:02 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A : 184		63261
Phosphorus, Total as P	0.021	mg/L		0.003	0.001	E365.1	09/14/22 16:02 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A : 189		63334
METALS, DISSOLVED												
Arsenic	0.014	mg/L		0.001	0.0002	E200.8	09/13/22 19:29 / dck			ICPMS205-H_220913A : 77		R178196
Cadmium	0.00002	mg/L	J	0.00003	0.00002	E200.8	09/13/22 19:29 / dck			ICPMS205-H_220913A : 77		R178196
Copper	0.006	mg/L		0.001	0.0001	E200.8	09/13/22 19:29 / dck			ICPMS205-H_220913A : 77		R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:29 / dck			ICPMS205-H_220913A : 77		R178196
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 19:29 / dck			ICPMS205-H_220913A : 77		R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.014	mg/L		0.001	0.0001	E200.8	09/13/22 19:31 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 78		63287
Cadmium	0.00027	mg/L		0.00003	0.00003	E200.8	09/13/22 19:31 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 78		63287
Calcium	63	mg/L		1	0.1	E200.7	09/08/22 00:55 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 150		63287
Copper	0.008	mg/L		0.001	0.0003	E200.8	09/13/22 19:31 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 78		63287
Lead	0.0003	mg/L	J	0.0003	0.0001	E200.8	09/13/22 19:31 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 78		63287
Magnesium	14	mg/L		1	0.05	E200.7	09/08/22 00:55 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 150		63287
Mercury	0.003	ug/L	J	0.005	0.002	E245.1	09/07/22 10:01 / cfg	09/07/22 08:08	E245.1	HGCV203-H_220907A : 15		63270
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	09/13/22 19:31 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 78		63287

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR Duplicate
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-003
Collection Date: 09/01/22 11:45
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	5	mg/L		1	0.3	A2540 D	09/06/22 13:14 / am			U-124 (14410200)_220906A : 26		TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	230	mg/L		4	2	A2320 B	09/07/22 15:54 / SR			PHSC_101-H_220907A : 62		R178009
Bicarbonate as HCO3	270	mg/L		4	3	A2320 B	09/07/22 15:54 / SR			PHSC_101-H_220907A : 62		R178009
Chloride	6	mg/L		1	0.02	E300.0	09/07/22 13:55 / SR			IC METROHM_220907A : 14		R178042
Sulfate	28	mg/L		1	0.06	E300.0	09/07/22 13:55 / SR			IC METROHM_220907A : 14		R178042
Hardness as CaCO3	222	mg/L		1	1	A2340 B	09/08/22 00:59 / abc			CALC_220912C : 465		R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.010	mg/L	J	0.02	0.008	E353.2	09/08/22 13:11 / JAR			FIA203-HE_220908A : 81		R178065
Nitrogen, Total	0.36	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:03 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A : 185		63261
Phosphorus, Total as P	0.083	mg/L		0.003	0.001	E365.1	09/14/22 16:08 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A : 193		63334
METALS, DISSOLVED												
Arsenic	0.010	mg/L		0.001	0.0002	E200.8	09/13/22 19:34 / dck			ICPMS205-H_220913A : 79		R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 19:34 / dck			ICPMS205-H_220913A : 79		R178196
Copper	0.001	mg/L		0.001	0.0001	E200.8	09/13/22 19:34 / dck			ICPMS205-H_220913A : 79		R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:34 / dck			ICPMS205-H_220913A : 79		R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 19:34 / dck			ICPMS205-H_220913A : 79		R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.010	mg/L		0.001	0.0001	E200.8	09/13/22 19:36 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 80		63287
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 19:36 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 80		63287
Calcium	59	mg/L		1	0.1	E200.7	09/08/22 00:59 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 151		63287
Copper	0.001	mg/L		0.001	0.0003	E200.8	09/13/22 19:36 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 80		63287
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	09/13/22 19:36 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 80		63287
Magnesium	18	mg/L		1	0.05	E200.7	09/08/22 00:59 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A : 151		63287
Mercury	0.046	ug/L		0.005	0.002	E245.1	09/07/22 10:05 / cfg	09/07/22 08:08	E245.1	HGCV203-H_220907A : 16		63270
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	09/13/22 19:36 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A : 80		63287

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-004
Collection Date: 09/01/22 13:00
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	5	mg/L		1	0.3	A2540 D	09/06/22 13:14 / am			U-124 (14410200)_220906A	27	TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	230	mg/L		4	2	A2320 B	09/07/22 16:01 / SR			PHSC_101-H_220907A	64	R178009
Bicarbonate as HCO3	270	mg/L		4	3	A2320 B	09/07/22 16:01 / SR			PHSC_101-H_220907A	64	R178009
Chloride	6	mg/L		1	0.02	E300.0	09/07/22 14:10 / SR			IC METROHM_220907A	15	R178042
Sulfate	28	mg/L		1	0.06	E300.0	09/07/22 14:10 / SR			IC METROHM_220907A	15	R178042
Hardness as CaCO3	220	mg/L		1	1	A2340 B	09/08/22 01:11 / abc			CALC_220912C	476	R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:12 / JAR			FIA203-HE_220908A	82	R178065
Nitrogen, Total	0.36	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:05 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	186	63261
Phosphorus, Total as P	0.081	mg/L		0.003	0.001	E365.1	09/14/22 16:09 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	194	63334
METALS, DISSOLVED												
Arsenic	0.011	mg/L		0.001	0.0002	E200.8	09/13/22 19:38 / dck			ICPMS205-H_220913A	81	R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 19:38 / dck			ICPMS205-H_220913A	81	R178196
Copper	0.001	mg/L		0.001	0.0001	E200.8	09/13/22 19:38 / dck			ICPMS205-H_220913A	81	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:38 / dck			ICPMS205-H_220913A	81	R178196
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 19:38 / dck			ICPMS205-H_220913A	81	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.010	mg/L		0.001	0.0001	E200.8	09/13/22 19:24 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	75	63287
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 19:24 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	75	63287
Calcium	59	mg/L		1	0.1	E200.7	09/08/22 01:11 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	154	63287
Copper	0.001	mg/L		0.001	0.0003	E200.8	09/13/22 19:24 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	75	63287
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	09/13/22 19:24 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	75	63287
Magnesium	18	mg/L		1	0.05	E200.7	09/08/22 01:11 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	154	63287
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	09/13/22 19:24 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	75	63287

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-005
Collection Date: 09/01/22 13:50
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	2	mg/L		1	0.3	A2540 D	09/06/22 13:14 / am			U-124 (14410200)_220906A	28	TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	160	mg/L		4	2	A2320 B	09/07/22 16:08 / SR			PHSC_101-H_220907A	66	R178009
Bicarbonate as HCO3	180	mg/L		4	3	A2320 B	09/07/22 16:08 / SR			PHSC_101-H_220907A	66	R178009
Chloride	11	mg/L		1	0.02	E300.0	09/07/22 14:24 / SR			IC METROHM_220907A	16	R178042
Sulfate	94	mg/L		1	0.06	E300.0	09/07/22 14:24 / SR			IC METROHM_220907A	16	R178042
Hardness as CaCO3	222	mg/L		1	1	A2340 B	09/08/22 01:14 / abc			CALC_220912C	487	R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.10	mg/L		0.02	0.008	E353.2	09/08/22 13:16 / JAR			FIA203-HE_220908A	85	R178065
Nitrogen, Total	0.29	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:06 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	187	63261
Phosphorus, Total as P	0.010	mg/L		0.003	0.001	E365.1	09/14/22 16:10 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	195	63334
METALS, DISSOLVED												
Arsenic	0.012	mg/L		0.001	0.0002	E200.8	09/13/22 19:41 / dck			ICPMS205-H_220913A	82	R178196
Cadmium	0.00002	mg/L	J	0.00003	0.00002	E200.8	09/13/22 19:41 / dck			ICPMS205-H_220913A	82	R178196
Copper	0.007	mg/L		0.001	0.0001	E200.8	09/13/22 19:41 / dck			ICPMS205-H_220913A	82	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:41 / dck			ICPMS205-H_220913A	82	R178196
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 19:41 / dck			ICPMS205-H_220913A	82	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.013	mg/L		0.001	0.0001	E200.8	09/13/22 19:43 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	83	63287
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 19:43 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	83	63287
Calcium	66	mg/L		1	0.1	E200.7	09/08/22 01:14 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	155	63287
Copper	0.009	mg/L		0.001	0.0003	E200.8	09/13/22 19:43 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	83	63287
Lead	0.0004	mg/L		0.0003	0.0001	E200.8	09/13/22 19:43 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	83	63287
Magnesium	14	mg/L		1	0.05	E200.7	09/08/22 01:14 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	155	63287
Zinc	0.004	mg/L	J	0.008	0.001	E200.8	09/13/22 19:43 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	83	63287

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-006
Collection Date: 09/01/22 14:45
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	0.8	mg/L	DJ	2	0.3	A2540 D	09/06/22 13:14 / am			U-124 (14410200)_220906A	29	TSS220906A
- TSS did not obtain the minimum residue requirement of 2.5 mg residue.												
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		4	2	A2320 B	09/07/22 16:14 / SR			PHSC_101-H_220907A	68	R178009
Bicarbonate as HCO3	140	mg/L		4	3	A2320 B	09/07/22 16:14 / SR			PHSC_101-H_220907A	68	R178009
Chloride	9	mg/L		1	0.02	E300.0	09/07/22 14:38 / SR			IC METROHM_220907A	17	R178042
Sulfate	130	mg/L		1	0.06	E300.0	09/07/22 14:38 / SR			IC METROHM_220907A	17	R178042
Hardness as CaCO3	233	mg/L		1	1	A2340 B	09/08/22 01:18 / abc			CALC_220912C	498	R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:17 / JAR			FIA203-HE_220908A	86	R178065
Nitrogen, Total	0.22	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:09 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	190	63261
Phosphorus, Total as P	0.012	mg/L		0.003	0.001	E365.1	09/14/22 16:11 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	196	63334
METALS, DISSOLVED												
Arsenic	0.013	mg/L		0.001	0.0002	E200.8	09/13/22 19:46 / dck			ICPMS205-H_220913A	84	R178196
Cadmium	0.00002	mg/L	J	0.00003	0.00002	E200.8	09/13/22 19:46 / dck			ICPMS205-H_220913A	84	R178196
Copper	0.004	mg/L		0.001	0.0001	E200.8	09/13/22 19:46 / dck			ICPMS205-H_220913A	84	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:46 / dck			ICPMS205-H_220913A	84	R178196
Zinc	0.011	mg/L		0.008	0.001	E200.8	09/13/22 19:46 / dck			ICPMS205-H_220913A	84	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.014	mg/L		0.001	0.0001	E200.8	09/13/22 19:50 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	86	63287
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 19:50 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	86	63287
Calcium	68	mg/L		1	0.1	E200.7	09/08/22 01:18 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	156	63287
Copper	0.006	mg/L		0.001	0.0003	E200.8	09/13/22 19:50 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	86	63287
Lead	0.0003	mg/L	J	0.0003	0.0001	E200.8	09/13/22 19:50 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	86	63287
Magnesium	15	mg/L		1	0.05	E200.7	09/08/22 01:18 / sld	09/07/22 09:36	E200.2	ICP2-HE_220907A	156	63287
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 19:50 / dck	09/07/22 09:36	E200.2	ICPMS205-H_220913A	86	63287

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-007
Collection Date: 09/01/22 15:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	2	mg/L		1	0.3	A2540 D	09/06/22 13:14 / am			U-124 (14410200)_220906A : 31		TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		4	2	A2320 B	09/07/22 16:21 / SR			PHSC_101-H_220907A : 70		R178009
Bicarbonate as HCO3	120	mg/L		4	3	A2320 B	09/07/22 16:21 / SR			PHSC_101-H_220907A : 70		R178009
Chloride	9	mg/L		1	0.02	E300.0	09/07/22 16:05 / SR			IC METROHM_220907A : 22		R178042
Sulfate	139	mg/L		1	0.06	E300.0	09/07/22 16:05 / SR			IC METROHM_220907A : 22		R178042
Hardness as CaCO3	233	mg/L		1	1	A2340 B	09/08/22 01:30 / abc			CALC_220912C : 509		R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:18 / JAR			FIA203-HE_220908A : 87		R178065
Nitrogen, Total	0.24	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:13 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A : 193		63261
Phosphorus, Total as P	0.016	mg/L		0.003	0.001	E365.1	09/14/22 16:13 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A : 197		63334
METALS, DISSOLVED												
Arsenic	0.014	mg/L		0.001	0.0002	E200.8	09/13/22 19:53 / dck			ICPMS205-H_220913A : 87		R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 19:53 / dck			ICPMS205-H_220913A : 87		R178196
Copper	0.004	mg/L		0.001	0.0001	E200.8	09/13/22 19:53 / dck			ICPMS205-H_220913A : 87		R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 19:53 / dck			ICPMS205-H_220913A : 87		R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 19:53 / dck			ICPMS205-H_220913A : 87		R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.014	mg/L		0.001	0.0001	E200.8	09/13/22 21:17 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A : 116		63288
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 21:17 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A : 116		63288
Calcium	69	mg/L		1	0.1	E200.7	09/08/22 01:30 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A : 159		63288
Copper	0.006	mg/L		0.001	0.0003	E200.8	09/13/22 21:17 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A : 116		63288
Lead	0.0003	mg/L	J	0.0003	0.0001	E200.8	09/13/22 21:17 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A : 116		63288
Magnesium	15	mg/L		1	0.05	E200.7	09/08/22 01:30 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A : 159		63288
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 21:17 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A : 116		63288

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-008
Collection Date: 09/01/22 16:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	3	mg/L		1	0.3	A2540 D	09/06/22 13:15 / am			U-124 (14410200)_220906A	32	TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	110	mg/L		4	2	A2320 B	09/07/22 16:27 / SR			PHSC_101-H_220907A	72	R178009
Bicarbonate as HCO3	110	mg/L		4	3	A2320 B	09/07/22 16:27 / SR			PHSC_101-H_220907A	72	R178009
Chloride	9	mg/L		1	0.02	E300.0	09/07/22 16:19 / SR			IC METROHM_220907A	23	R178042
Sulfate	141	mg/L		1	0.06	E300.0	09/07/22 16:19 / SR			IC METROHM_220907A	23	R178042
Hardness as CaCO3	227	mg/L		1	1	A2340 B	09/08/22 01:56 / abc			CALC_220912C	520	R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:19 / JAR			FIA203-HE_220908A	88	R178065
Nitrogen, Total	0.28	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:14 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	194	63261
Phosphorus, Total as P	0.022	mg/L		0.003	0.001	E365.1	09/14/22 16:14 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	198	63334
METALS, DISSOLVED												
Arsenic	0.014	mg/L		0.001	0.0002	E200.8	09/13/22 21:29 / dck			ICPMS205-H_220913A	121	R178196
Cadmium	0.00002	mg/L	J	0.00003	0.00002	E200.8	09/13/22 21:29 / dck			ICPMS205-H_220913A	121	R178196
Copper	0.003	mg/L		0.001	0.0001	E200.8	09/13/22 21:29 / dck			ICPMS205-H_220913A	121	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 21:29 / dck			ICPMS205-H_220913A	121	R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 21:29 / dck			ICPMS205-H_220913A	121	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.015	mg/L		0.001	0.0001	E200.8	09/13/22 21:43 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	127	63288
Cadmium	0.00003	mg/L		0.00003	0.00002	E200.8	09/13/22 21:43 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	127	63288
Calcium	68	mg/L		1	0.1	E200.7	09/08/22 01:56 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	166	63288
Copper	0.005	mg/L		0.001	0.0003	E200.8	09/13/22 21:43 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	127	63288
Lead	0.0004	mg/L		0.0003	0.0001	E200.8	09/13/22 21:43 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	127	63288
Magnesium	14	mg/L		1	0.05	E200.7	09/08/22 01:56 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	166	63288
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	09/13/22 21:43 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	127	63288

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-009
Collection Date: 09/01/22 17:15
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	2	mg/L		1	0.3	A2540 D	09/06/22 13:15 / am			U-124 (14410200)_220906A	33	TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		4	2	A2320 B	09/07/22 16:33 / SR			PHSC_101-H_220907A	74	R178009
Bicarbonate as HCO3	140	mg/L		4	3	A2320 B	09/07/22 16:33 / SR			PHSC_101-H_220907A	74	R178009
Chloride	0.98	mg/L	J	1	0.02	E300.0	09/07/22 16:34 / SR			IC METROHM_220907A	24	R178042
Sulfate	27	mg/L		1	0.06	E300.0	09/07/22 16:34 / SR			IC METROHM_220907A	24	R178042
Hardness as CaCO3	138	mg/L		1	1	A2340 B	09/08/22 02:00 / abc			CALC_220912C	531	R178138
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:20 / JAR			FIA203-HE_220908A	89	R178065
Nitrogen, Total	0.08	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:15 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	195	63261
Phosphorus, Total as P	0.008	mg/L		0.003	0.001	E365.1	09/14/22 16:15 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	199	63334
METALS, DISSOLVED												
Arsenic	0.005	mg/L		0.001	0.0002	E200.8	09/13/22 21:46 / dck			ICPMS205-H_220913A	128	R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 21:46 / dck			ICPMS205-H_220913A	128	R178196
Copper	0.002	mg/L		0.001	0.0001	E200.8	09/13/22 21:46 / dck			ICPMS205-H_220913A	128	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 21:46 / dck			ICPMS205-H_220913A	128	R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 21:46 / dck			ICPMS205-H_220913A	128	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.005	mg/L		0.001	0.0001	E200.8	09/13/22 21:48 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	129	63288
Cadmium	0.00003	mg/L	J	0.00003	0.00003	E200.8	09/13/22 21:48 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	129	63288
Calcium	41	mg/L		1	0.1	E200.7	09/08/22 02:00 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	167	63288
Copper	0.004	mg/L		0.001	0.0003	E200.8	09/13/22 21:48 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	129	63288
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	09/13/22 21:48 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	129	63288
Magnesium	9	mg/L		1	0.05	E200.7	09/08/22 02:00 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	167	63288
Zinc	0.001	mg/L	J	0.008	0.001	E200.8	09/13/22 21:48 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	129	63288

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-010
Collection Date: 09/01/22 17:50
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	3	mg/L		1	0.3	A2540 D	09/06/22 13:15 / am			U-124 (14410200)_220906A	34	TSS220906A
INORGANICS												
Alkalinity, Total as CaCO3	89	mg/L		4	2	A2320 B	09/07/22 16:39 / SR			PHSC_101-H_220907A	76	R178009
Bicarbonate as HCO3	98	mg/L		4	3	A2320 B	09/07/22 16:39 / SR			PHSC_101-H_220907A	76	R178009
Chloride	19	mg/L		1	0.02	E300.0	09/07/22 16:48 / SR			IC METROHM_220907A	25	R178042
Sulfate	271	mg/L		1	0.06	E300.0	09/07/22 16:48 / SR			IC METROHM_220907A	25	R178042
Hardness as CaCO3	331	mg/L		1	1	A2340 B	09/08/22 02:04 / abc			CALC_220912C	542	R178138
NUTRIENTS												
Nitrogen, Ammonia as N	ND	mg/L		0.05	0.03	E350.1	09/12/22 15:19 / JAR			FIA203-HE_220912A	22	R178164
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	09/08/22 13:21 / JAR			FIA203-HE_220908A	90	R178065
Nitrogen, Total	0.48	mg/L		0.05	0.02	A4500 N-C	09/07/22 14:17 / JAR	09/06/22 09:24	A4500 N-	FIA203-HE_220907A	196	63261
Phosphorus, Total as P	0.044	mg/L		0.003	0.001	E365.1	09/14/22 16:16 / JAR	09/09/22 11:18	E365.1	SEAL AA500_220914A	200	63334
METALS, DISSOLVED												
Arsenic	0.024	mg/L		0.001	0.0002	E200.8	09/13/22 21:50 / dck			ICPMS205-H_220913A	130	R178196
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	09/13/22 21:50 / dck			ICPMS205-H_220913A	130	R178196
Copper	0.002	mg/L		0.001	0.0001	E200.8	09/13/22 21:50 / dck			ICPMS205-H_220913A	130	R178196
Lead	ND	mg/L		0.0003	0.0001	E200.8	09/13/22 21:50 / dck			ICPMS205-H_220913A	130	R178196
Zinc	ND	mg/L		0.008	0.001	E200.8	09/13/22 21:50 / dck			ICPMS205-H_220913A	130	R178196
METALS, TOTAL RECOVERABLE												
Arsenic	0.025	mg/L		0.001	0.0001	E200.8	09/13/22 21:53 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	131	63288
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	09/13/22 21:53 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	131	63288
Calcium	101	mg/L		1	0.1	E200.7	09/08/22 02:04 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	168	63288
Copper	0.002	mg/L		0.001	0.0003	E200.8	09/13/22 21:53 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	131	63288
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	09/13/22 21:53 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	131	63288
Magnesium	19	mg/L		1	0.05	E200.7	09/08/22 02:04 / sld	09/07/22 09:37	E200.2	ICP2-HE_220907A	168	63288
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	09/13/22 21:53 / dck	09/07/22 09:37	E200.2	ICPMS205-H_220913A	131	63288

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-011
Collection Date: 09/01/22 13:00
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	58.4	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A : 21		PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	0.6	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B : 1		R179030
3050 EXTRACTABLE METALS												
Arsenic	111	mg/kg-dry		1	0.9	SW6020	09/20/22 14:49 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 91		63462
Cadmium	5.4	mg/kg-dry		0.2	0.2	SW6020	09/20/22 14:49 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 91		63462
Copper	1160	mg/kg-dry		8	8	SW6020	09/20/22 14:49 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 91		63462
Lead	231	mg/kg-dry		5	3	SW6020	09/20/22 14:49 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 91		63462
Zinc	1000	mg/kg-dry	D	20	20	SW6020	09/20/22 14:49 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 91		63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-012
Collection Date: 09/01/22 13:50
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	54.3	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A	23	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	2.4	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	2	R179030
3050 EXTRACTABLE METALS												
Arsenic	140	mg/kg-dry		1	0.8	SW6020	09/20/22 14:51 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	92	63462
Cadmium	9.5	mg/kg-dry		0.2	0.2	SW6020	09/20/22 14:51 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	92	63462
Copper	1850	mg/kg-dry		7	7	SW6020	09/20/22 14:51 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	92	63462
Lead	242	mg/kg-dry		5	3	SW6020	09/20/22 14:51 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	92	63462
Zinc	1320	mg/kg-dry	D	20	20	SW6020	09/20/22 14:51 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	92	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-013
Collection Date: 09/01/22 14:45
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	62.4	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A	25	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	1.7	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	3	R179030
3050 EXTRACTABLE METALS												
Arsenic	144	mg/kg-dry		1	1	SW6020	09/20/22 14:54 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	93	63462
Cadmium	10.5	mg/kg-dry		0.2	0.2	SW6020	09/20/22 14:54 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	93	63462
Copper	1630	mg/kg-dry		8	8	SW6020	09/20/22 14:54 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	93	63462
Lead	234	mg/kg-dry		5	3	SW6020	09/20/22 14:54 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	93	63462
Zinc	1720	mg/kg-dry	D	20	20	SW6020	09/20/22 14:54 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	93	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-014
Collection Date: 09/01/22 15:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	54.8	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A	27	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	2.6	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	4	R179030
3050 EXTRACTABLE METALS												
Arsenic	242	mg/kg-dry		1	0.9	SW6020	09/20/22 14:56 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	94	63462
Cadmium	7.9	mg/kg-dry		0.2	0.2	SW6020	09/20/22 14:56 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	94	63462
Copper	2380	mg/kg-dry		7	7	SW6020	09/20/22 14:56 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	94	63462
Lead	277	mg/kg-dry		5	3	SW6020	09/20/22 14:56 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	94	63462
Zinc	1540	mg/kg-dry	D	20	20	SW6020	09/20/22 14:56 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	94	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D Duplicate
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-015
Collection Date: 09/01/22 15:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	53.4	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A : 29		PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	3.3	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B : 5		R179030
3050 EXTRACTABLE METALS												
Arsenic	226	mg/kg-dry		1	0.8	SW6020	09/20/22 14:59 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 95		63462
Cadmium	7.1	mg/kg-dry		0.2	0.2	SW6020	09/20/22 14:59 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 95		63462
Copper	2320	mg/kg-dry		7	7	SW6020	09/20/22 14:59 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 95		63462
Lead	253	mg/kg-dry		5	3	SW6020	09/20/22 14:59 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 95		63462
Zinc	1400	mg/kg-dry	D	20	20	SW6020	09/20/22 14:59 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A : 95		63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-016
Collection Date: 09/01/22 16:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	61.3	wt%		0.2	0.02	D2974	09/27/22 14:11 / jjp			DRYING OVEN 2_220929A	31	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	3.9	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	6	R179030
3050 EXTRACTABLE METALS												
Arsenic	115	mg/kg-dry		1	1	SW6020	09/20/22 15:01 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	96	63462
Cadmium	5.3	mg/kg-dry		0.2	0.2	SW6020	09/20/22 15:01 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	96	63462
Copper	1080	mg/kg-dry		8	8	SW6020	09/20/22 15:01 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	96	63462
Lead	163	mg/kg-dry		5	3	SW6020	09/20/22 15:01 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	96	63462
Zinc	1060	mg/kg-dry	D	20	20	SW6020	09/20/22 15:01 / dck	09/16/22 16:58	SW3050 B	ICPMS205-H_220920A	96	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-017
Collection Date: 09/01/22 17:15
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	51.5	wt%		0.2	0.02	D2974	09/27/22 14:12 / jjp			DRYING OVEN 2_220929A	33	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	4.5	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	7	R179030
3050 EXTRACTABLE METALS												
Arsenic	73	mg/kg-dry		1	0.8	SW6020	09/20/22 15:15 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	102	63462
Cadmium	2.7	mg/kg-dry		0.2	0.2	SW6020	09/20/22 15:15 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	102	63462
Copper	857	mg/kg-dry		6	6	SW6020	09/20/22 15:15 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	102	63462
Lead	118	mg/kg-dry		5	3	SW6020	09/20/22 15:15 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	102	63462
Zinc	398	mg/kg-dry	D	20	20	SW6020	09/20/22 15:15 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	102	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25
Project: CFROU Monitoring
Matrix: Sediment

Lab ID: H22090073-018
Collection Date: 09/01/22 17:50
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL CHARACTERISTICS												
Moisture	76.8	wt%		0.2	0.02	D2974	09/27/22 14:13 / jjp			DRYING OVEN 2_220929A	35	PMOIST_220927_A
SIEVE ANALYSIS												
No. 230 (63 um), Passed	1.1	wt%-wet		0.1		SSSA 15-2	09/16/22 13:00 / jjp			MISC SOILS_220916B	8	R179030
3050 EXTRACTABLE METALS												
Arsenic	239	mg/kg-dry		2	2	SW6020	09/20/22 15:18 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	103	63462
Cadmium	9.1	mg/kg-dry		0.4	0.4	SW6020	09/20/22 15:18 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	103	63462
Copper	357	mg/kg-dry		10	10	SW6020	09/20/22 15:18 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	103	63462
Lead	163	mg/kg-dry		5	5	SW6020	09/20/22 15:18 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	103	63462
Zinc	1070	mg/kg-dry	D	30	30	SW6020	09/20/22 15:18 / dck	09/16/22 16:59	SW3050 B	ICPMS205-H_220920A	103	63462

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-84F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22090073-019
Collection Date: 09/01/22 08:30
DateReceived: 09/06/22
Report Date: 10/31/22

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, TOTAL RECOVERABLE												
Mercury	0.009	ug/L		0.005	0.002	E245.1	09/07/22 10:47 / cfg	09/07/22 08:08	E245.1	HGCV203-H_220907A	29	63270

Report Definitions: RL - Analyte Reporting Limit MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: 220907waLL-hg203
Date: *31-Oct-22*

Run ID :Run Order: **HGCV203-H_220907A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E245.1**
Analysis Date: **09/07/22 09:23** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.101	0.0050	0.1	0	**101**	90	110				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Run ID :Run Order: **HGCV203-H_220907A: 10** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV1** Method: **E245.1**
Analysis Date: **09/07/22 09:26** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.100	0.0050	0.1	0	**100**	95	105				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: 50660
Date: *31-Oct-22*

Run ID :Run Order: **SEAL AA500_220914A: 171** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **09/14/22 15:40** Units: **mg/L** **Prep Info:** Prep Date: **3/20/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.0979	0.010	0.1	0	98	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **SEAL AA500_220914A: 190** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **09/14/22 16:03** Units: **mg/L** **Prep Info:** Prep Date: **3/20/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.0959	0.010	0.1	0	96	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: 53408** **Date:** *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220907A: 174** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **09/07/22 13:50** Units: **mg/L** **Prep Info:** Prep Date: **9/23/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.487	0.10	0.5	0	97	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 188** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **09/07/22 14:07** Units: **mg/L** **Prep Info:** Prep Date: **9/23/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.488	0.10	0.5	0	98	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: 55893
Date: *31-Oct-22*

Run ID :Run Order: **SEAL AA500_220914A: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E365.1**

Analysis Date: **09/14/22 12:35** Units: **mg/L** **Prep Info:** Prep Date: **4/16/2021** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.250	0.010	0.25	0	**100**	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63261 **Date:** *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220907A: 16** SampType: **Method Blank** Lab ID: **MB-63261** Method: **A4500 N-C**

Analysis Date: **09/07/22 10:42** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	ND	0.02									

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 24** SampType: **Laboratory Control Sample** Lab ID: **LCS-63261** Method: **A4500 N-C**

Analysis Date: **09/07/22 10:52** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	108	3.0	112	0	96	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 31** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-63261** Method: **A4500 N-C**

Analysis Date: **09/07/22 11:00** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.931	0.10	1	0	93	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 177** SampType: **Sample Matrix Spike** Lab ID: **H22090054-028BMS** Method: **A4500 N-C**

Analysis Date: **09/07/22 13:54** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.964	0.10	1	0	96	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 178** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-028BMSD** Method: **A4500 N-C**

Analysis Date: **09/07/22 13:55** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.955	0.10	1	0	95	90	110	0.9638	1.0	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: 63261** **Date:** *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220907A: 178** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-028BMSD** Method: **A4500 N-C**

Analysis Date: **09/07/22 13:55** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 191** SampType: **Sample Matrix Spike** Lab ID: **H22090073-006AMS** Method: **A4500 N-C**

Analysis Date: **09/07/22 14:11** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.16	0.10	1	0.2177	**94**	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **FIA203-HE_220907A: 192** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-006AMSD** Method: **A4500 N-C**

Analysis Date: **09/07/22 14:12** Units: **mg/L** **Prep Info:** Prep Date: **9/6/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.17	0.10	1	0.2177	**96**	90	110	1.157	**1.4**	20	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63270 **Date:** *31-Oct-22*

Run ID :Run Order: **HGCV203-H_220907A: 12** SampType: **Method Blank** Lab ID: **MB-63270** Method: **E245.1**
Analysis Date: **09/07/22 09:52** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.002									

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Run ID :Run Order: **HGCV203-H_220907A: 18** SampType: **Laboratory Control Sample** Lab ID: **LCS-63270** Method: **E245.1**
Analysis Date: **09/07/22 10:12** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0547	0.0050	0.05	0	109	90	110				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Run ID :Run Order: **HGCV203-H_220907A: 23** SampType: **Sample Matrix Spike** Lab ID: **H22090073-008CMS** Method: **E245.1**
Analysis Date: **09/07/22 10:28** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0576	0.0050	0.05	0.00289	109	70	130				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Run ID :Run Order: **HGCV203-H_220907A: 24** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-008CMSD** Method: **E245.1**
Analysis Date: **09/07/22 10:31** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0578	0.0050	0.05	0.00289	110	70	130	0.05757	0.3	20	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Run ID :Run Order: **HGCV203-H_220907A: 34** SampType: **Sample Matrix Spike** Lab ID: **H22090081-002CMS** Method: **E245.1**
Analysis Date: **09/07/22 11:03** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0703	0.0050	0.05	0.01147	118	70	130				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: 63270
Date: *31-Oct-22*

Run ID :Run Order: **HGCV203-H_220907A: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090081-002CMSD** Method: **E245.1**

Analysis Date: **09/07/22 11:07** Units: **ug/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0622	0.0050	0.05	0.01147	**101**	70	130	0.07031	**12**	20	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-019B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63287 **Date:** *31-Oct-22*

Run ID :Run Order: **ICP2-HE_220907A: 121** SampType: **Method Blank** Lab ID: **MB-63287** Method: **E200.7**

Analysis Date: **09/07/22 23:05** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.1									
Magnesium	ND	0.05									

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220907A: 122** SampType: **Laboratory Control Sample** Lab ID: **LCS-63287** Method: **E200.7**

Analysis Date: **09/07/22 23:09** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.9	1.0	25	0	100	85	115				
Magnesium	24.2	1.0	25	0	97	85	115				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220907A: 142** SampType: **Serial Dilution** Lab ID: **H22090054-031DDIL** Method: **E200.7**

Analysis Date: **09/08/22 00:25** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	39.0	1.0		0		0	0	38.61	0.9	10	
Magnesium	11.8	1.0		0		0	0	11.86	0.2	10	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220907A: 144** SampType: **Sample Matrix Spike** Lab ID: **H22090054-031DMS3** Method: **E200.7**

Analysis Date: **09/08/22 00:32** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	63.2	1.0	25	38.61	98	70	130				
Magnesium	36.5	1.0	25	11.86	98	70	130				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220907A: 145** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-031DMSD3** Method: **E200.7**

Analysis Date: **09/08/22 00:36** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	62.6	1.0	25	38.61	96	70	130	63.17	0.9	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: 63287
Date: *31-Oct-22*

Run ID :Run Order: **ICP2-HE_220907A: 145** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-031DMSD3** Method: **E200.7**
Analysis Date: **09/08/22 00:36** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	36.1	1.0	25	11.86	**97**	70	130	36.46	**1.1**	20	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220908A: 25** SampType: **Sample Matrix Spike** Lab ID: **H22090054-031DMS3** Method: **E200.7**
Analysis Date: **09/08/22 11:47** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	67.3	1.0	25	40.8	**106**	70	130				
Magnesium	36.0	1.0	25	12.02	**96**	70	130				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICP2-HE_220908A: 26** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-031DMSD3** Method: **E200.7**
Analysis Date: **09/08/22 11:51** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	66.0	1.0	25	40.8	**101**	70	130	67.27	**1.8**	20	
Magnesium	35.8	1.0	25	12.02	**95**	70	130	36.02	**0.6**	20	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63287 **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 47** SampType: **Method Blank** Lab ID: **MB-63287** Method: **E200.8**

Analysis Date: **09/13/22 18:17** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICPMS205-H_220913A: 48** SampType: **Laboratory Control Sample** Lab ID: **LCS-63287** Method: **E200.8**

Analysis Date: **09/13/22 18:19** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.496	0.0010	0.5	0	99	85	115				
Cadmium	0.251	0.0010	0.25	0	101	85	115				
Copper	0.486	0.0050	0.5	0	97	85	115				
Lead	0.502	0.0010	0.5	0	100	85	115				
Zinc	0.487	0.010	0.5	0	97	85	115				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Run ID :Run Order: **ICPMS205-H_220913A: 50** SampType: **Sample Matrix Spike** Lab ID: **H22090054-031DMS3** Method: **E200.8**

Analysis Date: **09/13/22 18:24** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.506	0.0010	0.5	0.0009005	101	70	130				
Cadmium	0.252	0.0010	0.25	0	101	70	130				
Copper	0.482	0.0050	0.5	0	96	70	130				
Lead	0.506	0.0010	0.5	0	101	70	130				
Zinc	0.484	0.010	0.5	0	97	70	130				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: 63287** **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 51** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090054-031DMSD3** Method: **E200.8**

Analysis Date: **09/13/22 18:26** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.505	0.0010	0.5	0.0009005	**101**	70	130	0.5055	**0**	20	
Cadmium	0.248	0.0010	0.25	0	**99**	70	130	0.252	**1.7**	20	
Copper	0.478	0.0050	0.5	0	**96**	70	130	0.482	**0.8**	20	
Lead	0.498	0.0010	0.5	0	**100**	70	130	0.5055	**1.5**	20	
Zinc	0.486	0.010	0.5	0	**97**	70	130	0.4842	**0.3**	20	

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63288 **Date:** *31-Oct-22*

Run ID :Run Order: **ICP2-HE_220907A: 157** SampType: **Method Blank** Lab ID: **MB-63288** Method: **E200.7**

Analysis Date: **09/08/22 01:22** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.1									
Magnesium	ND	0.05									

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 158** SampType: **Laboratory Control Sample** Lab ID: **LCS-63288** Method: **E200.7**

Analysis Date: **09/08/22 01:26** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.2	1.0	25	0	**97**	85	115				
Magnesium	24.9	1.0	25	0	**100**	85	115				

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 160** SampType: **Serial Dilution** Lab ID: **H22090073-007CDIL** Method: **E200.7**

Analysis Date: **09/08/22 01:33** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	69.4	1.0		0		0	0	68.81	**0.9**	10	
Magnesium	14.8	1.0		0		0	0	14.8	**0.2**	10	

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 162** SampType: **Sample Matrix Spike** Lab ID: **H22090073-007CMS3** Method: **E200.7**

Analysis Date: **09/08/22 01:41** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	93.3	1.0	25	68.81	**98**	70	130				
Magnesium	40.3	1.0	25	14.8	**102**	70	130				

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 163** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-007CMSD3** Method: **E200.7**

Analysis Date: **09/08/22 01:45** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	92.7	1.0	25	68.81	**96**	70	130	93.34	**0.6**	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: 63288
Date: *31-Oct-22*

Run ID :Run Order: **ICP2-HE_220907A: 163** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-007CMSD3** Method: **E200.7**

Analysis Date: **09/08/22 01:45** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	39.5	1.0	25	14.8	**99**	70	130	40.29	**2.0**	20	

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63288 **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 111** SampType: **Method Blank** Lab ID: **MB-63288** Method: **E200.8**

Analysis Date: **09/13/22 21:05** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 112** SampType: **Laboratory Control Sample** Lab ID: **LCS-63288** Method: **E200.8**

Analysis Date: **09/13/22 21:07** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.502	0.0010	0.5	0	100	85	115				
Cadmium	0.254	0.0010	0.25	0	102	85	115				
Copper	0.499	0.0050	0.5	0	100	85	115				
Lead	0.507	0.0010	0.5	0	101	85	115				
Zinc	0.495	0.010	0.5	0	99	85	115				

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 117** SampType: **Sample Matrix Spike** Lab ID: **H22090073-007CMS3** Method: **E200.8**

Analysis Date: **09/13/22 21:19** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.511	0.0010	0.5	0.01375	99	70	130				
Cadmium	0.254	0.0010	0.25	0	101	70	130				
Copper	0.480	0.0050	0.5	0.005631	95	70	130				
Lead	0.511	0.0010	0.5	0.0002926	102	70	130				
Zinc	0.478	0.010	0.5	0.002341	95	70	130				

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: 63288
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 118** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-007CMSD3** Method: **E200.8**
Analysis Date: **09/13/22 21:21** Units: **mg/L** **Prep Info:** Prep Date: **9/7/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.520	0.0010	0.5	0.01375	**101**	70	130	0.5112	**1.7**	20	
Cadmium	0.255	0.0010	0.25	0	**102**	70	130	0.2537	**0.6**	20	
Copper	0.489	0.0050	0.5	0.005631	**97**	70	130	0.4801	**1.9**	20	
Lead	0.515	0.0010	0.5	0.0002926	**103**	70	130	0.5113	**0.7**	20	
Zinc	0.486	0.010	0.5	0.002341	**97**	70	130	0.4776	**1.8**	20	

Associated samples: **H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: 63334
Date: *31-Oct-22*

Run ID :Run Order: **SEAL AA500_220914A: 28** SampType: **Laboratory Control Sample** Lab ID: **LCS-63334** Method: **E365.1**

Analysis Date: **09/14/22 12:50** Units: **mg/L** **Prep Info:** Prep Date: **9/9/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.412	0.010	0.4	0	103	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **SEAL AA500_220914A: 72** SampType: **Method Blank** Lab ID: **MB-63334** Method: **E365.1**

Analysis Date: **09/14/22 13:42** Units: **mg/L** **Prep Info:** Prep Date: **9/9/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	ND	0.001									

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **SEAL AA500_220914A: 186** SampType: **Sample Matrix Spike** Lab ID: **H22090073-001DMS** Method: **E365.1**

Analysis Date: **09/14/22 15:58** Units: **mg/L** **Prep Info:** Prep Date: **9/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.211	0.010	0.2	0.0015	105	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **SEAL AA500_220914A: 187** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-001DMSD** Method: **E365.1**

Analysis Date: **09/14/22 16:00** Units: **mg/L** **Prep Info:** Prep Date: **9/13/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.212	0.010	0.2	0.0015	105	90	110	0.2111	0.2	20	

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** 63462 **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 87** SampType: **Method Blank** Lab ID: **MB-63462** Method: **SW6020**

Analysis Date: **09/20/22 14:39** Units: **mg/kg** **Prep Info:** Prep Date: **9/16/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.2									
Cadmium	ND	0.04									
Copper	ND	1									
Lead	ND	0.5									
Zinc	ND	3									

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 88** SampType: **Laboratory Control Sample** Lab ID: **LCS-63462** Method: **SW6020**

Analysis Date: **09/20/22 14:42** Units: **mg/kg** **Prep Info:** Prep Date: **9/16/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	174	1.0	196	0	**89**	66.4	104				
Cadmium	109	1.0	99	0	**110**	79.2	121				
Copper	132	3.2	137	0	**97**	73.9	113				
Lead	112	1.3	105	0	**107**	71.6	128				
Zinc	242	7.7	231	0	**105**	83.1	125				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 89** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-63462** Method: **SW6020**

Analysis Date: **09/20/22 14:44** Units: **mg/kg** **Prep Info:** Prep Date: **9/16/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	53.5	1.0	50.5	0	**106**	80	120				
Cadmium	27.7	1.0	25.25	0	**110**	80	120				
Copper	55.0	3.2	50.5	0	**109**	80	120				
Lead	53.3	1.3	50.5	0	**106**	80	120				
Zinc	50.8	7.8	50.5	0	**101**	80	120				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: 63462** **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 97** SampType: **Serial Dilution** Lab ID: **H22090073-016ADIL** Method: **SW6020**

Analysis Date: **09/20/22 15:03** Units: **mg/kg-dry** **Prep Info:** Prep Date: **9/16/2022** Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	126	5.0		0		0	0	114.8	**9.2**	10	
Cadmium	5.88	1.2		0		0	0	5.324		10	N
Copper	1160	41		0		0	0	1076	**7.3**	10	
Lead	181	16		0		0	0	163.4		10	N
Zinc	1210	98		0		0	0	1062	**13**	10	R

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 98** SampType: **Post Digestion/Distillation Spike** Lab ID: **H22090073-016APDS1** Method: **SW6020**

Analysis Date: **09/20/22 15:06** Units: **mg/kg-dry** **Prep Info:** Prep Date: **9/16/2022** Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	148	1.0	0.6376	114.8		75	125				A
Cadmium	40.3	1.0	0.6376	5.324		75	125				A
Copper	1110	8.2	0.6376	1076		75	125				A
Lead	194	3.3	0.6376	163.4		75	125				A
Zinc	1100	20	0.6376	1062		75	125				A

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 99** SampType: **Sample Matrix Spike** Lab ID: **H22090073-016AMS** Method: **SW6020**

Analysis Date: **09/20/22 15:08** Units: **mg/kg-dry** **Prep Info:** Prep Date: **9/16/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	249	1.0	127.4	114.8	**105**	75	125				
Cadmium	73.4	1.0	63.7	5.324	**107**	75	125				
Copper	1180	8.1	127.4	1076		75	125				A
Lead	284	3.3	127.4	163.4	**95**	75	125				
Zinc	1160	20	127.4	1062		75	125				A

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: 63462** **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 100** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-016AMSD** Method: **SW6020**

Analysis Date: **09/20/22 15:11** Units: **mg/kg-dry** **Prep Info:** Prep Date: **9/16/2022** Prep Method: **SW3050 B**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	255	1.0	124.9	114.8	**112**	75	125	248.7	**2.4**	20	
Cadmium	75.2	1.0	62.47	5.324	**112**	75	125	73.37	**2.5**	20	
Copper	1260	8.0	124.9	1076		75	125	1185	**6.0**	20	A
Lead	297	3.2	124.9	163.4	**107**	75	125	284.2	**4.4**	20	
Zinc	1240	19	124.9	1062		75	125	1160	**6.9**	20	A

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: PMOIST_220927_A** **Date:** *31-Oct-22*

Run ID :Run Order: **SOIL DRYING OVEN 2_220929A: 1** SampType: **Sample Duplicate** Lab ID: **H22090707-004A DUP** Method: **D2974**

Analysis Date: **09/27/22 12:54** Units: **wt%** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Moisture	2.75	0.20		0				2.84	**3.2**	20	

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** R178009 **Date:** *31-Oct-22*

Run ID :Run Order: **PHSC_101-H_220907A: 38** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **09/07/22 12:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **PHSC_101-H_220907A: 39** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **09/07/22 12:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	600	4.0	600	0	**100**	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **PHSC_101-H_220907A: 44** SampType: **Sample Duplicate** Lab ID: **H22090063-001ADUP** Method: **A2320 B**

Analysis Date: **09/07/22 14:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	190	4.0		0				185.8	**0.6**	10	
Bicarbonate as HCO3	220	4.0		0				219.5	**0.6**	10	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **PHSC_101-H_220907A: 82** SampType: **Sample Duplicate** Lab ID: **H22090081-003ADUP** Method: **A2320 B**

Analysis Date: **09/07/22 16:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	120	4.0		0				119.5	**1.0**	10	
Bicarbonate as HCO3	100	4.0		0				104.7	**2.1**	10	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178029
Date: *31-Oct-22*

Run ID :Run Order: **ICP2-HE_220907A: 6** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.7**

Analysis Date: **09/07/22 10:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.2	1.0	40	0	101	95	105				
Magnesium	39.6	1.0	40	0	99	95	105				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C, H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 140** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **09/08/22 00:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.6	1.0	25	0	103	90	110				
Magnesium	24.5	1.0	25	0	98	90	110				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C, H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 152** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **09/08/22 01:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.2	1.0	25	0	97	90	110				
Magnesium	25.4	1.0	25	0	102	90	110				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C, H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Run ID :Run Order: **ICP2-HE_220907A: 164** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **09/08/22 01:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.0	1.0	25	0	100	90	110				
Magnesium	25.3	1.0	25	0	101	90	110				

Associated samples: **H22090073-001C, H22090073-002C, H22090073-003C, H22090073-004C, H22090073-005C, H22090073-006C, H22090073-007C, H22090073-008C, H22090073-009C, H22090073-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178042
Date: *31-Oct-22*

Run ID :Run Order: **IC METROHM_220907A: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**

Analysis Date: **09/07/22 10:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.06									

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 3** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**

Analysis Date: **09/07/22 11:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.7	1.0	100	0	99	90	110				
Sulfate	386	1.0	400	0	97	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**

Analysis Date: **09/07/22 11:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.3	1.0	25	0	97	90	110				
Sulfate	101	1.0	100	0	101	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 6** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **09/07/22 11:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.2	1.0	50	0	98	90	110				
Sulfate	199	1.0	200	0	100	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: R178042** **Date:** *31-Oct-22*

Run ID :Run Order: **IC METROHM_220907A: 18** SampType: **Sample Matrix Spike** Lab ID: **H22090073-006AMS** Method: **E300.0**

Analysis Date: **09/07/22 14:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.7	1.0	25	8.619	100	90	110				
Sulfate	230	1.0	100	130.4	99	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 19** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-006AMSD** Method: **E300.0**

Analysis Date: **09/07/22 15:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	33.9	1.0	25	8.619	101	90	110	33.68	0.5	20	
Sulfate	232	1.0	100	130.4	102	90	110	229.8	1.0	20	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 20** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **09/07/22 15:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.5	1.0	50	0	99	90	110				
Sulfate	202	1.0	200	0	101	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **IC METROHM_220907A: 32** SampType: **Sample Matrix Spike** Lab ID: **H22090081-005AMS** Method: **E300.0**

Analysis Date: **09/07/22 18:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.9	1.0	25	0	100	90	110				
Sulfate	102	1.0	100	0	102	90	110				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178042
Date: *31-Oct-22*

Run ID :Run Order: **IC METROHM_220907A: 33** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090081-005AMSD** Method: **E300.0**

Analysis Date: **09/07/22 18:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.9	1.0	25	0	**100**	90	110	24.92	**0.1**	20	
Sulfate	103	1.0	100	0	**103**	90	110	102.2	**0.6**	20	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178065
Date: *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220908A: 10** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E353.2**

Analysis Date: **09/08/22 11:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.994	0.010	1	0	99	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 11** SampType: **Method Blank** Lab ID: **MBLK** Method: **E353.2**

Analysis Date: **09/08/22 11:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	ND	0.008									

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E353.2**

Analysis Date: **09/08/22 11:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.989	0.011	1	0	99	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 69** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **09/08/22 12:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.494	0.010	0.5	0	99	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 78** SampType: **Sample Matrix Spike** Lab ID: **H22090073-001DMS** Method: **E353.2**

Analysis Date: **09/08/22 13:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.01	0.011	1	0	101	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID:** R178065 **Date:** *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220908A: 78** SampType: **Sample Matrix Spike** Lab ID: **H22090073-001DMS** Method: **E353.2**

Analysis Date: **09/08/22 13:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 79** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-001DMSD** Method: **E353.2**

Analysis Date: **09/08/22 13:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.01	0.011	1	0	101	90	110	1.01	0.2	10	

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 83** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **09/08/22 13:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.494	0.010	0.5	0	99	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 92** SampType: **Sample Matrix Spike** Lab ID: **H22090074-001CMS** Method: **E353.2**

Analysis Date: **09/08/22 13:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.15	0.011	1	0.1399	101	90	110				

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Run ID :Run Order: **FIA203-HE_220908A: 93** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090074-001CMSD** Method: **E353.2**

Analysis Date: **09/08/22 13:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.16	0.011	1	0.1399	102	90	110	1.153	0.9	10	

Associated samples: **H22090073-001D, H22090073-002D, H22090073-003D, H22090073-004D, H22090073-005D, H22090073-006D, H22090073-007D, H22090073-008D, H22090073-009D, H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178164
Date: *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220912A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**
Analysis Date: **09/12/22 15:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.973	0.050	1	0	97	90	110				

Associated samples: **H22090073-010D**

Run ID :Run Order: **FIA203-HE_220912A: 10** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**
Analysis Date: **09/12/22 15:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H22090073-010D**

Run ID :Run Order: **FIA203-HE_220912A: 11** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E350.1**
Analysis Date: **09/12/22 15:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.500	0.050	0.5	0	100	90	110				

Associated samples: **H22090073-010D**

Run ID :Run Order: **FIA203-HE_220912A: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**
Analysis Date: **09/12/22 15:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.00	0.050	1	0	100	90	110				

Associated samples: **H22090073-010D**

Run ID :Run Order: **FIA203-HE_220912A: 18** SampType: **Sample Matrix Spike** Lab ID: **H22090065-001DMS** Method: **E350.1**
Analysis Date: **09/12/22 15:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.908	0.050	1	0	91	80	120				

Associated samples: **H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178164
Date: *31-Oct-22*

Run ID :Run Order: **FIA203-HE_220912A: 19** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090065-001DMSD** Method: **E350.1**

Analysis Date: **09/12/22 15:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.914	0.050	1	0	**91**	80	120	0.908	**0.7**	10	

Associated samples: **H22090073-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178196
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **09/13/22 16:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0621	0.0050	0.06	0	104	90	110				
Cadmium	0.0307	0.0010	0.03	0	102	90	110				
Copper	0.0609	0.010	0.06	0	101	90	110				
Lead	0.0595	0.010	0.06	0	99	90	110				
Zinc	0.0616	0.010	0.06	0	103	90	110				

Associated samples: **H22090073-001B, H22090073-001C, H22090073-002B, H22090073-002C, H22090073-003B, H22090073-003C, H22090073-004B, H22090073-004C, H22090073-005B, H22090073-005C, H22090073-006B, H22090073-006C, H22090073-007B, H22090073-007C, H22090073-008B, H22090073-008C, H22090073-009B, H22090073-009C, H22090073-010B, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 24** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **09/13/22 17:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Run ID :Run Order: **ICPMS205-H_220913A: 25** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **09/13/22 17:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0502	0.0050	0.05	0	100	85	115				
Cadmium	0.0509	0.0010	0.05	0	102	85	115				
Copper	0.0511	0.010	0.05	0	102	85	115				
Lead	0.0500	0.010	0.05	0	100	85	115				
Zinc	0.0522	0.010	0.05	0	104	85	115				

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178196
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 52** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **09/13/22 18:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0504	0.0050	0.05	0	101	90	110				
Cadmium	0.0500	0.0010	0.05	0	100	90	110				
Copper	0.0504	0.010	0.05	0	101	90	110				
Lead	0.0502	0.010	0.05	0	100	90	110				
Zinc	0.0509	0.010	0.05	0	102	90	110				

Associated samples: **H22090073-001B, H22090073-001C, H22090073-002B, H22090073-002C, H22090073-003B, H22090073-003C, H22090073-004B, H22090073-004C, H22090073-005B, H22090073-005C, H22090073-006B, H22090073-006C, H22090073-007B, H22090073-007C, H22090073-008B, H22090073-008C, H22090073-009B, H22090073-009C, H22090073-010B, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 67** SampType: **Sample Matrix Spike** Lab ID: **H22090065-001BMS** Method: **E200.8**

Analysis Date: **09/13/22 19:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0558	0.0010	0.05	0.005176	101	70	130				
Cadmium	0.0497	0.0010	0.05	0.0001287	99	70	130				
Copper	0.0504	0.0050	0.05	0.001624	97	70	130				
Lead	0.0509	0.0010	0.05	0	102	70	130				
Zinc	0.0536	0.010	0.05	0.00299	101	70	130				

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Run ID :Run Order: **ICPMS205-H_220913A: 68** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090065-001BMSD** Method: **E200.8**

Analysis Date: **09/13/22 19:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0570	0.0010	0.05	0.005176	104	70	130	0.05581	2.1	20	
Cadmium	0.0505	0.0010	0.05	0.0001287	101	70	130	0.04971	1.5	20	
Copper	0.0512	0.0050	0.05	0.001624	99	70	130	0.05036	1.6	20	
Lead	0.0517	0.0010	0.05	0	103	70	130	0.05094	1.5	20	
Zinc	0.0537	0.010	0.05	0.00299	101	70	130	0.05361	0.1	20	

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: R178196** **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 73** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **09/13/22 19:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0512	0.0050	0.05	0	102	90	110				
Cadmium	0.0516	0.0010	0.05	0	103	90	110				
Copper	0.0514	0.010	0.05	0	103	90	110				
Lead	0.0508	0.010	0.05	0	102	90	110				
Zinc	0.0516	0.010	0.05	0	103	90	110				

Associated samples: **H22090073-001B, H22090073-001C, H22090073-002B, H22090073-002C, H22090073-003B, H22090073-003C, H22090073-004B, H22090073-004C, H22090073-005B, H22090073-005C, H22090073-006B, H22090073-006C, H22090073-007B, H22090073-007C, H22090073-008B, H22090073-008C, H22090073-009B, H22090073-009C, H22090073-010B, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 93** SampType: **Sample Matrix Spike** Lab ID: **H22090061-002BMS** Method: **E200.8**

Analysis Date: **09/13/22 20:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0584	0.0010	0.05	0.006791	103	70	130				
Cadmium	0.0496	0.0010	0.05	0	99	70	130				
Copper	0.0489	0.0050	0.05	0	98	70	130				
Lead	0.0509	0.0010	0.05	0	102	70	130				
Zinc	0.0512	0.010	0.05	0	102	70	130				

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Run ID :Run Order: **ICPMS205-H_220913A: 94** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090061-002BMSD** Method: **E200.8**

Analysis Date: **09/13/22 20:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0584	0.0010	0.05	0.006791	103	70	130	0.05841	0	20	
Cadmium	0.0511	0.0010	0.05	0	102	70	130	0.04962	2.9	20	
Copper	0.0496	0.0050	0.05	0	99	70	130	0.04886	1.6	20	
Lead	0.0513	0.0010	0.05	0	103	70	130	0.0509	0.7	20	
Zinc	0.0515	0.010	0.05	0	103	70	130	0.05119	0.5	20	

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22090073 **BatchID: R178196** **Date:** *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 104** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **09/13/22 20:39** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0516	0.0050	0.05	0	103	90	110				
Cadmium	0.0516	0.0010	0.05	0	103	90	110				
Copper	0.0513	0.010	0.05	0	103	90	110				
Lead	0.0507	0.010	0.05	0	101	90	110				
Zinc	0.0520	0.010	0.05	0	104	90	110				

Associated samples: **H22090073-001B, H22090073-001C, H22090073-002B, H22090073-002C, H22090073-003B, H22090073-003C, H22090073-004B, H22090073-004C, H22090073-005B, H22090073-005C, H22090073-006B, H22090073-006C, H22090073-007B, H22090073-007C, H22090073-008B, H22090073-008C, H22090073-009B, H22090073-009C, H22090073-010B, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 122** SampType: **Sample Matrix Spike** Lab ID: **H22090073-008BMS** Method: **E200.8**

Analysis Date: **09/13/22 21:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0672	0.0010	0.05	0.01435	106	70	130				
Cadmium	0.0508	0.0010	0.05	0.00001922	102	70	130				
Copper	0.0539	0.0050	0.05	0.002748	102	70	130				
Lead	0.0526	0.0010	0.05	0	105	70	130				
Zinc	0.0539	0.010	0.05	0	108	70	130				

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Run ID :Run Order: **ICPMS205-H_220913A: 123** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090073-008BMSD** Method: **E200.8**

Analysis Date: **09/13/22 21:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0670	0.0010	0.05	0.01435	105	70	130	0.06717	0.3	20	
Cadmium	0.0514	0.0010	0.05	0.00001922	103	70	130	0.05085	1.1	20	
Copper	0.0537	0.0050	0.05	0.002748	102	70	130	0.05391	0.3	20	
Lead	0.0522	0.0010	0.05	0	104	70	130	0.05261	0.8	20	
Zinc	0.0528	0.010	0.05	0	106	70	130	0.05386	2.0	20	

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178196
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220913A: 125** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **09/13/22 21:38** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0518	0.0050	0.05	0	104	90	110				
Cadmium	0.0524	0.0010	0.05	0	105	90	110				
Copper	0.0527	0.010	0.05	0	105	90	110				
Lead	0.0511	0.010	0.05	0	102	90	110				
Zinc	0.0520	0.010	0.05	0	104	90	110				

Associated samples: **H22090073-001B, H22090073-001C, H22090073-002B, H22090073-002C, H22090073-003B, H22090073-003C, H22090073-004B, H22090073-004C, H22090073-005B, H22090073-005C, H22090073-006B, H22090073-006C, H22090073-007B, H22090073-007C, H22090073-008B, H22090073-008C, H22090073-009B, H22090073-009C, H22090073-010B, H22090073-010C**

Run ID :Run Order: **ICPMS205-H_220913A: 133** SampType: **Sample Matrix Spike** Lab ID: **H22090074-001BMS** Method: **E200.8**

Analysis Date: **09/13/22 21:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0520	0.0010	0.05	0.000501	103	70	130				
Cadmium	0.0525	0.0010	0.05	0	105	70	130				
Copper	0.0547	0.0050	0.05	0.003537	102	70	130				
Lead	0.0520	0.0010	0.05	0.0001163	104	70	130				
Zinc	0.0555	0.010	0.05	0.00211	107	70	130				

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Run ID :Run Order: **ICPMS205-H_220913A: 134** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22090074-001BMSD** Method: **E200.8**

Analysis Date: **09/13/22 22:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0528	0.0010	0.05	0.000501	105	70	130	0.05196	1.5	20	
Cadmium	0.0521	0.0010	0.05	0	104	70	130	0.05249	0.8	20	
Copper	0.0551	0.0050	0.05	0.003537	103	70	130	0.05468	0.7	20	
Lead	0.0517	0.0010	0.05	0.0001163	103	70	130	0.05196	0.6	20	
Zinc	0.0552	0.010	0.05	0.00211	106	70	130	0.05549	0.5	20	

Associated samples: **H22090073-001B, H22090073-002B, H22090073-003B, H22090073-004B, H22090073-005B, H22090073-006B, H22090073-007B, H22090073-008B, H22090073-009B, H22090073-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: R178415
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **SW6020**

Analysis Date: **09/20/22 11:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0622	0.0010	0.06	0	104	90	110				
Cadmium	0.0308	0.0010	0.03	0	103	90	110				
Copper	0.0612	0.0010	0.06	0	102	90	110				
Lead	0.0597	0.0010	0.06	0	99	90	110				
Zinc	0.0614	0.0013	0.06	0	102	90	110				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 15** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **SW6020**

Analysis Date: **09/20/22 11:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000524	0.0010		0							
Cadmium	0.0000725	0.0010		0							
Copper	0.0000834	0.0010		0							
Lead	-0.000184	0.0010		0							
Zinc	0.000759	0.0013		0							

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 17** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **SW6020**

Analysis Date: **09/20/22 11:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0106	0.0010	0.01	0	106	70	130				
Cadmium	0.0106	0.0010	0.01	0	106	70	130				
Copper	0.0207	0.0010	0.02	0	103	70	130				
Lead	-0.000189	0.0010		0		0	0				
Zinc	0.0106	0.0013	0.01	0	106	70	130				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: R178415
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 85** SampType: **Continuing Calibration Verification Standard** Lab ID: **CCV** Method: **SW6020**
Analysis Date: **09/20/22 14:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0515	0.0010	0.05	0	103	90	110				
Cadmium	0.0523	0.0010	0.05	0	105	90	110				
Copper	0.0530	0.0010	0.05	0	106	90	110				
Lead	0.0517	0.0010	0.05	0	103	90	110				
Zinc	0.0521	0.0013	0.05	0	104	90	110				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 162** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **SW6020**
Analysis Date: **09/21/22 02:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0620	0.0010	0.06	0	103	90	110				
Cadmium	0.0312	0.0010	0.03	0	104	90	110				
Copper	0.0607	0.0010	0.06	0	101	90	110				
Lead	0.0597	0.0010	0.06	0	100	90	110				
Zinc	0.0613	0.0013	0.06	0	102	90	110				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Run ID :Run Order: **ICPMS205-H_220920A: 165** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **SW6020**
Analysis Date: **09/21/22 02:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000478	0.0010		0							
Cadmium	0.0000742	0.0010		0							
Copper	-0.000216	0.0010		0							
Lead	0.0000320	0.0010		0							
Zinc	0.000732	0.0013		0							

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22090073
BatchID: R178415
Date: *31-Oct-22*

Run ID :Run Order: **ICPMS205-H_220920A: 167** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **SW6020**
Analysis Date: **09/21/22 02:45** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0102	0.0010	0.01	0	**102**	70	130				
Cadmium	0.0102	0.0010	0.01	0	**102**	70	130				
Copper	0.0197	0.0010	0.02	0	**98**	70	130				
Lead	0.0000341	0.0010		0		0	0				
Zinc	0.0102	0.0013	0.01	0	**102**	70	130				

Associated samples: **H22090073-011A, H22090073-012A, H22090073-013A, H22090073-014A, H22090073-015A, H22090073-016A, H22090073-017A, H22090073-018A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22090073
BatchID: TSS220906A
Date: *31-Oct-22*

Run ID :Run Order: **ACCU-124 (14410200)_220906A: 16** SampType: **Method Blank** Lab ID: **MB-49_220906A** Method: **A2540 D**

Analysis Date: **09/06/22 13:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.3									

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220906A: 17** SampType: **Laboratory Control Sample** Lab ID: **LCS-50_220906A** Method: **A2540 D**

Analysis Date: **09/06/22 13:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	103	10	100	0	**103**	80	120				

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220906A: 19** SampType: **Sample Duplicate** Lab ID: **H22090062-006A DUP** Method: **A2540 D**

Analysis Date: **09/06/22 13:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	74.0	10		0				73	**1.4**	5	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

Run ID :Run Order: **ACCU-124 (14410200)_220906A: 30** SampType: **Sample Duplicate** Lab ID: **H22090073-006A DUP** Method: **A2540 D**

Analysis Date: **09/06/22 13:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	1.00	10		0				0.8		5	

Associated samples: **H22090073-001A, H22090073-002A, H22090073-003A, H22090073-004A, H22090073-005A, H22090073-006A, H22090073-007A, H22090073-008A, H22090073-009A, H22090073-010A**

- TSS did not obtain the minimum residue requirement of 2.5 mg residue. - Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

BROOKS APPLIED LABS
13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

October 27, 2022

Energy Laboratories, Inc.
ATTN: Wanda Johnson
3161 E Lyndale
Helena, MT 59602
wjohnson@energylab.com

RE: Project ENL-HL1901 Client Project: H22090073

Dear Wanda Johnson,

On September 12, 2022, Brooks Applied Labs (BAL) received five (5) water samples at a temperature of 18.5°C. The samples were logged-in for the analyses of methyl mercury (MeHg) according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

EPA 1630 requires that all pre-preserved samples submitted must be kept cool to maintain sample integrity prior to analysis. Consequently, the MeHg results were qualified (**H**), indicating that the samples were received above the method required temperature.

Methyl Mercury using MERX
Water samples were pre-preserved with hydrochloric acid. The preserved samples were distilled and analyzed via EPA Method 1630.

The results were method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. This report should be used in its entirety for interpretation of results. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Amy Goodall
Project Manager
Brooks Applied Labs
amy@brooksapplied.com

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22090073

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received
BAL	Brooks Applied Labs
BLK	method blank
BS	blank spike
CAL	calibration standard
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain of custody record
D	dissolved fraction
DUP	duplicate
IBL	instrument blank
ICV	initial calibration verification
MDL	method detection limit
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
NR	non-reportable
N/C	not calculated
PS	post preparation spike
REC	percent recovery
RPD	relative percent difference
SCV	secondary calibration verification
SOP	standard operating procedure
SRM	reference material
T	total fraction
TR	total recoverable fraction

Definition of Data Qualifiers

(Effective 3/23/2020)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)
SM2340B	Non-Potable Waters	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22090073

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
H22090073-001E	2209105-01	Surface Water	Field Blank	09/01/2022	09/12/2022
H22090073-002E	2209105-02	Surface Water	Sample	09/01/2022	09/12/2022
H22090073-003E	2209105-03	Surface Water	Sample	09/01/2022	09/12/2022
H22090073-019A	2209105-04	Surface Water	Sample	09/01/2022	09/12/2022
H22090073-020A	2209105-05	Surface Water	Trip Blank	09/01/2022	09/12/2022

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
MeHg	Water	EPA 1630	10/04/2022	10/06/2022	B222283	S221045

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
H22090073-001E, Field Blank #1 FC-CFR										
2209105-01	MeHg	Surface Water	TR	≤ 0.026	H U	0.026	0.056	ng/L	B222283	S221045
H22090073-002E, FC-CFR										
2209105-02	MeHg	Surface Water	TR	1.07	H	0.025	0.055	ng/L	B222283	S221045
H22090073-003E, FC-CFR										
2209105-03	MeHg	Surface Water	TR	1.23	H	0.025	0.055	ng/L	B222283	S221045
H22090073-019A, CFR-84-F										
2209105-04	MeHg	Surface Water	TR	0.257	H	0.026	0.056	ng/L	B222283	S221045
H22090073-020A, Trip Blank										
2209105-05	MeHg	Surface Water	TR	≤ 0.025	H U	0.025	0.055	ng/L	B222283	S221045

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22090073

Accuracy & Precision Summary

Batch: B222283
Lab Matrix: Water
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B222283-BS3	**Blank Spike, (2240040)**						
	MeHg		1.000	0.770	ng/L	77% 67-133	
B222283-BS4	**Blank Spike, (2240040)**						
	MeHg		1.000	0.687	ng/L	69% 67-133	
B222283-MS4	**Matrix Spike (2209105-04)**						
	MeHg	0.257	1.200	1.049	ng/L	66% 65-135	
B222283-MSD4	**Matrix Spike Duplicate (2209105-04)**						
	MeHg	0.257	1.200	1.286	ng/L	86% 65-135	20% 35

Method Blanks & Reporting Limits

Batch: B222283
Matrix: Water
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B222283-BLK5	0.017	ng/L
B222283-BLK6	0.014	ng/L
B222283-BLK7	0.018	ng/L
B222283-BLK8	0.014	ng/L

Average: 0.016
Limit: 0.053

Standard Deviation: 0.002
Limit: 0.025

MDL: 0.025
MRL: 0.053

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22090073

Sample Containers

Lab ID: 2209105-01
Sample: H22090073-001E
Report Matrix: Surface Water
Sample Type: Field Blank
Collected: 09/01/2022
Received: 09/12/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250mL	21-0121	2mL 6N HCl (PP)	2150013	<2	Cooler - 2209105

Lab ID: 2209105-02
Sample: H22090073-002E
Report Matrix: Surface Water
Sample Type: Sample
Collected: 09/01/2022
Received: 09/12/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250mL	21-0121	2mL 6N HCl (PP)	2150013	<2	Cooler - 2209105

Lab ID: 2209105-03
Sample: H22090073-003E
Report Matrix: Surface Water
Sample Type: Sample
Collected: 09/01/2022
Received: 09/12/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250mL	21-0121	2mL 6N HCl (PP)	2150013	<2	Cooler - 2209105

Lab ID: 2209105-04
Sample: H22090073-019A
Report Matrix: Surface Water
Sample Type: Sample
Collected: 09/01/2022
Received: 09/12/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250mL	21-0121	2mL 6N HCl (PP)	2150013	<2	Cooler - 2209105

Lab ID: 2209105-05
Sample: H22090073-020A
Report Matrix: Surface Water
Sample Type: Trip Blank
Collected: 09/01/2022
Received: 09/12/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - 250mL Bottle - Hg-Sp	250mL	21-0121	2mL 6N HCl (PP)	2150013	<2	Cooler - 2209105

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22090073

Shipping Containers

Cooler - 2209105

Received: September 12, 2022 9:13
Tracking No: 1328 9416 9503 via FedEx
Coolant Type: Ice
Temperature: 18.5 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#1

Custody seals present? No
Custody seals intact? No
COC present? Yes

Energy Laboratories Inc
3161 East Lyndale Avenue
Helena, MT 59601
4064420711

H22090073

CHAIN-OF-CUSTODY RECORD

06-Sep-22

Earliest HT Expires: Thu, 9/08/2022 0830
Test Codes: Sub-BrooksRand

Earliest Due Date: 9/15/2022
 # Bus. Days Until Due: 7

Subcontractor:
Brooks Applied Labs
13751 Lake City Way NE
Seattle, WA 98125
TEL: 2066326206
FAX: 2066326017
Acct #: 2066326206

Subcontractor's Client:

QC Level: STD
State Sampled: MT

Rush	Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests: Sub-BrooksRand
☐	H22090073-001E	Surface Water	09/01/22 11:10 A	1 - CLIENT-SLD	1
	Sample Name: Field Blank #1 FC-CFR				
☐	H22090073-002E	Surface Water	09/01/22 11:45 A	1 - CLIENT-SLD	1
	Sample Name: FC-CFR				
☐	H22090073-003E	Surface Water	09/01/22 11:45 A	1 - CLIENT-SLD	1
	Sample Name: FC-CFR				
☐	H22090073-019A	Surface Water	09/01/22 08:30 A	1 - CLIENT-SLD	1
	Sample Name: CFR-84-F				
☐	H22090073-020A	Surface Water	09/01/22 08:30 A	1 - CLIENT-SLD	1
	Sample Name: Trip Blank				

Comments:

	Date/Time		Date/Time
Relinquished by: Rebecca A. Tooke	9/06/2022 9:37	**Received by:**	9-7-22 1130
Relinquished by:		**Received by:** AAW (BAL)	9/12/22 09:13

Shipped By:	Custody Seal	Intact	Receipt Temp:	Temp Blank	On Ice
9/9 1700	Y N	Y N	3.6/3.5 °C	Y N	Y N

Work Order Receipt Checklist

MT DEQ-Federal Superfund

H22090073

Login completed by: Rebecca A. Tooke
Date Received: 9/6/2022

Reviewed by: tjones
Received by: RAT

Reviewed Date: 9/26/2022
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Cooler 1 was received at 3.3 °C and Cooler 2 at 2.2 °C on ice with temperature blanks. Box 1 received at 5.2 °C with no temperature blank and no ice. Left in locked entry.

Per call to client only the fine sieve that is in the quote is needed. 9/6/22 rt

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Page 1 of 3

Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (If different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; tanner.traxler@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T. Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes: A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	TR As, Cd, Cu Pb, Zn	Diss As, Cd, Cu, Pb, Zn	TPN	NO3+2, TP	NH3	TSS	Tot. Alk. ,Sulfate, Chloride	Hardness (TR Ca & Mg)		See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Field Blank #1 FC-CFR	9/1/22	1110	5	W	✓	✓	✓	✓		✓	✓	✓				H220900073
2	FC-CFR	9/1/22	1145	5	W	✓	✓	✓	✓		✓	✓	✓				
3	FC-CFR Duplicate	9/1/22	1145	5	W	✓	✓	✓	✓		✓	✓	✓				
4	CFR-34	9/1/22	1300	5	W	✓	✓	✓	✓		✓	✓	✓				
5	CFR-27H	9/1/22	1350	5	W	✓	✓	✓	✓		✓	✓	✓				
6	CFR-11F	9/1/22	1445	5	W	✓	✓	✓	✓		✓	✓	✓				
7	CFR-07D	9/1/22	1550	5	W	✓	✓	✓	✓		✓	✓	✓				
8	CFR-03A	9/1/22	1630	5	W	✓	✓	✓	✓		✓	✓	✓				
9	WSC-SBC	9/1/22	1715	5	W	✓	✓	✓	✓		✓	✓	✓				
10	SS-25	9/1/22	1750	5	W	✓	✓	✓	✓	✓	✓	✓	✓				

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	9/8/22 1755				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Rebecca Hoff	9-6-22 0800	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
left attached entry	2	Y N (C B)	(Y) N	a 5.3 °C C2 5.0 B1 6.2	(Y) N	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Page 2 of 3

Account Information (Billing Information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (If different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com, tanner.traxler@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other _____

Comments

lab to sieve sediment samples into 3 size fractions, report as dry weight concentrations

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes: A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Analysis Requested: Total As, Cd, Cu, Pb, Zn	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	CFR-34	9/1/22	1300	1	S	✓			H22090073
2	CFR-27H	9/1/22	1350	1	S	✓			
3	CFR-11F	9/1/22	1445	1	S	✓			
4	CFR-07D	9/1/22	1530	1	S	✓			
5	CFR-07D Duplicate	9/1/22	1530	1	S	✓			
6	CFR-03A	9/1/22	1630	1	S	✓			
7	WSC-SBC	9/1/22	1715	1	S	✓			
8	SS-25	9/1/22	1750	1	S	✓			
9									
10									

Custody Record MUST be signed	Relinquished by (sign)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	9/2/22 1755				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Rebecca Mabel	9-6-22 800	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On-Ice	Payment Type	Amount	Receipt Number (cash/check only)
UPS Ground	1	Y N C B	Y N	1.3-1 °C, 2.2, 1.5, 2	Y N	Y N	CC Cash Check	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Page 3 of 3

Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; tanner.traxler@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes: A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Total Mercury, low level	Methyl Mercury (contract)	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	CFR-84F	9/1/22	0830	1	W	✓	✓			A22090073
2	Field Blank #1 FC-CFR	9/1/22	1110	1	W	✓	✓			
3	FC-CFR	9/1/22	1145	1	W	✓	✓			
4	FC-CFR Duplicate	9/1/22	1145	1	W	✓	✓			
5										
6										
7										
8										
9										
10										

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	9/8/22 1755	Tanner Traxler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Rebecca Nelson	9-6-22 0800	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On-Ice	Payment Type	Amount	Receipt Number (cash/check only)
hydrolocked entry	2	Y N C B	Y N	9.3 °C 22.0 B5.2	Y N	Y N	CC Cash Check	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

APPENDIX B4
ANALYTICAL LABORATORY RESULTS
4TH QUARTER MONITORING

ANALYTICAL SUMMARY REPORT

January 11, 2023

MT DEQ-Federal Superfund
PO Box 200901
Helena, MT 59620-0901

Work Order: H22120258 Quote ID: H1525

Project Name: CFROU Monitoring

Energy Laboratories Inc Helena MT received the following 12 samples for MT DEQ-Federal Superfund on 12/9/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H22120258-001	FC-CFR QC-FB	12/07/22 9:15	12/09/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Mercury, Total Recoverable Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended Subcontracted, Analytics
H22120258-002	FC-CFR	12/07/22 9:30	12/09/22	Surface Water	Same As Above
H22120258-003	FC-CFR QC-FD	12/07/22 9:30	12/09/22	Surface Water	Same As Above
H22120258-004	CFR-34	12/07/22 11:15	12/09/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22120258-005	CFR-27H	12/07/22 12:00	12/09/22	Surface Water	Same As Above
H22120258-006	CFR-11F	12/07/22 13:00	12/09/22	Surface Water	Same As Above
H22120258-007	CFR-07D	12/07/22 13:30	12/09/22	Surface Water	Same As Above
H22120258-008	CFR-03A	12/07/22 14:15	12/09/22	Surface Water	Same As Above
H22120258-009	WSC-SBC	12/07/22 15:00	12/09/22	Surface Water	Same As Above

ANALYTICAL SUMMARY REPORT

H22120258-010	SS-25	12/07/22 15:45	12/09/22	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity to pH 4.5 Conductivity Hardness Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Suspended
H22120258-011	CFR-84F	12/07/22 8:30	12/09/22	Surface Water	Mercury, Total Recoverable Mercury Digestion by E245.1 Subcontracted, Analytics
H22120258-012	Trip Blank	12/07/22 8:30	12/09/22	Trip Blank	Subcontracted, Analytics

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: MT DEQ-Federal Superfund
Project: CFROU Monitoring
Work Order: H22120258

Report Date: 01/11/23

CASE NARRATIVE

Some tests were subbed to Brooks Applied Labs in Seattle, WA. Please see attached data packet for details.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the calculated method detection limit (MDL). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR QC-FB
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-001
Collection Date: 12/07/22 09:15
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	ND	mg/L	D	6	0.3	A2540 D	12/12/22 09:39 / am			CU-124 (14410200)_221212A	3	TSS221212A
- TSS did not obtain the minimum residue requirement of 2.5 mg residue.												
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		4	2	A2320 B	12/12/22 13:36 / ljs			PHSC_101-H_221212A	80	R180736
Bicarbonate as HCO3	ND	mg/L		4	3	A2320 B	12/12/22 13:36 / ljs			PHSC_101-H_221212A	80	R180736
Chloride	ND	mg/L		1	0.02	E300.0	12/20/22 06:31 / ljs			IC METROHM_221219A	59	R181014
Sulfate	ND	mg/L		1	0.06	E300.0	12/20/22 06:31 / ljs			IC METROHM_221219A	59	R181014
Hardness as CaCO3	ND	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B	1	R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.02	0.008	E353.2	12/14/22 15:19 / JA			FIA203-HE_221214A	86	R180840
Nitrogen, Total	ND	mg/L		0.05	0.02	A4500 N-C	12/12/22 12:53 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A	33	64711
Phosphorus, Total as P	ND	mg/L		0.003	0.001	E365.1	12/19/22 14:26 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A	27	64802
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.001	0.0002	E200.8	12/13/22 16:33 / dck			ICPMS205-H_221213B	94	R180791
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	12/13/22 16:33 / dck			ICPMS205-H_221213B	94	R180791
Copper	ND	mg/L		0.001	0.0001	E200.8	12/13/22 16:33 / dck			ICPMS205-H_221213B	94	R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:33 / dck			ICPMS205-H_221213B	94	R180791
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	12/13/22 16:33 / dck			ICPMS205-H_221213B	94	R180791
METALS, TOTAL RECOVERABLE												
Arsenic	ND	mg/L		0.001	0.0001	E200.8	12/13/22 16:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	95	64707
Cadmium	ND	mg/L		0.00003	0.00003	E200.8	12/13/22 16:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	95	64707
Calcium	ND	mg/L		1	0.1	E200.7	12/12/22 12:46 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A	17	64707
Copper	ND	mg/L		0.001	0.0003	E200.8	12/13/22 16:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	95	64707
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	95	64707
Magnesium	ND	mg/L		1	0.05	E200.7	12/12/22 12:46 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A	17	64707
Mercury	ND	ug/L		0.005	0.002	E245.1	12/12/22 16:02 / cfg	12/12/22 09:38	E245.1	HGCV203-H_221212A	15	64708
Zinc	0.001	mg/L	J	0.008	0.001	E200.8	12/13/22 16:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	95	64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-002
Collection Date: 12/07/22 09:30
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	18	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 4		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	150	mg/L		4	2	A2320 B	12/12/22 11:18 / ljs			PHSC_101-H_221212A : 32		R180736
Bicarbonate as HCO3	180	mg/L		4	3	A2320 B	12/12/22 11:18 / ljs			PHSC_101-H_221212A : 32		R180736
Chloride	4	mg/L		1	0.02	E300.0	12/20/22 06:45 / ljs			IC METROHM_221219A : 60		R181014
Sulfate	17	mg/L		1	0.06	E300.0	12/20/22 06:45 / ljs			IC METROHM_221219A : 60		R181014
Hardness as CaCO3	162	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 2		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.20	mg/L		0.02	0.008	E353.2	12/14/22 15:23 / JA			FIA203-HE_221214A : 89		R180840
Nitrogen, Total	0.34	mg/L		0.05	0.02	A4500 N-C	12/12/22 12:56 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 36		64711
Phosphorus, Total as P	0.051	mg/L		0.003	0.001	E365.1	12/19/22 14:27 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 28		64802
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	12/13/22 16:39 / dck			ICPMS205-H_221213B : 96		R180791
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	12/13/22 16:39 / dck			ICPMS205-H_221213B : 96		R180791
Copper	0.0004	mg/L	J	0.001	0.0001	E200.8	12/13/22 16:39 / dck			ICPMS205-H_221213B : 96		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:39 / dck			ICPMS205-H_221213B : 96		R180791
Zinc	0.002	mg/L	J	0.008	0.001	E200.8	12/13/22 16:39 / dck			ICPMS205-H_221213B : 96		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.008	mg/L		0.001	0.0001	E200.8	12/13/22 16:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 97		64707
Cadmium	0.00005	mg/L		0.00003	0.00003	E200.8	12/13/22 16:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 97		64707
Calcium	43	mg/L		1	0.1	E200.7	12/12/22 12:50 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 18		64707
Copper	0.002	mg/L		0.001	0.0003	E200.8	12/13/22 16:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 97		64707
Lead	0.0035	mg/L		0.0003	0.0001	E200.8	12/13/22 16:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 97		64707
Magnesium	13	mg/L		1	0.05	E200.7	12/12/22 12:50 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 18		64707
Mercury	0.19	ug/L	D	0.02	0.02	E245.1	12/15/22 14:35 / cfg	12/12/22 09:38	E245.1	HGCV203-H_221215A : 20		64708
Zinc	0.014	mg/L		0.008	0.001	E200.8	12/13/22 16:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 97		64707

Report Definitions:
RL - Analyte Reporting Limit
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MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: FC-CFR QC-FD
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-003
Collection Date: 12/07/22 09:30
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	18	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 5		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	150	mg/L		4	2	A2320 B	12/12/22 11:24 / ljs			PHSC_101-H_221212A : 34		R180736
Bicarbonate as HCO3	180	mg/L		4	3	A2320 B	12/12/22 11:24 / ljs			PHSC_101-H_221212A : 34		R180736
Chloride	4	mg/L		1	0.02	E300.0	12/20/22 07:29 / ljs			IC METROHM_221219A : 63		R181014
Sulfate	17	mg/L		1	0.06	E300.0	12/20/22 07:29 / ljs			IC METROHM_221219A : 63		R181014
Hardness as CaCO3	160	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 3		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.20	mg/L		0.02	0.008	E353.2	12/14/22 15:24 / JA			FIA203-HE_221214A : 90		R180840
Nitrogen, Total	0.34	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:00 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 39		64711
Phosphorus, Total as P	0.053	mg/L		0.003	0.001	E365.1	12/19/22 14:28 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 29		64802
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	12/13/22 16:45 / dck			ICPMS205-H_221213B : 98		R180791
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	12/13/22 16:45 / dck			ICPMS205-H_221213B : 98		R180791
Copper	0.0004	mg/L	J	0.001	0.0001	E200.8	12/13/22 16:45 / dck			ICPMS205-H_221213B : 98		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:45 / dck			ICPMS205-H_221213B : 98		R180791
Zinc	0.001	mg/L	J	0.008	0.001	E200.8	12/13/22 16:45 / dck			ICPMS205-H_221213B : 98		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.008	mg/L		0.001	0.0001	E200.8	12/13/22 16:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 99		64707
Cadmium	0.00005	mg/L		0.00003	0.00003	E200.8	12/13/22 16:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 99		64707
Calcium	43	mg/L		1	0.1	E200.7	12/12/22 13:16 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 25		64707
Copper	0.002	mg/L		0.001	0.0003	E200.8	12/13/22 16:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 99		64707
Lead	0.0037	mg/L		0.0003	0.0001	E200.8	12/13/22 16:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 99		64707
Magnesium	13	mg/L		1	0.05	E200.7	12/12/22 13:16 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 25		64707
Mercury	0.137	ug/L		0.005	0.002	E245.1	12/12/22 16:09 / cfg	12/12/22 09:38	E245.1	HGCV203-H_221212A : 17		64708
Zinc	0.012	mg/L		0.008	0.001	E200.8	12/13/22 16:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 99		64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-34
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-004
Collection Date: 12/07/22 11:15
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	17	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 6		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	150	mg/L		4	2	A2320 B	12/12/22 11:29 / ljs			PHSC_101-H_221212A : 36		R180736
Bicarbonate as HCO3	180	mg/L		4	3	A2320 B	12/12/22 11:29 / ljs			PHSC_101-H_221212A : 36		R180736
Chloride	11	mg/L		1	0.02	E300.0	12/20/22 07:43 / ljs			IC METROHM_221219A : 64		R181014
Sulfate	116	mg/L		1	0.06	E300.0	12/20/22 07:43 / ljs			IC METROHM_221219A : 64		R181014
Hardness as CaCO3	253	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 4		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.36	mg/L		0.02	0.008	E353.2	12/14/22 15:25 / JA			FIA203-HE_221214A : 91		R180840
Nitrogen, Total	0.53	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:01 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 40		64711
Phosphorus, Total as P	0.028	mg/L		0.003	0.001	E365.1	12/19/22 14:30 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 30		64802
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	12/13/22 16:50 / dck			ICPMS205-H_221213B : 100		R180791
Cadmium	0.00005	mg/L		0.00003	0.00002	E200.8	12/13/22 16:50 / dck			ICPMS205-H_221213B : 100		R180791
Copper	0.004	mg/L		0.001	0.0001	E200.8	12/13/22 16:50 / dck			ICPMS205-H_221213B : 100		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:50 / dck			ICPMS205-H_221213B : 100		R180791
Zinc	0.012	mg/L		0.008	0.001	E200.8	12/13/22 16:50 / dck			ICPMS205-H_221213B : 100		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.009	mg/L		0.001	0.0001	E200.8	12/13/22 16:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 101		64707
Cadmium	0.00016	mg/L		0.00003	0.00003	E200.8	12/13/22 16:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 101		64707
Calcium	77	mg/L		1	0.1	E200.7	12/12/22 13:20 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 26		64707
Copper	0.026	mg/L		0.001	0.0003	E200.8	12/13/22 16:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 101		64707
Lead	0.0034	mg/L		0.0003	0.0001	E200.8	12/13/22 16:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 101		64707
Magnesium	15	mg/L		1	0.05	E200.7	12/12/22 13:20 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 26		64707
Zinc	0.028	mg/L		0.008	0.001	E200.8	12/13/22 16:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 101		64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-27H
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-005
Collection Date: 12/07/22 12:00
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	9	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 7		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	12/12/22 11:35 / ljs			PHSC_101-H_221212A : 38		R180736
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	12/12/22 11:35 / ljs			PHSC_101-H_221212A : 38		R180736
Chloride	14	mg/L		1	0.02	E300.0	12/20/22 07:58 / ljs			IC METROHM_221219A : 65		R181014
Sulfate	118	mg/L		1	0.06	E300.0	12/20/22 07:58 / ljs			IC METROHM_221219A : 65		R181014
Hardness as CaCO3	252	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 5		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.35	mg/L		0.02	0.008	E353.2	12/14/22 15:26 / JA			FIA203-HE_221214A : 92		R180840
Nitrogen, Total	0.49	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:02 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 41		64711
Phosphorus, Total as P	0.018	mg/L		0.003	0.001	E365.1	12/19/22 14:31 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 31		64802
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	12/13/22 16:56 / dck			ICPMS205-H_221213B : 102		R180791
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	12/13/22 16:56 / dck			ICPMS205-H_221213B : 102		R180791
Copper	0.004	mg/L		0.001	0.0001	E200.8	12/13/22 16:56 / dck			ICPMS205-H_221213B : 102		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 16:56 / dck			ICPMS205-H_221213B : 102		R180791
Zinc	0.014	mg/L		0.008	0.001	E200.8	12/13/22 16:56 / dck			ICPMS205-H_221213B : 102		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.008	mg/L		0.001	0.0001	E200.8	12/13/22 16:59 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 103		64707
Cadmium	0.00010	mg/L		0.00003	0.00002	E200.8	12/13/22 16:59 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 103		64707
Calcium	77	mg/L		1	0.1	E200.7	12/12/22 13:24 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 27		64707
Copper	0.022	mg/L		0.001	0.0003	E200.8	12/13/22 16:59 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 103		64707
Lead	0.0026	mg/L		0.0003	0.0001	E200.8	12/13/22 16:59 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 103		64707
Magnesium	15	mg/L		1	0.05	E200.7	12/12/22 13:24 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 27		64707
Zinc	0.024	mg/L		0.008	0.001	E200.8	12/13/22 16:59 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 103		64707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-11F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-006
Collection Date: 12/07/22 13:00
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	15	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 8		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		4	2	A2320 B	12/12/22 11:40 / ljs			PHSC_101-H_221212A : 40		R180736
Bicarbonate as HCO3	170	mg/L		4	3	A2320 B	12/12/22 11:40 / ljs			PHSC_101-H_221212A : 40		R180736
Chloride	13	mg/L		1	0.02	E300.0	12/16/22 08:46 / ljs			IC METROHM_221215A : 90		R180905
Sulfate	154	mg/L		1	0.06	E300.0	12/16/22 08:46 / ljs			IC METROHM_221215A : 90		R180905
Hardness as CaCO3	289	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 6		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.20	mg/L		0.02	0.008	E353.2	12/14/22 15:30 / JA			FIA203-HE_221214A : 95		R180840
Nitrogen, Total	0.33	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:48 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 79		64711
Phosphorus, Total as P	0.018	mg/L		0.003	0.001	E365.1	12/19/22 14:32 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 32		64802
METALS, DISSOLVED												
Arsenic	0.005	mg/L		0.001	0.0002	E200.8	12/13/22 17:19 / dck			ICPMS205-H_221213B : 110		R180791
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	12/13/22 17:19 / dck			ICPMS205-H_221213B : 110		R180791
Copper	0.003	mg/L		0.001	0.0001	E200.8	12/13/22 17:19 / dck			ICPMS205-H_221213B : 110		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 17:19 / dck			ICPMS205-H_221213B : 110		R180791
Zinc	0.011	mg/L		0.008	0.001	E200.8	12/13/22 17:19 / dck			ICPMS205-H_221213B : 110		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.007	mg/L		0.001	0.0001	E200.8	12/13/22 17:30 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 114		64707
Cadmium	0.00012	mg/L		0.00003	0.00003	E200.8	12/13/22 17:30 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 114		64707
Calcium	88	mg/L		1	0.1	E200.7	12/12/22 13:27 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 28		64707
Copper	0.019	mg/L		0.001	0.0003	E200.8	12/13/22 17:30 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 114		64707
Lead	0.0024	mg/L		0.0003	0.0001	E200.8	12/13/22 17:30 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 114		64707
Magnesium	17	mg/L		1	0.05	E200.7	12/12/22 13:27 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 28		64707
Zinc	0.021	mg/L		0.008	0.001	E200.8	12/13/22 17:30 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 114		64707

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-07D
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-007
Collection Date: 12/07/22 13:30
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	7	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			CU-124 (14410200)_221212A : 9		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		4	2	A2320 B	12/12/22 11:46 / ljs			PHSC_101-H_221212A : 42		R180736
Bicarbonate as HCO3	160	mg/L		4	3	A2320 B	12/12/22 11:46 / ljs			PHSC_101-H_221212A : 42		R180736
Chloride	13	mg/L		1	0.02	E300.0	12/16/22 09:00 / ljs			IC METROHM_221215A : 91		R180905
Sulfate	163	mg/L		1	0.06	E300.0	12/16/22 09:00 / ljs			IC METROHM_221215A : 91		R180905
Hardness as CaCO3	288	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 7		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.17	mg/L		0.02	0.008	E353.2	12/14/22 15:33 / JA			FIA203-HE_221214A : 98		R180840
Nitrogen, Total	0.32	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:04 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 43		64711
Phosphorus, Total as P	0.012	mg/L		0.003	0.001	E365.1	12/19/22 14:33 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 33		64802
METALS, DISSOLVED												
Arsenic	0.005	mg/L		0.001	0.0002	E200.8	12/13/22 17:33 / dck			ICPMS205-H_221213B : 115		R180791
Cadmium	0.00004	mg/L		0.00003	0.00002	E200.8	12/13/22 17:33 / dck			ICPMS205-H_221213B : 115		R180791
Copper	0.002	mg/L		0.001	0.0001	E200.8	12/13/22 17:33 / dck			ICPMS205-H_221213B : 115		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 17:33 / dck			ICPMS205-H_221213B : 115		R180791
Zinc	0.005	mg/L	J	0.008	0.001	E200.8	12/13/22 17:33 / dck			ICPMS205-H_221213B : 115		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.007	mg/L		0.001	0.0001	E200.8	12/13/22 17:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 116		64707
Cadmium	0.00009	mg/L		0.00003	0.00003	E200.8	12/13/22 17:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 116		64707
Calcium	89	mg/L		1	0.1	E200.7	12/12/22 13:31 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 29		64707
Copper	0.013	mg/L		0.001	0.0003	E200.8	12/13/22 17:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 116		64707
Lead	0.0015	mg/L		0.0003	0.0001	E200.8	12/13/22 17:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 116		64707
Magnesium	16	mg/L		1	0.05	E200.7	12/12/22 13:31 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 29		64707
Zinc	0.014	mg/L		0.008	0.001	E200.8	12/13/22 17:36 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 116		64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-03A
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-008
Collection Date: 12/07/22 14:15
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	3	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			U-124 (14410200)_221212A	10	TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		4	2	A2320 B	12/12/22 11:56 / ljs			PHSC_101-H_221212A	46	R180736
Bicarbonate as HCO3	140	mg/L		4	3	A2320 B	12/12/22 11:56 / ljs			PHSC_101-H_221212A	46	R180736
Chloride	17	mg/L		1	0.02	E300.0	12/16/22 09:44 / ljs			IC METROHM_221215A	94	R180905
Sulfate	180	mg/L		1	0.06	E300.0	12/16/22 09:44 / ljs			IC METROHM_221215A	94	R180905
Hardness as CaCO3	282	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B	8	R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.02	0.008	E353.2	12/14/22 15:34 / JA			FIA203-HE_221214A	99	R180840
Nitrogen, Total	0.24	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:06 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A	44	64711
Phosphorus, Total as P	0.009	mg/L		0.003	0.001	E365.1	12/19/22 14:34 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A	34	64802
METALS, DISSOLVED												
Arsenic	0.004	mg/L		0.001	0.0002	E200.8	12/13/22 17:39 / dck			ICPMS205-H_221213B	117	R180791
Cadmium	0.00003	mg/L	J	0.00003	0.00002	E200.8	12/13/22 17:39 / dck			ICPMS205-H_221213B	117	R180791
Copper	0.002	mg/L		0.001	0.0001	E200.8	12/13/22 17:39 / dck			ICPMS205-H_221213B	117	R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 17:39 / dck			ICPMS205-H_221213B	117	R180791
Zinc	0.004	mg/L	J	0.008	0.001	E200.8	12/13/22 17:39 / dck			ICPMS205-H_221213B	117	R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.006	mg/L		0.001	0.0001	E200.8	12/13/22 17:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	118	64707
Cadmium	0.00005	mg/L		0.00003	0.00002	E200.8	12/13/22 17:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	118	64707
Calcium	88	mg/L		1	0.1	E200.7	12/12/22 13:35 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A	30	64707
Copper	0.007	mg/L		0.001	0.0003	E200.8	12/13/22 17:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	118	64707
Lead	0.0007	mg/L		0.0003	0.0001	E200.8	12/13/22 17:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	118	64707
Magnesium	15	mg/L		1	0.05	E200.7	12/12/22 13:35 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A	30	64707
Zinc	0.008	mg/L		0.008	0.001	E200.8	12/13/22 17:42 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B	118	64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: WSC-SBC
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-009
Collection Date: 12/07/22 15:00
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	4	mg/L	D	2	0.3	A2540 D	12/12/22 14:28 / am			U-124 (14410200)_221212A : 11		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		4	2	A2320 B	12/12/22 12:02 / ljs			PHSC_101-H_221212A : 48		R180736
Bicarbonate as HCO3	160	mg/L		4	3	A2320 B	12/12/22 12:02 / ljs			PHSC_101-H_221212A : 48		R180736
Chloride	1	mg/L		1	0.02	E300.0	12/16/22 09:58 / ljs			IC METROHM_221215A : 95		R180905
Sulfate	29	mg/L		1	0.06	E300.0	12/16/22 09:58 / ljs			IC METROHM_221215A : 95		R180905
Hardness as CaCO3	159	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 9		R180813
NUTRIENTS												
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.02	0.008	E353.2	12/14/22 15:36 / JA			FIA203-HE_221214A : 100		R180840
Nitrogen, Total	0.10	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:07 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 45		64711
Phosphorus, Total as P	0.007	mg/L		0.003	0.001	E365.1	12/19/22 14:40 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 38		64802
METALS, DISSOLVED												
Arsenic	0.003	mg/L		0.001	0.0002	E200.8	12/13/22 17:45 / dck			ICPMS205-H_221213B : 119		R180791
Cadmium	ND	mg/L		0.00003	0.00002	E200.8	12/13/22 17:45 / dck			ICPMS205-H_221213B : 119		R180791
Copper	0.0010	mg/L	J	0.001	0.0001	E200.8	12/13/22 17:45 / dck			ICPMS205-H_221213B : 119		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 17:45 / dck			ICPMS205-H_221213B : 119		R180791
Zinc	0.007	mg/L	J	0.008	0.001	E200.8	12/13/22 17:45 / dck			ICPMS205-H_221213B : 119		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.003	mg/L		0.001	0.0001	E200.8	12/13/22 17:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 120		64707
Cadmium	0.00003	mg/L		0.00003	0.00003	E200.8	12/13/22 17:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 120		64707
Calcium	46	mg/L		1	0.1	E200.7	12/12/22 13:46 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 33		64707
Copper	0.006	mg/L		0.001	0.0003	E200.8	12/13/22 17:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 120		64707
Lead	0.0005	mg/L		0.0003	0.0001	E200.8	12/13/22 17:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 120		64707
Magnesium	11	mg/L		1	0.05	E200.7	12/12/22 13:46 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 33		64707
Zinc	0.003	mg/L	J	0.008	0.001	E200.8	12/13/22 17:48 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 120		64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: SS-25
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-010
Collection Date: 12/07/22 15:45
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Solids, Total Suspended TSS @ 105 C	1.3	mg/L	DJ	2	0.3	A2540 D	12/12/22 14:28 / am			U-124 (14410200)_221212A : 12		TSS221212A
INORGANICS												
Alkalinity, Total as CaCO3	110	mg/L		4	2	A2320 B	12/12/22 12:07 / ljs			PHSC_101-H_221212A : 50		R180736
Bicarbonate as HCO3	130	mg/L		4	3	A2320 B	12/12/22 12:07 / ljs			PHSC_101-H_221212A : 50		R180736
Chloride	33	mg/L		1	0.02	E300.0	12/16/22 10:13 / ljs			IC METROHM_221215A : 96		R180905
Sulfate	333	mg/L		1	0.06	E300.0	12/16/22 10:13 / ljs			IC METROHM_221215A : 96		R180905
Hardness as CaCO3	408	mg/L		1	1	A2340 B	12/14/22 11:11 / sld			WATERCALC_221214B : 10		R180813
NUTRIENTS												
Nitrogen, Ammonia as N	0.07	mg/L		0.05	0.03	E350.1	12/13/22 13:11 / JA			FIA203-HE_221213A : 53		R180793
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.02	0.008	E353.2	12/14/22 15:37 / JA			FIA203-HE_221214A : 101		R180840
Nitrogen, Total	0.40	mg/L		0.05	0.02	A4500 N-C	12/12/22 13:08 / JA	12/09/22 13:18	A4500 N-	FIA203-HE_221212A : 46		64711
Phosphorus, Total as P	0.013	mg/L		0.003	0.001	E365.1	12/19/22 14:41 / JA	12/16/22 10:03	E365.1	SEAL AA500_221219A : 39		64802
METALS, DISSOLVED												
Arsenic	0.006	mg/L		0.001	0.0002	E200.8	12/13/22 17:51 / dck			ICPMS205-H_221213B : 121		R180791
Cadmium	0.00006	mg/L		0.00003	0.00002	E200.8	12/13/22 17:51 / dck			ICPMS205-H_221213B : 121		R180791
Copper	0.002	mg/L		0.001	0.0001	E200.8	12/13/22 17:51 / dck			ICPMS205-H_221213B : 121		R180791
Lead	ND	mg/L		0.0003	0.0001	E200.8	12/13/22 17:51 / dck			ICPMS205-H_221213B : 121		R180791
Zinc	0.018	mg/L		0.008	0.001	E200.8	12/13/22 17:51 / dck			ICPMS205-H_221213B : 121		R180791
METALS, TOTAL RECOVERABLE												
Arsenic	0.007	mg/L		0.001	0.0001	E200.8	12/13/22 17:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 122		64707
Cadmium	0.00009	mg/L		0.00003	0.00002	E200.8	12/13/22 17:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 122		64707
Calcium	130	mg/L		1	0.1	E200.7	12/12/22 13:50 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 34		64707
Copper	0.003	mg/L		0.001	0.0003	E200.8	12/13/22 17:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 122		64707
Lead	0.0002	mg/L	J	0.0003	0.0001	E200.8	12/13/22 17:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 122		64707
Magnesium	20	mg/L		1	0.05	E200.7	12/12/22 13:50 / kjb	12/09/22 09:22	E200.2	ICP2-HE_221212A : 34		64707
Zinc	0.017	mg/L		0.008	0.001	E200.8	12/13/22 17:53 / dck	12/09/22 09:22	E200.2	ICPMS205-H_221213B : 122		64707

Report Definitions:
RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix
MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Federal Superfund
Client Sample ID: CFR-84F
Project: CFROU Monitoring
Matrix: Surface Water

Lab ID: H22120258-011
Collection Date: 12/07/22 08:30
DateReceived: 12/09/22
Report Date: 01/11/23

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, TOTAL RECOVERABLE												
Mercury	0.014	ug/L		0.005	0.002	E245.1	12/12/22 16:13 / cfg	12/12/22 09:38	E245.1	HGCV203-H_221212A	18	64708

Report Definitions: RL - Analyte Reporting Limit | MCL - Maximum Contaminant Level | ND - Not detected at the Reporting Limit (RL)

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 221212waLL-hg203
Date: *11-Jan-23*

Run ID :Run Order: **HGCV203-H_221212A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E245.1**

Analysis Date: **12/12/22 15:20** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.106	0.0050	0.1	0	106	90	110				

Associated samples: **H22120258-001C, H22120258-003C, H22120258-011A**

Run ID :Run Order: **HGCV203-H_221212A: 10** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV1** Method: **E245.1**

Analysis Date: **12/12/22 15:23** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0978	0.0050	0.1	0	98	95	105				

Associated samples: **H22120258-001C, H22120258-003C, H22120258-011A**

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 221215waLL-hg203
Date: *11-Jan-23*

Run ID :Run Order: **HGCV203-H_221215A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E245.1**

Analysis Date: **12/15/22 13:39** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.103	0.0050	0.1	0	103	90	110				

Associated samples: **H22120258-002C**

Run ID :Run Order: **HGCV203-H_221215A: 10** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV1** Method: **E245.1**

Analysis Date: **12/15/22 13:43** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.101	0.0050	0.1	0	101	95	105				

Associated samples: **H22120258-002C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 44449
Date: *11-Jan-23*

Run ID :Run Order: **SEAL AA500_221219A: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E365.1**

Analysis Date: **12/19/22 14:12** Units: **mg/L** **Prep Info:** Prep Date: **1/17/2019** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.252	0.010	0.25	0	**101**	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 50868** **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221212A: 20** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:37** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.499	0.10	0.5	0	**100**	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 37** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:57** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.482	0.10	0.5	0	**96**	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 77** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **A4500 N-C**

Analysis Date: **12/12/22 13:45** Units: **mg/L** **Prep Info:** Prep Date: **4/8/2020** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.463	0.10	0.5	0	**93**	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 51253
Date: *11-Jan-23*

Run ID :Run Order: **SEAL AA500_221219A: 35** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E365.1**

Analysis Date: **12/19/22 14:35** Units: **mg/L** **Prep Info:** Prep Date: **5/11/2020** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.0993	0.010	0.1	0	99	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64707** **Date:** *11-Jan-23*

Run ID :Run Order: **ICP2-HE_221212A: 15** SampType: **Method Blank** Lab ID: **MB-64707** Method: **E200.7**

Analysis Date: **12/12/22 12:38** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.1									
Magnesium	ND	0.05									

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 16** SampType: **Laboratory Control Sample** Lab ID: **LCS-64707** Method: **E200.7**

Analysis Date: **12/12/22 12:42** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	26.6	1.0	25	0	106	85	115				
Magnesium	26.8	1.0	25	0	107	85	115				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 21** SampType: **Serial Dilution** Lab ID: **H22120258-002CDIL** Method: **E200.7**

Analysis Date: **12/12/22 13:01** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	42.0	1.0		0		0	0	43.33	3.2	10	
Magnesium	12.5	1.0		0		0	0	13.06	4.0	10	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 23** SampType: **Sample Matrix Spike** Lab ID: **H22120258-002CMS3** Method: **E200.7**

Analysis Date: **12/12/22 13:09** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	67.5	1.0	25	43.33	97	70	130				
Magnesium	39.7	1.0	25	13.06	107	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64707** **Date:** *11-Jan-23*

Run ID :Run Order: **ICP2-HE_221212A: 24** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-002CMSD3** Method: **E200.7**

Analysis Date: **12/12/22 13:12** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	69.2	1.0	25	43.33	103	70	130	67.47	2.5	20	
Magnesium	40.0	1.0	25	13.06	108	70	130	39.74	0.6	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 36** SampType: **Serial Dilution** Lab ID: **H22120260-001CDIL** Method: **E200.7**

Analysis Date: **12/12/22 13:58** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	123	1.0		0		0	0	128.1	4.4	10	
Magnesium	10.9	1.0		0		0	0	11.38	4.4	10	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 38** SampType: **Sample Matrix Spike** Lab ID: **H22120260-001CMS3** Method: **E200.7**

Analysis Date: **12/12/22 14:05** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	150	1.0	25	128.1		70	130				A
Magnesium	39.2	1.0	25	11.38	111	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 39** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120260-001CMSD3** Method: **E200.7**

Analysis Date: **12/12/22 14:09** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	150	1.0	25	128.1		70	130	150.1	0.2	20	A
Magnesium	38.5	1.0	25	11.38	108	70	130	39.24	2.0	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64707** **Date:** *11-Jan-23*

Run ID :Run Order: **ICPMS205-H_221213B: 93** SampType: **Method Blank** Lab ID: **MB-64707** Method: **E200.8**

Analysis Date: **12/13/22 16:31** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0001									
Cadmium	ND	0.00003									
Copper	ND	0.0003									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 104** SampType: **Laboratory Control Sample** Lab ID: **LCS-64707** Method: **E200.8**

Analysis Date: **12/13/22 17:02** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.516	0.0010	0.5	0	103	85	115				
Cadmium	0.261	0.0010	0.25	0	104	85	115				
Copper	0.512	0.0050	0.5	0	102	85	115				
Lead	0.519	0.0010	0.5	0	104	85	115				
Zinc	0.510	0.010	0.5	0	102	85	115				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 105** SampType: **Sample Matrix Spike** Lab ID: **H22120258-002CMS3** Method: **E200.8**

Analysis Date: **12/13/22 17:05** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.523	0.0010	0.5	0.007921	103	70	130				
Cadmium	0.254	0.0010	0.25	0.00004794	101	70	130				
Copper	0.504	0.0050	0.5	0.001805	101	70	130				
Lead	0.515	0.0010	0.5	0.003485	102	70	130				
Zinc	0.504	0.010	0.5	0.01363	98	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64707** **Date:** *11-Jan-23*

Run ID :Run Order: **ICPMS205-H_221213B: 106** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-002CMSD3** Method: **E200.8**

Analysis Date: **12/13/22 17:08** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.522	0.0010	0.5	0.007921	103	70	130	0.5233	0.2	20	
Cadmium	0.259	0.0010	0.25	0.00004794	104	70	130	0.2537	2.0	20	
Copper	0.506	0.0050	0.5	0.001805	101	70	130	0.5045	0.3	20	
Lead	0.518	0.0010	0.5	0.003485	103	70	130	0.515	0.5	20	
Zinc	0.515	0.010	0.5	0.01363	100	70	130	0.5041	2.1	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 127** SampType: **Sample Matrix Spike** Lab ID: **H22120260-001CMS3** Method: **E200.8**

Analysis Date: **12/13/22 18:08** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.521	0.0010	0.5	0.002116	104	70	130				
Cadmium	0.258	0.0010	0.25	0.00008926	103	70	130				
Copper	0.508	0.0050	0.5	0.005867	100	70	130				
Lead	0.524	0.0010	0.5	0.000966	105	70	130				
Zinc	0.532	0.010	0.5	0.04524	97	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 128** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120260-001CMSD3** Method: **E200.8**

Analysis Date: **12/13/22 18:11** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **E200.2**

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.511	0.0010	0.5	0.002116	102	70	130	0.5214	2.0	20	
Cadmium	0.257	0.0010	0.25	0.00008926	103	70	130	0.258	0.3	20	
Copper	0.497	0.0050	0.5	0.005867	98	70	130	0.508	2.1	20	
Lead	0.515	0.0010	0.5	0.000966	103	70	130	0.5237	1.7	20	
Zinc	0.521	0.010	0.5	0.04524	95	70	130	0.5322	2.1	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64708** **Date:** *11-Jan-23*

Run ID :Run Order: **HGCV203-H_221212A: 12** SampType: **Method Blank** Lab ID: **MB-64708** Method: **E245.1**

Analysis Date: **12/12/22 15:52** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.002									

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Run ID :Run Order: **HGCV203-H_221212A: 13** SampType: **Laboratory Control Sample** Lab ID: **LCS-64708** Method: **E245.1**

Analysis Date: **12/12/22 15:55** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0532	0.0050	0.05	0	106	90	110				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Run ID :Run Order: **HGCV203-H_221212A: 19** SampType: **Sample Matrix Spike** Lab ID: **H22120258-011AMS** Method: **E245.1**

Analysis Date: **12/12/22 16:20** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0684	0.0050	0.05	0.01364	110	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Run ID :Run Order: **HGCV203-H_221212A: 20** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-011AMSD** Method: **E245.1**

Analysis Date: **12/12/22 16:24** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0653	0.0050	0.05	0.01364	103	70	130	0.06845	4.8	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Run ID :Run Order: **HGCV203-H_221213A: 26** SampType: **Sample Matrix Spike** Lab ID: **H22120260-006BMS** Method: **E245.1**

Analysis Date: **12/13/22 14:54** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0540	0.0050	0.05	0.00261	103	70	130				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 64708
Date: *11-Jan-23*

Run ID :Run Order: **HGCV203-H_221213A: 27** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120260-006BMSD** Method: **E245.1**

Analysis Date: **12/13/22 14:58** Units: **ug/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **E245.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0540	0.0050	0.05	0.00261	**103**	70	130	0.054	**0**	20	

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64711** **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221212A: 11** SampType: **Method Blank** Lab ID: **MB-64711** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:26** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	ND	0.02									

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 14** SampType: **Laboratory Control Sample** Lab ID: **LCS-64711** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:30** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	11.5	0.30	11.2	0	103	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 17** SampType: **Laboratory Fortified Blank** Lab ID: **LFB-64711** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:34** Units: **mg/L** **Prep Info:** Prep Date: **12/9/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.02	0.10	1	0	102	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 34** SampType: **Sample Matrix Spike** Lab ID: **H22120258-001Ams** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:54** Units: **mg/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	1.01	0.10	1	0	101	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-001Amsd** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:55** Units: **mg/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.988	0.10	1	0	99	90	110	1.014	2.6	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: 64711** **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221212A: 35** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-001Amsd** Method: **A4500 N-C**

Analysis Date: **12/12/22 12:55** Units: **mg/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 54** SampType: **Sample Matrix Spike** Lab ID: **H22120260-005Ams** Method: **A4500 N-C**

Analysis Date: **12/12/22 13:17** Units: **mg/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.976	0.10	1	0	98	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **FIA203-HE_221212A: 55** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120260-005Amsd** Method: **A4500 N-C**

Analysis Date: **12/12/22 13:19** Units: **mg/L** **Prep Info:** Prep Date: **12/12/2022** Prep Method: **A4500 N-C**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Total	0.960	0.10	1	0	96	90	110	0.9761	1.6	20	

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID:** 64802 **Date:** *11-Jan-23*

Run ID :Run Order: **SEAL AA500_221219A: 15** SampType: **Method Blank** Lab ID: **MB-64802** Method: **E365.1**

Analysis Date: **12/19/22 14:13** Units: **mg/L** **Prep Info:** Prep Date: **12/16/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	ND	0.001									

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **SEAL AA500_221219A: 18** SampType: **Laboratory Control Sample** Lab ID: **LCS-64802** Method: **E365.1**

Analysis Date: **12/19/22 14:17** Units: **mg/L** **Prep Info:** Prep Date: **12/16/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.425	0.010	0.4	0	106	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **SEAL AA500_221219A: 23** SampType: **Sample Matrix Spike** Lab ID: **H22110332-001Cms** Method: **E365.1**

Analysis Date: **12/19/22 14:22** Units: **mg/L** **Prep Info:** Prep Date: **11/14/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.218	0.010	0.2	0.0017	108	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **SEAL AA500_221219A: 24** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22110332-001Cmsd** Method: **E365.1**

Analysis Date: **12/19/22 14:23** Units: **mg/L** **Prep Info:** Prep Date: **11/14/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.223	0.010	0.2	0.0017	111	90	110	0.2178	2.3	20	S

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **SEAL AA500_221219A: 45** SampType: **Sample Matrix Spike** Lab ID: **H22120260-005Dms** Method: **E365.1**

Analysis Date: **12/19/22 14:48** Units: **mg/L** **Prep Info:** Prep Date: **12/16/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.218	0.010	0.2	0	109	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: 64802
Date: *11-Jan-23*

Run ID :Run Order: **SEAL AA500_221219A: 45** SampType: **Sample Matrix Spike** Lab ID: **H22120260-005Dms** Method: **E365.1**

Analysis Date: **12/19/22 14:48** Units: **mg/L** **Prep Info:** Prep Date: **12/16/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **SEAL AA500_221219A: 46** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120260-005Dmsd** Method: **E365.1**

Analysis Date: **12/19/22 14:49** Units: **mg/L** **Prep Info:** Prep Date: **12/16/2022** Prep Method: **E365.1**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total as P	0.216	0.010	0.2	0	**108**	90	110	0.2175	**0.6**	20	

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180736** **Date:** *11-Jan-23*

Run ID :Run Order: **PHSC_101-H_221212A: 6** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **12/12/22 09:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **PHSC_101-H_221212A: 7** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **12/12/22 09:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	560	4.0	600	0	**93**	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **PHSC_101-H_221212A: 44** SampType: **Sample Duplicate** Lab ID: **H22120258-007ADUP** Method: **A2320 B**

Analysis Date: **12/12/22 11:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	130	4.0		0				130.3	**1.9**	10	
Bicarbonate as HCO3	160	4.0		0				158.4	**1.9**	10	

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **PHSC_101-H_221212A: 82** SampType: **Sample Duplicate** Lab ID: **H22120258-001ADUP** Method: **A2320 B**

Analysis Date: **12/12/22 13:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	4.0		0				0		10	
Bicarbonate as HCO3	ND	4.0		0				0		10	

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: R180774
Date: *11-Jan-23*

Run ID :Run Order: **ICP2-HE_221212A: 6** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.7**

Analysis Date: **12/12/22 12:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.7	1.0	40	0	102	95	105				
Magnesium	40.5	1.0	40	0	101	95	105				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 7** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV-1** Method: **E200.7**

Analysis Date: **12/12/22 12:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.2	1.0	25	0	101	95	105				
Magnesium	25.7	1.0	25	0	103	95	105				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 19** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **12/12/22 12:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	25.8	1.0	25	0	103	90	110				
Magnesium	26.1	1.0	25	0	104	90	110				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Run ID :Run Order: **ICP2-HE_221212A: 31** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E200.7**

Analysis Date: **12/12/22 13:39** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	26.1	1.0	25	0	104	90	110				
Magnesium	26.2	1.0	25	0	105	90	110				

Associated samples: **H22120258-001C, H22120258-002C, H22120258-003C, H22120258-004C, H22120258-005C, H22120258-006C, H22120258-007C, H22120258-008C, H22120258-009C, H22120258-010C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180791** **Date:** *11-Jan-23*

Run ID :Run Order: **ICPMS205-H_221213B: 14** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **12/13/22 11:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0621	0.0050	0.06	0	104	90	110				
Cadmium	0.0304	0.0010	0.03	0	101	90	110				
Copper	0.0604	0.010	0.06	0	101	90	110				
Lead	0.0593	0.010	0.06	0	99	90	110				
Zinc	0.0605	0.010	0.06	0	101	90	110				

Associated samples: **H22120258-001B, H22120258-001C, H22120258-002B, H22120258-002C, H22120258-003B, H22120258-003C, H22120258-004B, H22120258-004C, H22120258-005B, H22120258-005C, H22120258-006B, H22120258-006C, H22120258-007B, H22120258-007C, H22120258-008B, H22120258-008C, H22120258-009B, H22120258-009C, H22120258-010B, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 26** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E200.8**

Analysis Date: **12/13/22 11:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0522	0.0050	0.05	0	104	85	115				
Cadmium	0.0512	0.0010	0.05	0	102	85	115				
Copper	0.0535	0.010	0.05	0	107	85	115				
Lead	0.0500	0.010	0.05	0	100	85	115				
Zinc	0.0551	0.010	0.05	0	110	85	115				

Associated samples: **H22120258-001B, H22120258-002B, H22120258-003B, H22120258-004B, H22120258-005B, H22120258-006B, H22120258-007B, H22120258-008B, H22120258-009B, H22120258-010B**

Run ID :Run Order: **ICPMS205-H_221213B: 29** SampType: **Method Blank** Lab ID: **LRB** Method: **E200.8**

Analysis Date: **12/13/22 12:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									
Cadmium	ND	0.00002									
Copper	ND	0.0001									
Lead	ND	0.0001									
Zinc	ND	0.001									

Associated samples: **H22120258-001B, H22120258-002B, H22120258-003B, H22120258-004B, H22120258-005B, H22120258-006B, H22120258-007B, H22120258-008B, H22120258-009B, H22120258-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180791** **Date:** *11-Jan-23*

Run ID :Run Order: **ICPMS205-H_221213B: 58** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **12/13/22 14:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0604	0.0050	0.06	0	101	90	110				
Cadmium	0.0286	0.0010	0.03	0	95	90	110				
Copper	0.0587	0.010	0.06	0	98	90	110				
Lead	0.0570	0.010	0.06	0	95	90	110				
Zinc	0.0593	0.010	0.06	0	99	90	110				

Associated samples: **H22120258-001B, H22120258-001C, H22120258-002B, H22120258-002C, H22120258-003B, H22120258-003C, H22120258-004B, H22120258-004C, H22120258-005B, H22120258-005C, H22120258-006B, H22120258-006C, H22120258-007B, H22120258-007C, H22120258-008B, H22120258-008C, H22120258-009B, H22120258-009C, H22120258-010B, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 91** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **12/13/22 16:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0505	0.0050	0.05	0	101	90	110				
Cadmium	0.0494	0.0010	0.05	0	99	90	110				
Copper	0.0506	0.010	0.05	0	101	90	110				
Lead	0.0489	0.010	0.05	0	98	90	110				
Zinc	0.0517	0.010	0.05	0	103	90	110				

Associated samples: **H22120258-001B, H22120258-001C, H22120258-002B, H22120258-002C, H22120258-003B, H22120258-003C, H22120258-004B, H22120258-004C, H22120258-005B, H22120258-005C, H22120258-006B, H22120258-006C, H22120258-007B, H22120258-007C, H22120258-008B, H22120258-008C, H22120258-009B, H22120258-009C, H22120258-010B, H22120258-010C**

Run ID :Run Order: **ICPMS205-H_221213B: 108** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E200.8**

Analysis Date: **12/13/22 17:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0503	0.0050	0.05	0	101	90	110				
Cadmium	0.0502	0.0010	0.05	0	100	90	110				
Copper	0.0505	0.010	0.05	0	101	90	110				
Lead	0.0504	0.010	0.05	0	101	90	110				
Zinc	0.0519	0.010	0.05	0	104	90	110				

Associated samples: **H22120258-001B, H22120258-001C, H22120258-002B, H22120258-002C, H22120258-003B, H22120258-003C, H22120258-004B, H22120258-004C, H22120258-005B, H22120258-005C, H22120258-006B, H22120258-006C, H22120258-007B, H22120258-007C, H22120258-008B, H22120258-008C, H22120258-009B, H22120258-009C, H22120258-010B, H22120258-010C**

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limit; R - RPD outside accepted recovery limits; N - Analyte concentration was not sufficiently high to calculate RPD; A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180791** **Date:** *11-Jan-23*

Run ID :Run Order: **ICPMS205-H_221213B: 111** SampType: **Sample Matrix Spike** Lab ID: **H22120258-006BMS** Method: **E200.8**

Analysis Date: **12/13/22 17:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0572	0.0010	0.05	0.005103	104	70	130				
Cadmium	0.0503	0.0010	0.05	0.00003924	101	70	130				
Copper	0.0529	0.0050	0.05	0.002705	100	70	130				
Lead	0.0507	0.0010	0.05	0	101	70	130				
Zinc	0.0622	0.010	0.05	0.01135	102	70	130				

Associated samples: **H22120258-001B, H22120258-002B, H22120258-003B, H22120258-004B, H22120258-005B, H22120258-006B, H22120258-007B, H22120258-008B, H22120258-009B, H22120258-010B**

Run ID :Run Order: **ICPMS205-H_221213B: 112** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-006BMSD** Method: **E200.8**

Analysis Date: **12/13/22 17:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0578	0.0010	0.05	0.005103	105	70	130	0.05719	1.0	20	
Cadmium	0.0503	0.0010	0.05	0.00003924	101	70	130	0.05031	0	20	
Copper	0.0532	0.0050	0.05	0.002705	101	70	130	0.05288	0.6	20	
Lead	0.0514	0.0010	0.05	0	103	70	130	0.05074	1.3	20	
Zinc	0.0632	0.010	0.05	0.01135	104	70	130	0.06217	1.6	20	

Associated samples: **H22120258-001B, H22120258-002B, H22120258-003B, H22120258-004B, H22120258-005B, H22120258-006B, H22120258-007B, H22120258-008B, H22120258-009B, H22120258-010B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID:** R180793 **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221213A: 9** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**

Analysis Date: **12/13/22 12:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.965	0.050	1	0	96	90	110				

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 10** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**

Analysis Date: **12/13/22 12:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**

Analysis Date: **12/13/22 12:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.973	0.050	1	0	97	90	110				

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 50** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **12/13/22 13:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.499	0.050	0.5	0	100	90	110				

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 54** SampType: **Sample Matrix Spike** Lab ID: **H22120258-010DMS** Method: **E350.1**

Analysis Date: **12/13/22 13:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.933	0.050	1	0.0725	86	80	120				

Associated samples: **H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: R180793
Date: *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221213A: 55** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-010DMSD** Method: **E350.1**

Analysis Date: **12/13/22 13:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.940	0.050	1	0.0725	**87**	80	120	0.9327	**0.8**	10	

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 90** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**

Analysis Date: **12/13/22 16:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.956	0.050	1	0	**96**	90	110				

Associated samples: **H22120258-010D**

Run ID :Run Order: **FIA203-HE_221213A: 93** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**

Analysis Date: **12/13/22 17:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.967	0.050	1	0	**97**	90	110				

Associated samples: **H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180840** **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221214A: 10** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E353.2**

Analysis Date: **12/14/22 13:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.05	0.010	1	0	105	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 11** SampType: **Method Blank** Lab ID: **MBLK** Method: **E353.2**

Analysis Date: **12/14/22 13:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	ND	0.008									

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 12** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E353.2**

Analysis Date: **12/14/22 13:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.987	0.011	1	0	99	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 79** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **12/14/22 15:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.474	0.010	0.5	0	95	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 87** SampType: **Sample Matrix Spike** Lab ID: **H22120258-001DMS** Method: **E353.2**

Analysis Date: **12/14/22 15:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.948	0.011	1	0	95	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID: R180840** **Date:** *11-Jan-23*

Run ID :Run Order: **FIA203-HE_221214A: 87** SampType: **Sample Matrix Spike** Lab ID: **H22120258-001DMS** Method: **E353.2**

Analysis Date: **12/14/22 15:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 88** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-001DMSD** Method: **E353.2**

Analysis Date: **12/14/22 15:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.949	0.011	1	0	95	90	110	0.9475	0.1	10	

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 93** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E353.2**

Analysis Date: **12/14/22 15:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	0.477	0.010	0.5	0	95	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 96** SampType: **Sample Matrix Spike** Lab ID: **H22120258-006DMS** Method: **E353.2**

Analysis Date: **12/14/22 15:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.15	0.011	1	0.2019	94	90	110				

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Run ID :Run Order: **FIA203-HE_221214A: 97** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-006DMSD** Method: **E353.2**

Analysis Date: **12/14/22 15:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite as N	1.14	0.011	1	0.2019	94	90	110	1.146	0.2	10	

Associated samples: **H22120258-001D, H22120258-002D, H22120258-003D, H22120258-004D, H22120258-005D, H22120258-006D, H22120258-007D, H22120258-008D, H22120258-009D, H22120258-010D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22120258
BatchID: R180905
Date: *11-Jan-23*

Run ID :Run Order: **IC METROHM_221215A: 13** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**
Analysis Date: **12/15/22 12:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	99.1	1.0	100	0	99	90	110				
Sulfate	400	1.0	400	0	100	90	110				

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 14** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**
Analysis Date: **12/15/22 12:38** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.03	0.02									
Sulfate	ND	0.06									

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 17** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**
Analysis Date: **12/15/22 13:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.7	1.0	25	0	99	90	110				
Sulfate	101	1.0	100	0	101	90	110				

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 74** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**
Analysis Date: **12/16/22 04:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	53.6	1.0	50	0	107	90	110				
Sulfate	211	1.0	200	0	106	90	110				

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 88** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**
Analysis Date: **12/16/22 08:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	53.7	1.0	50	0	107	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22120258
BatchID: R180905
Date: *11-Jan-23*

Run ID :Run Order: **IC METROHM_221215A: 88** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**
Analysis Date: **12/16/22 08:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	213	1.0	200	0	106	90	110				

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 92** SampType: **Sample Matrix Spike** Lab ID: **H22120258-007AMS** Method: **E300.0**
Analysis Date: **12/16/22 09:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	39.6	1.0	25	13.38	105	90	110				
Sulfate	267	1.0	100	163.2	104	90	110				

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **IC METROHM_221215A: 93** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-007AMSD** Method: **E300.0**
Analysis Date: **12/16/22 09:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	39.4	1.0	25	13.38	104	90	110	39.61	0.4	20	
Sulfate	267	1.0	100	163.2	104	90	110	266.8	0.3	20	

Associated samples: **H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch
Work Order: H22120258
BatchID: R181014
Date: *11-Jan-23*

Run ID :Run Order: **IC METROHM_221219A: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**
Analysis Date: **12/19/22 15:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.02									
Sulfate	ND	0.06									

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Run ID :Run Order: **IC METROHM_221219A: 3** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**
Analysis Date: **12/19/22 16:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	101	1.0	100	0	101	90	110				
Sulfate	390	1.0	400	0	98	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Run ID :Run Order: **IC METROHM_221219A: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**
Analysis Date: **12/19/22 16:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.0	1.0	25	0	100	90	110				
Sulfate	104	1.0	100	0	104	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Run ID :Run Order: **IC METROHM_221219A: 52** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**
Analysis Date: **12/20/22 04:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	50.2	1.0	50	0	100	90	110				
Sulfate	198	1.0	200	0	99	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Run ID :Run Order: **IC METROHM_221219A: 61** SampType: **Sample Matrix Spike** Lab ID: **H22120258-002AMS** Method: **E300.0**
Analysis Date: **12/20/22 07:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	30.1	1.0	25	3.834	105	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund
Prepared by Helena, MT Branch

Work Order: H22120258
BatchID: R181014
Date: *11-Jan-23*

Run ID :Run Order: **IC METROHM_221219A: 61** SampType: **Sample Matrix Spike** Lab ID: **H22120258-002AMS** Method: **E300.0**

Analysis Date: **12/20/22 07:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	122	1.0	100	16.7	105	90	110				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Run ID :Run Order: **IC METROHM_221219A: 62** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H22120258-002AMSD** Method: **E300.0**

Analysis Date: **12/20/22 07:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	30.0	1.0	25	3.834	105	90	110	30.08	0.1	20	
Sulfate	121	1.0	100	16.7	105	90	110	121.9	0.5	20	

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: MT DEQ-Federal Superfund — Prepared by Helena, MT Branch

Work Order: H22120258 **BatchID:** TSS221212A **Date:** *11-Jan-23*

Run ID :Run Order: **ACCU-124 (14410200)_221212A: 1** SampType: **Method Blank** Lab ID: **MB-24_221212** Method: **A2540 D**

Analysis Date: **12/12/22 14:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	0.5	0.3									

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **ACCU-124 (14410200)_221212A: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-25_221212** Method: **A2540 D**

Analysis Date: **12/12/22 14:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	98.0	25	100	0	98	80	120				

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

Run ID :Run Order: **ACCU-124 (14410200)_221212A: 2** SampType: **Sample Duplicate** Lab ID: **H22120258-001A DUP** Method: **A2540 D**

Analysis Date: **12/12/22 14:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	10		0				0.5		10	

Associated samples: **H22120258-001A, H22120258-002A, H22120258-003A, H22120258-004A, H22120258-005A, H22120258-006A, H22120258-007A, H22120258-008A, H22120258-009A, H22120258-010A**

- TSS did not obtain the minimum residue requirement of 2.5 mg residue. - Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

BROOKS APPLIED LABS
13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

January 9, 2023

Energy Laboratories, Inc.
ATTN: Wanda Johnson
3161 E Lyndale
Helena, MT 59602
wjohnson@energylab.com

RE: Project ENL-HL1901 Client Project: H22120258

Dear Wanda Johnson,

On December 13, 2022, Brooks Applied Labs (BAL) received five (5) water samples at a temperature of 2.9°C. The samples were logged-in for the analyses of methyl mercury (MeHg) according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

Methyl Mercury using MERX
Water samples were pre-preserved with hydrochloric acid. The preserved samples were distilled and analyzed via EPA Method 1630.

The results were method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL verifies that the reported results of all analyses for which the laboratory is accredited meet the requirements of the accrediting body, unless otherwise noted in the report narrative. For more information regarding accreditations please see the *Report Information* and *Batch Summary* pages. This report must be used in its entirety for interpretation of results. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Amy Goodall
Project Manager
Brooks Applied Labs
amy@brooksapplied.com

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Report Information

General Disclaimers

Test results are based solely upon the sample submitted to Brooks Applied Labs in the condition it was received . This report shall not be reproduced or copied, except in full, without written approval of the laboratory. Brooks Applied Labs is not responsible for the consequences arising from the use of a partial report.

Laboratory Accreditation

BAL maintains accreditation with various state and national agencies for select test methods. For a current list of BAL accreditations, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. The reported analyte/matrix/method combination shall be considered outside BAL's scopes of accreditation unless otherwise identified as ISO, TNI, or ISO,TNI in the tables. It is the responsibility of the client to verify whether a specific accreditation is required for the intended data use.

ISO: ISO/IEC 17025:2017 accredited test method. Issued by ANSI National Accreditation Board (ANAB), #ADE-1447.02.

TNI: NELAP accredited test method. Issued by the State of Florida Department of Health, #E87982.

ISO,TNI: Test method is accredited under both the ISO/IEC 17025:2017 and NELAP accreditations referenced above.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Sample Information

Sample	Alias	Lab ID	Report Matrix	Type	Sampled	Received
H22120258-001E	FC-CFR QC-FB	2212221-01	Surface water	Sample	12/07/2022	12/13/2022
H22120258-002E	FC-CFR	2212221-02	Surface water	Sample	12/07/2022	12/13/2022
H22120258-003E	FC-CFR QC-FD	2212221-03	Surface water	Sample	12/07/2022	12/13/2022
H22120258-011B	CFR-84F	2212221-04	Surface water	Sample	12/07/2022	12/13/2022
H22120258-012A	Trip blank	2212221-05	Trip blank	Trip Blank	12/07/2022	12/13/2022

Batch Summary

Analyte	Lab Matrix	Method	Accred.	Prepared	Analyzed	Batch	Sequence
MeHg	Water	EPA 1630	ISO,TNI	12/15/22	12/15/22	B223065	S221317
MeHg	Water	EPA 1630	ISO,TNI	12/15/22	12/16/22	B223065	S221321

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
H22120258-001E, FC-CFR QC-FB										
2212221-01	MeHg	Surface water	TR	0.031	J	0.023	0.049	ng/L	B223065	S221317
H22120258-002E, FC-CFR										
2212221-02	MeHg	Surface water	TR	0.923		0.023	0.049	ng/L	B223065	S221317
H22120258-003E, FC-CFR QC-FD										
2212221-03	MeHg	Surface water	TR	0.932		0.023	0.050	ng/L	B223065	S221317
H22120258-011B, CFR-84F										
2212221-04	MeHg	Surface water	TR	0.202		0.026	0.057	ng/L	B223065	S221321
H22120258-012A, Trip blank										
2212221-05	MeHg	Trip blank	TR	≤ 0.023	U	0.023	0.050	ng/L	B223065	S221317

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Accuracy & Precision Summary

Batch: B223065
Lab Matrix: Water
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B223065-BS1	**Blank Spike, (2249035)**						
	MeHg		1.000	1.067	ng/L	107% 67-133	
B223065-MS2	**Matrix Spike (2212248-01)**						
	MeHg	0.057	1.000	1.059	ng/L	100% 65-135	
B223065-MSD2	**Matrix Spike Duplicate (2212248-01)**						
	MeHg	0.057	1.000	1.049	ng/L	99% 65-135	1% 35

Method Blanks & Reporting Limits

Batch: B223065
Matrix: Water
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B223065-BLK1	0.003	ng/L
B223065-BLK2	0.010	ng/L
B223065-BLK3	0.003	ng/L
B223065-BLK4	0.002	ng/L

Average: 0.005 **Standard Deviation:** 0.004 **MDL:** 0.022
Limit: 0.049 **Limit:** 0.022 **MRL:** 0.049

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Sample Containers

Lab ID: 2212221-01
Sample: H22120258-001E
Report Matrix: Surface water
Sample Type: Sample
Collected: 12/07/2022
Received: 12/13/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - Bottle (enter size)	250 mL	21-0121	2 mL 6N HCl (PP)	2228001	<2	Cooler - 2212221

Lab ID: 2212221-02
Sample: H22120258-002E
Report Matrix: Surface water
Sample Type: Sample
Collected: 12/07/2022
Received: 12/13/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - Bottle (enter size)	250 mL	21-0121	2 mL 6N HCl (PP)	2228001	<2	Cooler - 2212221

Lab ID: 2212221-03
Sample: H22120258-003E
Report Matrix: Surface water
Sample Type: Sample
Collected: 12/07/2022
Received: 12/13/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - Bottle (enter size)	250 mL	21-0121	2 mL 6N HCl (PP)	2228001	<2	Cooler - 2212221

Lab ID: 2212221-04
Sample: H22120258-011B
Report Matrix: Surface water
Sample Type: Sample
Collected: 12/07/2022
Received: 12/13/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - Bottle (enter size)	250 mL	21-0121	2 mL 6N HCl (PP)	2228001	<2	Cooler - 2212221

Lab ID: 2212221-05
Sample: H22120258-012A
Report Matrix: Trip blank
Sample Type: Trip Blank
Collected: 12/07/2022
Received: 12/13/2022

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	FLPE - Bottle (enter size)	250 mL	21-0121	2 mL 6N HCl (PP)	2228001	<2	Cooler - 2212221

Project ID: ENL-HL1901
PM: Amy Goodall

Client PM: Wanda Johnson
Client Project: H22120258

Shipping Containers

Cooler - 2212221

Received: December 13, 2022 10:36
Tracking No: 1Z 37E W97 01 6155 0912 via UP
Coolant Type: Ice
Temperature: 2.9 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: R-IR-1

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

Energy Laboratories Inc
3161 East Lyndale Avenue
Helena, MT 59601
4064420711

H22120258

CHAIN-OF-CUSTODY RECORD

09-Dec-22

Earliest HT Expires: Wed, 12/14/2022
Test Codes: Sub-BrooksRand

Earliest Due Date: 12/20/2022
 # Bus. Days Until Due: 7

Subcontractor:
Brooks Applied Labs
13751 Lake City Way NE
Seattle, WA 98125
TEL: 2066326206
FAX: 2066326017
Acct #: 2066326206

Subcontractor's Client:

QC Level: STD
State Sampled: MT

Rush	Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests: Sub-BrooksRand
☐	H22120258-001E	Surface Water	12/07/22 09:15 A	1 - CLIENT-SLD	1
	Sample Name: FC-CFR QC-FB				
☐	H22120258-002E	Surface Water	12/07/22 09:30 A	1 - CLIENT-SLD	1
	Sample Name: FC-CFR				
☐	H22120258-003E	Surface Water	12/07/22 09:30 A	1 - CLIENT-SLD	1
	Sample Name: FC-CFR QC-FD				
☐	H22120258-011B	Surface Water	12/07/22 08:30 A	1 - CLIENT-SLD	1
	Sample Name: CFR-84F				
☐	H22120258-012A	Trip Blank	12/07/22 08:30 A	1 - CLIENT-SLD	1
	Sample Name: Trip Blank				

Comments: Methylmercury-EPA 1630

		Date/Time		Date/Time
Relinquished by:	Taylor K. Jones	12/09/2022 8:49	**Received by:** ATT	12/13/22 10:36
Relinquished by:			**Received by:**	

Shipped By:	Custody Seal Y N	Intact Y N	Receipt Temp: °C	Temp Blank Y N	On Ice Y N

Work Order Receipt Checklist

MT DEQ-Federal Superfund

H22120258

Login completed by: Taylor K. Jones
Date Received: 12/9/2022

Reviewed by: rtooke
Received by: tkj

Reviewed Date: 12/12/2022
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.5°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The Temperature Blank temperature for shipping container 1 was 0.1°C and shipping container 2 was 0.5°C.
The container for Dissolved Metals was not indicated as filtered for sample CFR-11F. An email was sent to Joe Naughton to verify it was filtered. The container that did not specify was filtered per email from Joe Naughton on 12/9/22.
tj 12/9/22

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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; tanner.traxler@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

C1 0.1
C2 0.5

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T. Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	TR As, Cd, Cu Pb, Zn	Diss As, Cd, Cu, Pb, Zn	TPN	NO3+2, TP	NH3	TSS	Tot. Alk. ,Sulfate, Chloride	Hardness (TR Ca & Mg)		See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
C2	1 ~~Field Blank #1~~ FC-CFR QC-FB	12/7/22	0915	5	W	✓	✓	✓	✓		✓	✓	✓				H22120258
C2	2 FC-CFR	12/7/22	0930	5	W	✓	✓	✓	✓		✓	✓	✓				
C2	3 FC-CFR ~~Duplicate~~ QC-FD	12/7/22	0935	5	W	✓	✓	✓	✓		✓	✓	✓				
C2	4 CFR-34	12/7/22	1115	5	W	✓	✓	✓	✓		✓	✓	✓				
C2	5 CFR-27H	12/7/22	1200	5	W	✓	✓	✓	✓		✓	✓	✓				
C1	6 CFR-11F	12/7/22	1300	5	W	✓	✓	✓	✓		✓	✓	✓				
C1	7 CFR-07D	12/7/22	1330	5	W	✓	✓	✓	✓		✓	✓	✓				
C1	8 CFR-03A	12/7/22	1415	5	W	✓	✓	✓	✓		✓	✓	✓				
C1	9 WSC-SBC	12/7/22	1500	5	W	✓	✓	✓	✓		✓	✓	✓				
C1	10 SS-25	12/7/22	1545	5	W	✓	✓	✓	✓	✓	✓	✓	✓				

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	12/8/22 1900	Tanner Traxler	Taylor Wells	12/9/22 0730	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand del	1	Y N C B	Y N	4.5°C	Y N	Y N	CC Cash Check_____	$	

Ref in locked cabinet
C2 0.5 each

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	MTDEQ
Contact	Ben Quinones
Phone	(406) 444-6593
Mailing Address	MTDEQ, P.O.Box 200901-0901
City, State, Zip	Helena, MT 59620-0901
Email	bequinones@ mt.gov
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	RESPEC
Contact	Joe Naughton
Phone	(406) 214-4478
Mailing Address	815 East Front Street, Suite 3
City, State, Zip	Missoula, MT 59802
Email	joe.naughton@respec.com; tanner.traxler@respec.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

C1 0.1
C2 0.5

Project Information

Project Name, PWSID, Permit, etc.	CFROU Monitoring
Sampler Name	T. Traxler, J. Naughton
Sampler Phone	(406) 437-3346
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Total Mercury, low level	Methyl Mercury (contract)	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
C2	1 CFR-84F	12/7/22	0830	1	W	✓	✓			H22120258
C2	2 ~~Field Blank #~~1 FC-CFR QC-FB	12/7/22	0915	1	W	✓	✓			
C2	3 FC-CFR	12/7/22	0930	1	W	✓	✓			
C2	4 FC-CFR ~~Duplicate~~ QC-FB	12/7/22	0930	1	W	✓	✓			
	5									
	6									
	7									
	8									
	9									
	10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Tanner Traxler	12/8/22 1900	Tanner Traxler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Taylor Jones	12/9/22 0730	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand del left in locker	4	Y N C B	Y N	4.0 °C 4.2 seal	Y N	Y N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

APPENDIX C

SURFACE WATER DATA

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

Station ID	Activity Start Date	Activity Type	Characteristic Name	Sample Fraction	Result Value	Result Value Unit	Result Qualifier	Method Detection Limit	Lower Reporting Limit
FC-CFR	15-Mar-22	QC-FB	Alkalinity, total	Total	3	mg/l	J	2	4
FC-CFR	7-Jun-22	QC-FB	Alkalinity, total	Total	Not Detected			2	4
FC-CFR	15-Mar-22	QC-FD	Alkalinity, total	Total	140	mg/l		2	4
FC-CFR	7-Jun-22	QC-FD	Alkalinity, total	Total	90	mg/l		2	4
CFR-03A	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	110	mg/l		2	4
CFR-03A	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	73	mg/l		2	4
CFR-07D	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	130	mg/l		2	4
CFR-07D	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	79	mg/l		2	4
CFR-11F	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
CFR-11F	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	82	mg/l		2	4
CFR-27H	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
CFR-27H	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	96	mg/l		2	4
CFR-34	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	150	mg/l		2	4
CFR-34	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	100	mg/l		2	4
SS-25	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	98	mg/l		2	4
SS-25	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	47	mg/l		2	4
WSC-SBC	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
WSC-SBC	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	73	mg/l		2	4
FC-CFR	15-Mar-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
FC-CFR	7-Jun-22	S-ROUTINE	Alkalinity, total	Total	92	mg/l		2	4
CFR-27H	15-Mar-22	S-ROUTINE	Ammonia	Unfiltered	Not Detected			0.03	0.05
SS-25	15-Mar-22	S-ROUTINE	Ammonia	Unfiltered	Not Detected			0.03	0.05
SS-25	7-Jun-22	S-ROUTINE	Ammonia	Unfiltered	Not Detected			0.03	0.05
FC-CFR	15-Mar-22	QC-FB	Arsenic	Dissolved	Not Detected			0.0002	0.001
FC-CFR	7-Jun-22	QC-FB	Arsenic	Dissolved	Not Detected			0.0002	0.001
FC-CFR	15-Mar-22	QC-FD	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
FC-CFR	7-Jun-22	QC-FD	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
CFR-03A	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.005	mg/l		0.0002	0.001
CFR-03A	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.014	mg/l		0.0002	0.001
CFR-07D	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
CFR-07D	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.014	mg/l		0.0002	0.001
CFR-11F	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
CFR-11F	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.015	mg/l		0.0002	0.001
CFR-27H	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
CFR-27H	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.016	mg/l		0.0002	0.001
CFR-34	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
CFR-34	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.016	mg/l		0.0002	0.001
SS-25	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.019	mg/l		0.0002	0.001
WSC-SBC	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.003	mg/l		0.0002	0.001
WSC-SBC	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.003	mg/l		0.0002	0.001
FC-CFR	15-Mar-22	S-ROUTINE	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
FC-CFR	7-Jun-22	S-ROUTINE	Arsenic	Dissolved	0.007	mg/l		0.0002	0.001
FC-CFR	15-Mar-22	QC-FB	Arsenic	Total Recv	Not Detected			0.0001	0.001
FC-CFR	7-Jun-22	QC-FB	Arsenic	Total Recv	Not Detected			0.0001	0.001
FC-CFR	15-Mar-22	QC-FD	Arsenic	Total Recv	0.012	mg/l		0.0001	0.001
FC-CFR	7-Jun-22	QC-FD	Arsenic	Total Recv	0.013	mg/l		0.0001	0.001
CFR-03A	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.006	mg/l		0.0001	0.001
CFR-03A	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.016	mg/l		0.0001	0.001
CFR-07D	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.008	mg/l		0.0001	0.001
CFR-07D	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.02	mg/l		0.0001	0.001
CFR-11F	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.008	mg/l		0.0001	0.001
CFR-11F	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.021	mg/l		0.0001	0.001
CFR-27H	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.01	mg/l		0.0001	0.001
CFR-27H	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.034	mg/l		0.0001	0.001
CFR-34	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.011	mg/l		0.0001	0.001
CFR-34	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.035	mg/l		0.0001	0.001
SS-25	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.009	mg/l		0.0001	0.001
SS-25	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.021	mg/l		0.0001	0.001
WSC-SBC	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.003	mg/l		0.0001	0.001
WSC-SBC	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.004	mg/l		0.0001	0.001
FC-CFR	15-Mar-22	S-ROUTINE	Arsenic	Total Recv	0.012	mg/l		0.0001	0.001
FC-CFR	7-Jun-22	S-ROUTINE	Arsenic	Total Recv	0.014	mg/l		0.0001	0.001
FC-CFR	15-Mar-22	QC-FB	Bicarbonate	Total	3	mg/l	J	3	4
FC-CFR	7-Jun-22	QC-FB	Bicarbonate	Total	Not Detected			3	4
FC-CFR	15-Mar-22	QC-FD	Bicarbonate	Total	170	mg/l		3	4
FC-CFR	7-Jun-22	QC-FD	Bicarbonate	Total	110	mg/l		3	4
CFR-03A	15-Mar-22	S-ROUTINE	Bicarbonate	Total	140	mg/l		3	4
CFR-03A	7-Jun-22	S-ROUTINE	Bicarbonate	Total	89	mg/l		3	4
CFR-07D	15-Mar-22	S-ROUTINE	Bicarbonate	Total	160	mg/l		3	4
CFR-07D	7-Jun-22	S-ROUTINE	Bicarbonate	Total	96	mg/l		3	4
CFR-11F	15-Mar-22	S-ROUTINE	Bicarbonate	Total	170	mg/l		3	4
CFR-11F	7-Jun-22	S-ROUTINE	Bicarbonate	Total	100	mg/l		3	4
CFR-27H	15-Mar-22	S-ROUTINE	Bicarbonate	Total	170	mg/l		3	4
CFR-27H	7-Jun-22	S-ROUTINE	Bicarbonate	Total	120	mg/l		3	4
CFR-34	15-Mar-22	S-ROUTINE	Bicarbonate	Total	180	mg/l		3	4
CFR-34	7-Jun-22	S-ROUTINE	Bicarbonate	Total	120	mg/l		3	4
SS-25	15-Mar-22	S-ROUTINE	Bicarbonate	Total	120	mg/l		3	4
SS-25	7-Jun-22	S-ROUTINE	Bicarbonate	Total	57	mg/l		3	4

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

WSC-SBC	15-Mar-22	S-ROUTINE	Bicarbonate	Total	160	mg/l		3	4
WSC-SBC	7-Jun-22	S-ROUTINE	Bicarbonate	Total	89	mg/l		3	4
FC-CFR	15-Mar-22	S-ROUTINE	Bicarbonate	Total	170	mg/l		3	4
FC-CFR	7-Jun-22	S-ROUTINE	Bicarbonate	Total	110	mg/l		3	4
FC-CFR	15-Mar-22	QC-FB	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	7-Jun-22	QC-FB	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	15-Mar-22	QC-FD	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	7-Jun-22	QC-FD	Cadmium	Dissolved	Not Detected			0.00002	0.00003
CFR-03A	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-03A	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-07D	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-07D	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-11F	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-11F	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-27H	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
CFR-27H	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
CFR-34	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
CFR-34	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00005	mg/l		0.00002	0.00003
SS-25	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
SS-25	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	0.00005	mg/l		0.00002	0.00003
WSC-SBC	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
WSC-SBC	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	15-Mar-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	7-Jun-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	15-Mar-22	QC-FB	Cadmium	Total Recv	Not Detected			0.00003	0.00003
FC-CFR	7-Jun-22	QC-FB	Cadmium	Total Recv	Not Detected			0.00003	0.00003
FC-CFR	15-Mar-22	QC-FD	Cadmium	Total Recv	0.00012	mg/l		0.00003	0.00003
FC-CFR	7-Jun-22	QC-FD	Cadmium	Total Recv	0.0001	mg/l		0.00003	0.00003
CFR-03A	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.00013	mg/l		0.00003	0.00003
CFR-03A	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00017	mg/l		0.00003	0.00003
CFR-07D	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.0001	mg/l		0.00003	0.00003
CFR-07D	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00023	mg/l		0.00003	0.00003
CFR-11F	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.0001	mg/l		0.00003	0.00003
CFR-11F	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00028	mg/l		0.00003	0.00003
CFR-27H	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.00018	mg/l		0.00003	0.00003
CFR-27H	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00065	mg/l		0.00003	0.00003
CFR-34	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.00018	mg/l		0.00003	0.00003
CFR-34	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00077	mg/l		0.00003	0.00003
SS-25	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.00013	mg/l		0.00003	0.00003
SS-25	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00013	mg/l		0.00003	0.00003
WSC-SBC	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

WSC-SBC	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00006	mg/l		0.00003	0.00003
FC-CFR	15-Mar-22	S-ROUTINE	Cadmium	Total Recv	0.00009	mg/l		0.00002	0.00003
FC-CFR	7-Jun-22	S-ROUTINE	Cadmium	Total Recv	0.00015	mg/l		0.00003	0.00003
FC-CFR	15-Mar-22	QC-FB	Calcium	Total Recv	Not Detected			0.1	1
FC-CFR	7-Jun-22	QC-FB	Calcium	Total Recv	Not Detected			0.1	1
FC-CFR	15-Mar-22	QC-FD	Calcium	Total Recv	39	mg/l		0.1	1
FC-CFR	7-Jun-22	QC-FD	Calcium	Total Recv	27	mg/l		0.1	1
CFR-03A	15-Mar-22	S-ROUTINE	Calcium	Total Recv	93	mg/l		0.1	1
CFR-03A	7-Jun-22	S-ROUTINE	Calcium	Total Recv	61	mg/l		0.1	1
CFR-07D	15-Mar-22	S-ROUTINE	Calcium	Total Recv	89	mg/l		0.1	1
CFR-07D	7-Jun-22	S-ROUTINE	Calcium	Total Recv	62	mg/l		0.1	1
CFR-11F	15-Mar-22	S-ROUTINE	Calcium	Total Recv	90	mg/l		0.1	1
CFR-11F	7-Jun-22	S-ROUTINE	Calcium	Total Recv	63	mg/l		0.1	1
CFR-27H	15-Mar-22	S-ROUTINE	Calcium	Total Recv	77	mg/l		0.1	1
CFR-27H	7-Jun-22	S-ROUTINE	Calcium	Total Recv	65	mg/l		0.1	1
CFR-34	15-Mar-22	S-ROUTINE	Calcium	Total Recv	76	mg/l		0.1	1
CFR-34	7-Jun-22	S-ROUTINE	Calcium	Total Recv	65	mg/l		0.1	1
SS-25	15-Mar-22	S-ROUTINE	Calcium	Total Recv	121	mg/l		0.1	1
SS-25	7-Jun-22	S-ROUTINE	Calcium	Total Recv	75	mg/l		0.1	1
WSC-SBC	15-Mar-22	S-ROUTINE	Calcium	Total Recv	47	mg/l		0.1	1
WSC-SBC	7-Jun-22	S-ROUTINE	Calcium	Total Recv	26	mg/l		0.1	1
FC-CFR	15-Mar-22	S-ROUTINE	Calcium	Total Recv	38	mg/l		0.1	1
FC-CFR	7-Jun-22	S-ROUTINE	Calcium	Total Recv	28	mg/l		0.1	1
FC-CFR	15-Mar-22	QC-FB	Chloride	Total	Not Detected			0.02	1
FC-CFR	7-Jun-22	QC-FB	Chloride	Total	Not Detected			0.02	1
FC-CFR	15-Mar-22	QC-FD	Chloride	Total	4	mg/l		0.02	1
FC-CFR	7-Jun-22	QC-FD	Chloride	Total	2	mg/l		0.02	1
CFR-03A	15-Mar-22	S-ROUTINE	Chloride	Total	20	mg/l		0.02	1
CFR-03A	7-Jun-22	S-ROUTINE	Chloride	Total	10	mg/l		0.02	1
CFR-07D	15-Mar-22	S-ROUTINE	Chloride	Total	15	mg/l		0.02	1
CFR-07D	7-Jun-22	S-ROUTINE	Chloride	Total	10	mg/l		0.02	1
CFR-11F	15-Mar-22	S-ROUTINE	Chloride	Total	14	mg/l		0.02	1
CFR-11F	7-Jun-22	S-ROUTINE	Chloride	Total	10	mg/l		0.02	1
CFR-27H	15-Mar-22	S-ROUTINE	Chloride	Total	12	mg/l		0.02	1
CFR-27H	7-Jun-22	S-ROUTINE	Chloride	Total	10	mg/l		0.02	1
CFR-34	15-Mar-22	S-ROUTINE	Chloride	Total	12	mg/l		0.02	1
CFR-34	7-Jun-22	S-ROUTINE	Chloride	Total	10	mg/l		0.02	1
SS-25	15-Mar-22	S-ROUTINE	Chloride	Total	32	mg/l		0.02	1
SS-25	7-Jun-22	S-ROUTINE	Chloride	Total	31	mg/l		0.02	1
WSC-SBC	15-Mar-22	S-ROUTINE	Chloride	Total	1	mg/l		0.02	1
WSC-SBC	7-Jun-22	S-ROUTINE	Chloride	Total	0.91	mg/l	J	0.02	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	15-Mar-22	S-ROUTINE	Chloride	Total	4	mg/l		0.02	1
FC-CFR	7-Jun-22	S-ROUTINE	Chloride	Total	2	mg/l		0.02	1
FC-CFR	15-Mar-22	QC-FB	Copper	Dissolved	Not Detected			0.0001	0.001
FC-CFR	7-Jun-22	QC-FB	Copper	Dissolved	Not Detected			0.0001	0.001
FC-CFR	15-Mar-22	QC-FD	Copper	Dissolved	0.001	mg/l		0.0001	0.001
FC-CFR	7-Jun-22	QC-FD	Copper	Dissolved	0.001	mg/l		0.0001	0.001
CFR-03A	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
CFR-03A	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
CFR-07D	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
CFR-07D	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.004	mg/l		0.0001	0.001
CFR-11F	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
CFR-11F	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.005	mg/l		0.0001	0.001
CFR-27H	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.005	mg/l		0.0001	0.001
CFR-27H	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.009	mg/l		0.0001	0.001
CFR-34	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.005	mg/l		0.0001	0.001
CFR-34	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.009	mg/l		0.0001	0.001
SS-25	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
SS-25	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
WSC-SBC	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.001	mg/l		0.0001	0.001
WSC-SBC	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
FC-CFR	15-Mar-22	S-ROUTINE	Copper	Dissolved	0.0005	mg/l	J	0.0001	0.001
FC-CFR	7-Jun-22	S-ROUTINE	Copper	Dissolved	0.001	mg/l		0.0001	0.001
FC-CFR	15-Mar-22	QC-FB	Copper	Total Recv	Not Detected			0.0003	0.001
FC-CFR	7-Jun-22	QC-FB	Copper	Total Recv	Not Detected			0.0003	0.001
FC-CFR	15-Mar-22	QC-FD	Copper	Total Recv	0.004	mg/l		0.0003	0.001
FC-CFR	7-Jun-22	QC-FD	Copper	Total Recv	0.005	mg/l		0.0003	0.001
CFR-03A	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.005	mg/l		0.0003	0.001
CFR-03A	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.016	mg/l		0.0003	0.001
CFR-07D	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.012	mg/l		0.0003	0.001
CFR-07D	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.045	mg/l		0.0003	0.001
CFR-11F	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.014	mg/l		0.0003	0.001
CFR-11F	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.052	mg/l		0.0003	0.001
CFR-27H	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.037	mg/l		0.0003	0.001
CFR-27H	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.158	mg/l		0.0003	0.001
CFR-34	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.038	mg/l		0.0003	0.001
CFR-34	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.172	mg/l		0.0003	0.001
SS-25	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.004	mg/l		0.0003	0.001
SS-25	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.008	mg/l		0.0003	0.001
WSC-SBC	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.004	mg/l		0.0003	0.001
WSC-SBC	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.017	mg/l		0.0003	0.001
FC-CFR	15-Mar-22	S-ROUTINE	Copper	Total Recv	0.004	mg/l		0.0003	0.001

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	7-Jun-22	S-ROUTINE	Copper	Total Recv	0.005	mg/l		0.0003	0.001
FC-CFR	15-Mar-22	QC-FB	Hardness, Ca, Mg	NA	Not Detected			1	1
FC-CFR	7-Jun-22	QC-FB	Hardness, Ca, Mg	NA	Not Detected			1	1
FC-CFR	15-Mar-22	QC-FD	Hardness, Ca, Mg	NA	145	mg/l		1	1
FC-CFR	7-Jun-22	QC-FD	Hardness, Ca, Mg	NA	98	mg/l		1	1
CFR-03A	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	291	mg/l		1	1
CFR-03A	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	184	mg/l		1	1
CFR-07D	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	286	mg/l		1	1
CFR-07D	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	191	mg/l		1	1
CFR-11F	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	289	mg/l		1	1
CFR-11F	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	198	mg/l		1	1
CFR-27H	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	248	mg/l		1	1
CFR-27H	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	206	mg/l		1	1
CFR-34	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	247	mg/l		1	1
CFR-34	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	209	mg/l		1	1
SS-25	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	370	mg/l		1	1
SS-25	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	225	mg/l		1	1
WSC-SBC	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	160	mg/l		1	1
WSC-SBC	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	84	mg/l		1	1
FC-CFR	15-Mar-22	S-ROUTINE	Hardness, Ca, Mg	NA	141	mg/l		1	1
FC-CFR	7-Jun-22	S-ROUTINE	Hardness, Ca, Mg	NA	100	mg/l		1	1
FC-CFR	15-Mar-22	QC-FB	Lead	Dissolved	0.0002	mg/l	J	0.0001	0.0003
FC-CFR	7-Jun-22	QC-FB	Lead	Dissolved	0.0003	mg/l	J	0.0001	0.0003
FC-CFR	15-Mar-22	QC-FD	Lead	Dissolved	0.0009	mg/l		0.0001	0.0003
FC-CFR	7-Jun-22	QC-FD	Lead	Dissolved	0.0006	mg/l		0.0001	0.0003
CFR-03A	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
CFR-03A	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0001	mg/l	J	0.0001	0.0003
CFR-07D	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
CFR-07D	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0002	mg/l	J	0.0001	0.0003
CFR-11F	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0006	mg/l		0.0001	0.0003
CFR-11F	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0002	mg/l	J	0.0001	0.0003
CFR-27H	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
CFR-27H	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0006	mg/l		0.0001	0.0003
CFR-34	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
CFR-34	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
SS-25	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0006	mg/l		0.0001	0.0003
SS-25	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0002	mg/l	J	0.0001	0.0003
WSC-SBC	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
WSC-SBC	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0003	mg/l	J	0.0001	0.0003
FC-CFR	15-Mar-22	S-ROUTINE	Lead	Dissolved	0.0007	mg/l		0.0001	0.0003
FC-CFR	7-Jun-22	S-ROUTINE	Lead	Dissolved	0.0006	mg/l		0.0001	0.0003

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	15-Mar-22	QC-FB	Lead	Total Recv	Not Detected			0.0001	0.0003
FC-CFR	7-Jun-22	QC-FB	Lead	Total Recv	Not Detected			0.0001	0.0003
FC-CFR	15-Mar-22	QC-FD	Lead	Total Recv	0.0095	mg/l		0.0001	0.0003
FC-CFR	7-Jun-22	QC-FD	Lead	Total Recv	0.0104	mg/l		0.0001	0.0003
CFR-03A	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0003	mg/l		0.0001	0.0003
CFR-03A	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0024	mg/l		0.0001	0.0003
CFR-07D	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0012	mg/l		0.0001	0.0003
CFR-07D	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0084	mg/l		0.0001	0.0003
CFR-11F	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0016	mg/l		0.0001	0.0003
CFR-11F	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0069	mg/l		0.0001	0.0003
CFR-27H	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.004	mg/l		0.0001	0.0003
CFR-27H	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0216	mg/l		0.0001	0.0003
CFR-34	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0043	mg/l		0.0001	0.0003
CFR-34	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0235	mg/l		0.0001	0.0003
SS-25	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0002	mg/l	J	0.0001	0.0003
SS-25	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0017	mg/l		0.0001	0.0003
WSC-SBC	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0002	mg/l	J	0.0001	0.0003
WSC-SBC	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0015	mg/l		0.0001	0.0003
FC-CFR	15-Mar-22	S-ROUTINE	Lead	Total Recv	0.0093	mg/l		0.0001	0.0003
FC-CFR	7-Jun-22	S-ROUTINE	Lead	Total Recv	0.0118	mg/l		0.0001	0.0003
FC-CFR	15-Mar-22	QC-FB	Magnesium	Total Recv	Not Detected			0.05	1
FC-CFR	7-Jun-22	QC-FB	Magnesium	Total Recv	Not Detected			0.05	1
FC-CFR	15-Mar-22	QC-FD	Magnesium	Total Recv	12	mg/l		0.05	1
FC-CFR	7-Jun-22	QC-FD	Magnesium	Total Recv	7	mg/l		0.05	1
CFR-03A	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
CFR-03A	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	8	mg/l		0.05	1
CFR-07D	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1
CFR-07D	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	9	mg/l		0.05	1
CFR-11F	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	16	mg/l		0.05	1
CFR-11F	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	10	mg/l		0.05	1
CFR-27H	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
CFR-27H	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	11	mg/l		0.05	1
CFR-34	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
CFR-34	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	11	mg/l		0.05	1
SS-25	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	17	mg/l		0.05	1
SS-25	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	9	mg/l		0.05	1
WSC-SBC	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	11	mg/l		0.05	1
WSC-SBC	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	5	mg/l		0.05	1
FC-CFR	15-Mar-22	S-ROUTINE	Magnesium	Total Recv	12	mg/l		0.05	1
FC-CFR	7-Jun-22	S-ROUTINE	Magnesium	Total Recv	7	mg/l		0.05	1
FC-CFR	15-Mar-22	QC-FB	Mercury	Total Recv	Not Detected			0.002	0.005

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	7-Jun-22	QC-FB	Mercury	Total Recv	Not Detected			0.001	0.005
FC-CFR	15-Mar-22	QC-FD	Mercury	Total Recv	0.38	ug/l	D	0.008	0.01
FC-CFR	7-Jun-22	QC-FD	Mercury	Total Recv	0.38	ug/l	D	0.006	0.01
CFR-84F	15-Mar-22	S-ROUTINE	Mercury	Total Recv	0.063	ug/l		0.002	0.005
CFR-84F	7-Jun-22	S-ROUTINE	Mercury	Total Recv	0.28	ug/l	D	0.006	0.01
FC-CFR	15-Mar-22	S-ROUTINE	Mercury	Total Recv	0.34	ug/l	D	0.008	0.01
FC-CFR	7-Jun-22	S-ROUTINE	Mercury	Total Recv	0.47	ug/l	D	0.006	0.01
FC-CFR	15-Mar-22	QC-FB	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
FC-CFR	7-Jun-22	QC-FB	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
FC-CFR	15-Mar-22	QC-FD	Nitrate + Nitrite	Unfiltered	0.1	mg/l		0.008	0.02
FC-CFR	7-Jun-22	QC-FD	Nitrate + Nitrite	Unfiltered	0.03	mg/l		0.008	0.02
CFR-03A	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.03	mg/l		0.008	0.02
CFR-03A	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.013	mg/l	J	0.008	0.02
CFR-07D	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.15	mg/l		0.008	0.02
CFR-07D	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.03	mg/l		0.008	0.02
CFR-11F	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.15	mg/l		0.008	0.02
CFR-11F	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.03	mg/l		0.008	0.02
CFR-27H	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.22	mg/l		0.008	0.02
CFR-27H	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.09	mg/l		0.008	0.02
CFR-34	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.22	mg/l		0.008	0.02
CFR-34	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.11	mg/l		0.008	0.02
SS-25	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.05	mg/l		0.008	0.02
SS-25	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.019	mg/l	J	0.008	0.02
WSC-SBC	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.013	mg/l	J	0.008	0.02
WSC-SBC	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.016	mg/l	J	0.008	0.02
FC-CFR	15-Mar-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.1	mg/l		0.008	0.02
FC-CFR	7-Jun-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.04	mg/l		0.008	0.02
FC-CFR	15-Mar-22	QC-FB	Potassium	Total Recv	Not Detected			0.1	1
FC-CFR	7-Jun-22	QC-FB	Potassium	Total Recv	Not Detected			0.1	1
FC-CFR	15-Mar-22	QC-FD	Potassium	Total Recv	3	mg/l		0.1	1
FC-CFR	7-Jun-22	QC-FD	Potassium	Total Recv	2	mg/l		0.1	1
CFR-03A	15-Mar-22	S-ROUTINE	Potassium	Total Recv	6	mg/l		0.1	1
CFR-03A	7-Jun-22	S-ROUTINE	Potassium	Total Recv	4	mg/l		0.1	1
CFR-07D	15-Mar-22	S-ROUTINE	Potassium	Total Recv	5	mg/l		0.1	1
CFR-07D	7-Jun-22	S-ROUTINE	Potassium	Total Recv	4	mg/l		0.1	1
CFR-11F	15-Mar-22	S-ROUTINE	Potassium	Total Recv	5	mg/l		0.1	1
CFR-11F	7-Jun-22	S-ROUTINE	Potassium	Total Recv	4	mg/l		0.1	1
CFR-27H	15-Mar-22	S-ROUTINE	Potassium	Total Recv	4	mg/l		0.1	1
CFR-27H	7-Jun-22	S-ROUTINE	Potassium	Total Recv	5	mg/l		0.1	1
CFR-34	15-Mar-22	S-ROUTINE	Potassium	Total Recv	4	mg/l		0.1	1
CFR-34	7-Jun-22	S-ROUTINE	Potassium	Total Recv	5	mg/l		0.1	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	15-Mar-22	S-ROUTINE	Potassium	Total Recv	8	mg/l		0.1	1
SS-25	7-Jun-22	S-ROUTINE	Potassium	Total Recv	5	mg/l		0.1	1
WSC-SBC	15-Mar-22	S-ROUTINE	Potassium	Total Recv	2	mg/l		0.1	1
WSC-SBC	7-Jun-22	S-ROUTINE	Potassium	Total Recv	0.9	mg/l	J	0.1	1
FC-CFR	15-Mar-22	S-ROUTINE	Potassium	Total Recv	3	mg/l		0.1	1
FC-CFR	7-Jun-22	S-ROUTINE	Potassium	Total Recv	2	mg/l		0.1	1
FC-CFR	15-Mar-22	QC-FB	Sodium	Total Recv	Not Detected			0.1	1
FC-CFR	7-Jun-22	QC-FB	Sodium	Total Recv	Not Detected			0.1	1
FC-CFR	15-Mar-22	QC-FD	Sodium	Total Recv	8	mg/l		0.1	1
FC-CFR	7-Jun-22	QC-FD	Sodium	Total Recv	5	mg/l		0.1	1
CFR-03A	15-Mar-22	S-ROUTINE	Sodium	Total Recv	24	mg/l		0.1	1
CFR-03A	7-Jun-22	S-ROUTINE	Sodium	Total Recv	14	mg/l		0.1	1
CFR-07D	15-Mar-22	S-ROUTINE	Sodium	Total Recv	19	mg/l		0.1	1
CFR-07D	7-Jun-22	S-ROUTINE	Sodium	Total Recv	15	mg/l		0.1	1
CFR-11F	15-Mar-22	S-ROUTINE	Sodium	Total Recv	19	mg/l		0.1	1
CFR-11F	7-Jun-22	S-ROUTINE	Sodium	Total Recv	16	mg/l		0.1	1
CFR-27H	15-Mar-22	S-ROUTINE	Sodium	Total Recv	17	mg/l		0.1	1
CFR-27H	7-Jun-22	S-ROUTINE	Sodium	Total Recv	16	mg/l		0.1	1
CFR-34	15-Mar-22	S-ROUTINE	Sodium	Total Recv	18	mg/l		0.1	1
CFR-34	7-Jun-22	S-ROUTINE	Sodium	Total Recv	17	mg/l		0.1	1
SS-25	15-Mar-22	S-ROUTINE	Sodium	Total Recv	35	mg/l		0.1	1
SS-25	7-Jun-22	S-ROUTINE	Sodium	Total Recv	21	mg/l		0.1	1
WSC-SBC	15-Mar-22	S-ROUTINE	Sodium	Total Recv	4	mg/l		0.1	1
WSC-SBC	7-Jun-22	S-ROUTINE	Sodium	Total Recv	2	mg/l		0.1	1
FC-CFR	15-Mar-22	S-ROUTINE	Sodium	Total Recv	8	mg/l		0.1	1
FC-CFR	7-Jun-22	S-ROUTINE	Sodium	Total Recv	5	mg/l		0.1	1
FC-CFR	15-Mar-22	QC-FB	Sulfate	Total	Not Detected			0.06	1
FC-CFR	7-Jun-22	QC-FB	Sulfate	Total	Not Detected			0.06	1
FC-CFR	15-Mar-22	QC-FD	Sulfate	Total	16	mg/l		0.06	1
FC-CFR	7-Jun-22	QC-FD	Sulfate	Total	9	mg/l		0.06	1
CFR-03A	15-Mar-22	S-ROUTINE	Sulfate	Total	206	mg/l		0.06	1
CFR-03A	7-Jun-22	S-ROUTINE	Sulfate	Total	116	mg/l		0.06	1
CFR-07D	15-Mar-22	S-ROUTINE	Sulfate	Total	176	mg/l		0.06	1
CFR-07D	7-Jun-22	S-ROUTINE	Sulfate	Total	118	mg/l		0.06	1
CFR-11F	15-Mar-22	S-ROUTINE	Sulfate	Total	169	mg/l		0.06	1
CFR-11F	7-Jun-22	S-ROUTINE	Sulfate	Total	119	mg/l		0.06	1
CFR-27H	15-Mar-22	S-ROUTINE	Sulfate	Total	130	mg/l		0.06	1
CFR-27H	7-Jun-22	S-ROUTINE	Sulfate	Total	112	mg/l		0.06	1
CFR-34	15-Mar-22	S-ROUTINE	Sulfate	Total	123	mg/l		0.06	1
CFR-34	7-Jun-22	S-ROUTINE	Sulfate	Total	103	mg/l		0.06	1
SS-25	15-Mar-22	S-ROUTINE	Sulfate	Total	314	mg/l		0.06	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	7-Jun-22	S-ROUTINE	Sulfate	Total	164	mg/l		0.06	1
WSC-SBC	15-Mar-22	S-ROUTINE	Sulfate	Total	34	mg/l		0.06	1
WSC-SBC	7-Jun-22	S-ROUTINE	Sulfate	Total	14	mg/l		0.06	1
FC-CFR	15-Mar-22	S-ROUTINE	Sulfate	Total	16	mg/l		0.06	1
FC-CFR	7-Jun-22	S-ROUTINE	Sulfate	Total	9	mg/l		0.06	1
FC-CFR	15-Mar-22	QC-FB	Total nitrogen, mixed forms	Unfiltered	Not Detected			0.03	0.05
FC-CFR	7-Jun-22	QC-FB	Total nitrogen, mixed forms	Unfiltered	Not Detected			0.02	0.05
FC-CFR	15-Mar-22	QC-FD	Total nitrogen, mixed forms	Unfiltered	0.31	mg/l		0.03	0.05
FC-CFR	7-Jun-22	QC-FD	Total nitrogen, mixed forms	Unfiltered	0.27	mg/l		0.02	0.05
CFR-03A	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.23	mg/l		0.03	0.05
CFR-03A	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.22	mg/l		0.02	0.05
CFR-07D	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.33	mg/l		0.03	0.05
CFR-07D	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.24	mg/l		0.02	0.05
CFR-11F	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.33	mg/l		0.03	0.05
CFR-11F	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.29	mg/l		0.02	0.05
CFR-27H	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.41	mg/l		0.03	0.05
CFR-27H	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.38	mg/l		0.02	0.05
CFR-34	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.45	mg/l		0.03	0.05
CFR-34	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.4	mg/l		0.02	0.05
SS-25	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.3	mg/l		0.03	0.05
SS-25	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.35	mg/l		0.02	0.05
WSC-SBC	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.08	mg/l		0.03	0.05
WSC-SBC	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.1	mg/l		0.02	0.05
FC-CFR	15-Mar-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.31	mg/l		0.03	0.05
FC-CFR	7-Jun-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.26	mg/l		0.02	0.05
FC-CFR	15-Mar-22	QC-FB	Total Phosphorus, mixed forms	Unfiltered	0.003	mg/l	J	0.001	0.003
FC-CFR	7-Jun-22	QC-FB	Total Phosphorus, mixed forms	Unfiltered	Not Detected			0.001	0.003
FC-CFR	15-Mar-22	QC-FD	Total Phosphorus, mixed forms	Unfiltered	0.059	mg/l		0.001	0.003
FC-CFR	7-Jun-22	QC-FD	Total Phosphorus, mixed forms	Unfiltered	0.078	mg/l		0.001	0.003
CFR-03A	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.013	mg/l		0.001	0.003
CFR-03A	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.078	mg/l		0.001	0.003
CFR-07D	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.015	mg/l		0.001	0.003
CFR-07D	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.085	mg/l		0.001	0.003
CFR-11F	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.018	mg/l		0.001	0.003
CFR-11F	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.093	mg/l		0.001	0.003
CFR-27H	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.03	mg/l		0.001	0.003
CFR-27H	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.169	mg/l		0.001	0.003
CFR-34	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.032	mg/l		0.001	0.003
CFR-34	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.178	mg/l		0.001	0.003
SS-25	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.013	mg/l		0.001	0.003
SS-25	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.088	mg/l		0.001	0.003

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

WSC-SBC	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.005	mg/l		0.001	0.003
WSC-SBC	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.025	mg/l		0.001	0.003
FC-CFR	15-Mar-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.059	mg/l		0.001	0.003
FC-CFR	7-Jun-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.077	mg/l		0.001	0.003
FC-CFR	15-Mar-22	QC-FB	Total suspended solids	NA	Not Detected			0.8	1
FC-CFR	7-Jun-22	QC-FB	Total suspended solids	NA	Not Detected			0.3	1
FC-CFR	15-Mar-22	QC-FD	Total suspended solids	NA	40	mg/l	D	0.8	4
FC-CFR	7-Jun-22	QC-FD	Total suspended solids	NA	46	mg/l	D	0.3	5
CFR-03A	15-Mar-22	S-ROUTINE	Total suspended solids	NA	3	mg/l		0.8	1
CFR-03A	7-Jun-22	S-ROUTINE	Total suspended solids	NA	20	mg/l	D	0.3	3
CFR-07D	15-Mar-22	S-ROUTINE	Total suspended solids	NA	11	mg/l	D	0.8	2
CFR-07D	7-Jun-22	S-ROUTINE	Total suspended solids	NA	34	mg/l	D	0.3	5
CFR-11F	15-Mar-22	S-ROUTINE	Total suspended solids	NA	12	mg/l	D	0.8	2
CFR-11F	7-Jun-22	S-ROUTINE	Total suspended solids	NA	47	mg/l	D	0.3	10
CFR-27H	15-Mar-22	S-ROUTINE	Total suspended solids	NA	23	mg/l	D	0.8	2
CFR-27H	7-Jun-22	S-ROUTINE	Total suspended solids	NA	104	mg/l	D	0.3	20
CFR-34	15-Mar-22	S-ROUTINE	Total suspended solids	NA	25	mg/l	D	0.8	4
CFR-34	7-Jun-22	S-ROUTINE	Total suspended solids	NA	118	mg/l	D	0.3	20
SS-25	15-Mar-22	S-ROUTINE	Total suspended solids	NA	2	mg/l		0.8	1
SS-25	7-Jun-22	S-ROUTINE	Total suspended solids	NA	9	mg/l	D	0.3	3
WSC-SBC	15-Mar-22	S-ROUTINE	Total suspended solids	NA	4	mg/l		0.8	1
WSC-SBC	7-Jun-22	S-ROUTINE	Total suspended solids	NA	17	mg/l	D	0.3	3
FC-CFR	15-Mar-22	S-ROUTINE	Total suspended solids	NA	36	mg/l	D	0.8	5
FC-CFR	7-Jun-22	S-ROUTINE	Total suspended solids	NA	38	mg/l	D	0.3	5
FC-CFR	15-Mar-22	QC-FB	Zinc	Dissolved	Not Detected			0.001	0.008
FC-CFR	7-Jun-22	QC-FB	Zinc	Dissolved	0.025	mg/l		0.001	0.008
FC-CFR	15-Mar-22	QC-FD	Zinc	Dissolved	0.003	mg/l	J	0.001	0.008
FC-CFR	7-Jun-22	QC-FD	Zinc	Dissolved	0.026	mg/l		0.001	0.008
CFR-03A	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.008	mg/l	J	0.001	0.008
CFR-03A	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.013	mg/l	B	0.001	0.008
CFR-07D	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.006	mg/l	J	0.001	0.008
CFR-07D	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.015	mg/l	B	0.001	0.008
CFR-11F	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.007	mg/l	J	0.001	0.008
CFR-11F	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.017	mg/l	B	0.001	0.008
CFR-27H	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.007	mg/l	J	0.001	0.008
CFR-27H	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.017	mg/l	B	0.001	0.008
CFR-34	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.008	mg/l	J	0.001	0.008
CFR-34	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.02	mg/l	B	0.001	0.008
SS-25	15-Mar-22	S-ROUTINE	Zinc	Dissolved	0.017	mg/l		0.001	0.008
SS-25	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.029	mg/l	B	0.001	0.008
WSC-SBC	15-Mar-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

WSC-SBC	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.014	mg/l	B	0.001	0.008
FC-CFR	15-Mar-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008
FC-CFR	7-Jun-22	S-ROUTINE	Zinc	Dissolved	0.02	mg/l	B	0.001	0.008
FC-CFR	15-Mar-22	QC-FB	Zinc	Total Recv	Not Detected			0.001	0.008
FC-CFR	7-Jun-22	QC-FB	Zinc	Total Recv	Not Detected			0.001	0.008
FC-CFR	15-Mar-22	QC-FD	Zinc	Total Recv	0.026	mg/l		0.001	0.008
FC-CFR	7-Jun-22	QC-FD	Zinc	Total Recv	0.031	mg/l		0.001	0.008
CFR-03A	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.014	mg/l		0.001	0.008
CFR-03A	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.018	mg/l		0.001	0.008
CFR-07D	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.015	mg/l		0.001	0.008
CFR-07D	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.036	mg/l		0.001	0.008
CFR-11F	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.018	mg/l		0.001	0.008
CFR-11F	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.049	mg/l		0.001	0.008
CFR-27H	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.032	mg/l		0.001	0.008
CFR-27H	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.127	mg/l		0.001	0.008
CFR-34	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.037	mg/l		0.001	0.008
CFR-34	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.14	mg/l		0.001	0.008
SS-25	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.024	mg/l		0.001	0.008
SS-25	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.015	mg/l		0.001	0.008
WSC-SBC	15-Mar-22	S-ROUTINE	Zinc	Total Recv	Not Detected			0.001	0.008
WSC-SBC	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.009	mg/l		0.001	0.008
FC-CFR	15-Mar-22	S-ROUTINE	Zinc	Total Recv	0.025	mg/l		0.001	0.008
FC-CFR	7-Jun-22	S-ROUTINE	Zinc	Total Recv	0.037	mg/l		0.001	0.008
CFR-03A	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12.6	mg/l			
CFR-07D	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12.6	mg/l			
CFR-11F	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	11.7	mg/l			
CFR-27H	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12.6	mg/l			
CFR-34	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	10.7	mg/l			
CFR-84F	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	11.2	mg/l			
SS-25	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12.8	mg/l			
WSC-SBC	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12	mg/l			
FC-CFR	15-Mar-22	Field Measurement	Dissolved oxygen (DO)	NA	12.2	mg/l			
CFR-07D	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA	9	mg/l			
CFR-11F	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA	9.3	mg/l			
CFR-27H	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA		mg/l			
CFR-34	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA	9.2	mg/l			
CFR-84F	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA		mg/l			
SS-25	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA		mg/l			
WSC-SBC	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA		mg/l			
FC-CFR	7-Jun-22	Field Measurement	Dissolved oxygen (DO)	NA	10.9	mg/l			
CFR-03A	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	119	%			

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-07D	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	120	%			
CFR-11F	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	110	%			
CFR-27H	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	116	%			
CFR-34	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	99	%			
CFR-84F	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	103	%			
SS-25	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	121	%			
WSC-SBC	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	115	%			
FC-CFR	15-Mar-22	Field Measurement	Dissolved oxygen saturation	NA	106	%			
CFR-07D	7-Jun-22	Field Measurement	Dissolved oxygen saturation	NA	101	%			
CFR-11F	7-Jun-22	Field Measurement	Dissolved oxygen saturation	NA	104	%			
CFR-34	7-Jun-22	Field Measurement	Dissolved oxygen saturation	NA	102	%			
FC-CFR	7-Jun-22	Field Measurement	Dissolved oxygen saturation	NA	109	%			
CFR-03A	15-Mar-22	Field Measurement	Flow	NA	97.3	ft3/sec			
CFR-07D	15-Mar-22	Field Measurement	Flow	NA	168.72	ft3/sec			
CFR-11F	15-Mar-22	Field Measurement	Flow	NA	181.92	ft3/sec			
CFR-27H	15-Mar-22	Field Measurement	Flow	NA	226	ft3/sec			
CFR-34	15-Mar-22	Field Measurement	Flow	NA	304.37	ft3/sec			
CFR-84F	15-Mar-22	Field Measurement	Flow	NA	615	ft3/sec			
SS-25	15-Mar-22	Field Measurement	Flow	NA	59.4	ft3/sec			
WSC-SBC	15-Mar-22	Field Measurement	Flow	NA	38.6	ft3/sec			
CFR-03A	7-Jun-22	Field Measurement	Flow	NA	424	ft3/sec			
CFR-07D	7-Jun-22	Field Measurement	Flow	NA	483.79	ft3/sec			
CFR-11F	7-Jun-22	Field Measurement	Flow	NA	597.25	ft3/sec			
CFR-27H	7-Jun-22	Field Measurement	Flow	NA	512	ft3/sec			
CFR-34	7-Jun-22	Field Measurement	Flow	NA	532.41	ft3/sec			
CFR-84F	7-Jun-22	Field Measurement	Flow	NA	1530	ft3/sec			
SS-25	7-Jun-22	Field Measurement	Flow	NA	259	ft3/sec			
WSC-SBC	7-Jun-22	Field Measurement	Flow	NA	147	ft3/sec			
FC-CFR	7-Jun-22	Field Measurement	Flow	NA	198	ft3/sec			
CFR-03A	15-Mar-22	Field Measurement	pH	NA	8.05	None			
CFR-07D	15-Mar-22	Field Measurement	pH	NA	7.99	None			
CFR-11F	15-Mar-22	Field Measurement	pH	NA	7.81	None			
CFR-27H	15-Mar-22	Field Measurement	pH	NA	7.73	None			
CFR-34	15-Mar-22	Field Measurement	pH	NA	7.55	None			
CFR-84F	15-Mar-22	Field Measurement	pH	NA	7.29	None			
SS-25	15-Mar-22	Field Measurement	pH	NA	8.17	None			
WSC-SBC	15-Mar-22	Field Measurement	pH	NA	8.12	None			
FC-CFR	15-Mar-22	Field Measurement	pH	NA	7.42	None			
CFR-03A	7-Jun-22	Field Measurement	pH	NA	7.65	None			
CFR-07D	7-Jun-22	Field Measurement	pH	NA	7.87	None			
CFR-11F	7-Jun-22	Field Measurement	pH	NA	8	None			

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-27H	7-Jun-22	Field Measurement	pH	NA	7.64	None			
CFR-34	7-Jun-22	Field Measurement	pH	NA	7.7	None			
CFR-84F	7-Jun-22	Field Measurement	pH	NA	7.23	None			
SS-25	7-Jun-22	Field Measurement	pH	NA	7.8	None			
WSC-SBC	7-Jun-22	Field Measurement	pH	NA	7.82	None			
CFR-03A	15-Mar-22	Field Measurement	Specific conductance	NA	674.4	uS/cm			
CFR-07D	15-Mar-22	Field Measurement	Specific conductance	NA	633.6	uS/cm			
CFR-11F	15-Mar-22	Field Measurement	Specific conductance	NA	630.8	uS/cm			
CFR-27H	15-Mar-22	Field Measurement	Specific conductance	NA	526.2	uS/cm			
CFR-34	15-Mar-22	Field Measurement	Specific conductance	NA	555	uS/cm			
CFR-84F	15-Mar-22	Field Measurement	Specific conductance	NA	489.4	uS/cm			
SS-25	15-Mar-22	Field Measurement	Specific conductance	NA	841	uS/cm			
WSC-SBC	15-Mar-22	Field Measurement	Specific conductance	NA	318.1	uS/cm			
FC-CFR	15-Mar-22	Field Measurement	Specific conductance	NA	298.8	uS/cm			
CFR-03A	7-Jun-22	Field Measurement	Specific conductance	NA	430.9	uS/cm			
CFR-07D	7-Jun-22	Field Measurement	Specific conductance	NA	440.6	uS/cm			
CFR-11F	7-Jun-22	Field Measurement	Specific conductance	NA	452.3	uS/cm			
CFR-27H	7-Jun-22	Field Measurement	Specific conductance	NA	458	uS/cm			
CFR-34	7-Jun-22	Field Measurement	Specific conductance	NA	451.2	uS/cm			
CFR-84F	7-Jun-22	Field Measurement	Specific conductance	NA	332.1	uS/cm			
SS-25	7-Jun-22	Field Measurement	Specific conductance	NA	526.4	uS/cm			
WSC-SBC	7-Jun-22	Field Measurement	Specific conductance	NA	168.7	uS/cm			
FC-CFR	7-Jun-22	Field Measurement	Specific conductance	NA	196.2	uS/cm			
CFR-03A	15-Mar-22	Field Measurement	Turbidity	NA	2.1	NTU			
CFR-07D	15-Mar-22	Field Measurement	Turbidity	NA	4.7	NTU			
CFR-11F	15-Mar-22	Field Measurement	Turbidity	NA	5	NTU			
CFR-27H	15-Mar-22	Field Measurement	Turbidity	NA	10.4	NTU			
CFR-34	15-Mar-22	Field Measurement	Turbidity	NA	10	NTU			
CFR-84F	15-Mar-22	Field Measurement	Turbidity	NA	15.3	NTU			
SS-25	15-Mar-22	Field Measurement	Turbidity	NA	1.4	NTU			
WSC-SBC	15-Mar-22	Field Measurement	Turbidity	NA	1.7	NTU			
FC-CFR	15-Mar-22	Field Measurement	Turbidity	NA	21.7	NTU			
CFR-03A	7-Jun-22	Field Measurement	Turbidity	NA	7.3	NTU			
CFR-07D	7-Jun-22	Field Measurement	Turbidity	NA	11.4	NTU			
CFR-11F	7-Jun-22	Field Measurement	Turbidity	NA	14.7	NTU			
CFR-27H	7-Jun-22	Field Measurement	Turbidity	NA	38.4	NTU			
CFR-34	7-Jun-22	Field Measurement	Turbidity	NA	50.8	NTU			
CFR-84F	7-Jun-22	Field Measurement	Turbidity	NA	66.3	NTU			
SS-25	7-Jun-22	Field Measurement	Turbidity	NA	5.4	NTU			
WSC-SBC	7-Jun-22	Field Measurement	Turbidity	NA	5.4	NTU			
FC-CFR	7-Jun-22	Field Measurement	Turbidity	NA	19.3	NTU			

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-03A	15-Mar-22	Field Measurement	Water Temperature	NA	5.5	deg C			
CFR-07D	15-Mar-22	Field Measurement	Water Temperature	NA	5.9	deg C			
CFR-11F	15-Mar-22	Field Measurement	Water Temperature	NA	5.6	deg C			
CFR-27H	15-Mar-22	Field Measurement	Water Temperature	NA	4.7	deg C			
CFR-34	15-Mar-22	Field Measurement	Water Temperature	NA	5	deg C			
CFR-84F	15-Mar-22	Field Measurement	Water Temperature	NA	5.9	deg C			
SS-25	15-Mar-22	Field Measurement	Water Temperature	NA	5.1	deg C			
WSC-SBC	15-Mar-22	Field Measurement	Water Temperature	NA	6	deg C			
FC-CFR	15-Mar-22	Field Measurement	Water Temperature	NA	3.4	deg C			
CFR-03A	7-Jun-22	Field Measurement	Water Temperature	NA	12	deg C			
CFR-07D	7-Jun-22	Field Measurement	Water Temperature	NA	12.9	deg C			
CFR-11F	7-Jun-22	Field Measurement	Water Temperature	NA	12.8	deg C			
CFR-27H	7-Jun-22	Field Measurement	Water Temperature	NA	13.1	deg C			
CFR-34	7-Jun-22	Field Measurement	Water Temperature	NA	12.8	deg C			
CFR-84F	7-Jun-22	Field Measurement	Water Temperature	NA	11.8	deg C			
SS-25	7-Jun-22	Field Measurement	Water Temperature	NA	13.2	deg C			
WSC-SBC	7-Jun-22	Field Measurement	Water Temperature	NA	10.2	deg C			
FC-CFR	7-Jun-22	QC-FB	Methylmercury(1+)	Total Recv	Not Detected			0.023	0.05
FC-CFR	7-Jun-22	S-ROUTINE	Methylmercury(1+)	Total Recv	2.13	ng/l		0.023	0.05
FC-CFR	7-Jun-22	QC-FD	Methylmercury(1+)	Total Recv	1.98	ng/l		0.023	0.05
CFR-84F	7-Jun-22	S-ROUTINE	Methylmercury(1+)	Total Recv	Not Detected			0.023	0.05
FC-CFR	15-Mar-22	QC-FB	Methylmercury(1+)	Total Recv	Not Detected			0.023	0.05
FC-CFR	15-Mar-22	S-ROUTINE	Methylmercury(1+)	Total Recv	1.92	ng/l		0.023	0.05
FC-CFR	15-Mar-22	QC-FD	Methylmercury(1+)	Total Recv	2.03	ng/l		0.023	0.05
CFR-84F	15-Mar-22	S-ROUTINE	Methylmercury(1+)	Total Recv	0.556	ng/l		0.028	0.06
SS-25	1-Sep-22	Field Measurement	pH	NA	8.81	None			
WSC-SBC	1-Sep-22	Field Measurement	pH	NA	8.61	None			
CFR-03A	1-Sep-22	Field Measurement	pH	NA	9.06	None			
CFR-07D	1-Sep-22	Field Measurement	pH	NA	8.91	None			
CFR-11F	1-Sep-22	Field Measurement	pH	NA	8.75	None			
CFR-34	1-Sep-22	Field Measurement	pH	NA	8.63	None			
CFR-27H	1-Sep-22	Field Measurement	pH	NA	8.51	None			
FC-CFR	1-Sep-22	Field Measurement	pH	NA	8.36	None			
CFR-84F	1-Sep-22	Field Measurement	pH	NA	8.07	None			
SS-25	1-Sep-22	Field Measurement	Water Temperature	NA	20.9	deg C			
WSC-SBC	1-Sep-22	Field Measurement	Water Temperature	NA	17.6	deg C			
CFR-03A	1-Sep-22	Field Measurement	Water Temperature	NA	20.8	deg C			
CFR-07D	1-Sep-22	Field Measurement	Water Temperature	NA	21.7	deg C			
CFR-11F	1-Sep-22	Field Measurement	Water Temperature	NA	21.8	deg C			
CFR-34	1-Sep-22	Field Measurement	Water Temperature	NA	19.6	deg C			
CFR-27H	1-Sep-22	Field Measurement	Water Temperature	NA	20	deg C			

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	1-Sep-22	Field Measurement	Water Temperature	NA	14.6	deg C			
CFR-84F	1-Sep-22	Field Measurement	Water Temperature	NA	17.9	deg C			
SS-25	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	9.4	mg/l			
WSC-SBC	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	8.9	mg/l			
CFR-03A	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	11.8	mg/l			
CFR-07D	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	11.6	mg/l			
CFR-11F	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	12.5	mg/l			
CFR-34	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	13.5	mg/l			
CFR-27H	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	12.5	mg/l			
FC-CFR	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	10.1	mg/l			
CFR-84F	1-Sep-22	Field Measurement	Dissolved oxygen (DO)	NA	7.9	mg/l			
SS-25	1-Sep-22	Field Measurement	Specific conductance	NA	723	uS/cm			
WSC-SBC	1-Sep-22	Field Measurement	Specific conductance	NA	269	uS/cm			
CFR-03A	1-Sep-22	Field Measurement	Specific conductance	NA	493	uS/cm			
CFR-07D	1-Sep-22	Field Measurement	Specific conductance	NA	505	uS/cm			
CFR-11F	1-Sep-22	Field Measurement	Specific conductance	NA	507	uS/cm			
CFR-34	1-Sep-22	Field Measurement	Specific conductance	NA	483	uS/cm			
CFR-27H	1-Sep-22	Field Measurement	Specific conductance	NA	492	uS/cm			
FC-CFR	1-Sep-22	Field Measurement	Specific conductance	NA	475	uS/cm			
CFR-84F	1-Sep-22	Field Measurement	Specific conductance	NA	569	uS/cm			
SS-25	1-Sep-22	Field Measurement	Turbidity	NA	4.1	NTU			
WSC-SBC	1-Sep-22	Field Measurement	Turbidity	NA	1.1	NTU			
CFR-03A	1-Sep-22	Field Measurement	Turbidity	NA	2.7	NTU			
CFR-07D	1-Sep-22	Field Measurement	Turbidity	NA	1.5	NTU			
CFR-11F	1-Sep-22	Field Measurement	Turbidity	NA	1.2	NTU			
CFR-34	1-Sep-22	Field Measurement	Turbidity	NA					
CFR-27H	1-Sep-22	Field Measurement	Turbidity	NA	1	NTU			
FC-CFR	1-Sep-22	Field Measurement	Turbidity	NA	3.3	NTU			
CFR-84F	1-Sep-22	Field Measurement	Turbidity	NA	2.6	NTU			
SS-25	1-Sep-22	Field Measurement	Flow	NA	20.5	ft3/sec			
WSC-SBC	1-Sep-22	Field Measurement	Flow	NA	18.5	ft3/sec			
CFR-03A	1-Sep-22	Field Measurement	Flow	NA	39.9	ft3/sec			
CFR-07D	1-Sep-22	Field Measurement	Flow	NA	63.3	ft3/sec			
CFR-11F	1-Sep-22	Field Measurement	Flow	NA	44.26	ft3/sec			
CFR-34	1-Sep-22	Field Measurement	Flow	NA	78.24	ft3/sec			
CFR-27H	1-Sep-22	Field Measurement	Flow	NA	62.3	ft3/sec			
FC-CFR	1-Sep-22	Field Measurement	Flow	NA	25.3	ft3/sec			
CFR-84F	1-Sep-22	Field Measurement	Flow	NA	212	ft3/sec			
FC-CFR	1-Sep-22	QC-FB	Alkalinity, total	Total	Not Detected			2	4
FC-CFR	1-Sep-22	QC-FB	Bicarbonate	Total	Not Detected			3	4
FC-CFR	1-Sep-22	QC-FB	Chloride	Total	Not Detected			0.02	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	1-Sep-22	QC-FB	Sulfate	Total	Not Detected			0.06	1
FC-CFR	1-Sep-22	QC-FB	Total nitrogen, mixed forms	Unfiltered	Not Detected			0.02	0.05
FC-CFR	1-Sep-22	QC-FB	Total suspended solids	NA	Not Detected			0.3	1
FC-CFR	1-Sep-22	QC-FB	Arsenic	Dissolved	Not Detected			0.0002	0.001
FC-CFR	1-Sep-22	QC-FB	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	1-Sep-22	QC-FB	Copper	Dissolved	Not Detected			0.0001	0.001
FC-CFR	1-Sep-22	QC-FB	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	1-Sep-22	QC-FB	Zinc	Dissolved	Not Detected			0.001	0.008
FC-CFR	1-Sep-22	QC-FB	Arsenic	Total Recv	Not Detected			0.0001	0.001
FC-CFR	1-Sep-22	QC-FB	Cadmium	Total Recv	Not Detected			0.00003	0.00003
FC-CFR	1-Sep-22	QC-FB	Calcium	Total Recv	Not Detected			0.1	1
FC-CFR	1-Sep-22	QC-FB	Copper	Total Recv	Not Detected			0.0003	0.001
FC-CFR	1-Sep-22	QC-FB	Lead	Total Recv	Not Detected			0.0001	0.0003
FC-CFR	1-Sep-22	QC-FB	Magnesium	Total Recv	Not Detected			0.05	1
FC-CFR	1-Sep-22	QC-FB	Zinc	Total Recv	Not Detected			0.001	0.008
FC-CFR	1-Sep-22	QC-FB	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
FC-CFR	1-Sep-22	QC-FB	Total Phosphorus, mixed forms	Unfiltered	0.002	mg/l	J	0.001	0.003
FC-CFR	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	170	mg/l	J	2	4
FC-CFR	1-Sep-22	S-ROUTINE	Bicarbonate	Total	190	mg/l	J	3	4
FC-CFR	1-Sep-22	S-ROUTINE	Chloride	Total	11	mg/l		0.02	1
FC-CFR	1-Sep-22	S-ROUTINE	Sulfate	Total	87	mg/l	J	0.06	1
FC-CFR	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.21	mg/l		0.02	0.05
FC-CFR	1-Sep-22	S-ROUTINE	Total suspended solids	NA	0.8	mg/l	J	0.3	1
FC-CFR	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.014	mg/l	J	0.0002	0.001
FC-CFR	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	0.00002	mg/l	J	0.00002	0.00003
FC-CFR	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.006	mg/l	J	0.0001	0.001
FC-CFR	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	1-Sep-22	S-ROUTINE	Zinc	Dissolved	0.002	mg/l	J	0.001	0.008
FC-CFR	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.014	mg/l	J	0.0001	0.001
FC-CFR	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	0.00027	mg/l		0.00003	0.00003
FC-CFR	1-Sep-22	S-ROUTINE	Calcium	Total Recv	63	mg/l		0.1	1
FC-CFR	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.008	mg/l	J	0.0003	0.001
FC-CFR	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0003	mg/l	J	0.0001	0.0003
FC-CFR	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
FC-CFR	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.003	mg/l	J	0.001	0.008
FC-CFR	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.019	mg/l	J	0.008	0.02
FC-CFR	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.021	mg/l	J	0.001	0.003
FC-CFR	1-Sep-22	QC-FD	Alkalinity, total	Total	230	mg/l		2	4
FC-CFR	1-Sep-22	QC-FD	Bicarbonate	Total	270	mg/l		3	4
FC-CFR	1-Sep-22	QC-FD	Chloride	Total	6	mg/l		0.02	1
FC-CFR	1-Sep-22	QC-FD	Sulfate	Total	28	mg/l		0.06	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	1-Sep-22	QC-FD	Total nitrogen, mixed forms	Unfiltered	0.36	mg/l		0.02	0.05
FC-CFR	1-Sep-22	QC-FD	Total suspended solids	NA	5	mg/l		0.3	1
FC-CFR	1-Sep-22	QC-FD	Arsenic	Dissolved	0.01	mg/l		0.0002	0.001
FC-CFR	1-Sep-22	QC-FD	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	1-Sep-22	QC-FD	Copper	Dissolved	0.001	mg/l		0.0001	0.001
FC-CFR	1-Sep-22	QC-FD	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	1-Sep-22	QC-FD	Zinc	Dissolved	Not Detected			0.001	0.008
FC-CFR	1-Sep-22	QC-FD	Arsenic	Total Recv	0.01	mg/l		0.0001	0.001
FC-CFR	1-Sep-22	QC-FD	Cadmium	Total Recv	Not Detected			0.00003	0.00003
FC-CFR	1-Sep-22	QC-FD	Calcium	Total Recv	59	mg/l		0.1	1
FC-CFR	1-Sep-22	QC-FD	Copper	Total Recv	0.001	mg/l		0.0003	0.001
FC-CFR	1-Sep-22	QC-FD	Lead	Total Recv	0.0007	mg/l		0.0001	0.0003
FC-CFR	1-Sep-22	QC-FD	Magnesium	Total Recv	18	mg/l		0.05	1
FC-CFR	1-Sep-22	QC-FD	Zinc	Total Recv	0.003	mg/l	J	0.001	0.008
FC-CFR	1-Sep-22	QC-FD	Nitrate + Nitrite	Unfiltered	0.01	mg/l	J	0.008	0.02
FC-CFR	1-Sep-22	QC-FD	Total Phosphorus, mixed forms	Unfiltered	0.083	mg/l		0.001	0.003
CFR-34	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	230	mg/l	J	2	4
CFR-34	1-Sep-22	S-ROUTINE	Bicarbonate	Total	270	mg/l	J	3	4
CFR-34	1-Sep-22	S-ROUTINE	Chloride	Total	6	mg/l		0.02	1
CFR-34	1-Sep-22	S-ROUTINE	Sulfate	Total	28	mg/l	J	0.06	1
CFR-34	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.36	mg/l	J	0.02	0.05
CFR-34	1-Sep-22	S-ROUTINE	Total suspended solids	NA	5	mg/l		0.3	1
CFR-34	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.011	mg/l	J	0.0002	0.001
CFR-34	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
CFR-34	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.001	mg/l		0.0001	0.001
CFR-34	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-34	1-Sep-22	S-ROUTINE	Zinc	Dissolved	0.002	mg/l	J	0.001	0.008
CFR-34	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.01	mg/l	J	0.0001	0.001
CFR-34	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003
CFR-34	1-Sep-22	S-ROUTINE	Calcium	Total Recv	59	mg/l		0.1	1
CFR-34	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.001	mg/l		0.0003	0.001
CFR-34	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0007	mg/l		0.0001	0.0003
CFR-34	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	18	mg/l		0.05	1
CFR-34	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.003	mg/l	J	0.001	0.008
CFR-34	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
CFR-34	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.081	mg/l	J	0.001	0.003
CFR-27H	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	160	mg/l	J	2	4
CFR-27H	1-Sep-22	S-ROUTINE	Bicarbonate	Total	180	mg/l	J	3	4
CFR-27H	1-Sep-22	S-ROUTINE	Chloride	Total	11	mg/l		0.02	1
CFR-27H	1-Sep-22	S-ROUTINE	Sulfate	Total	94	mg/l	J	0.06	1
CFR-27H	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.29	mg/l	J	0.02	0.05

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-27H	1-Sep-22	S-ROUTINE	Total suspended solids	NA	2	mg/l		0.3	1
CFR-27H	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.012	mg/l	J	0.0002	0.001
CFR-27H	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	0.00002	mg/l	J	0.00002	0.00003
CFR-27H	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.007	mg/l	J	0.0001	0.001
CFR-27H	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-27H	1-Sep-22	S-ROUTINE	Zinc	Dissolved	0.002	mg/l	J	0.001	0.008
CFR-27H	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.013	mg/l	J	0.0001	0.001
CFR-27H	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003
CFR-27H	1-Sep-22	S-ROUTINE	Calcium	Total Recv	66	mg/l		0.1	1
CFR-27H	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.009	mg/l	J	0.0003	0.001
CFR-27H	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0004	mg/l		0.0001	0.0003
CFR-27H	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
CFR-27H	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.004	mg/l	J	0.001	0.008
CFR-27H	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.1	mg/l		0.008	0.02
CFR-27H	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.01	mg/l		0.001	0.003
CFR-11F	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	130	mg/l	J	2	4
CFR-11F	1-Sep-22	S-ROUTINE	Bicarbonate	Total	140	mg/l	J	3	4
CFR-11F	1-Sep-22	S-ROUTINE	Chloride	Total	9	mg/l		0.02	1
CFR-11F	1-Sep-22	S-ROUTINE	Sulfate	Total	130	mg/l	J	0.06	1
CFR-11F	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.22	mg/l		0.02	0.05
CFR-11F	1-Sep-22	S-ROUTINE	Total suspended solids	NA	0.8	mg/l	DJ	0.3	2
CFR-11F	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.013	mg/l	J	0.0002	0.001
CFR-11F	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	0.00002	mg/l	J	0.00002	0.00003
CFR-11F	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.004	mg/l		0.0001	0.001
CFR-11F	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-11F	1-Sep-22	S-ROUTINE	Zinc	Dissolved	0.011	mg/l		0.001	0.008
CFR-11F	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.014	mg/l	J	0.0001	0.001
CFR-11F	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003
CFR-11F	1-Sep-22	S-ROUTINE	Calcium	Total Recv	68	mg/l		0.1	1
CFR-11F	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.006	mg/l	J	0.0003	0.001
CFR-11F	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0003	mg/l	J	0.0001	0.0003
CFR-11F	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1
CFR-11F	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.002	mg/l	J	0.001	0.008
CFR-11F	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
CFR-11F	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.012	mg/l		0.001	0.003
CFR-07D	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	120	mg/l	J	2	4
CFR-07D	1-Sep-22	S-ROUTINE	Bicarbonate	Total	120	mg/l	J	3	4
CFR-07D	1-Sep-22	S-ROUTINE	Chloride	Total	9	mg/l		0.02	1
CFR-07D	1-Sep-22	S-ROUTINE	Sulfate	Total	139	mg/l	J	0.06	1
CFR-07D	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.24	mg/l		0.02	0.05
CFR-07D	1-Sep-22	S-ROUTINE	Total suspended solids	NA	2	mg/l		0.3	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-07D	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.014	mg/l	J	0.0002	0.001
CFR-07D	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
CFR-07D	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.004	mg/l		0.0001	0.001
CFR-07D	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-07D	1-Sep-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008
CFR-07D	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.014	mg/l	J	0.0001	0.001
CFR-07D	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003
CFR-07D	1-Sep-22	S-ROUTINE	Calcium	Total Recv	69	mg/l		0.1	1
CFR-07D	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.006	mg/l	J	0.0003	0.001
CFR-07D	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0003	mg/l	J	0.0001	0.0003
CFR-07D	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1
CFR-07D	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.002	mg/l	J	0.001	0.008
CFR-07D	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
CFR-07D	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.016	mg/l	J	0.001	0.003
CFR-03A	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	110	mg/l	J	2	4
CFR-03A	1-Sep-22	S-ROUTINE	Bicarbonate	Total	110	mg/l	J	3	4
CFR-03A	1-Sep-22	S-ROUTINE	Chloride	Total	9	mg/l		0.02	1
CFR-03A	1-Sep-22	S-ROUTINE	Sulfate	Total	141	mg/l	J	0.06	1
CFR-03A	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.28	mg/l	J	0.02	0.05
CFR-03A	1-Sep-22	S-ROUTINE	Total suspended solids	NA	3	mg/l		0.3	1
CFR-03A	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.014	mg/l	J	0.0002	0.001
CFR-03A	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	0.00002	mg/l	J	0.00002	0.00003
CFR-03A	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
CFR-03A	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-03A	1-Sep-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008
CFR-03A	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.015	mg/l	J	0.0001	0.001
CFR-03A	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	0.00003	mg/l		0.00002	0.00003
CFR-03A	1-Sep-22	S-ROUTINE	Calcium	Total Recv	68	mg/l		0.1	1
CFR-03A	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.005	mg/l		0.0003	0.001
CFR-03A	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0004	mg/l		0.0001	0.0003
CFR-03A	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	14	mg/l		0.05	1
CFR-03A	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.003	mg/l	J	0.001	0.008
CFR-03A	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
CFR-03A	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.022	mg/l	J	0.001	0.003
WSC-SBC	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	120	mg/l	J	2	4
WSC-SBC	1-Sep-22	S-ROUTINE	Bicarbonate	Total	140	mg/l	J	3	4
WSC-SBC	1-Sep-22	S-ROUTINE	Chloride	Total	0.98	mg/l	J	0.02	1
WSC-SBC	1-Sep-22	S-ROUTINE	Sulfate	Total	27	mg/l	J	0.06	1
WSC-SBC	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.08	mg/l		0.02	0.05
WSC-SBC	1-Sep-22	S-ROUTINE	Total suspended solids	NA	2	mg/l		0.3	1
WSC-SBC	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.005	mg/l		0.0002	0.001

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

WSC-SBC	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
WSC-SBC	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
WSC-SBC	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
WSC-SBC	1-Sep-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008
WSC-SBC	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.005	mg/l		0.0001	0.001
WSC-SBC	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	0.00003	mg/l	J	0.00003	0.00003
WSC-SBC	1-Sep-22	S-ROUTINE	Calcium	Total Recv	41	mg/l		0.1	1
WSC-SBC	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.004	mg/l		0.0003	0.001
WSC-SBC	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0002	mg/l	J	0.0001	0.0003
WSC-SBC	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	9	mg/l		0.05	1
WSC-SBC	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.001	mg/l	J	0.001	0.008
WSC-SBC	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
WSC-SBC	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.008	mg/l		0.001	0.003
SS-25	1-Sep-22	S-ROUTINE	Alkalinity, total	Total	89	mg/l	J	2	4
SS-25	1-Sep-22	S-ROUTINE	Bicarbonate	Total	98	mg/l	J	3	4
SS-25	1-Sep-22	S-ROUTINE	Chloride	Total	19	mg/l		0.02	1
SS-25	1-Sep-22	S-ROUTINE	Sulfate	Total	271	mg/l	J	0.06	1
SS-25	1-Sep-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.48	mg/l	J	0.02	0.05
SS-25	1-Sep-22	S-ROUTINE	Total suspended solids	NA	3	mg/l		0.3	1
SS-25	1-Sep-22	S-ROUTINE	Arsenic	Dissolved	0.024	mg/l	J	0.0002	0.001
SS-25	1-Sep-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
SS-25	1-Sep-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
SS-25	1-Sep-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
SS-25	1-Sep-22	S-ROUTINE	Zinc	Dissolved	Not Detected			0.001	0.008
SS-25	1-Sep-22	S-ROUTINE	Arsenic	Total Recv	0.025	mg/l	J	0.0001	0.001
SS-25	1-Sep-22	S-ROUTINE	Cadmium	Total Recv	Not Detected			0.00003	0.00003
SS-25	1-Sep-22	S-ROUTINE	Calcium	Total Recv	101	mg/l		0.1	1
SS-25	1-Sep-22	S-ROUTINE	Copper	Total Recv	0.002	mg/l		0.0003	0.001
SS-25	1-Sep-22	S-ROUTINE	Lead	Total Recv	0.0002	mg/l	J	0.0001	0.0003
SS-25	1-Sep-22	S-ROUTINE	Magnesium	Total Recv	19	mg/l		0.05	1
SS-25	1-Sep-22	S-ROUTINE	Zinc	Total Recv	0.002	mg/l	J	0.001	0.008
SS-25	1-Sep-22	S-ROUTINE	Ammonia	Unfiltered	Not Detected			0.03	0.05
SS-25	1-Sep-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
SS-25	1-Sep-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.044	mg/l	J	0.001	0.003
FC-CFR	1-Sep-22	QC-FB	Mercury	Total Recv	Not Detected			0.002	0.005
FC-CFR	1-Sep-22	S-ROUTINE	Mercury	Total Recv	0.003	ug/l	J	0.002	0.005
FC-CFR	1-Sep-22	QC-FD	Mercury	Total Recv	0.046	ug/l		0.002	0.005
CFR-84F	1-Sep-22	S-ROUTINE	Mercury	Total Recv	0.009	ug/l		0.002	0.005
FC-CFR	1-Sep-22	QC-FB	Hardness, Ca, Mg	NA	Not Detected			1	1
FC-CFR	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	218	mg/l		1	1
FC-CFR	1-Sep-22	QC-FD	Hardness, Ca, Mg	NA	222	mg/l		1	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-34	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	220	mg/l		1	1
CFR-27H	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	222	mg/l		1	1
CFR-11F	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	233	mg/l		1	1
CFR-07D	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	233	mg/l		1	1
CFR-03A	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	227	mg/l		1	1
WSC-SBC	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	138	mg/l		1	1
SS-25	1-Sep-22	S-ROUTINE	Hardness, Ca, Mg	NA	331	mg/l		1	1
FC-CFR	8-Dec-22	QC-FB	Alkalinity, total	Total	Not Detected			2	4
FC-CFR	8-Dec-22	QC-FB	Bicarbonate	Total	Not Detected			3	4
FC-CFR	8-Dec-22	QC-FB	Chloride	Total	Not Detected			0.02	1
FC-CFR	8-Dec-22	QC-FB	Sulfate	Total	Not Detected			0.06	1
FC-CFR	8-Dec-22	QC-FB	Total nitrogen, mixed forms	Unfiltered	Not Detected			0.02	0.05
FC-CFR	8-Dec-22	QC-FB	Total suspended solids	NA	Not Detected		D	0.3	6
FC-CFR	8-Dec-22	QC-FB	Arsenic	Dissolved	Not Detected			0.0002	0.001
FC-CFR	8-Dec-22	QC-FB	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	8-Dec-22	QC-FB	Copper	Dissolved	Not Detected			0.0001	0.001
FC-CFR	8-Dec-22	QC-FB	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	8-Dec-22	QC-FB	Zinc	Dissolved	0.003	mg/l	J	0.001	0.008
FC-CFR	8-Dec-22	QC-FB	Arsenic	Total Recv	Not Detected			0.0001	0.001
FC-CFR	8-Dec-22	QC-FB	Cadmium	Total Recv	Not Detected			0.00003	0.00003
FC-CFR	8-Dec-22	QC-FB	Calcium	Total Recv	Not Detected			0.1	1
FC-CFR	8-Dec-22	QC-FB	Copper	Total Recv	Not Detected			0.0003	0.001
FC-CFR	8-Dec-22	QC-FB	Lead	Total Recv	Not Detected			0.0001	0.0003
FC-CFR	8-Dec-22	QC-FB	Magnesium	Total Recv	Not Detected			0.05	1
FC-CFR	8-Dec-22	QC-FB	Zinc	Total Recv	0.001	mg/l	J	0.001	0.008
FC-CFR	8-Dec-22	QC-FB	Nitrate + Nitrite	Unfiltered	Not Detected			0.008	0.02
FC-CFR	8-Dec-22	QC-FB	Total Phosphorus, mixed forms	Unfiltered	Not Detected			0.001	0.003
FC-CFR	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	150	mg/l		2	4
FC-CFR	8-Dec-22	S-ROUTINE	Bicarbonate	Total	180	mg/l		3	4
FC-CFR	8-Dec-22	S-ROUTINE	Chloride	Total	4	mg/l		0.02	1
FC-CFR	8-Dec-22	S-ROUTINE	Sulfate	Total	17	mg/l		0.06	1
FC-CFR	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.34	mg/l		0.02	0.05
FC-CFR	8-Dec-22	S-ROUTINE	Total suspended solids	NA	18	mg/l	D	0.3	2
FC-CFR	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
FC-CFR	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.0004	mg/l	J	0.0001	0.001
FC-CFR	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.002	mg/l	J	0.001	0.008
FC-CFR	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.008	mg/l		0.0001	0.001
FC-CFR	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00005	mg/l		0.00003	0.00003
FC-CFR	8-Dec-22	S-ROUTINE	Calcium	Total Recv	43	mg/l		0.1	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.002	mg/l		0.0003	0.001
FC-CFR	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0035	mg/l		0.0001	0.0003
FC-CFR	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	13	mg/l		0.05	1
FC-CFR	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.014	mg/l		0.001	0.008
FC-CFR	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.2	mg/l		0.008	0.02
FC-CFR	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.051	mg/l		0.001	0.003
FC-CFR	8-Dec-22	QC-FD	Alkalinity, total	Total	150	mg/l		2	4
FC-CFR	8-Dec-22	QC-FD	Bicarbonate	Total	180	mg/l		3	4
FC-CFR	8-Dec-22	QC-FD	Chloride	Total	4	mg/l		0.02	1
FC-CFR	8-Dec-22	QC-FD	Sulfate	Total	17	mg/l		0.06	1
FC-CFR	8-Dec-22	QC-FD	Total nitrogen, mixed forms	Unfiltered	0.34	mg/l		0.02	0.05
FC-CFR	8-Dec-22	QC-FD	Total suspended solids	NA	18	mg/l	D	0.3	2
FC-CFR	8-Dec-22	QC-FD	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
FC-CFR	8-Dec-22	QC-FD	Cadmium	Dissolved	Not Detected			0.00002	0.00003
FC-CFR	8-Dec-22	QC-FD	Copper	Dissolved	0.0004	mg/l	J	0.0001	0.001
FC-CFR	8-Dec-22	QC-FD	Lead	Dissolved	Not Detected			0.0001	0.0003
FC-CFR	8-Dec-22	QC-FD	Zinc	Dissolved	0.001	mg/l	J	0.001	0.008
FC-CFR	8-Dec-22	QC-FD	Arsenic	Total Recv	0.008	mg/l		0.0001	0.001
FC-CFR	8-Dec-22	QC-FD	Cadmium	Total Recv	0.00005	mg/l		0.00003	0.00003
FC-CFR	8-Dec-22	QC-FD	Calcium	Total Recv	43	mg/l		0.1	1
FC-CFR	8-Dec-22	QC-FD	Copper	Total Recv	0.002	mg/l		0.0003	0.001
FC-CFR	8-Dec-22	QC-FD	Lead	Total Recv	0.0037	mg/l		0.0001	0.0003
FC-CFR	8-Dec-22	QC-FD	Magnesium	Total Recv	13	mg/l		0.05	1
FC-CFR	8-Dec-22	QC-FD	Zinc	Total Recv	0.012	mg/l		0.001	0.008
FC-CFR	8-Dec-22	QC-FD	Nitrate + Nitrite	Unfiltered	0.2	mg/l		0.008	0.02
FC-CFR	8-Dec-22	QC-FD	Total Phosphorus, mixed forms	Unfiltered	0.053	mg/l		0.001	0.003
CFR-34	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	150	mg/l		2	4
CFR-34	8-Dec-22	S-ROUTINE	Bicarbonate	Total	180	mg/l		3	4
CFR-34	8-Dec-22	S-ROUTINE	Chloride	Total	11	mg/l		0.02	1
CFR-34	8-Dec-22	S-ROUTINE	Sulfate	Total	116	mg/l		0.06	1
CFR-34	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.53	mg/l		0.02	0.05
CFR-34	8-Dec-22	S-ROUTINE	Total suspended solids	NA	17	mg/l	D	0.3	2
CFR-34	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
CFR-34	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00005	mg/l		0.00002	0.00003
CFR-34	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.004	mg/l		0.0001	0.001
CFR-34	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-34	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.012	mg/l		0.001	0.008
CFR-34	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.009	mg/l		0.0001	0.001
CFR-34	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00016	mg/l		0.00003	0.00003
CFR-34	8-Dec-22	S-ROUTINE	Calcium	Total Recv	77	mg/l		0.1	1
CFR-34	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.026	mg/l		0.0003	0.001

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-34	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0034	mg/l		0.0001	0.0003
CFR-34	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1
CFR-34	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.028	mg/l		0.001	0.008
CFR-34	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.36	mg/l		0.008	0.02
CFR-34	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.028	mg/l		0.001	0.003
CFR-27H	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
CFR-27H	8-Dec-22	S-ROUTINE	Bicarbonate	Total	170	mg/l		3	4
CFR-27H	8-Dec-22	S-ROUTINE	Chloride	Total	14	mg/l		0.02	1
CFR-27H	8-Dec-22	S-ROUTINE	Sulfate	Total	118	mg/l		0.06	1
CFR-27H	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.49	mg/l		0.02	0.05
CFR-27H	8-Dec-22	S-ROUTINE	Total suspended solids	NA	9	mg/l	D	0.3	2
CFR-27H	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
CFR-27H	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
CFR-27H	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.004	mg/l		0.0001	0.001
CFR-27H	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-27H	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.014	mg/l		0.001	0.008
CFR-27H	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.008	mg/l		0.0001	0.001
CFR-27H	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.0001	mg/l		0.00002	0.00003
CFR-27H	8-Dec-22	S-ROUTINE	Calcium	Total Recv	77	mg/l		0.1	1
CFR-27H	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.022	mg/l		0.0003	0.001
CFR-27H	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0026	mg/l		0.0001	0.0003
CFR-27H	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1
CFR-27H	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.024	mg/l		0.001	0.008
CFR-27H	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.35	mg/l		0.008	0.02
CFR-27H	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.018	mg/l		0.001	0.003
CFR-11F	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	140	mg/l		2	4
CFR-11F	8-Dec-22	S-ROUTINE	Bicarbonate	Total	170	mg/l		3	4
CFR-11F	8-Dec-22	S-ROUTINE	Chloride	Total	13	mg/l		0.02	1
CFR-11F	8-Dec-22	S-ROUTINE	Sulfate	Total	154	mg/l		0.06	1
CFR-11F	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.33	mg/l		0.02	0.05
CFR-11F	8-Dec-22	S-ROUTINE	Total suspended solids	NA	15	mg/l	D	0.3	2
CFR-11F	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.005	mg/l		0.0002	0.001
CFR-11F	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-11F	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.003	mg/l		0.0001	0.001
CFR-11F	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-11F	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.011	mg/l		0.001	0.008
CFR-11F	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.007	mg/l		0.0001	0.001
CFR-11F	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00012	mg/l		0.00003	0.00003
CFR-11F	8-Dec-22	S-ROUTINE	Calcium	Total Recv	88	mg/l		0.1	1
CFR-11F	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.019	mg/l		0.0003	0.001
CFR-11F	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0024	mg/l		0.0001	0.0003

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-11F	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	17	mg/l		0.05	1
CFR-11F	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.021	mg/l		0.001	0.008
CFR-11F	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.2	mg/l		0.008	0.02
CFR-11F	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.018	mg/l		0.001	0.003
CFR-07D	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	130	mg/l		2	4
CFR-07D	8-Dec-22	S-ROUTINE	Bicarbonate	Total	160	mg/l		3	4
CFR-07D	8-Dec-22	S-ROUTINE	Chloride	Total	13	mg/l		0.02	1
CFR-07D	8-Dec-22	S-ROUTINE	Sulfate	Total	163	mg/l		0.06	1
CFR-07D	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.32	mg/l		0.02	0.05
CFR-07D	8-Dec-22	S-ROUTINE	Total suspended solids	NA	7	mg/l	D	0.3	2
CFR-07D	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.005	mg/l		0.0002	0.001
CFR-07D	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00004	mg/l		0.00002	0.00003
CFR-07D	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
CFR-07D	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-07D	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.005	mg/l	J	0.001	0.008
CFR-07D	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.007	mg/l		0.0001	0.001
CFR-07D	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00009	mg/l		0.00003	0.00003
CFR-07D	8-Dec-22	S-ROUTINE	Calcium	Total Recv	89	mg/l		0.1	1
CFR-07D	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.013	mg/l		0.0003	0.001
CFR-07D	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0015	mg/l		0.0001	0.0003
CFR-07D	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	16	mg/l		0.05	1
CFR-07D	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.014	mg/l		0.001	0.008
CFR-07D	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.17	mg/l		0.008	0.02
CFR-07D	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.012	mg/l		0.001	0.003
CFR-03A	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	120	mg/l		2	4
CFR-03A	8-Dec-22	S-ROUTINE	Bicarbonate	Total	140	mg/l		3	4
CFR-03A	8-Dec-22	S-ROUTINE	Chloride	Total	17	mg/l		0.02	1
CFR-03A	8-Dec-22	S-ROUTINE	Sulfate	Total	180	mg/l		0.06	1
CFR-03A	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.24	mg/l		0.02	0.05
CFR-03A	8-Dec-22	S-ROUTINE	Total suspended solids	NA	3	mg/l	D	0.3	2
CFR-03A	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.004	mg/l		0.0002	0.001
CFR-03A	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00003	mg/l	J	0.00002	0.00003
CFR-03A	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
CFR-03A	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
CFR-03A	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.004	mg/l	J	0.001	0.008
CFR-03A	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.006	mg/l		0.0001	0.001
CFR-03A	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00005	mg/l		0.00002	0.00003
CFR-03A	8-Dec-22	S-ROUTINE	Calcium	Total Recv	88	mg/l		0.1	1
CFR-03A	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.007	mg/l		0.0003	0.001
CFR-03A	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0007	mg/l		0.0001	0.0003
CFR-03A	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	15	mg/l		0.05	1

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-03A	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.008	mg/l		0.001	0.008
CFR-03A	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.07	mg/l		0.008	0.02
CFR-03A	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.009	mg/l		0.001	0.003
WSC-SBC	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	130	mg/l		2	4
WSC-SBC	8-Dec-22	S-ROUTINE	Bicarbonate	Total	160	mg/l		3	4
WSC-SBC	8-Dec-22	S-ROUTINE	Chloride	Total	1	mg/l		0.02	1
WSC-SBC	8-Dec-22	S-ROUTINE	Sulfate	Total	29	mg/l		0.06	1
WSC-SBC	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.1	mg/l		0.02	0.05
WSC-SBC	8-Dec-22	S-ROUTINE	Total suspended solids	NA	4	mg/l	D	0.3	2
WSC-SBC	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.003	mg/l		0.0002	0.001
WSC-SBC	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	Not Detected			0.00002	0.00003
WSC-SBC	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.001	mg/l	J	0.0001	0.001
WSC-SBC	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
WSC-SBC	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.007	mg/l	J	0.001	0.008
WSC-SBC	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.003	mg/l		0.0001	0.001
WSC-SBC	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00003	mg/l		0.00003	0.00003
WSC-SBC	8-Dec-22	S-ROUTINE	Calcium	Total Recv	46	mg/l		0.1	1
WSC-SBC	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.006	mg/l		0.0003	0.001
WSC-SBC	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0005	mg/l		0.0001	0.0003
WSC-SBC	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	11	mg/l		0.05	1
WSC-SBC	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.003	mg/l	J	0.001	0.008
WSC-SBC	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.07	mg/l		0.008	0.02
WSC-SBC	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.007	mg/l		0.001	0.003
SS-25	8-Dec-22	S-ROUTINE	Alkalinity, total	Total	110	mg/l		2	4
SS-25	8-Dec-22	S-ROUTINE	Bicarbonate	Total	130	mg/l		3	4
SS-25	8-Dec-22	S-ROUTINE	Chloride	Total	33	mg/l		0.02	1
SS-25	8-Dec-22	S-ROUTINE	Sulfate	Total	333	mg/l		0.06	1
SS-25	8-Dec-22	S-ROUTINE	Total nitrogen, mixed forms	Unfiltered	0.4	mg/l		0.02	0.05
SS-25	8-Dec-22	S-ROUTINE	Total suspended solids	NA	1.3	mg/l	DJ	0.3	2
SS-25	8-Dec-22	S-ROUTINE	Arsenic	Dissolved	0.006	mg/l		0.0002	0.001
SS-25	8-Dec-22	S-ROUTINE	Cadmium	Dissolved	0.00006	mg/l		0.00002	0.00003
SS-25	8-Dec-22	S-ROUTINE	Copper	Dissolved	0.002	mg/l		0.0001	0.001
SS-25	8-Dec-22	S-ROUTINE	Lead	Dissolved	Not Detected			0.0001	0.0003
SS-25	8-Dec-22	S-ROUTINE	Zinc	Dissolved	0.018	mg/l		0.001	0.008
SS-25	8-Dec-22	S-ROUTINE	Arsenic	Total Recv	0.007	mg/l		0.0001	0.001
SS-25	8-Dec-22	S-ROUTINE	Cadmium	Total Recv	0.00009	mg/l		0.00002	0.00003
SS-25	8-Dec-22	S-ROUTINE	Calcium	Total Recv	130	mg/l		0.1	1
SS-25	8-Dec-22	S-ROUTINE	Copper	Total Recv	0.003	mg/l		0.0003	0.001
SS-25	8-Dec-22	S-ROUTINE	Lead	Total Recv	0.0002	mg/l	J	0.0001	0.0003
SS-25	8-Dec-22	S-ROUTINE	Magnesium	Total Recv	20	mg/l		0.05	1
SS-25	8-Dec-22	S-ROUTINE	Zinc	Total Recv	0.017	mg/l		0.001	0.008

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	8-Dec-22	S-ROUTINE	Ammonia	Unfiltered	0.07	mg/l		0.03	0.05
SS-25	8-Dec-22	S-ROUTINE	Nitrate + Nitrite	Unfiltered	0.07	mg/l		0.008	0.02
SS-25	8-Dec-22	S-ROUTINE	Total Phosphorus, mixed forms	Unfiltered	0.013	mg/l		0.001	0.003
FC-CFR	8-Dec-22	QC-FB	Mercury	Total Recv	Not Detected			0.002	0.005
FC-CFR	8-Dec-22	S-ROUTINE	Mercury	Total Recv	0.19	ug/l	D	0.02	0.02
FC-CFR	8-Dec-22	QC-FD	Mercury	Total Recv	0.137	ug/l		0.002	0.005
CFR-84F	8-Dec-22	S-ROUTINE	Mercury	Total Recv	0.014	ug/l		0.002	0.005
FC-CFR	8-Dec-22	QC-FB	Hardness, Ca, Mg	NA	Not Detected			1	1
FC-CFR	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	162	mg/l		1	1
FC-CFR	8-Dec-22	QC-FD	Hardness, Ca, Mg	NA	160	mg/l		1	1
CFR-34	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	253	mg/l		1	1
CFR-27H	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	252	mg/l		1	1
CFR-11F	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	289	mg/l		1	1
CFR-07D	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	288	mg/l		1	1
CFR-03A	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	282	mg/l		1	1
WSC-SBC	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	159	mg/l		1	1
SS-25	8-Dec-22	S-ROUTINE	Hardness, Ca, Mg	NA	408	mg/l		1	1
SS-25	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	14.6	mg/l			
WSC-SBC	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	11.7	mg/l			
CFR-03A	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	16.2	mg/l			
CFR-07D	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	15.5	mg/l			
CFR-11F	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	14.9	mg/l			
CFR-27H	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	13.8	mg/l			
CFR-34	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	13.6	mg/l			
FC-CFR	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	12.5	mg/l			
CFR-84F	8-Dec-22	Field Measurement	Dissolved oxygen (DO)	NA	13.5	mg/l			
SS-25	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	110	%			
WSC-SBC	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	88	%			
CFR-03A	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	121	%			
CFR-07D	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	112	%			
CFR-11F	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	106	%			
CFR-27H	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	99	%			
CFR-34	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	100	%			
FC-CFR	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	91	%			
CFR-84F	8-Dec-22	Field Measurement	Dissolved oxygen saturation	NA	96	%			
SS-25	8-Dec-22	Field Measurement	Specific conductance	NA	889.9	uS/cm			
WSC-SBC	8-Dec-22	Field Measurement	Specific conductance	NA	166.3	uS/cm			
CFR-03A	8-Dec-22	Field Measurement	Specific conductance	NA	610	uS/cm			
CFR-07D	8-Dec-22	Field Measurement	Specific conductance	NA	601	uS/cm			
CFR-11F	8-Dec-22	Field Measurement	Specific conductance	NA	596.8	uS/cm			
CFR-27H	8-Dec-22	Field Measurement	Specific conductance	NA	535.1	uS/cm			

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

CFR-34	8-Dec-22	Field Measurement	Specific conductance	NA	315.7	uS/cm			
FC-CFR	8-Dec-22	Field Measurement	Specific conductance	NA	380.7	uS/cm			
CFR-84F	8-Dec-22	Field Measurement	Specific conductance	NA	494.2	uS/cm			
SS-25	8-Dec-22	Field Measurement	Turbidity	NA	1.6	NTU			
WSC-SBC	8-Dec-22	Field Measurement	Turbidity	NA	5.5	NTU			
CFR-03A	8-Dec-22	Field Measurement	Turbidity	NA	2.4	NTU			
CFR-07D	8-Dec-22	Field Measurement	Turbidity	NA	4.1	NTU			
CFR-11F	8-Dec-22	Field Measurement	Turbidity	NA	7.7	NTU			
CFR-27H	8-Dec-22	Field Measurement	Turbidity	NA	5.4	NTU			
CFR-34	8-Dec-22	Field Measurement	Turbidity	NA	8.6	NTU			
FC-CFR	8-Dec-22	Field Measurement	Turbidity	NA	8.4	NTU			
CFR-84F	8-Dec-22	Field Measurement	Turbidity	NA	4.1	NTU			
SS-25	8-Dec-22	Field Measurement	Flow	NA	39.8	ft3/sec			
WSC-SBC	8-Dec-22	Field Measurement	Flow	NA	51.4	ft3/sec			
CFR-03A	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
CFR-07D	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
CFR-11F	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
CFR-27H	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
CFR-34	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
FC-CFR	8-Dec-22	Field Measurement	Flow	NA	105	ft3/sec			
CFR-84F	8-Dec-22	Field Measurement	Flow	NA		ft3/sec			
SS-25	8-Dec-22	Field Measurement	pH	NA	8.22	None			
WSC-SBC	8-Dec-22	Field Measurement	pH	NA	8.39	None			
CFR-03A	8-Dec-22	Field Measurement	pH	NA	8.71	None			
CFR-07D	8-Dec-22	Field Measurement	pH	NA	8.5	None			
CFR-11F	8-Dec-22	Field Measurement	pH	NA	8.41	None			
CFR-27H	8-Dec-22	Field Measurement	pH	NA	8.08	None			
CFR-34	8-Dec-22	Field Measurement	pH	NA	8.1	None			
FC-CFR	8-Dec-22	Field Measurement	pH	NA	8.18	None			
CFR-84F	8-Dec-22	Field Measurement	pH	NA	7.98	None			
SS-25	8-Dec-22	Field Measurement	Water Temperature	NA	1.8	deg C			
WSC-SBC	8-Dec-22	Field Measurement	Water Temperature	NA	1.9	deg C			
CFR-03A	8-Dec-22	Field Measurement	Water Temperature	NA	1.5	deg C			
CFR-07D	8-Dec-22	Field Measurement	Water Temperature	NA	0.4	deg C			
CFR-11F	8-Dec-22	Field Measurement	Water Temperature	NA	0.1	deg C			
CFR-27H	8-Dec-22	Field Measurement	Water Temperature	NA	0.6	deg C			
CFR-34	8-Dec-22	Field Measurement	Water Temperature	NA	1.6	deg C			
FC-CFR	8-Dec-22	Field Measurement	Water Temperature	NA	1.7	deg C			
CFR-84F	8-Dec-22	Field Measurement	Water Temperature	NA	1.1	deg C			
FC-CFR	1-Sep-22	QC-FB	Methylmercury(1+)	Total Recv	Not Detected			0.026	0.056
FC-CFR	1-Sep-22	S-ROUTINE	Methylmercury(1+)	Total Recv	1.07	ng/l		0.025	0.055

Table C-1. Surface water monitoring results for the Clark Fork River Operable Unit, 2022.

FC-CFR	1-Sep-22	QC-FD	Methylmercury(1+)	Total Recv	1.23	ng/l		0.025	0.055
CFR-84F	1-Sep-22	S-ROUTINE	Methylmercury(1+)	Total Recv	0.257	ng/l		0.026	0.056
FC-CFR	8-Dec-22	QC-FB	Methylmercury(1+)	Total Recv	0.031	ng/l	J	0.023	0.049
FC-CFR	8-Dec-22	S-ROUTINE	Methylmercury(1+)	Total Recv	0.923	ng/l		0.023	0.049
FC-CFR	8-Dec-22	QC-FD	Methylmercury(1+)	Total Recv	0.932	ng/l		0.023	0.05
CFR-84F	8-Dec-22	S-ROUTINE	Methylmercury(1+)	Total Recv	0.202	ng/l		0.026	0.057

APPENDIX D

SEDIMENT DATA

Table D-1. Sediment monitoring results for the Clark Fork River Operable Unit, 2022.

Station ID	Activity Start Date	Activity Type	Characteristic Name	Result Value	Result Value Unit	Result Qualifier	Method Detection Limit	Lower Reporting Limit
SS-25	15-Mar-22	QC-FD	Arsenic	197	mg/kg-DW		2	2
CFR-03A	15-Mar-22	S-ROUTINE	Arsenic	100	mg/kg-DW		1	1
CFR-07D	15-Mar-22	S-ROUTINE	Arsenic	143	mg/kg-DW		0.9	1
CFR-11F	15-Mar-22	S-ROUTINE	Arsenic	119	mg/kg-DW		1	1
CFR-27H	15-Mar-22	S-ROUTINE	Arsenic	180	mg/kg-DW		0.9	1
CFR-34	15-Mar-22	S-ROUTINE	Arsenic	98	mg/kg-DW		0.9	1
SS-25	15-Mar-22	S-ROUTINE	Arsenic	208	mg/kg-DW		2	2
WSC-SBC	15-Mar-22	S-ROUTINE	Arsenic	79	mg/kg-DW		1	1
SS-25	15-Mar-22	QC-FD	Cadmium	10.5	mg/kg-DW		0.4	0.4
CFR-03A	15-Mar-22	S-ROUTINE	Cadmium	4.3	mg/kg-DW		0.3	0.3
CFR-07D	15-Mar-22	S-ROUTINE	Cadmium	3.8	mg/kg-DW		0.2	0.2
CFR-11F	15-Mar-22	S-ROUTINE	Cadmium	6.6	mg/kg-DW		0.3	0.3
CFR-27H	15-Mar-22	S-ROUTINE	Cadmium	6.9	mg/kg-DW		0.2	0.2
CFR-34	15-Mar-22	S-ROUTINE	Cadmium	4.9	mg/kg-DW		0.2	0.2
SS-25	15-Mar-22	S-ROUTINE	Cadmium	9.2	mg/kg-DW		0.4	0.4
WSC-SBC	15-Mar-22	S-ROUTINE	Cadmium	3.2	mg/kg-DW		0.3	0.3
SS-25	15-Mar-22	QC-FD	Copper	380	mg/kg-DW		10	10
CFR-03A	15-Mar-22	S-ROUTINE	Copper	715	mg/kg-DW		10	10
CFR-07D	15-Mar-22	S-ROUTINE	Copper	1270	mg/kg-DW		7	7
CFR-11F	15-Mar-22	S-ROUTINE	Copper	1170	mg/kg-DW		10	10
CFR-27H	15-Mar-22	S-ROUTINE	Copper	1640	mg/kg-DW		7	7
CFR-34	15-Mar-22	S-ROUTINE	Copper	1170	mg/kg-DW		8	8
SS-25	15-Mar-22	S-ROUTINE	Copper	309	mg/kg-DW		10	10
WSC-SBC	15-Mar-22	S-ROUTINE	Copper	830	mg/kg-DW		9	9
SS-25	15-Mar-22	QC-FD	Lead	154	mg/kg-DW		6	6
CFR-03A	15-Mar-22	S-ROUTINE	Lead	103	mg/kg-DW		4	5
CFR-07D	15-Mar-22	S-ROUTINE	Lead	143	mg/kg-DW		3	5
CFR-11F	15-Mar-22	S-ROUTINE	Lead	154	mg/kg-DW		4	5
CFR-27H	15-Mar-22	S-ROUTINE	Lead	208	mg/kg-DW		3	5
CFR-34	15-Mar-22	S-ROUTINE	Lead	158	mg/kg-DW		3	5
SS-25	15-Mar-22	S-ROUTINE	Lead	137	mg/kg-DW		5	5
WSC-SBC	15-Mar-22	S-ROUTINE	Lead	104	mg/kg-DW		4	5
SS-25	15-Mar-22	QC-FD	Zinc	1290	mg/kg-DW	D	30	30
CFR-03A	15-Mar-22	S-ROUTINE	Zinc	904	mg/kg-DW	D	20	20
CFR-07D	15-Mar-22	S-ROUTINE	Zinc	840	mg/kg-DW	D	20	20
CFR-11F	15-Mar-22	S-ROUTINE	Zinc	1010	mg/kg-DW	D	20	20
CFR-27H	15-Mar-22	S-ROUTINE	Zinc	1620	mg/kg-DW	D	20	20
CFR-34	15-Mar-22	S-ROUTINE	Zinc	929	mg/kg-DW	D	20	20

Table D-1. Sediment monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	15-Mar-22	S-ROUTINE	Zinc	1250	mg/kg-DW	D	30	30
WSC-SBC	15-Mar-22	S-ROUTINE	Zinc	348	mg/kg-DW	D	20	20
CFR-34	1-Sep-22	S-ROUTINE	Arsenic	111	mg/kg-DW		0.9	1
CFR-34	1-Sep-22	S-ROUTINE	Cadmium	5.4	mg/kg-DW		0.2	0.2
CFR-34	1-Sep-22	S-ROUTINE	Copper	1160	mg/kg-DW		8	8
CFR-34	1-Sep-22	S-ROUTINE	Lead	231	mg/kg-DW		3	5
CFR-34	1-Sep-22	S-ROUTINE	Zinc	1000	mg/kg-DW	D	20	20
CFR-27H	1-Sep-22	S-ROUTINE	Arsenic	140	mg/kg-DW		0.8	1
CFR-27H	1-Sep-22	S-ROUTINE	Cadmium	9.5	mg/kg-DW		0.2	0.2
CFR-27H	1-Sep-22	S-ROUTINE	Copper	1850	mg/kg-DW		7	7
CFR-27H	1-Sep-22	S-ROUTINE	Lead	242	mg/kg-DW		3	5
CFR-27H	1-Sep-22	S-ROUTINE	Zinc	1320	mg/kg-DW	D	20	20
CFR-11F	1-Sep-22	S-ROUTINE	Arsenic	144	mg/kg-DW		1	1
CFR-11F	1-Sep-22	S-ROUTINE	Cadmium	10.5	mg/kg-DW		0.2	0.2
CFR-11F	1-Sep-22	S-ROUTINE	Copper	1630	mg/kg-DW		8	8
CFR-11F	1-Sep-22	S-ROUTINE	Lead	234	mg/kg-DW		3	5
CFR-11F	1-Sep-22	S-ROUTINE	Zinc	1720	mg/kg-DW	D	20	20
CFR-07D	1-Sep-22	S-ROUTINE	Arsenic	242	mg/kg-DW		0.9	1
CFR-07D	1-Sep-22	S-ROUTINE	Cadmium	7.9	mg/kg-DW		0.2	0.2
CFR-07D	1-Sep-22	S-ROUTINE	Copper	2380	mg/kg-DW		7	7
CFR-07D	1-Sep-22	S-ROUTINE	Lead	277	mg/kg-DW		3	5
CFR-07D	1-Sep-22	S-ROUTINE	Zinc	1540	mg/kg-DW	D	20	20
CFR-07D	1-Sep-22	QC-FD	Arsenic	226	mg/kg-DW		0.8	1
CFR-07D	1-Sep-22	QC-FD	Cadmium	7.1	mg/kg-DW		0.2	0.2
CFR-07D	1-Sep-22	QC-FD	Copper	2320	mg/kg-DW		7	7
CFR-07D	1-Sep-22	QC-FD	Lead	253	mg/kg-DW		3	5
CFR-07D	1-Sep-22	QC-FD	Zinc	1400	mg/kg-DW	D	20	20
CFR-03A	1-Sep-22	S-ROUTINE	Arsenic	115	mg/kg-DW		1	1
CFR-03A	1-Sep-22	S-ROUTINE	Cadmium	5.3	mg/kg-DW		0.2	0.2
CFR-03A	1-Sep-22	S-ROUTINE	Copper	1080	mg/kg-DW		8	8
CFR-03A	1-Sep-22	S-ROUTINE	Lead	163	mg/kg-DW		3	5
CFR-03A	1-Sep-22	S-ROUTINE	Zinc	1060	mg/kg-DW	D	20	20
WSC-SBC	1-Sep-22	S-ROUTINE	Arsenic	73	mg/kg-DW		0.8	1
WSC-SBC	1-Sep-22	S-ROUTINE	Cadmium	2.7	mg/kg-DW		0.2	0.2
WSC-SBC	1-Sep-22	S-ROUTINE	Copper	857	mg/kg-DW		6	6
WSC-SBC	1-Sep-22	S-ROUTINE	Lead	118	mg/kg-DW		3	5
WSC-SBC	1-Sep-22	S-ROUTINE	Zinc	398	mg/kg-DW	D	20	20
SS-25	1-Sep-22	S-ROUTINE	Arsenic	239	mg/kg-DW		2	2
SS-25	1-Sep-22	S-ROUTINE	Cadmium	9.1	mg/kg-DW		0.4	0.4
SS-25	1-Sep-22	S-ROUTINE	Copper	357	mg/kg-DW		10	10
SS-25	1-Sep-22	S-ROUTINE	Lead	163	mg/kg-DW		5	5

Table D-1. Sediment monitoring results for the Clark Fork River Operable Unit, 2022.

SS-25	1-Sep-22	S-ROUTINE	Zinc	1070	mg/kg-DW	D	30	30

APPENDIX E

PERIPHYTON DATA: DIATOMS

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP001

Client ID: WSC-SBC
Date Collected: 8/25/2022
Station Name: Warm Springs Creek near mouth
STORET ID:
Latitude: 46.18041
Longitude: -112.78592

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	4.202	Excellent	Excellent
Species Richness	56	Excellent	Excellent
Native Taxa Percent	2.00%		
Cosmopolitan Taxa Percent	74.66%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	0.12%		
Dominant Taxon Percent	32.21%	Good	Good
Sediment			
Siltation Taxa Percent	28.84%	Good	Excellent
Motile Taxa Percent	30.59%		
Mountains Brackish Taxa Percent	85.64%		
Plains Brackish Taxa Percent	0.62%		
Organic Nutrients			
Pollution Index	2.662	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	3.25%		
Polysaprobous Taxa Percent	21.35%		
Low DO Taxa Percent	0.62%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	77.28%		
Eutraphentic Taxa Percent	20.72%		
Rhopalodiales Percent	0.50%		
Metals			
Disturbance Taxa Percent	32.21%	Good	Good
Acidophilous Taxa Percent	1.25%		
Metals Tolerant Taxa Percent	15.23%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	63.05%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	56.68%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Good

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	34.46%	68.79%
Mountains Metals Increasers Taxa Percent	18.98%	27.09%
Mountains Nutrient Increasers Taxa Percent	11.61%	16.60%
Mountains Sediment Increasers Taxa Percent	5.37%	14.46%
Plains General Decreasers Taxa Percent	7.99%	76.73%
Plains General Increasers Taxa Percent	60.42%	97.38%
Teply 2010		
Northern Rockies Sediment Increasers Taxa	7.93%	26.76%
Warm Water Fisheries Nutrient Increasers Taxa	4.46%	30%
Warm Water Fisheries Sediment Increasers Taxa	11.9%	36.89%
Middle Rockies Sediment Increasers Taxa	6.37%	24.03%
Northern Rockies Nutrient Increasers Taxa	2.11%	20.18%

Dominant Taxa

Category	A	PRA
Achnanthidium minutissimum	258	32.21%
Nitzschia fonticola	69	8.61%
Encyonema minutum	46	5.74%
Cocconeis placentula sensu lato	43	5.37%
Nitzschia dissipata v. media	41	5.12%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP002

Client ID: SS-25
Date Collected: 8/25/2022
Station Name: Silver Bow Creek at Warm Springs
STORET ID:
Latitude: 46.18123
Longitude: -112.77917

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	4.440	Excellent	Excellent
Species Richness	58	Excellent	Excellent
Native Taxa Percent	2.49%		
Cosmopolitan Taxa Percent	76.59%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	2.49%		
Dominant Taxon Percent	29.14%	Good	Good
Sediment			
Siltation Taxa Percent	24.91%	Good	Excellent
Motile Taxa Percent	25.78%		
Mountains Brackish Taxa Percent	79.95%		
Plains Brackish Taxa Percent	0.37%		
Organic Nutrients			
Pollution Index	2.558	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	14.45%		
Polysaprobous Taxa Percent	21.42%		
Low DO Taxa Percent	9.46%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	59.28%		
Eutraphentic Taxa Percent	64.13%		
Rhopalodiales Percent	1.00%		
Metals			
Disturbance Taxa Percent	2.24%	Excellent	Excellent
Acidophilous Taxa Percent	0.00%		
Metals Tolerant Taxa Percent	14.57%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	60.77%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	26.03%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Good

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	67.12%	98.50%
Mountains Metals Increasers Taxa Percent	13.45%	16.35%
Mountains Nutrient Increasers Taxa Percent	51.43%	94.30%
Mountains Sediment Increasers Taxa Percent	21.54%	51.99%
Plains General Decreasers Taxa Percent	30.26%	24.51%
Plains General Increasers Taxa Percent	26.28%	30.50%
Teply 2010		
Northern Rockies Sediment Increasers Taxa	5.23%	22.05%
Warm Water Fisheries Nutrient Increasers Taxa	21.05	76.94%
Warm Water Fisheries Sediment Increasers Taxa	14.57	42.16%
Middle Rockies Sediment Increasers Taxa	11.83	38.2%
Northern Rockies Nutrient Increasers Taxa	17.06	55%

Dominant Taxa

Category	A	PRA
Cocconeis placentula sensu lato	234	29.14%
Gomphonema parvulum	69	8.59%
Rhoicosphenia abbreviata	44	5.48%
Rhoicosphenia californica	43	5.35%
Navicula tripunctata	27	3.36%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP003

Client ID: CFR-03A
Date Collected: 8/25/2022
Station Name: Clark Fork River near Galen
STORET ID:
Latitude: 46.20877
Longitude: -112.7674

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	4.616	Excellent	Excellent
Species Richness	65	Excellent	Excellent
Native Taxa Percent	1.50%		
Cosmopolitan Taxa Percent	79.63%		
Mountains Rare Taxa Percent	0.25%		
Plains Rare Taxa Percent	0.50%		
Dominant Taxon Percent	20.25%	Excellent	Excellent
Sediment			
Siltation Taxa Percent	31.13%	Good	Excellent
Motile Taxa Percent	45.13%		
Mountains Brackish Taxa Percent	82.88%		
Plains Brackish Taxa Percent	0.50%		
Organic Nutrients			
Pollution Index	2.663	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	2.75%		
Polysaprobous Taxa Percent	11.88%		
Low DO Taxa Percent	1.88%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	67.00%		
Eutraphentic Taxa Percent	51.25%		
Rhopalodiales Percent	11.00%		
Metals			
Disturbance Taxa Percent	7.75%	Excellent	Excellent
Acidophilous Taxa Percent	0.00%		
Metals Tolerant Taxa Percent	6.00%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	69.75%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	39.62%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Excellent

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	53.38%	92.79%
Mountains Metals Increasers Taxa Percent	19.63%	28.43%
Mountains Nutrient Increasers Taxa Percent	37.38%	75.18%
Mountains Sediment Increasers Taxa Percent	24.00%	58.71%
Plains General Decreasers Taxa Percent	22.75%	41.68%
Plains General Increasers Taxa Percent	45.25%	80.23%
Teply 2010		
Northern Rockies Sediment Increasers Taxa	6.23%	23.82%
Warm Water Fisheries Nutrient Increasers Taxa	8.85%	42%
Warm Water Fisheries Sediment Increasers Taxa	42.89	90.7%
Middle Rockies Sediment Increasers Taxa	11.12	36.56%
Northern Rockies Nutrient Increasers Taxa	5.11%	25.93%

Dominant Taxa

Category	A	PRA
Cocconeis placentula sensu lato	162	20.25%
Epithemia sorex	88	11.00%
Achnanthidium minutissimum	62	7.75%
Navicula cryptotenella	61	7.63%
Navicula cryptotenelloides	35	4.38%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP004

Client ID: CFR-07D
Date Collected: 8/25/2022
Station Name: Clark Fork River at Galen Road
STORET ID:
Latitude: 46.23725
Longitude: -112.75302

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	4.347	Excellent	Excellent
Species Richness	58	Excellent	Excellent
Native Taxa Percent	0.87%		
Cosmopolitan Taxa Percent	81.74%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	1.24%		
Dominant Taxon Percent	26.34%	Good	Good
Sediment			
Siltation Taxa Percent	28.20%	Good	Excellent
Motile Taxa Percent	41.49%		
Mountains Brackish Taxa Percent	80.50%		
Plains Brackish Taxa Percent	0.62%		
Organic Nutrients			
Pollution Index	2.695	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	4.10%		
Polysaprobous Taxa Percent	7.45%		
Low DO Taxa Percent	1.37%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	67.58%		
Eutraphentic Taxa Percent	52.92%		
Rhopalodiales Percent	10.93%		
Metals			
Disturbance Taxa Percent	8.82%	Excellent	Excellent
Acidophilous Taxa Percent	0.99%		
Metals Tolerant Taxa Percent	3.85%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	73.17%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	39.25%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Good

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	57.52%	95.35%
Mountains Metals Increasers Taxa Percent	20.25%	29.81%
Mountains Nutrient Increasers Taxa Percent	47.83%	91.15%
Mountains Sediment Increasers Taxa Percent	20.00%	48.01%
Plains General Decreasers Taxa Percent	27.83%	29.81%
Plains General Increasers Taxa Percent	39.38%	66.64%
Teply 2010		
Northern Rockies Nutrient Increasers Taxa	5.6%	26.87%
Northern Rockies Sediment Increasers Taxa	9.33%	29.23%
Warm Water Fisheries Nutrient Increasers Taxa	10.95	47.96%
Warm Water Fisheries Sediment Increasers Taxa	34.58	80.88%
Middle Rockies Sediment Increasers Taxa	6.58%	24.54%

Dominant Taxa

Category	A	PRA
Cocconeis placentula sensu lato	212	26.34%
Epithemia sorex	88	10.93%
Achnanthidium minutissimum	71	8.82%
Navicula cryptotenelloides	50	6.21%
Navicula cryptotenella	40	4.97%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP005

Client ID: CFR-11F
Date Collected: 8/25/2022
Station Name: Clark Fork River at Gem Back Road
STORET ID:
Latitude: 46.2652
Longitude: -112.7443

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	3.877	Excellent	Good
Species Richness	50	Excellent	Excellent
Native Taxa Percent	1.62%		
Cosmopolitan Taxa Percent	82.79%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	1.87%		
Dominant Taxon Percent	35.29%	Good	Good
Sediment			
Siltation Taxa Percent	24.69%	Good	Excellent
Motile Taxa Percent	33.79%		
Mountains Brackish Taxa Percent	76.31%		
Plains Brackish Taxa Percent	0.25%		
Organic Nutrients			
Pollution Index	2.731	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	1.87%		
Polysaprobous Taxa Percent	5.99%		
Low DO Taxa Percent	0.50%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	70.32%		
Eutraphentic Taxa Percent	61.22%		
Rhopalodiales Percent	10.22%		
Metals			
Disturbance Taxa Percent	3.99%	Excellent	Excellent
Acidophilous Taxa Percent	0.62%		
Metals Tolerant Taxa Percent	4.74%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	73.07%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	32.04%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Good

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	68.58%	98.75%
Mountains Metals Increasers Taxa Percent	19.95%	29.12%
Mountains Nutrient Increasers Taxa Percent	58.98%	98.03%
Mountains Sediment Increasers Taxa Percent	24.56%	60.26%
Plains General Decreasers Taxa Percent	36.41%	14.01%
Plains General Increasers Taxa Percent	36.16%	57.93%
Teply 2010		
Northern Rockies Nutrient Increasers Taxa	3.62%	23.1%
Northern Rockies Sediment Increasers Taxa	14.86	41.21%
Warm Water Fisheries Nutrient Increasers Taxa	10.61	47.23%
Warm Water Fisheries Sediment Increasers Taxa	50.06	95%
Middle Rockies Sediment Increasers Taxa	8.48%	29.02%

Dominant Taxa

Category	A	PRA
Cocconeis placentula sensu lato	283	35.29%
Epithemia sorex	82	10.22%
Navicula cryptotenelloides	65	8.10%
Cocconeis pediculus	38	4.74%
Navicula cryptotenella	34	4.24%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP006

Client ID: CFR-27H
Date Collected: 8/25/2022
Station Name: Clark Fork River at Deer Lodge
STORET ID:
Latitude: 46.39796
Longitude: -112.74283

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	2.886	Good	Fair
Species Richness	42	Excellent	Excellent
Native Taxa Percent	0.12%		
Cosmopolitan Taxa Percent	83.77%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	0.37%		
Dominant Taxon Percent	52.93%	Fair	Fair
Sediment			
Siltation Taxa Percent	19.48%	Excellent	Excellent
Motile Taxa Percent	24.59%		
Mountains Brackish Taxa Percent	94.26%		
Plains Brackish Taxa Percent	0.25%		
Organic Nutrients			
Pollution Index	2.815	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	0.87%		
Polysaprobous Taxa Percent	2.37%		
Low DO Taxa Percent	0.87%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	78.78%		
Eutraphentic Taxa Percent	15.86%		
Rhopalodiales Percent	0.12%		
Metals			
Disturbance Taxa Percent	52.93%	Fair	Fair
Acidophilous Taxa Percent	0.00%		
Metals Tolerant Taxa Percent	2.00%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	89.76%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	73.53%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Fair
MTP	Montana DEQ Plains (Bahls 1992)	Fair

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	23.60%	47.61%
Mountains Metals Increasers Taxa Percent	3.00%	4.65%
Mountains Nutrient Increasers Taxa Percent	15.23%	22.97%
Mountains Sediment Increasers Taxa Percent	8.74%	20.33%
Plains General Decreasers Taxa Percent	4.12%	83.65%
Plains General Increasers Taxa Percent	81.02%	99.38%
Teply 2010		
Northern Rockies Nutrient Increasers Taxa	1.87%	18.66%
Northern Rockies Sediment Increasers Taxa	4.36%	20.52%
Warm Water Fisheries Nutrient Increasers Taxa	8.1%	40.31%
Warm Water Fisheries Sediment Increasers Taxa	38.4%	85.93%
Middle Rockies Sediment Increasers Taxa	4.49%	20.39%

Dominant Taxa

Category	A	PRA
Achnanthidium minutissimum	424	52.93%
Navicula cryptotenella	89	11.11%
Encyonopsis microcephala	72	8.99%
Cocconeis placentula sensu lato	32	4.00%
Amphora pediculus	28	3.50%

Metric Summary

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP007

Client ID: CFR-34
Date Collected: 8/25/2022
Station Name: Clark Fork River at Williams-Tavenner Bridge
STORET ID:
Latitude: 46.39778
Longitude: -112.74194

Metrics (Bahls 1993)

Metric	Value	MTM	MTP
Community Structure			
Shannon H (log2)	4.192	Excellent	Excellent
Species Richness	49	Excellent	Excellent
Native Taxa Percent	0.25%		
Cosmopolitan Taxa Percent	80.55%		
Mountains Rare Taxa Percent	0.00%		
Plains Rare Taxa Percent	0.00%		
Dominant Taxon Percent	21.57%	Excellent	Excellent
Sediment			
Siltation Taxa Percent	33.29%	Good	Excellent
Motile Taxa Percent	50.87%		
Mountains Brackish Taxa Percent	83.54%		
Plains Brackish Taxa Percent	0.50%		
Organic Nutrients			
Pollution Index	2.711	Excellent	Excellent
Nitrogen Heterotroph Taxa Percent	1.75%		
Polysaprobous Taxa Percent	7.48%		
Low DO Taxa Percent	1.37%		
Inorganic Nutrients			
Nitrogen Autotroph Taxa Percent	66.46%		
Eutraphentic Taxa Percent	56.73%		
Rhopalodiales Percent	7.98%		
Metals			
Disturbance Taxa Percent	6.48%	Excellent	Excellent
Acidophilous Taxa Percent	0.00%		
Metals Tolerant Taxa Percent	4.11%		
Saprobity / Oxygen			
% oligosaprobous and β-mesosaprobous diatoms:	74.81%		
% diatoms requiring > 75% DO saturation (Van Dam categories 1 and 2):	41.9%		

BioIndex	Description	Rating
MTM	Montana DEQ Mountains (Bahls 1992)	Good
MTP	Montana DEQ Plains (Bahls 1992)	Excellent

Increaser/Decreaser Taxa

Metric	Value	Prob.
Teply and Bahls 2005		
Mountains General Increasers Taxa Percent	58.35%	95.73%
Mountains Metals Increasers Taxa Percent	13.22%	15.87%
Mountains Nutrient Increasers Taxa Percent	35.91%	71.91%
Mountains Sediment Increasers Taxa Percent	32.92%	79.67%
Plains General Decreasers Taxa Percent	21.95%	43.64%
Plains General Increasers Taxa Percent	41.90%	72.91%
Teply 2010		
Northern Rockies Nutrient Increasers Taxa	4.87%	25.46%
Northern Rockies Sediment Increasers Taxa	5.74%	22.95%
Warm Water Fisheries Nutrient Increasers Taxa	13.61	56.62%
Warm Water Fisheries Sediment Increasers Taxa	46.32	93.21%
Middle Rockies Sediment Increasers Taxa	13.34	42.77%

Dominant Taxa

Category	A	PRA
Cocconeis placentula sensu lato	173	21.57%
Amphora pediculus	106	13.22%
Navicula cryptotenella	76	9.48%
Epithemia sorex	64	7.98%
Achnanthidium minutissimum	52	6.48%

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP001

RAI No.: PBSJ22CFRP001 Sta. Name: Warm Springs Creek near mouth
Client ID: WSC-SBC
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium deflexum	1	0.12%		
Achnanthidium minutissimum	258	32.21%		
Achnanthidium pyrenaicum	16	2.00%		
Amphipleura pellucida	3	0.37%		
Cocconeis pediculus	3	0.37%		
Cocconeis placentula sensu lato	43	5.37%		
Cymbella affinis	29	3.62%		
Cymbella compacta	1	0.12%		
Diatoma moniliformis	30	3.75%		
Diatoma vulgaris	2	0.25%		
Encyonema sp.	4	0.50%		GV
Encyonema minutum	46	5.74%		
Encyonema silesiacum	33	4.12%		
Epithemia operculata	2	0.25%		
Epithemia sorex	2	0.25%		
Fragilaria gracilis	10	1.25%		
Fragilaria pectinalis	5	0.62%		
Geissleria acceptata	5	0.62%		
Geissleria decussis	1	0.12%		
Gomphonema sp.	3	0.37%		sp.2 PNSQA
Gomphonema minutum	6	0.75%		
Hippodonta capitata	1	0.12%		
Humidophila contenta	4	0.50%		GV, uncertain
Mayamaea permitis	2	0.25%		
Navicula capitatoradiata	1	0.12%		
Navicula cryptotenella	7	0.87%		
Navicula metareichardtiana	5	0.62%		
Navicula recens	1	0.12%		
Navicula tripunctata	9	1.12%		
Nitzschia sp.	7	0.87%		GV
Nitzschia acicularis	3	0.37%		
Nitzschia costei	7	0.87%		
Nitzschia dissipata v. media	41	5.12%		
Nitzschia fonticola	69	8.61%		
Nitzschia incognita	11	1.37%		
Nitzschia inconspicua	2	0.25%		
Nitzschia lacuum	2	0.25%		
Nitzschia linearis	1	0.12%		
Nitzschia microcephala	4	0.50%		GV, uncertain
Nitzschia palea v. debilis	7	0.87%		
Nitzschia paleacea	15	1.87%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP001

RAI No.: PBSJ22CFRP001 Sta. Name: Warm Springs Creek near mouth
Client ID: WSC-SBC
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Nitzschia pura	7	0.87%		
Nitzschia sociabilis	4	0.50%		
Nitzschia soratensis	1	0.12%		
Nitzschia subtilis	10	1.25%		
Opephora sp.	3	0.37%		obscured, uncertain
Planothidium frequentissimum	6	0.75%		
Planothidium lanceolatum	1	0.12%		
Planothidium reichardtii	2	0.25%		
Reimeria sinuata	19	2.37%		
Sellaphora atomoides	4	0.50%		
Staurosira construens v. venter	9	1.12%		
Staurosirella leptostauron	4	0.50%		
Staurosirella pinnata	11	1.37%		
Ulnaria acus	10	1.25%		
Ulnaria contracta	8	1.00%		

Sample Count 801

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP002

RAI No.: PBSJ22CFRP002 Sta. Name: Silver Bow Creek at Warm Springs
Client ID: SS-25
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium exiguum	1	0.12%		
Achnanthidium minutissimum	18	2.24%		
Amphora pediculus	18	2.24%		
Cocconeis pediculus	22	2.74%		
Cocconeis placentula sensu lato	234	29.14%		
Cyclotella meneghiniana	2	0.25%		
Cymbella affinis	7	0.87%		
Cymbella compacta	8	1.00%		
Diatoma vulgaris	7	0.87%		
Encyonema sp.	4	0.50%		GV
Encyonema silesiacum	1	0.12%		
Epithemia sorex	8	1.00%		
Fragilaria pectinalis	6	0.75%		
Geissleria acceptata	3	0.37%		
Geissleria decussis	1	0.12%		
Gomphonella olivacea	1	0.12%		
Gomphonema sp.	2	0.25%		GV
Gomphonema kobayasii	20	2.49%		
Gomphonema minutum	8	1.00%		
Gomphonema parvulum	69	8.59%		
Hippodonta capitata	2	0.25%		
Luticola mutica	1	0.12%		
Mayamaea permitis	5	0.62%		
Melosira varians	1	0.12%		
Meridion circulare v. constrictum	2	0.25%		
Navicula sp.	2	0.25%		obscured, uncertain
Navicula antonii	14	1.74%		
Navicula capitatoradiata	2	0.25%		
Navicula cryptotenella	23	2.86%		
Navicula metareichardtiana	20	2.49%		
Navicula tripunctata	27	3.36%		
Nitzschia sp.	4	0.50%		GV
Nitzschia amphibia	23	2.86%		
Nitzschia costei	8	1.00%		
Nitzschia dissipata v. media	3	0.37%		
Nitzschia fonticola	16	1.99%		
Nitzschia incognita	2	0.25%		
Nitzschia linearis	1	0.12%		
Nitzschia palea v. debilis	15	1.87%		
Nitzschia paleacea	16	1.99%		
Nitzschia soratensis	8	1.00%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP002

RAI No.: PBSJ22CFRP002 Sta. Name: Silver Bow Creek at Warm Springs
Client ID: SS-25
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Opephora sp.	7	0.87%		GV, uncertain
Planothidium frequentissimum	18	2.24%		
Planothidium lanceolatum	4	0.50%		
Planothidium reichardtii	5	0.62%		
Planothidium rostratoholarcticum	1	0.12%		
Reimeria sinuata	5	0.62%		
Reimeria uniseriata	3	0.37%		
Rhoicosphenia abbreviata	44	5.48%		
Rhoicosphenia californica	43	5.35%		
Sellaphora atomoides	4	0.50%		
Staurosira binodis	4	0.50%		
Staurosira construens v. venter	7	0.87%		
Staurosirella leptostauron	10	1.25%		
Staurosirella pinnata	4	0.50%		
Ulnaria contracta	5	0.62%		
Ulnaria ulna	2	0.25%		
Undetermined Pennate	2	0.25%		GV
Sample Count	803			

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP003

RAI No.: PBSJ22CFRP003 Sta. Name: Clark Fork River near Galen
Client ID: CFR-03A
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium deflexum	1	0.13%		
Achnanthidium minutissimum	62	7.75%		
Achnanthidium pyrenaicum	5	0.63%		
Achnanthidium rivulare	2	0.25%		
Adlafia sp.	1	0.13%		obscured
Amphora indistincta	2	0.25%		
Amphora pediculus	27	3.38%		
Caloneis sp.	2	0.25%		obscured
Cocconeis pediculus	7	0.88%		
Cocconeis placentula sensu lato	162	20.25%		
Cyclostephanos invisitatus	1	0.13%		
Cymbella affinis	16	2.00%		
Cymbella compacta	2	0.25%		
Denticula sp.	4	0.50%		GV
Diatoma moniliformis	9	1.13%		
Diatoma vulgaris	1	0.13%		
Encyonema minutum	21	2.63%		
Encyonema silesiacum	4	0.50%		
Epithemia gibba	2	0.25%		
Epithemia sorex	88	11.00%		
Fragilaria pectinalis	1	0.13%		
Geissleria acceptata	2	0.25%		
Gomphoneis sp.	2	0.25%		GV
Gomphonella olivacea	1	0.13%		
Gomphonema kobayasii	3	0.38%		
Gomphonema parvulum	11	1.38%		
Gyrosigma attenuatum	1	0.13%		
Halamphora veneta	1	0.13%		
Mayamaea permitis	1	0.13%		
Navicula antonii	13	1.63%		
Navicula capitatoradiata	2	0.25%		
Navicula cryptotenella	61	7.63%		
Navicula cryptotenelloides	35	4.38%		
Navicula gregaria	1	0.13%		
Navicula lundii	2	0.25%		
Navicula metareichardtiana	11	1.38%		
Navicula tripunctata	34	4.25%		
Nitzschia acidoclinata	2	0.25%		
Nitzschia amphibia	2	0.25%		
Nitzschia costei	6	0.75%		
Nitzschia dissipata v. media	24	3.00%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP003

RAI No.: PBSJ22CFRP003 Sta. Name: Clark Fork River near Galen
Client ID: CFR-03A
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Nitzschia fonticola	3	0.38%		
Nitzschia fossilis	7	0.88%		GV
Nitzschia incognita	15	1.88%		
Nitzschia palea	1	0.13%		
Nitzschia palea v. debilis	4	0.50%		
Nitzschia paleacea	4	0.50%		
Nitzschia soratensis	2	0.25%		
Nitzschia supralitorea	2	0.25%		
Opephora sp.	8	1.00%		GV
Planothidium frequentissimum	19	2.38%		
Planothidium lanceolatum	2	0.25%		
Psammothidium lauenburgianum	1	0.13%		
Reimeria sinuata	3	0.38%		
Reimeria uniseriata	2	0.25%		
Rhoicosphenia abbreviata	15	1.88%		
Rhoicosphenia californica	14	1.75%		
Sellaphora atomoides	12	1.50%		GV
Sellaphora saugerresii	1	0.13%		
Simonsenia delognei	1	0.13%		
Staurosira binodis	18	2.25%		
Staurosira construens v. venter	7	0.88%		
Staurosirella leptostauron	9	1.13%		
Staurosirella pinnata	13	1.63%		
Ulnaria acus	2	0.25%		

Sample Count 800

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP004

RAI No.: PBSJ22CFRP004 Sta. Name: Clark Fork River at Galen Road
Client ID: CFR-07D
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium deflexum	5	0.62%		
Achnanthidium minutissimum	71	8.82%		
Amphora pediculus	18	2.24%		
Caloneis molaris	2	0.25%		
Cocconeis neodiminuta	1	0.12%		
Cocconeis pediculus	16	1.99%		
Cocconeis placentula sensu lato	212	26.34%		
Cyclotella meneghiniana	1	0.12%		
Cymbella affinis	4	0.50%		
Denticula sp.	2	0.25%		GV
Diatoma moniliformis	4	0.50%		
Encyonema sp.	6	0.75%		GV
Encyonopsis microcephala	20	2.48%		
Epithemia gibba	1	0.12%		
Epithemia sorex	88	10.93%		
Fragilaria gracilis	2	0.25%		
Geissleria acceptata	2	0.25%		
Geissleria cascadensis	2	0.25%		translate to Navicula cascadensis
Geissleria decussis	1	0.12%		
Gomphonella olivacea	3	0.37%		
Gomphonema kobayasii	5	0.62%		GV
Gomphonema parvulum	9	1.12%		
Grunowia solgensis	1	0.12%		
Gyrosigma acuminatum	1	0.12%		
Mayamaea permitis	1	0.12%		
Navicula antonii	16	1.99%		
Navicula capitatoradiata	3	0.37%		
Navicula cryptotenella	40	4.97%		
Navicula cryptotenelloides	50	6.21%		
Navicula lundii	8	0.99%		
Navicula metareichardtiana	6	0.75%		
Navicula tripunctata	1	0.12%		
Nitzschia acidoclinata	1	0.12%		
Nitzschia communis	4	0.50%		
Nitzschia costei	13	1.61%		
Nitzschia dissipata v. media	15	1.86%		
Nitzschia fonticola	8	0.99%		
Nitzschia heufleriana	2	0.25%		
Nitzschia incognita	2	0.25%		
Nitzschia palea v. debilis	6	0.75%		
Nitzschia paleacea	12	1.49%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP004

RAI No.: PBSJ22CFRP004 Sta. Name: Clark Fork River at Galen Road
Client ID: CFR-07D
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Nitzschia pura	6	0.75%		
Nitzschia soratensis	9	1.12%		
Nitzschia subtilis	8	0.99%		
Nitzschia supralitorea	6	0.75%		
Opephora sp.	6	0.75%		GV
Planothidium frequentissimum	13	1.61%		
Planothidium lanceolatum	1	0.12%		
Psammothidium sp.	1	0.12%		obscured
Pseudostaurosira brevistriata	2	0.25%		
Reimeria sinuata	14	1.74%		
Rhoicosphenia abbreviata	17	2.11%		
Rhoicosphenia californica	16	1.99%		
Sellaphora atomoides	4	0.50%		
Staurosira construens v. venter	30	3.73%		
Staurosirella leptostauron	2	0.25%		
Staurosirella pinnata	2	0.25%		
Undetermined Pennate	3	0.37%		GV, obscured
Sample Count	805			

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP005

RAI No.: PBSJ22CFRP005 Sta. Name: Clark Fork River at Gem Back Road
Client ID: CFR-11F
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium deflexum	2	0.25%		
Achnanthidium minutissimum	32	3.99%		
Amphora pediculus	13	1.62%		
Caloneis sp.	2	0.25%		GV
Cocconeis pediculus	38	4.74%		
Cocconeis placentula sensu lato	283	35.29%		
Cyclotella meneghiniana	2	0.25%		
Cymbella affinis	7	0.87%		
Diatoma moniliformis	4	0.50%		
Encyonema minutum	1	0.12%		
Encyonema silesiacum	2	0.25%		
Encyonopsis microcephala	24	2.99%		
Epithemia sorex	82	10.22%		
Fragilaria mesolepta	1	0.12%		
Geissleria acceptata	2	0.25%		
Gomphonella olivacea	7	0.87%		
Gomphonema sp.	2	0.25%		GV
Gomphonema kobayasii	13	1.62%		
Gomphonema minutum	4	0.50%		
Mayamaea permitis	2	0.25%		
Navicula antonii	9	1.12%		
Navicula capitatoradiata	1	0.12%		
Navicula cryptocephala	1	0.12%		
Navicula cryptotenella	34	4.24%		
Navicula cryptotenelloides	65	8.10%		
Navicula metareichardtiana	5	0.62%		
Navicula tripunctata	4	0.50%		
Nitzschia sp.	4	0.50%		GV
Nitzschia sp.	6	0.75%		sp.1
Nitzschia amphibia	1	0.12%		
Nitzschia archibaldii	2	0.25%		
Nitzschia costei	4	0.50%		
Nitzschia dissipata v. media	11	1.37%		
Nitzschia incognita	5	0.62%		
Nitzschia palea v. debilis	22	2.74%		
Nitzschia paleacea	9	1.12%		
Nitzschia subtilis	5	0.62%		
Nitzschia supralitorea	1	0.12%		
Opephora sp.	2	0.25%		GV
Planothidium frequentissimum	17	2.12%		RV
Reimeria sinuata	1	0.12%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP005

RAI No.: PBSJ22CFRP005 Sta. Name: Clark Fork River at Gem Back Road
Client ID: CFR-11F
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Rhoicosphenia abbreviata	20	2.49%		
Rhoicosphenia californica	20	2.49%		
Sellaphora atomoides	4	0.50%		
Simonsenia delognei	1	0.12%		
Staurosira binodis	2	0.25%		
Staurosira construens v. venter	15	1.87%		
Staurosirella leptostauron	2	0.25%		
Staurosirella pinnata	4	0.50%		
Surirella librile	1	0.12%		
Ulnaria ulna	1	0.12%		
Sample Count	802			

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP006

RAI No.: PBSJ22CFRP006 Sta. Name: Clark Fork River at Deer Lodge
Client ID: CFR-27H
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium deflexum	3	0.37%		
Achnanthidium minutissimum	424	52.93%		
Achnanthidium pyrenaicum	1	0.12%		
Amphora sp.	2	0.25%		GV
Amphora ovalis	2	0.25%		
Amphora pediculus	28	3.50%		
Caloneis sp.	2	0.25%		GV
Cocconeis pediculus	3	0.37%		
Cocconeis placentula sensu lato	32	4.00%		
Cyclotella meneghiniana	1	0.12%		
Cymbella affinis	6	0.75%		
Cymbella compacta	2	0.25%		
Diatoma moniliformis	1	0.12%		
Diatoma vulgaris	5	0.62%		
Encyonema minutum	1	0.12%		
Encyonopsis microcephala	72	8.99%		
Encyonopsis subminuta	2	0.25%		
Epithemia sorex	1	0.12%		
Fragilaria gracilis	1	0.12%		
Fragilaria vaucheriae	4	0.50%		GV, uncertain
Geissleria acceptata	2	0.25%		
Gomphonella olivacea	8	1.00%		
Gomphonema parvulum	6	0.75%		
Navicula antonii	9	1.12%		
Navicula cryptotenella	89	11.11%		
Navicula cryptotenelloides	11	1.37%		
Navicula tripunctata	16	2.00%		
Nitzschia costei	6	0.75%		GV
Nitzschia dissipata v. media	18	2.25%		
Nitzschia fonticola	2	0.25%		
Nitzschia palea v. debilis	1	0.12%		
Planothidium frequentissimum	3	0.37%		RV
Planothidium lanceolatum	3	0.37%		
Reimeria sinuata	5	0.62%		
Reimeria uniseriata	2	0.25%		
Rhoicosphenia abbreviata	5	0.62%		
Rhoicosphenia californica	5	0.62%		
Sellaphora atomoides	2	0.25%		
Stauroneis sp.	2	0.25%		sp uncertain
Staurosira construens v. venter	5	0.62%		
Staurosirella leptostauron	2	0.25%		

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP006

RAI No.: PBSJ22CFRP006 Sta. Name: Clark Fork River at Deer Lodge
Client ID: CFR-27H
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Undetermined Pennate	6	0.75%		GV, obscured
Sample Count 801				

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP007

RAI No.: PBSJ22CFRP007 Sta. Name: Clark Fork River at Williams-Tavenner Bridge
Client ID: CFR-34
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Diatoms				
Bacillariophyta				
Achnanthidium minutissimum	52	6.48%		
Achnanthidium pyrenaicum	2	0.25%		
Adlafia minuscula	2	0.25%		
Amphora sp.	2	0.25%		GV
Amphora pediculus	106	13.22%		
Caloneis lancettula	4	0.50%		
Cocconeis pediculus	25	3.12%		
Cocconeis placentula sensu lato	173	21.57%		
Cymbella affinis	3	0.37%		
Cymbella compacta	3	0.37%		
Diatoma moniliformis	7	0.87%		
Diatoma vulgaris	2	0.25%		
Encyonema silesiacum	2	0.25%		
Encyonopsis microcephala	10	1.25%		
Epithemia sorex	64	7.98%		
Fragilariforma sp.	2	0.25%		obscured
Geissleria acceptata	2	0.25%		
Gomphonella olivacea	11	1.37%		
Gomphonema parvulum	4	0.50%		
Mayamaea permitis	2	0.25%		
Navicula antonii	19	2.37%		
Navicula cryptotenella	76	9.48%		
Navicula cryptotenelloides	8	1.00%		
Navicula lundii	1	0.12%		
Navicula metareichardtiana	11	1.37%		
Navicula tripunctata	16	2.00%		
Nitzschia sp.	2	0.25%		obscured
Nitzschia costei	13	1.62%		
Nitzschia dissipata v. media	49	6.11%		
Nitzschia fonticola	2	0.25%		
Nitzschia palea	4	0.50%		
Nitzschia palea v. debilis	18	2.24%		
Nitzschia sociabilis	2	0.25%		
Nitzschia soratensis	8	1.00%		
Nitzschia supralitorea	3	0.37%		
Placoneis explanata	1	0.12%		broken
Planothidium frequentissimum	22	2.74%		RV
Planothidium lanceolatum	1	0.12%		
Planothidium reichardtii	2	0.25%		
Reimeria sinuata	17	2.12%		
Rhoicosphenia abbreviata	5	0.62%		GV

Taxa Listing

Project ID: PBSJ22CFRP
RAI No.: PBSJ22CFRP007

RAI No.: PBSJ22CFRP007 Sta. Name: Clark Fork River at Williams-Tavenner Bridge
Client ID: CFR-34
Date Coll.: 8/25/2022 No Jars: 1 STORET ID:
Sample Notes:

Taxonomic Name	Count	PRA	Cell Count	Comment
Rhoicosphenia californica	4	0.50%		
Sellaphora atomoides	24	2.99%		
Sellaphora saugerresii	1	0.12%		
Simonsenia delognei	3	0.37%		
Staurosira binodis	2	0.25%		
Staurosira construens v. venter	5	0.62%		
Staurosirella pinnata	3	0.37%		
Surirella undulata	2	0.25%		previously reported at Cymatopleura elliptica

Sample Count 802

APPENDIX F

MACROINVERTEBRATE DATA

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR001

Client ID: WSC-SBC
Date Coll.: 8/25/2022
Sta. Name: Warm Springs Creek near mouth
STORET ID:
Sample portion used: 16.67%
Latitude: 46.18041 Longitude: -112.78592

Air Breathers
- Air Breather Percent: 0.93%
- Air Breather Richness: 1

Cold
- Cold Stenotherm Percent: 0.00%
- Cold Stenotherm Richness: 0
- Calculated thermal preference: 15.62

Diversity
- Shannon H (log2): 3.68
- Taxa Richness: 41
- Dominant Taxon Percent: 43.68%

Function
- Collector-gatherer percent: 8.55%
- Filterer percent: 31.60%
- Filterer Richness: 5
- Predator Percent: 6.69%
- Predator Richness: 12
- Scraper percent: 47.58%
- Shredder percent: 5.02%
- Percent predatory mites: 0.56%

Hemoglobin
- Hemoglobin Bearer Percent: 0.00%
- Hemoglobin Bearer Richness: 0

Metals Tolerance
- Metals Tolerance Index: 4.52

Tolerance
- Sensitive taxa richness: 0
- Tolerant taxa percent: 44.80%
- MDEQ HBI: 4.204161
- MDEQ HBI without mites: 4.199618
- All Non-Insect Percent: 1.30%
- All Non-Insect Richness: 3
- Ephemeroptera richness: 6
- Plecoptera richness: 3
- Orthocladius + Nais + Hydroptilidae: 0.56%

Sediment
- Clinger Percent: 85.13%
- Clinger Richness: 21
- FSBI (2012): 60.00
- Trichoptera richness: 9

Voltinism
- Semivoltine Richness: 5

Biological Assessment
- O/E (2012): 0.78
- MVFP: 44.4

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR002

Client ID: SS-25
Date Coll.: 8/25/2022
Sta. Name: Silver Bow Creek at Warm Springs
STORET ID:
Sample portion used: 2.10%
Latitude: 46.18123 Longitude: -112.77917

Air Breathers
- Air Breather Percent: 0.00%
- Air Breather Richness: 0

Cold
- Cold Stenotherm Percent: 0.00%
- Cold Stenotherm Richness: 0
- Calculated thermal preference: 17.36

Diversity
- Shannon H (log2): 2.79
- Taxa Richness: 37
- Dominant Taxon Percent: 50.55%

Function
- Collector-gatherer percent: 21.82%
- Filterer percent: 57.64%
- Filterer Richness: 5
- Predator Percent: 5.82%
- Predator Richness: 7
- Scraper percent: 11.27%
- Shredder percent: 3.09%
- Percent predatory mites: 0.73%

Hemoglobin
- Hemoglobin Bearer Percent: 1.45%
- Hemoglobin Bearer Richness: 1

Metals Tolerance
- Metals Tolerance Index: 4.63

Tolerance
- Sensitive taxa richness: 0
- Tolerant taxa percent: 25.27%
- MDEQ HBI: 5.055556
- MDEQ HBI without mites: 5.055971
- All Non-Insect Percent: 7.45%
- All Non-Insect Richness: 13
- Ephemeroptera richness: 3
- Plecoptera richness: 0
- Orthocladius + Nais + Hydroptilidae: 0.36%

Sediment
- Clinger Percent: 80.36%
- Clinger Richness: 13
- FSBI (2012): 10.00
- Trichoptera richness: 9

Voltinism
- Semivoltine Richness: 4

Biological Assessment
- O/E (2012): 0.69
- MVFP: 27.8

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR003

Client ID: CFR-03A
Date Coll.: 8/25/2022
Sta. Name: Clark Fork River near Galen
STORET ID:
Sample portion used: 10.00%
Latitude: 46.20877 Longitude: -112.7674

Air Breathers
- Air Breather Percent: 0.00%
- Air Breather Richness: 0

Cold
- Cold Stenotherm Percent: 23.50%
- Cold Stenotherm Richness: 1
- Calculated thermal preference: 16.11

Diversity
- Shannon H (log2): 3.78
- Taxa Richness: 39
- Dominant Taxon Percent: 23.50%

Function
- Collector-gatherer percent: 15.79%
- Filterer percent: 28.01%
- Filterer Richness: 5
- Predator Percent: 2.82%
- Predator Richness: 6
- Scraper percent: 23.31%
- Shredder percent: 29.14%
- Percent predatory mites: 0.75%

Hemoglobin
- Hemoglobin Bearer Percent: 15.04%
- Hemoglobin Bearer Richness: 3

Metals Tolerance
- Metals Tolerance Index: 4.42

Tolerance
- Sensitive taxa richness: 1
- Tolerant taxa percent: 31.95%
- MDEQ HBI: 5.517241
- MDEQ HBI without mites: 5.521235
- All Non-Insect Percent: 4.51%
- All Non-Insect Richness: 9
- Ephemeroptera richness: 7
- Plecoptera richness: 0
- Orthocladius + Nais + Hydroptilidae: 0.38%

Sediment
- Clinger Percent: 59.77%
- Clinger Richness: 18
- FSBI (2012): 45.00
- Trichoptera richness: 10

Voltinism
- Semivoltine Richness: 5

Biological Assessment
- O/E (2012): 0.46
- MVFP: 44.4

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR004

Client ID: CFR-07D
Date Coll.: 8/25/2022
Sta. Name: Clark Fork River at Galen Road
STORET ID:
Sample portion used: 20.00%
Latitude: 46.23725 Longitude: -112.75302

Air Breathers
- Air Breather Percent: 0.55%
- Air Breather Richness: 1

Cold
- Cold Stenotherm Percent: 0.55%
- Cold Stenotherm Richness: 1
- Calculated thermal preference: 16.16

Diversity
- Shannon H (log2): 4.33
- Taxa Richness: 44
- Dominant Taxon Percent: 32.84%

Function
- Collector-gatherer percent: 14.13%
- Filterer percent: 19.63%
- Filterer Richness: 5
- Predator Percent: 9.91%
- Predator Richness: 9
- Scraper percent: 46.79%
- Shredder percent: 7.89%
- Percent predatory mites: 1.28%

Hemoglobin
- Hemoglobin Bearer Percent: 13.03%
- Hemoglobin Bearer Richness: 3

Metals Tolerance
- Metals Tolerance Index: 3.90

Tolerance
- Sensitive taxa richness: 1
- Tolerant taxa percent: 55.23%
- MDEQ HBI: 4.500937
- MDEQ HBI without mites: 4.494297
- All Non-Insect Percent: 6.42%
- All Non-Insect Richness: 6
- Ephemeroptera richness: 8
- Plecoptera richness: 2
- Orthocladius + Nais + Hydroptilidae: 0.18%

Sediment
- Clinger Percent: 75.60%
- Clinger Richness: 20
- FSBI (2012): 50.00
- Trichoptera richness: 10

Voltinism
- Semivoltine Richness: 5

Biological Assessment
- O/E (2012): 0.59
- MVFP: 55.6

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR005

Client ID: CFR-11F
Date Coll.: 8/25/2022
Sta. Name: Clark Fork River at Gem Back Road
STORET ID:
Sample portion used: 20.00%
Latitude: 46.2652 Longitude: -112.7443

Air Breathers
- Air Breather Percent: 0.57%
- Air Breather Richness: 1

Cold
- Cold Stenotherm Percent: 0.00%
- Cold Stenotherm Richness: 0
- Calculated thermal preference: 17.82

Diversity
- Shannon H (log2): 4.23
- Taxa Richness: 40
- Dominant Taxon Percent: 20.34%

Function
- Collector-gatherer percent: 38.78%
- Filterer percent: 9.89%
- Filterer Richness: 5
- Predator Percent: 6.65%
- Predator Richness: 8
- Scraper percent: 33.08%
- Shredder percent: 4.37%
- Percent predatory mites: 1.52%

Hemoglobin
- Hemoglobin Bearer Percent: 7.79%
- Hemoglobin Bearer Richness: 5

Metals Tolerance
- Metals Tolerance Index: 3.90

Tolerance
- Sensitive taxa richness: 1
- Tolerant taxa percent: 58.75%
- MDEQ HBI: 4.902040
- MDEQ HBI without mites: 4.900415
- All Non-Insect Percent: 11.41%
- All Non-Insect Richness: 9
- Ephemeroptera richness: 7
- Plecoptera richness: 1
- Orthocladius + Nais + Hydroptilidae: 2.66%

Sediment
- Clinger Percent: 51.52%
- Clinger Richness: 12
- FSBI (2012): 5.00
- Trichoptera richness: 7

Voltinism
- Semivoltine Richness: 5

Biological Assessment
- O/E (2012): 0.44
- MVFP: 55.6

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR006

Client ID: CFR-27H
Date Coll.: 8/25/2022
Sta. Name: Clark Fork River
STORET ID:
Sample portion used: 6.67%
Latitude: 46.39796 Longitude: -112.74283

Air Breathers
- Air Breather Percent: 0.37%
- Air Breather Richness: 1

Cold
- Cold Stenotherm Percent: 0.00%
- Cold Stenotherm Richness: 0
- Calculated thermal preference: 16.94

Diversity
- Shannon H (log2): 3.50
- Taxa Richness: 35
- Dominant Taxon Percent: 34.07%

Function
- Collector-gatherer percent: 20.74%
- Filterer percent: 43.33%
- Filterer Richness: 6
- Predator Percent: 8.33%
- Predator Richness: 8
- Scraper percent: 20.19%
- Shredder percent: 4.81%
- Percent predatory mites: 0.00%

Hemoglobin
- Hemoglobin Bearer Percent: 2.04%
- Hemoglobin Bearer Richness: 2

Metals Tolerance
- Metals Tolerance Index: 4.37

Tolerance
- Sensitive taxa richness: 0
- Tolerant taxa percent: 38.89%
- MDEQ HBI: 4.572796
- MDEQ HBI without mites: 4.572796
- All Non-Insect Percent: 0.19%
- All Non-Insect Richness: 1
- Ephemeroptera richness: 5
- Plecoptera richness: 2
- Orthocladius + Nais + Hydroptilidae: 0.00%

Sediment
- Clinger Percent: 75.19%
- Clinger Richness: 15
- FSBI (2012): 10.00
- Trichoptera richness: 8

Voltinism
- Semivoltine Richness: 3

Biological Assessment
- O/E (2012): 0.41
- MVFP: 38.9

Metric Summary

Project ID: PBSJ22CFR
RAI No.: PBSJ22CFR007

Client ID: CFR-34
Date Coll.: 8/25/2022
Sta. Name: Clark Fork River at Williams-Tavenner Bridge
STORET ID:
Sample portion used: 3.33%
Latitude: 46.39778 Longitude: -112.74194

Air Breathers
- Air Breather Percent: 0.37%
- Air Breather Richness: 2

Cold
- Cold Stenotherm Percent: 0.00%
- Cold Stenotherm Richness: 0
- Calculated thermal preference: 17.01

Diversity
- Shannon H (log2): 3.54
- Taxa Richness: 39
- Dominant Taxon Percent: 35.16%

Function
- Collector-gatherer percent: 19.05%
- Filterer percent: 45.05%
- Filterer Richness: 4
- Predator Percent: 3.11%
- Predator Richness: 5
- Scraper percent: 25.46%
- Shredder percent: 5.31%
- Percent predatory mites: 0.73%

Hemoglobin
- Hemoglobin Bearer Percent: 6.96%
- Hemoglobin Bearer Richness: 4

Metals Tolerance
- Metals Tolerance Index: 4.23

Tolerance
- Sensitive taxa richness: 0
- Tolerant taxa percent: 35.90%
- MDEQ HBI: 4.397365
- MDEQ HBI without mites: 4.392789
- All Non-Insect Percent: 2.38%
- All Non-Insect Richness: 7
- Ephemeroptera richness: 5
- Plecoptera richness: 1
- Orthocladius + Nais + Hydroptilidae: 0.73%

Sediment
- Clinger Percent: 78.21%
- Clinger Richness: 18
- FSBI (2012): 30.00
- Trichoptera richness: 9

Voltinism
- Semivoltine Richness: 4

Biological Assessment
- O/E (2012): 0.44
- MVFP: 33.3

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

Station ID	Sample Date	Biological Taxonomic Name	Result Value	Characteristic Name	Laboratory Name	Analytical Method ID	Analysis Start Date	Laboratory Sample ID	Result Comment
WSC-SBC	25-Aug-22	Acari	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Arctopsyche	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Attenella margarita	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Baetis tricaudatus	16	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Baetis tricaudatus complex
WSC-SBC	25-Aug-22	Brachycentrus occidentalis	55	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Cardiocladius	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Chelifera	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Cleptelmis addenda	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Cricotopus (Cricotopus)	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Cricotopus bicinctus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Cricotopus trifascia	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Diamesinae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Diphetor hageni	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Drunella	10	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Empididae	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Ephemerellidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Eukiefferiella brehmi	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Eukiefferiella Brehmi Group
WSC-SBC	25-Aug-22	Eukiefferiella claripennis	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Eukiefferiella Claripennis Group
WSC-SBC	25-Aug-22	Eukiefferiella gracei	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Eukiefferiella Gracei Group
WSC-SBC	25-Aug-22	Glossosoma	10	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Glossosomatidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Hesperoperla pacifica	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Hexatoma	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Hydropsyche	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Hydroptila	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Lepidostoma	16	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Micrasema	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Micropsectra	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Nematoda	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Oecetis	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Optioservus	235	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Orthocladiinae	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Cricotopus / Orthocladius
WSC-SBC	25-Aug-22	Orthocladius	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Pagastia	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Parametriocnemus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Pentaneura	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Pisidiidae	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Sphaeriidae
WSC-SBC	25-Aug-22	Rheotanytarsus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

WSC-SBC	25-Aug-22	Rhyacophila brunnea	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Rhyacophila Brunnea Group
WSC-SBC	25-Aug-22	Sialis	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Simulium	109	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Skwala	8	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Sweltsa	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Tricorythodes	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	
WSC-SBC	25-Aug-22	Tvetenia bavarica	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR001	Tvetenia Bavarica Group
SS-25	25-Aug-22	Acari	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Amiocentrus aspilus	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Baetis tricaudatus	24	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	Baetis tricaudatus complex
SS-25	25-Aug-22	Brachycentrus occidentalis	15	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Caecidotea	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Cheumatopsyche	14	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Cleptelmis addenda	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Crangonyx	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Cricotopus (Cricotopus)	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Cricotopus trifascia	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Diphetor hageni	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Erpobdella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Eukiefferiella brehmi	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	Eukiefferiella Brehmi Group
SS-25	25-Aug-22	Helobdella stagnalis	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Hemerodromia	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Hyalella	14	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Hydropsyche	278	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Hydroptila	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Lepidostoma	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Microtendipes	8	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Naididae	8	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	Tubificinae
SS-25	25-Aug-22	Nais (Animalia)	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Nectopsyche	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Nematoda	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Oecetis	17	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Optioservus	59	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Pagastia	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Parametriocnemus	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Pisidiidae	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	Sphaeriidae
SS-25	25-Aug-22	Potamopyrgus antipodarum	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Protoptila	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Tanypodinae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Trepaxonemata	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Tricorythodes	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

SS-25	25-Aug-22	Tvetenia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
SS-25	25-Aug-22	Tvetenia vitracies	9	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	Tvetenia tshernovskii
SS-25	25-Aug-22	Zaitzevia	33	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR002	
CFR-03A	25-Aug-22	Acari	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Attenella	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Baetis tricaudatus	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	Baetis tricaudatus complex
CFR-03A	25-Aug-22	Brachycentrus occidentalis	21	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Caecidotea	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Cheumatopsyche	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Cleptelmis addenda	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Cricotopus	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Cricotopus (Cricotopus)	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Cricotopus (Nostococladius)	125	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Diphetor hageni	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Drunella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Ecdyonurus criddlei	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	Afghanurus criddlei
CFR-03A	25-Aug-22	Enchytraeidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Erpobdella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Glossosoma	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Glossosomatidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Gomphidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Helicopsyche	13	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Hemerodromia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Hydropsyche	48	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Hydroptilidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Iswaeon	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Lepidostoma	17	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Limnodrilus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Microtendipes	73	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Naididae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Nematoda	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Oecetis	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Optioservus	97	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Orthocladiinae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Orthocladius	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Pagastia	8	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Petrophila	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Pisidiidae	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	Sphaeriidae
CFR-03A	25-Aug-22	Polypedilum	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Protoptila	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Psychomyia	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

CFR-03A	25-Aug-22	Trepaxonemata	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Tricorythodes	11	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-03A	25-Aug-22	Tvetenia vitracies	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	Tvetenia tshernovskii
CFR-03A	25-Aug-22	Zaitzevia	30	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR003	
CFR-07D	25-Aug-22	Acari	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Amiocentrus aspilus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Attenella margarita	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Baetis tricaudatus	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Baetis tricaudatus complex
CFR-07D	25-Aug-22	Brachycentrus occidentalis	19	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Cleptelmis addenda	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Cricotopus (Cricotopus)	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Cricotopus (Nostococladius)	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Diphetor hageni	17	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Ecdyonurus criddlei	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Afghanurus criddlei
CFR-07D	25-Aug-22	Glossosoma	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Glossosomatidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Helicopsyche	48	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Heptagenia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Hexatoma	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Hydropsyche	18	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Isogenoides	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Iswaeon	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Lepidostoma	18	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Leptophlebiidae	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Microtendipes	67	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Naididae	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Tubificinae
CFR-07D	25-Aug-22	Nectopsyche	15	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Nematoda	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Oecetis	19	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Ophiogomphus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Optioservus	179	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Orthocladius	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Pagastia	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Parametriocnemus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Petrophila	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Phaenopsectra	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Pisidiidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Sphaeriidae
CFR-07D	25-Aug-22	Polypedilum	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Protoptila	16	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Psychomyia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Sialis	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

CFR-07D	25-Aug-22	Simulium	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Skwala	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Thienemannimyia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Thienemannimyia Group
CFR-07D	25-Aug-22	Trepaxonemata	17	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Tricorythodes	17	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-07D	25-Aug-22	Tvetenia vitracies	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	Tvetenia tshernovskii
CFR-07D	25-Aug-22	Zaitzevia	15	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR004	
CFR-11F	25-Aug-22	Acari	8	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Baetis	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Baetis Fuscatus Gr.
CFR-11F	25-Aug-22	Baetis tricaudatus	18	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Baetis tricaudatus complex
CFR-11F	25-Aug-22	Brachycentrus occidentalis	4	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Copepoda	2	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Corixidae	2	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Corynoneura	2	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Diphetor hageni	23	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Ecdyonurus criddlei	6	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Afghanurus criddlei
CFR-11F	25-Aug-22	Enchytraeidae	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Helicopsyche	64	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Hexatoma	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Hydropsyche	5	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Hydroptila	12	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Hydroptilidae	2	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Iswaeon	19	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Lepidostoma	10	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Microtendipes	30	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Naididae	29	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Tubificinae
CFR-11F	25-Aug-22	Nectopsyche	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Nematoda	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Odontomesa	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Oecetis	13	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Ophiogomphus	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Optioservus	107	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Pacifastacus leniusculus	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Phaenopsectra	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Pisidiidae	9	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Sphaeriidae
CFR-11F	25-Aug-22	Polypedilum	3	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Potthastia gaedii	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Potthastia Gaedii Group
CFR-11F	25-Aug-22	Procladius	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Procloeon	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Simulium	4	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Skwala	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

CFR-11F	25-Aug-22	Thienemannimyia	1	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Thienemannimyia Group
CFR-11F	25-Aug-22	Trepaxonemata	5	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Tribelos	4	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Tricorythodes	88	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-11F	25-Aug-22	Tvetenia vitracies	13	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	Tvetenia tshernovskii
CFR-11F	25-Aug-22	Zaitzevia	20	COUNT	RHITHRON	10500-C	6-Mar-23	PBSJ22CFR005	
CFR-27H	25-Aug-22	Agapetus	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Atherix	8	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Baetis tricaudatus	31	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	Baetis tricaudatus complex
CFR-27H	25-Aug-22	Brachycentrus occidentalis	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Cardiocladius	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Chelifera	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Cheumatopsyche	26	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Cricotopus (Cricotopus)	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Cricotopus trifascia	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Diphetor hageni	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Enchytraeidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Ephemerellidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Eukiefferiella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Eukiefferiella devonica	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	Eukiefferiella Devonica Group
CFR-27H	25-Aug-22	Helicopsyche	64	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Hexatoma	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Hydropsyche	184	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Isoperla	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Iswaeon	14	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Lepidostoma	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Microtendipes	10	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Nanocladius	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Nectopsyche	19	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Oecetis	21	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Optioservus	40	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Parametriocnemus	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Polypedilum	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Simulium	11	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Skwala	9	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Tanytarsini	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Thienemanniella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Thienemannimyia	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	Thienemannimyia Group
CFR-27H	25-Aug-22	Tricorythodes	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-27H	25-Aug-22	Tvetenia bavarica	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	Tvetenia Bavarica Group
CFR-27H	25-Aug-22	Tvetenia vitracies	28	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	Tvetenia tshernovskii

Table F-1. Macroinvertebrate taxa counts for the Clark Fork River Operable Unit, 2022.

CFR-27H	25-Aug-22	Zaitzevia	30	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR006	
CFR-34	25-Aug-22	Acari	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Agapetus	29	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Attenella margarita	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Baetis tricaudatus	13	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Baetis tricaudatus complex
CFR-34	25-Aug-22	Cheumatopsyche	16	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Cricotopus (Isocladius)	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Cricotopus trifascia	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Enchytraeidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Ephemerella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Eukiefferiella devonica	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Eukiefferiella Devonica Group
CFR-34	25-Aug-22	Glossosoma	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Helicopsyche	68	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Hexatoma	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Hyalella	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Hydropsyche	5	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Hydroptila	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Iswaeon	6	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Lepidostoma	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Microcylloepus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Microtendipes	33	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Naididae	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Tubificinae
CFR-34	25-Aug-22	Nais (Animalia)	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Nectopsyche	9	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Nematoda	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Oecetis	7	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Optioservus	35	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Orthocladiinae	3	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Cricotopus / Orthocladius
CFR-34	25-Aug-22	Orthocladius	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Parametriocnemus	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Perlidae	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Phaenopsectra	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Polypedilum	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Simulium	192	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Thienemannimyia	4	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Thienemannimyia Group
CFR-34	25-Aug-22	Tipula	1	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Tribelos	2	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Tricorythodes	39	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	
CFR-34	25-Aug-22	Tvetenia vitracies	18	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	Tvetenia tshernovskii
CFR-34	25-Aug-22	Zaitzevia	20	COUNT	RHITHRON	10500-C	3-Mar-23	PBSJ22CFR007	

APPENDIX G

VEGETATION MONITORING PHOTOGRAPHS

GROUND COVER PLOTS

PHASE 1

Transect TW25



Figure H-1. Ground cover Plot P01_Y07_TW25-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-2. Ground cover Plot P01_Y07_TW25-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-3. Ground cover Plot P01_Y07_TW25-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-4. Ground cover Plot P01_Y07_TW25-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-5. Ground cover Plot P01_Y07_TW25-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-6. Ground cover Plot P01_Y07_TW25-50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-7. Ground cover Plot P01_Y07_TW25-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-8. Ground cover Plot P01_Y07_TW25-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-9. Ground cover Plot P01_Y07_TW25-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-10. Ground cover Plot P01_Y07_TW25-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

Transect TW50



Figure H-11. Ground cover Plot P01_Y07_TW50-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-12. Ground cover Plot P01_Y07_TW50-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-13. Ground cover Plot P01_Y07_TW50-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-14. Ground cover Plot P01_Y07_TW50-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-15. Ground cover Plot P01_Y07_TW50-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-16. Ground cover Plot P01_Y07_TW50-50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-17. Ground cover Plot P01_Y07_TW50-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-18. Ground cover Plot P01_Y07_TW50-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-19. Ground cover Plot P01_Y07_TW50-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-20. Ground cover Plot P01_Y07_TW50-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

Transect TW75



Figure H-21. Ground cover Plot P01_Y07_TW75-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-22. Ground cover Plot P01_Y07_TW75-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

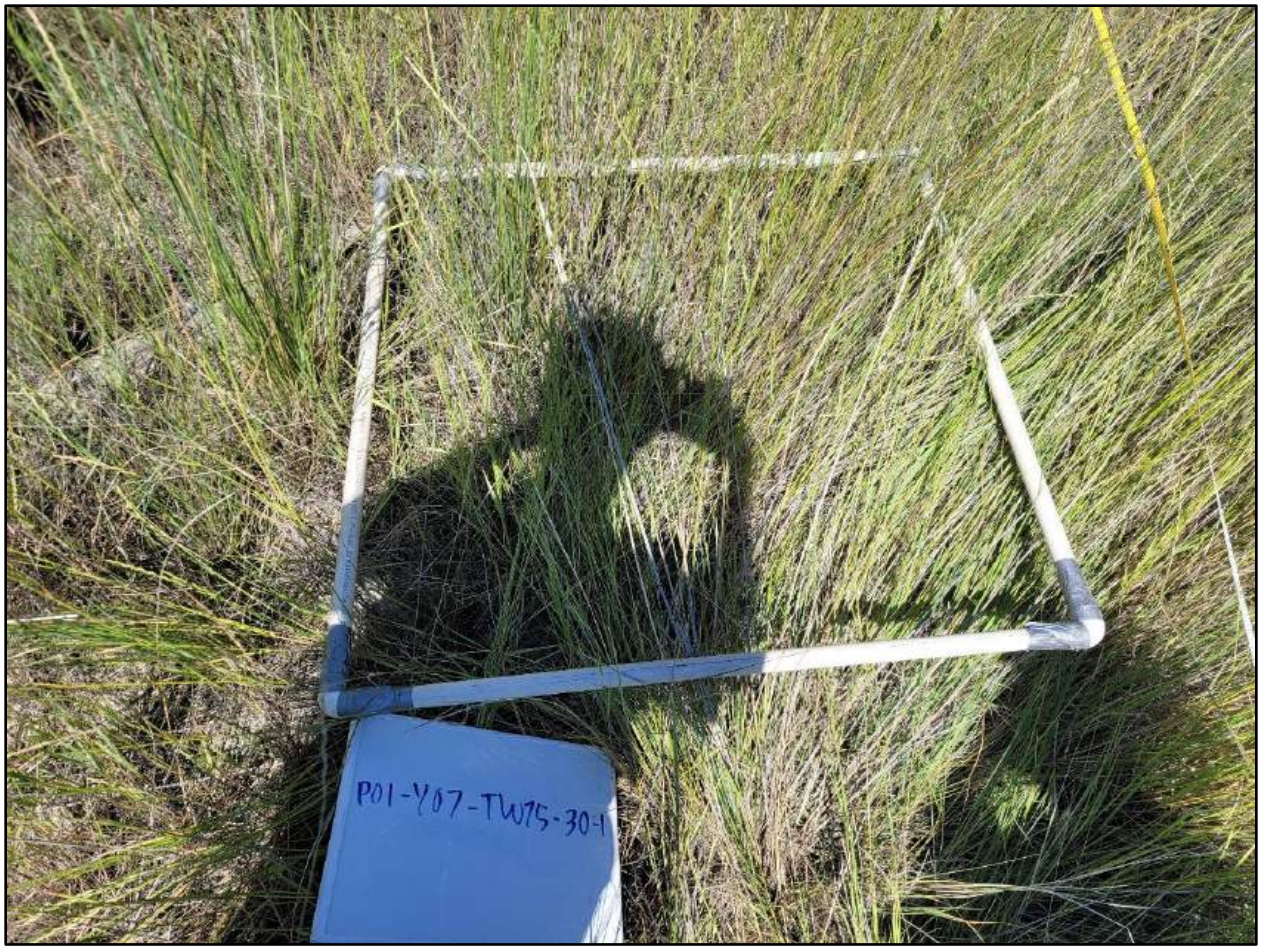


Figure H-23. Ground cover Plot P01_Y07_TW75-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-24. Ground cover Plot P01_Y07_TW75-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-25. Ground cover Plot P01_Y07_TW75-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-26. Ground cover Plot P01_Y07_TW75-50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-27. Ground cover Plot P01_Y07_TW75-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-28. Ground cover Plot P01_Y07_TW75-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-29. Ground cover Plot P01_Y07_TW75-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-30. Ground cover Plot P01_Y07_TW75-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

Transect TE25



Figure H-31. Ground cover Plot P01_Y07_TE25-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-32. Ground cover Plot P01_Y07_TE25-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-33. Ground cover Plot P01_Y07_TE25-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-34. Ground cover Plot P01_Y07_TE25-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-35. Ground cover Plot P01_Y07_TE25-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-36. Ground cover Plot P01_Y07_TE25-50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

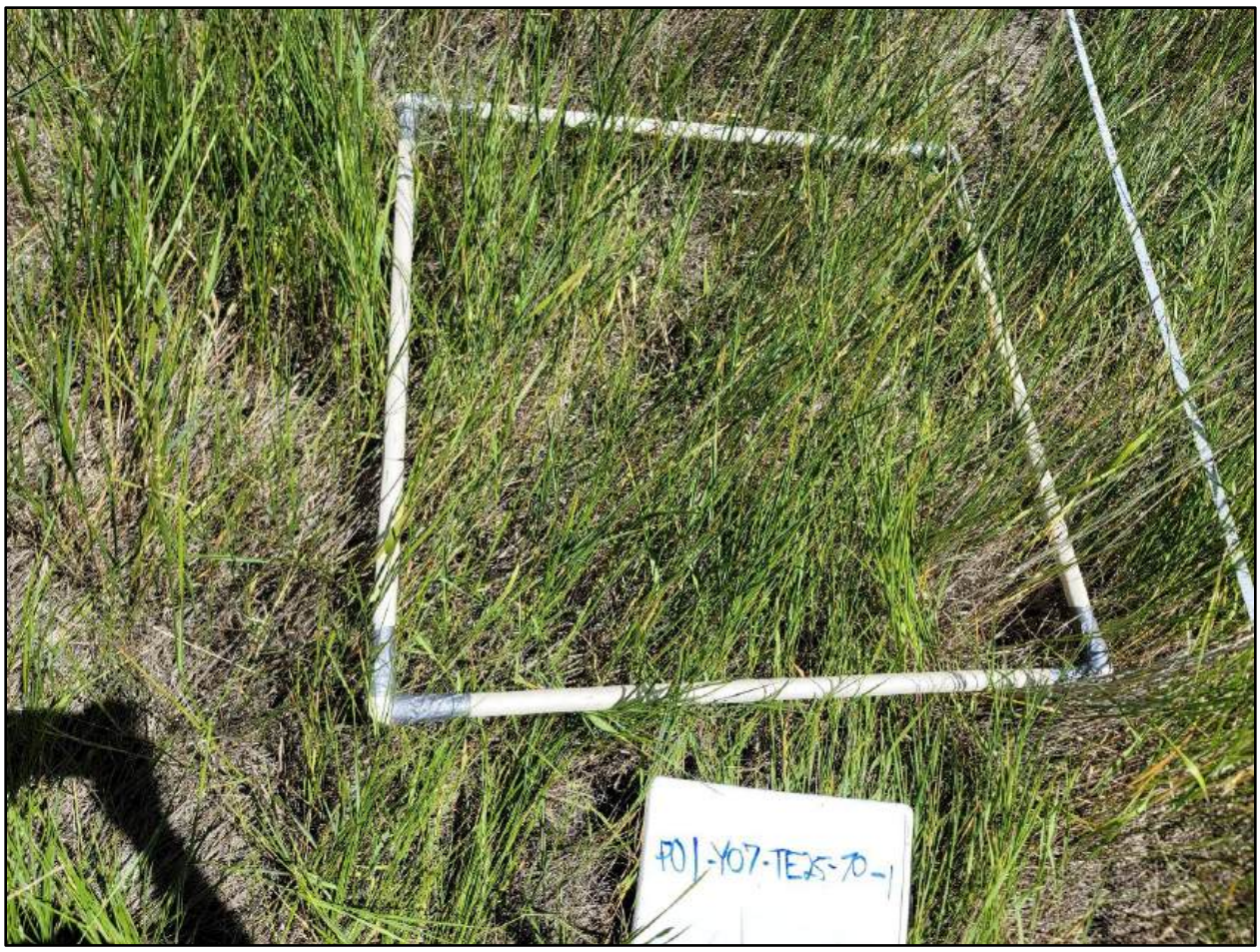


Figure H-37. Ground cover Plot P01_Y07_TE25-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-38. Ground cover Plot P01_Y07_TE25-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-39. Ground cover Plot P01_Y07_TE25-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-40. Ground cover Plot P01_Y07_TE25-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

Transect TE50



Figure H-41. Ground cover Plot P01_Y07_TE50-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-42. Ground cover Plot P01_Y07_TE50-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-43. Ground cover Plot P01_Y07_TE50-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-44. Ground cover Plot P01_Y07_TE50-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

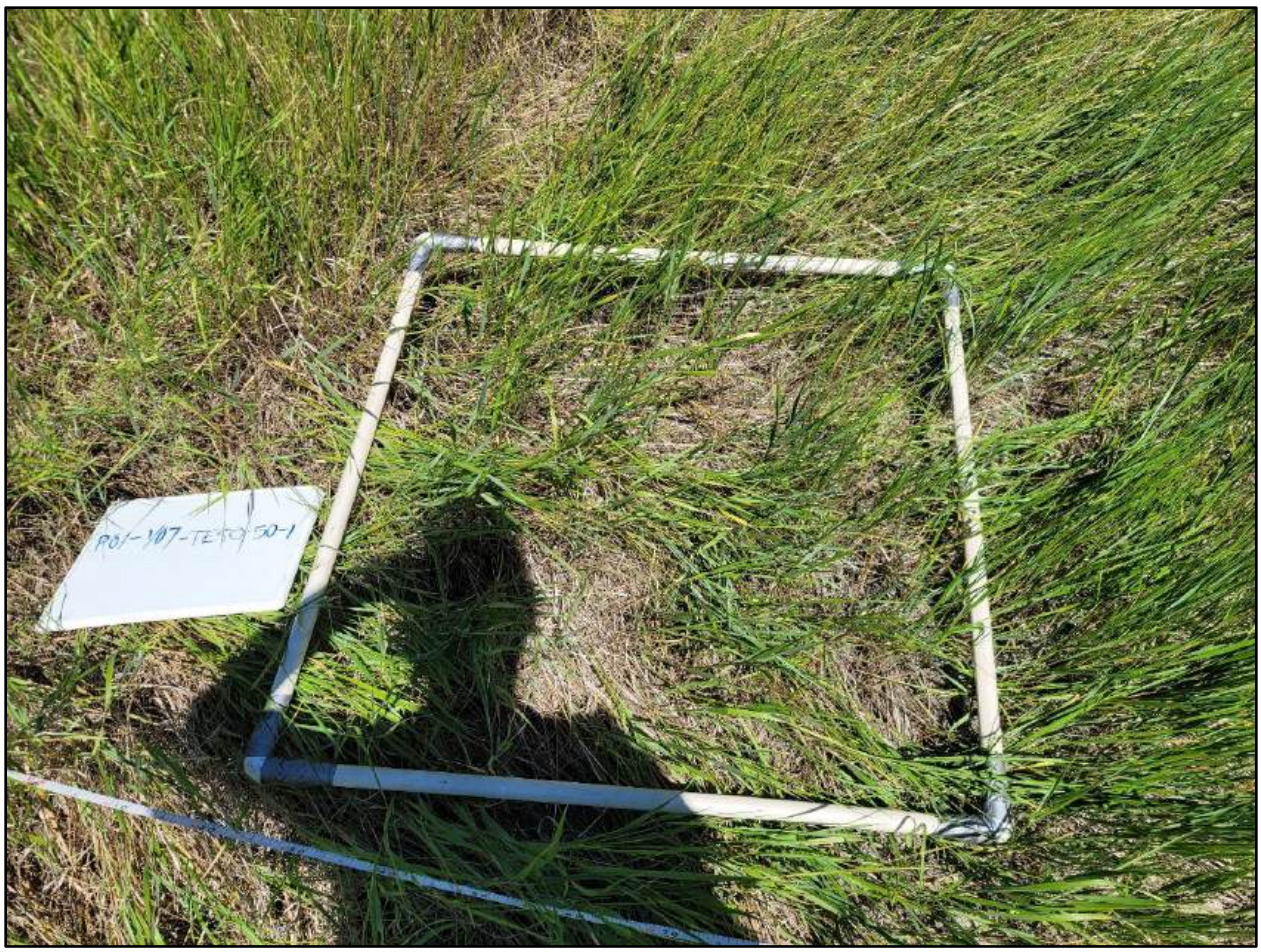


Figure H-45. Ground cover Plot P01_Y07_TE50-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.

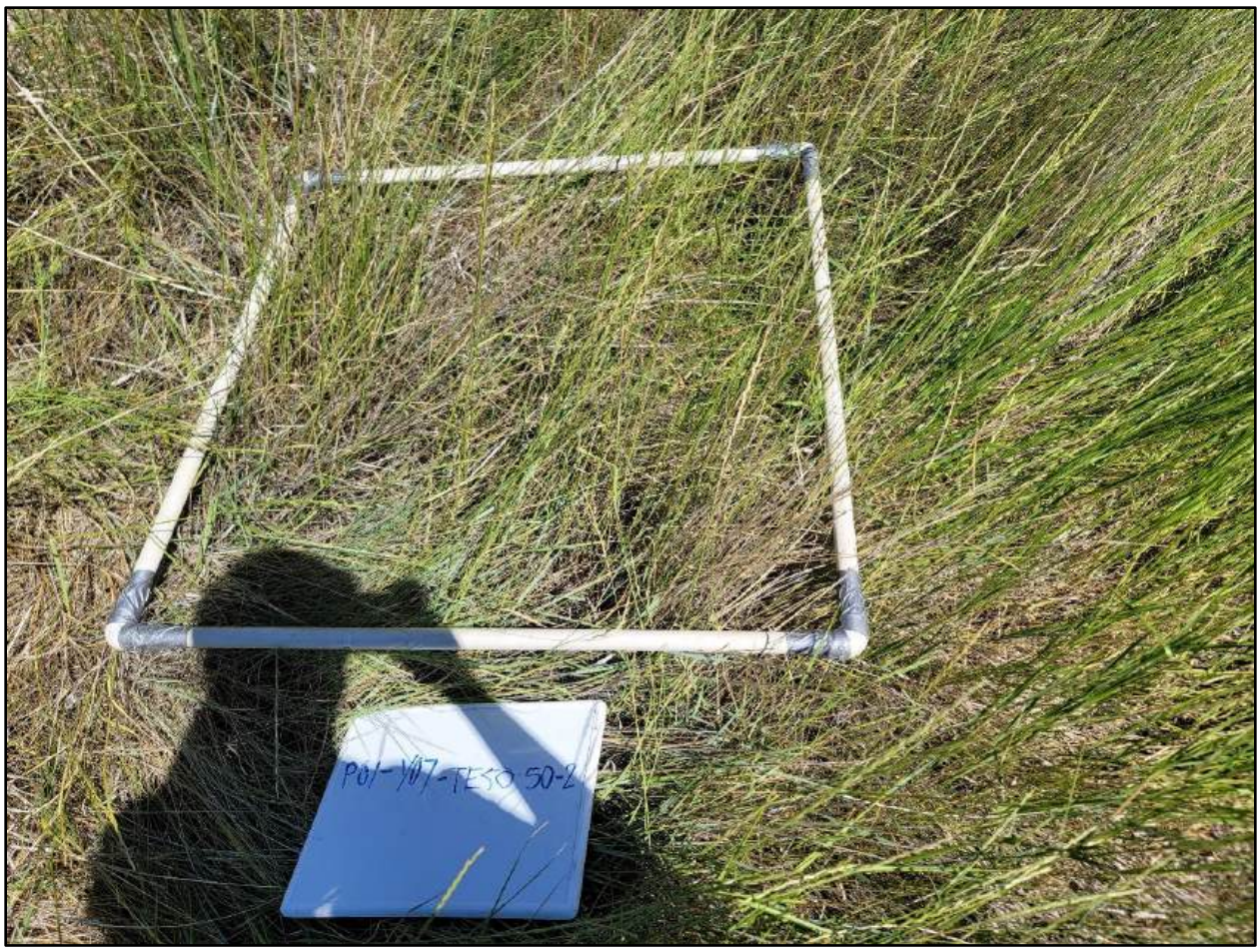


Figure H-46. Ground cover Plot P01_Y07_TE50-50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

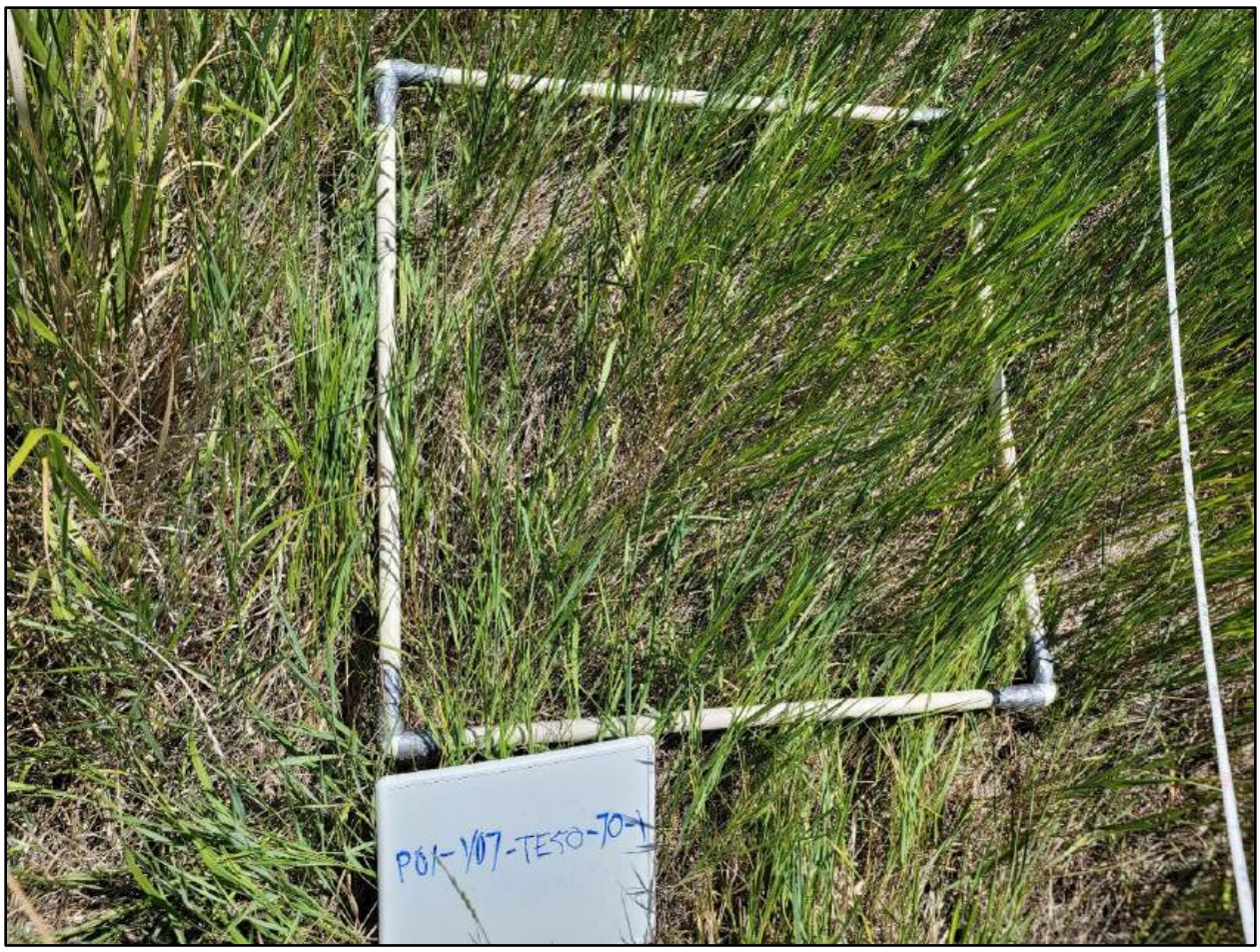


Figure H-47. Ground cover Plot P01_Y07_TE50-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.

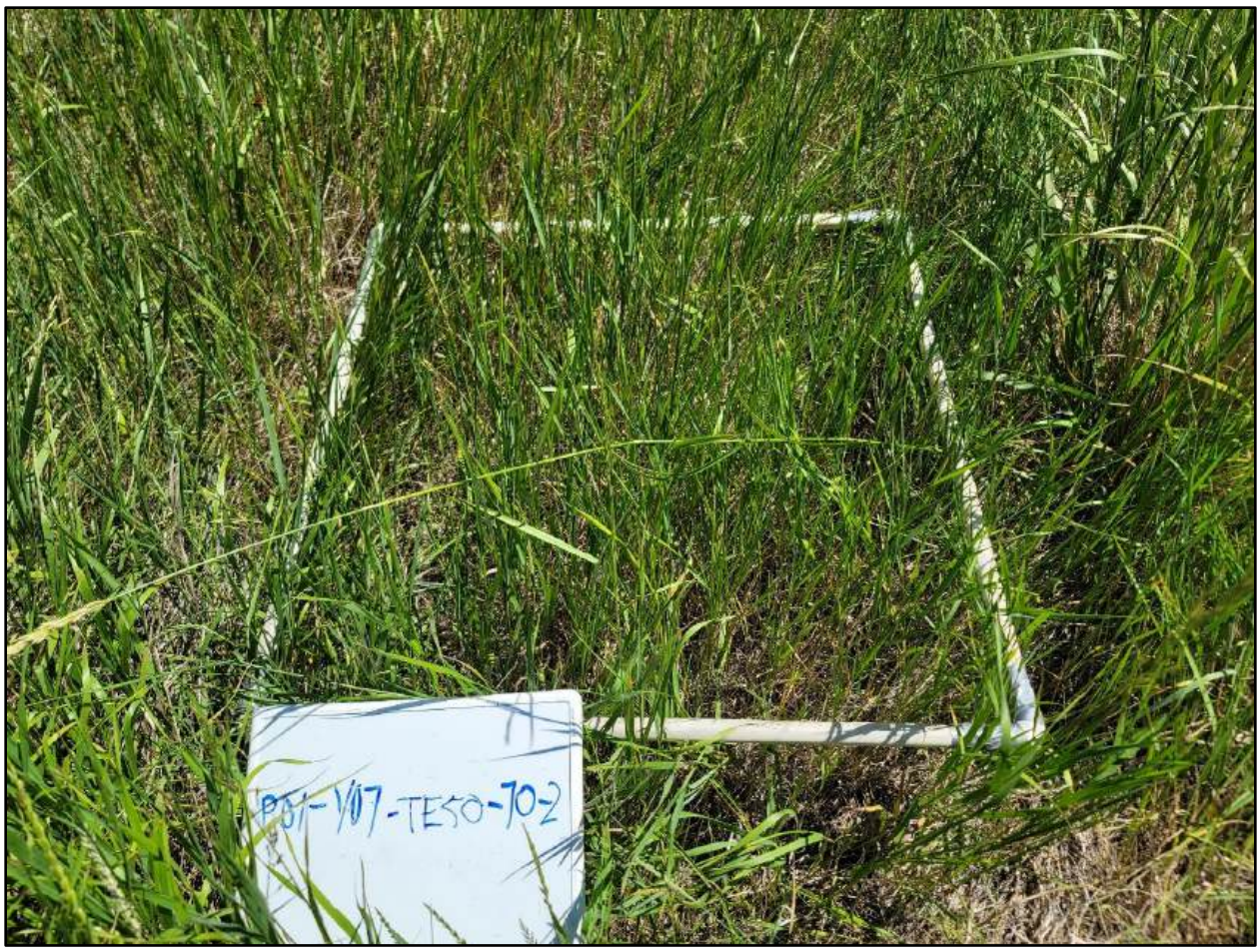


Figure H-48. Ground cover Plot P01_Y07_TE50-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-49. Ground cover Plot P01_Y07_TE50-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.

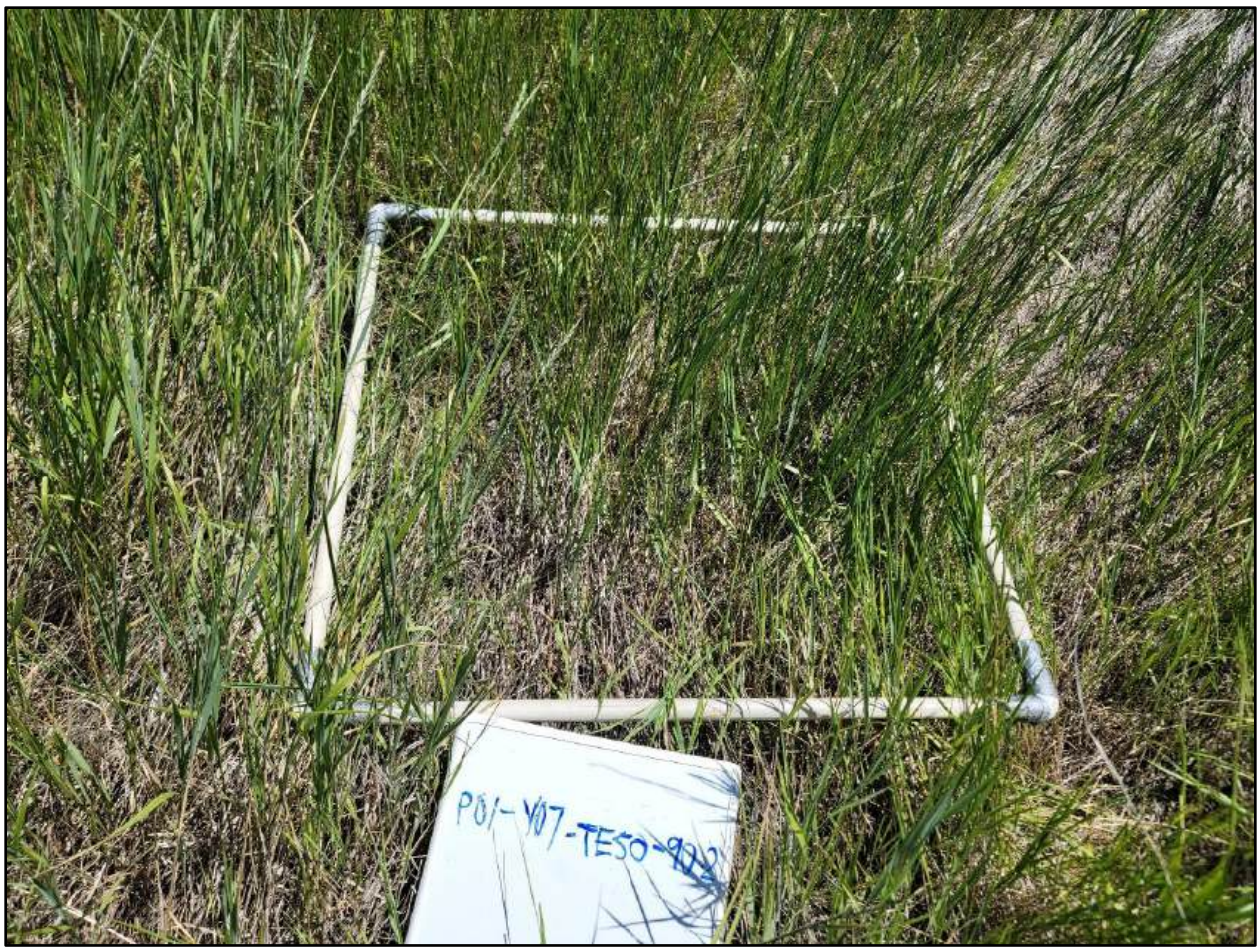


Figure H-50. Ground cover Plot P01_Y07_TE50-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

Transect TE75



Figure H-51. Ground cover Plot P01_Y07_TE75-10-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-52. Ground cover Plot P01_Y07_TE75-10-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

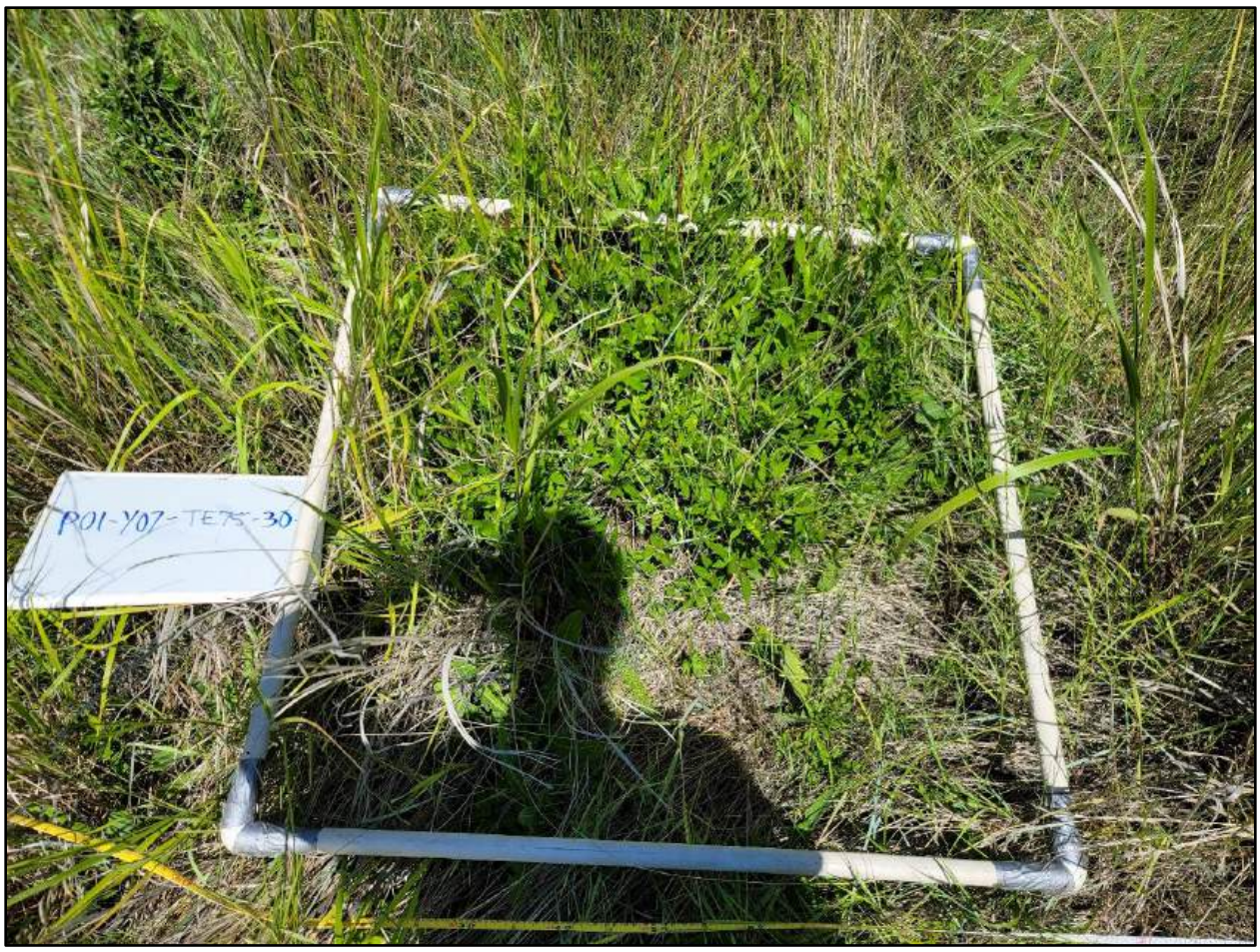


Figure H-53. Ground cover Plot P01_Y07_TE75-30-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-54. Ground cover Plot P01_Y07_TE75-30-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.

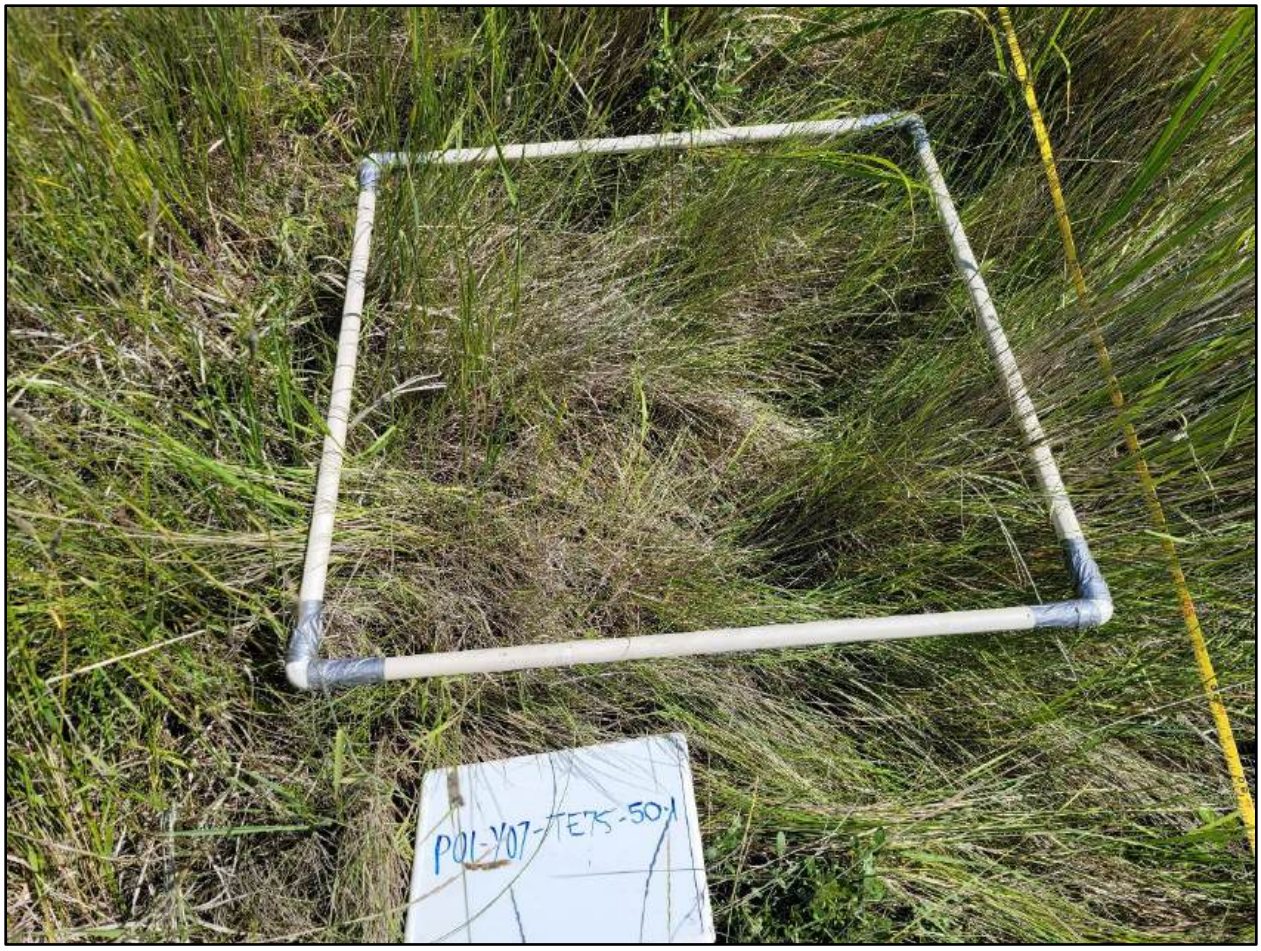


Figure H-55. Ground cover Plot P01_Y07_TE75-50-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-56. Ground cover Plot P01_Y07_TE75_50-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-57. Ground cover Plot P01_Y07_TE75-70-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.

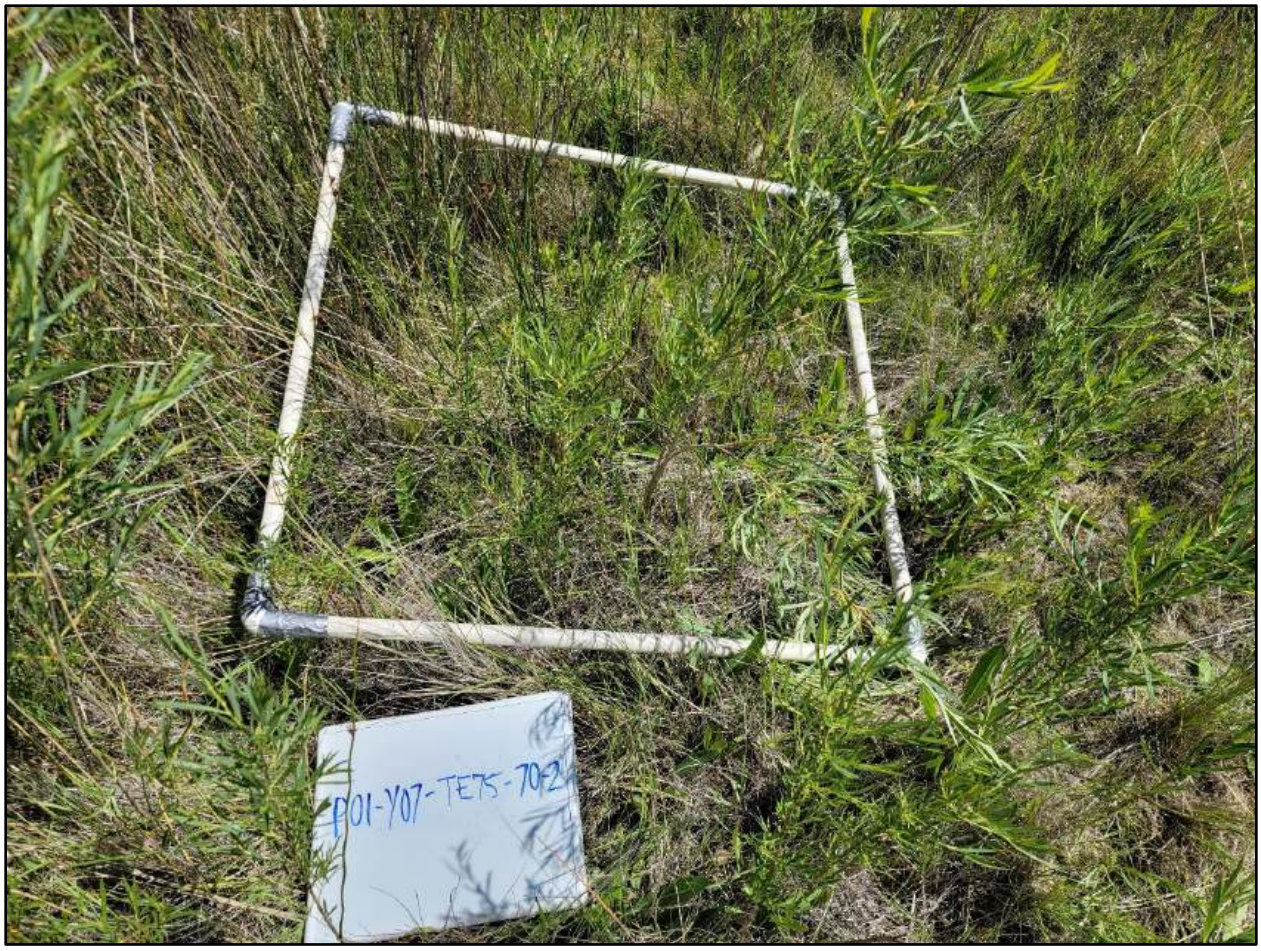


Figure H-58. Ground cover Plot P01_Y07_TE75-70-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-59. Ground cover Plot P01_Y07_TE75-90-1 in Phase 1 of the Clark Fork River Operable Unit, 2022.



Figure H-60. Ground cover Plot P01_Y07_TE75-90-2 in Phase 1 of the Clark Fork River Operable Unit, 2022.