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2022 Stormwater Outfall Monitoring Report

APDES Permit No. AKS052558

FINAL REPORT

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MUNICIPALITY OF ANCHORAGE

WATERSHED MANAGEMENT SERVICES

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List of Acronyms

°C	Degrees Celsius
%	Percent
µg/L	Micrograms/Liter
ADEC	Alaska Department of Environmental Conservation
APDES	Alaska Pollutant Discharge and Elimination System
AWC	Anchorage Waterways Council
AWL	Alaska Water Laboratories
AWQS	Alaska Water Quality Standard
Ben Boeke	Rain Gauge at the Ben Boeke Indoor Ice Arena
BTEX	Benzene, Ethylbenzene, Toluene, and Xylenes
BMPs	Best Management Practices
BOD ₅	Biochemical Oxygen Demand (5 Day)
COC	Chain of Custody
CI	Commercial Industrial
Cu	Copper
CWA	Clean Water Act
DO	Dissolved Oxygen
DOT&PF	Alaska Department of Transportation and Public Facilities
DOY	Day of Year
EPA	U.S. Environmental Protection Agency
FC/100 mL	Fecal Coliform Units per 100 Milliliters
gpm	Gallons per Minute
Hr or Hrs	Hour or Hours
HGDB	Hydro-Geographic Database
L	Liter
LCS/LCSD	Laboratory Control Samples and Duplicates
mL	Milliliter
mg/L	Milligrams/Liter
MOA	Municipality of Anchorage
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MS4	Municipal Separate Storm Sewer System
NADP	National Atmospheric Deposition Program
ND	Not Detected
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
OGS	Oil/Grit Separator
PAHs	Polycyclic Aromatic Hydrocarbons
PANC	NOAA National Weather Service Station at TSAIA
QA/QC	Quality Assurance/Quality Control
QAP	Monitoring, Evaluation, and Quality Assurance Plan
QC	Quality Control
SMRC	Stormwater Managers Resource Center.
Eloise Spencer	Rain Gauge at Elmore and Huffman Roads



SRMs	Standard Reference Material
SWM	Stormwater Outfall Monitoring
TAqH	Total Aqueous Hydrocarbons
TAH	Total Aromatic Hydrocarbons
TDS	Total Dissolved Solids
Thomas	Rain Gauge at Lake Otis Parkway and Tudor Road
TMDL	Total Maximum Daily Load
TNTC	Too Numerous to Count
TPAH	Total Polycyclic Aromatic Hydrocarbons
TSAIA	Ted Stevens Anchorage International Airport
TSS	Total Suspended Solids
USGS	United States Geological Survey

1.0 Introduction

This report details the findings of the 2022 Municipality of Anchorage (MOA) stormwater monitoring program. This program satisfies the stormwater outfall monitoring requirements of the current Municipal Separate Storm Sewer System (MS4) permit (Permit No. AKS052558) in compliance with the National Pollutant Discharge Elimination System (NPDES) established under the Clean Water Act (CWA).

1.1 Background

The U.S. Environmental Protection Agency (EPA) first issued a MS4 permit to the MOA and the Alaska Department of Transportation and Public Facilities (DOT&PF) in 1999. EPA reissued the permit in 2009 with the additional requirement to conduct stormwater outfall monitoring throughout the Anchorage Bowl (EPA 2009). After reissuance of the permit, EPA delegated the NPDES stormwater program to the Alaska Department of Environmental Conservation (ADEC), which now oversees its implementation and administration within the state as part of the Alaska Pollutant Discharge Elimination System (APDES). ADEC reissued the MS4 permit in 2015 and 2020, maintaining the requirement for stormwater outfall monitoring (ADEC 2020 and ADEC 2020b).

The Anchorage MS4 permit establishes control measures requiring the co-permittees to develop programs designed to prevent contaminants from entering the storm sewer system. The permit also identifies monitoring objectives, including stormwater outfall monitoring (Section 4.1.7 of the MS4 permit). MOA has taken the lead role in administering the stormwater outfall monitoring (SWM) program. The MS4 permit requires the selection of 10 priority outfall locations for stormwater monitoring that represent a variety of major land use areas within the Anchorage Bowl. It also requires selected outfall locations to be sampled four times each year during storm events that meet specific criteria for a designated set of physical and chemical parameters. Stormwater sampling conducted during 2022 represents the second year of monitoring under the 2020 MS4 permit and the 12th year of monitoring selected outfalls during storm events.

This report and the data collected under the SWM Program fulfill the annual outfall monitoring objectives of the MS4 permit. The current permit went into effect on August 1, 2020 and will expire on July 31, 2025.

1.2 Stormwater Definition

Urban stormwater is a major contributor of pollution to the nation's waterways (EPA 1983). Precipitation and snowmelt events cause runoff that can transport urban contaminants into streams, rivers, and lakes. The runoff from impermeable surfaces such as roads, driveways, and sidewalks, as well as from semi-permeable surfaces such as golf courses, lawns, and gardens can carry a variety of pollutants through the storm sewer, generally discharging directly into local waterways without treatment. The EPA and delegated states, of which Alaska is one, use the MS4 permit to control these pollutants and limit contamination of local waterbodies.

Section 303(d) of the CWA requires that states submit to EPA a list of impaired waterbodies and develop water quality management plans, in the form of Total Maximum Daily Loads (TMDLs) for those waters. The current MS4 permit cites the Final DEC 2014/2016 Integrated Report that identifies 11 Anchorage-area waterbodies as impaired for fecal coliform (ADEC 2018). These

waterbodies include Campbell Creek, Campbell Lake, Chester Creek, Fish Creek, Furrow Creek, Little Campbell Creek, Little Rabbit Creek, Little Survival Creek, Ship Creek, University Lake, and Westchester Lagoon. ADEC has developed, and EPA has approved, TMDLs for fecal coliform for all 11 listed waterbodies. The TMDL implementation plans identify urban runoff as the major contributor of fecal coliform pollution and establish specific reduction goals to improve stormwater quality and reduce the resulting impact on receiving waters.

Since 2010, ADEC has updated the listings for Ship Creek and Hood/Spenard Lake. The petroleum products impairment was removed from Ship Creek in 2012, following monitoring that demonstrated that the analytical indicators for petroleum hydrocarbons were not present in sufficient concentrations to exceed water quality criteria. Ship Creek remains impaired for fecal coliform. Hood/Spenard Lake is no longer included on the Section 303(d) list of impaired waters. Following implementation of improved stormwater management practices and a waterfowl hazing program at the Ted Stevens Anchorage International Airport (TSAIA), water quality data has shown that Hood/Spenard Lake meets water quality criteria for fecal coliform and dissolved oxygen (DO). The fecal coliform bacteria impairment was removed in 2010 and the DO impairment was removed in 2016.

1.3 Monitoring Program Objectives

The overarching objectives of the monitoring program established in the Anchorage MS4 permit are to characterize the quality of stormwater discharges from the MS4 and track the effectiveness of best management practices (BMPs) implemented as part of the TMDL implementation plans. The SWM Program aims to meet these objectives through continued monitoring of 10 outfalls through the permit term. The SWM Program meets the following objectives specified in the MS4 permit:

- Broadly estimate the annual stormwater loading of fecal coliform and petroleum products discharged into specific watersheds from the MS4.
- Assess the effectiveness of existing stormwater controls in reducing fecal coliform bacteria and petroleum product contamination.
- Identify and prioritize portions of the MS4 that need additional controls.

As of 2018, no waterbody in the Anchorage MS4 permit area is included on the Section 303(d) list of impaired waters for petroleum product contamination (ADEC 2018). However, because petroleum products were identified as a contaminant of concern in the 2015 MS4 permit, and because stormwater runoff has the potential to transport petroleum products from a variety of sources, the stormwater outfall monitoring program continues to measure petroleum product contamination.

1.4 Report Organization

Section 2.0 of this report includes an overview of the SWM Program and provides background information regarding the outfall site selection process, the water quality parameters tested, and procedures followed as required by the MS4 permit. This section also details 2022 fieldwork conducted under the Program, including a discussion of the sampling events and the associated weather and precipitation data. Discussion of field-sampling procedures, sample handling and chain of custody, laboratory analyses, quality control, and data validation procedures is included.

Section 3.0 presents the results of the 2022 SWM Program, including tabular and graphical summaries of field measurements and lab data, as well as a discussion of results, site trends, yearly and seasonal trends, and annual loading from MS4 discharge.

Section 4.0 of the report presents a summary of findings as well as preliminary conclusions. References are included in Section 5.0. The body of the report is followed by appendices, which include site maps, field photographs, laboratory data reports, data validation summaries, and field log forms.

2.0 Program Description and Methodology

The SWM Program was developed to meet the MS4 permit requirements and is defined in the updated *Monitoring, Evaluation, and Quality Assurance Plan (QAP)* for the MS4 permit (MOA 2020). Appendix B of the QAP, *Stormwater Outfall Monitoring Plan* specifically details the SWM Program, including the program design rationale, sampling methodology and protocols, field team training requirements, and results to be presented in the annual report.

2.1 Monitoring Sites

Per the requirements of the MS4 permit, the *Stormwater Outfall Monitoring Plan* includes a list of 30 outfalls prioritized as high and medium priority monitoring locations. The MOA developed the list to meet the requirements of the 2009 MS4 permit.

The methodology used to define the monitoring corridor and identify and prioritize the outfalls is described in the QAP (MOA 2020). Under the 2009 MS4 permit, the MOA selected and ranked 30 subbasins within a targeted area of the Anchorage Bowl for inclusion in the SWM Program (MOA 2011). Selected subbasins include those zoned for a single predominant land use, subbasins zoned for mixed land uses, and subbasins with and without oil and grit separator (OGS) devices. These subbasins were then ranked based on the area of impervious surface directly connected to the storm drain system leading to the outfall, access to the outfall, and accessibility of the outfall from legal parking.

The SWM Program began in 2011 with ten priority outfalls selected for sampling. To facilitate sample labeling and simplify outfall identification in the field, the outfalls were sequentially numbered from south to north along the monitoring corridor (SWM01 through SWM10).

Two outfalls, SWM01 and SWM02, were sampled from 2011 through 2016. However, these outfalls were replaced in 2017. SWM01 was discontinued due to inconsistent flow and the small size of the drainage area. The replacement outfall, SWM11, also drains a residential land use subbasin and has a larger drainage area than SWM01. SWM02 was discontinued when it was determined that the outfall is not truly representative of the contributing land use area as a result of influence of streamflow from Little Campbell Creek. SWM02 was replaced with SWM12, which also drains a commercial and industrial land use subbasin. SWM11 and SWM12 were not included on the original list of 30 prioritized subbasins but were selected because their location in the monitoring corridor and the characteristics of their subbasins are similar to those of SWM01 and SWM02.

From 2011 through 2020, SWM09 was sampled, located near the Anchorage Football Stadium, draining the area around Ben Boeke and Sullivan Arenas. In 2020, SWM09's storm drain system was reconstructed and routed to a new outfall approximately 320 feet to the east, near the Bonnie

Cusack Outdoor Ice Skating Arena. The original outfall, SWM09, was left in place but now drains a significantly smaller area. The new outfall, SWM09A, replaces SWM09 and drains a similar characterized subbasin around Ben Boeke and Sullivan Arenas. The reconstruction also affected the subbasin to the east, which outfalls to SWM07. SWM07's subbasin was redelineated, and its subbasin increased by 1.76 acres, an increase in percent imperviousness by six percent. Updated outfall characteristics are provided in Table 1.

SWM03 and SWM04 are located near Sylvan Drive and drain a residential area east of Campbell Creek. Though these outfalls are close together, SWM03 has a far larger drainage area. SWM05 is located at the end of East 56th Avenue and drains a commercial and industrial area south of International Airport Road and east of C Street. SWM06 is located at the end of Maplewood Street and drains a residential area north of Northern Lights Boulevard. SWM07 and SWM08 are located at the Seward Highway where Chester Creek passes beneath the highway. They drain a commercial and industrial area north of the creek and a mixed land use area south of the creek, respectively. SWM09A is located near the Bonnie Cusack Outdoor Ice Skating Arena and drains the area around Ben Boeke and Sullivan Arenas. SWM10 is located at the end of Eagle Street and drains a mixed commercial and residential area south of Chester Creek. SWM11 is located at Johns Road and Botanical Circle and drains a large residential area north of Furrow Creek. SWM12 drains a commercial and industrial area near the Old Seward Highway and represents the inflow to the Lynwood retention basin.

Table 1 presents the characteristics of the outfalls sampled under the SWM Program, including physical location, geographic location, outfall dimensions, acreage of subbasin, and percent impervious surface of the subbasin. Figure 1 shows the locations of the 10 currently monitored outfalls and subbasins within the monitoring corridor. Figure 1 also shows the locations of four tipping bucket rain gauges installed along the monitoring corridor in 2022. Detailed site maps showing the outfalls and the land use types of the contributing subbasins are included as Appendix A.



Table 1. Outfalls Sampled Under the Stormwater Outfall Monitoring Program, 2011 – 2022.

Station ID	Subbasin ID	Outfall Node ID	Watershed	Contributing Land Use	OGS Present	Priority Rank ^a	Latitude	Longitude	Outfall Diameter (inches)	Subbasin Area (acres)	Subbasin Percent Impervious
SWM01	1040b	1040-3	Little Campbell	Residential	No	10	61° 07.526'	-149° 50.196'	18	91.38	36
SWM02	1210	847-1	Little Campbell	Commercial and Industrial	No	17	61° 08.665'	-149° 50.797'	18	37.17	82
SWM03	1224a	1224-1	Campbell	Residential	Yes	3	61° 09.548'	-149° 52.443'	36	92.78	70
SWM04	1224b	1224-2	Campbell	Residential	Yes	6	61° 09.545'	-149° 52.451'	20	20.10	32
SWM05	805	207-1	Campbell	Commercial and Industrial	Yes	1	61° 10.202'	-149° 52.326'	32	58.34	75
SWM06	219	314-22	Chester	Residential	Yes	2	61° 11.996'	-149° 50.750'	24	33.81	37
SWM07	507	484-1	Chester	Commercial and Industrial	No	8	61° 12.100'	-149° 52.114'	24	51.93	89
SWM08	549	86-1	Chester	Mixed	No	6	61° 12.095'	-149° 52.114'	42	354.62	69
SWM09	132	499-1	Chester	Commercial and Industrial	Yes	4	61° 12.176'	-149° 52.554'	24	40.04	54
SWM09A	132	499-1	Chester	Commercial and Industrial	Yes	4	61° 12.159'	-149° 52.448'	24	42.63	79
SWM10	554	525-2	Chester	Mixed	No	5	61° 12.161'	-149° 52.486'	24	47.51	75
SWM11	1103	348-3	Furrow	Residential	No	-	61° 06.448'	-149° 52.734'	36	86.32	39
SWM12	1449	1454-1	Campbell	Commercial and Industrial	No	-	61° 09.758'	-149° 52.525'	24	111.68	60

Note: Stations highlighted in red were sampled from 2011 through 2016. Stations highlighted in yellow were added to the SWM Program in 2017 to replace SWM01 and SWM02. SWM09, highlighted in blue, was replaced by SWM09A in 2022. **Bold** cells were updated in 2022.

^aMOA 2011

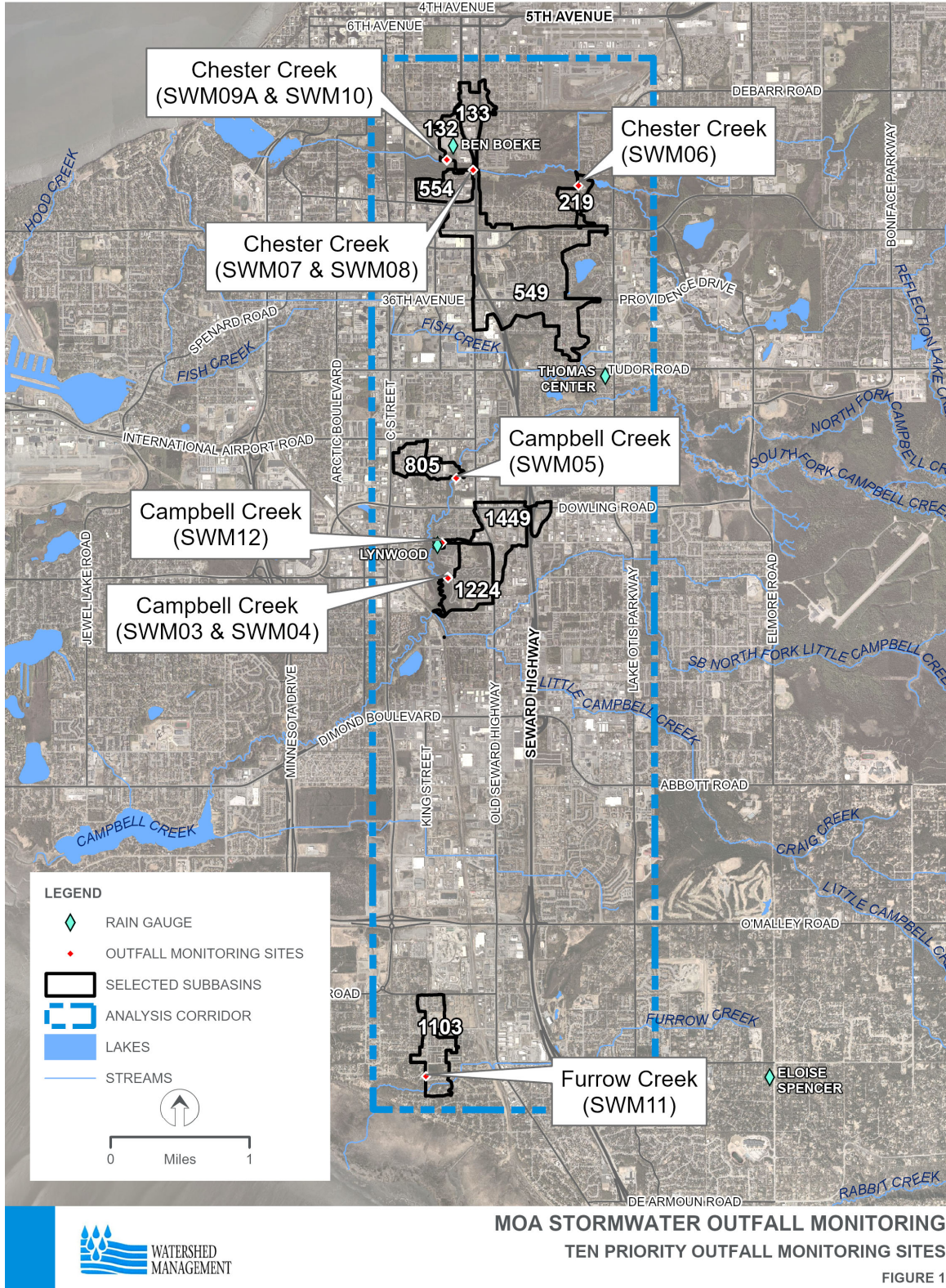


Figure 1. Overview Map of Outfall Monitoring Sites and Subbasins.
Detailed maps of each subbasin are provided in Appendix A.



2.2 Measured Parameters

Monitoring of the selected outfalls includes both *insitu* measurements and discrete grab samples submitted for laboratory analyses. Table 2 lists parameters measured under the MS4 SWM Program, including sample type, measurement type, analysis method, and purpose of monitoring. Measurement quality objectives for each parameter including precision, accuracy, sensitivity, and measurement range are included in the QAP. In addition to the parameters listed in Table 2, field observations are recorded at each outfall including evidence of oily sheen, scum, odor, detritus, floating material, water color and clarity, deposits or stains, vegetation, and other pertinent observations.

Table 2. Sample Type, Measurement Type, and Method of Analysis for Measured Parameters.

Parameter	Sample Type ^a	Measurement Type	Analysis Method	Purpose
Flow	IR	Field	Flow meter, or bucket	Characterize flow & loading
Specific Conductivity	IR	Field	EPA 120.1/ YSI 556/Pro Plus	Stormwater quality
Dissolved Oxygen (DO)	IR	Field	EPA 360.1/ YSI 556/Pro Plus	Stormwater quality
pH	IR	Field	EPA 150.2/ YSI 556/Pro Plus	Stormwater quality
Temperature	IR	Field	SM2550B/ YSI 556/Pro Plus	Stormwater quality
Turbidity	IR/G	Field	EPA 180.1/ Hach 2100	Stormwater quality
5-Day Biochemical Oxygen Demand (BOD ₅)	G	Laboratory	SM 5210 B	Stormwater quality
Fecal Coliform	G	Laboratory	SM 9222D	Stormwater quality & loading
Total Suspended Solids (TSS)	G	Laboratory	SM 2540D	Stormwater quality
Total Aromatic Hydrocarbons (TAH)	G	Laboratory	EPA 624	Stormwater quality & loading
Total Aqueous Hydrocarbons (TAqH)	G	Laboratory	EPA 625 + EPA 624	Stormwater quality & loading
Dissolved Copper ^b	G	Laboratory	EPA 200.8	Stormwater quality
Total Hardness ^b	G	Laboratory	EPA 200.8	Stormwater quality

^a IR = instantaneous recording of field analysis; G = grab sample for analysis

^b Dissolved copper and total hardness were added to the SWM Program in 2016.

Pro = Professional

Table 3 identifies the parameters monitored at each selected outfall. Only samples from outfalls located in predominantly commercial and industrial land use areas are analyzed for hydrocarbon concentrations. This includes measurements of total aromatic hydrocarbons (TAH) and polycyclic aromatic hydrocarbons (PAH), which provide the basis for calculation of total aqueous hydrocarbons (TAqH). Outfalls with watersheds dominated by commercial and industrial land uses are those most likely to contribute petroleum hydrocarbon pollutants to receiving waters. To assess the effectiveness of existing BMPs in improving stormwater quality and reducing petroleum hydrocarbon



concentrations, the SWM Program samples two outfalls within commercial and industrial subbasins that contain OGS systems, and two that do not have OGS systems.

Table 3. Parameters Measured at Each Selected Outfall.

Station ID	Watershed	Contributing Land Use	OGS Present?	Field Parameters						Lab Samples						
				Flow	Conductivity	pH	Temperature	DO	Turbidity	BOD ₅	Fecal Coliform	TSS	Hardness	Dissolved Cu	TAH	PAH
SWM03	Campbell	Residential	Yes	x	x	x	x	x	x	x	x	x	x	x		
SWM04	Campbell	Residential	Yes	x	x	x	x	x	x	x	x	x	x	x		
SWM05	Campbell	Commercial and Industrial	Yes	x	x	x	x	x	x	x	x	x	x	x	x	x
SWM06	Chester	Residential	Yes	x	x	x	x	x	x	x	x	x	x	x		
SWM07	Chester	Commercial and Industrial	No	x	x	x	x	x	x	x	x	x	x	x	x	x
SWM08	Chester	Mixed	No	x	x	x	x	x	x	x	x	x	x			
SWM09A	Chester	Commercial and Industrial	Yes	x	x	x	x	x	x	x	x	x	x	x	x	x
SWM10	Chester	Mixed	No	x	x	x	x	x	x	x	x	x	x			
SWM11	Furrow	Residential	No	x	x	x	x	x	x	x	x	x	x			
SWM12	Campbell	Commercial and Industrial	No	x	x	x	x	x	x	x	x	x	x	x	x	x

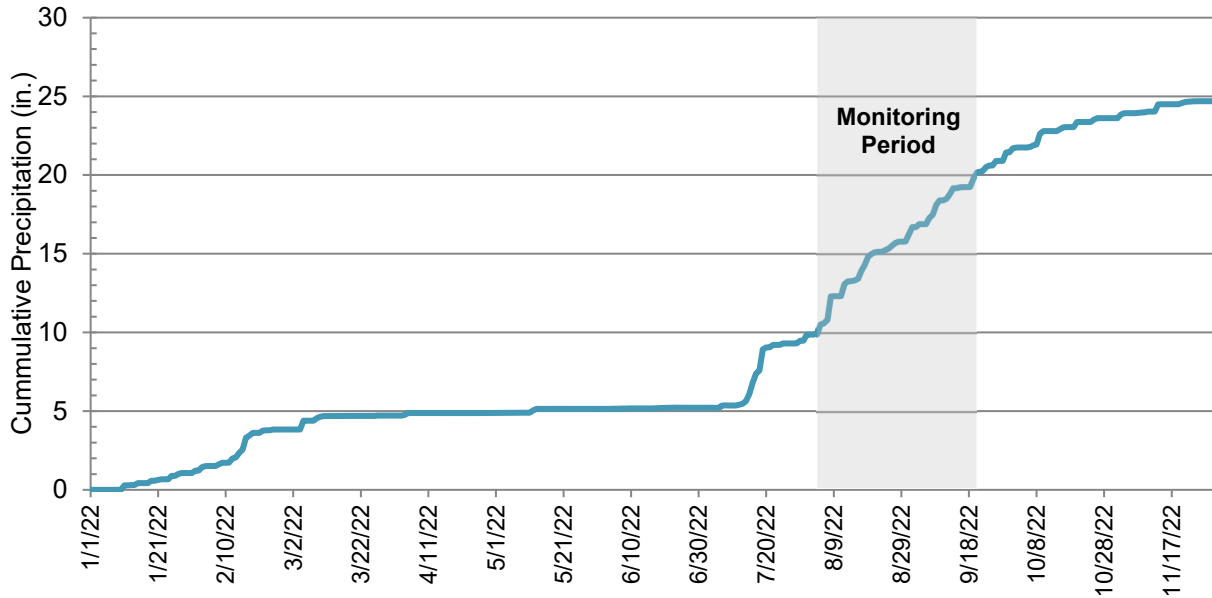
* DO = dissolved oxygen; BOD₅: 5-day biochemical oxygen demand; TSS: total suspended solids; TAH: total aromatic hydrocarbons; TAqH: total aqueous hydrocarbons

2.3 Precipitation

The SWM Program measures pollutants and pollutant indicators in stormwater at the 10 selected outfalls four times each summer. Sampling events are triggered by storms that generate 0.1 inches of precipitation or greater in 24 hours and are preceded by a period of 24 hours with less than 0.1 inches of precipitation. Rainfall at the National Weather Service (NWS 2022a) mesonet KTUU-midtown weather station was monitored to determine whether a rainfall event provided sufficient precipitation to trigger a sampling event. This weather station is centrally located in the monitoring corridor and provides a good representation of active precipitation that would produce runoff at the sites. The weather station website updates every five minutes with the latest precipitation amount and displays 72-hours' worth of data with a 24-hour running precipitation total.

Four stormwater outfall monitoring events were conducted in 2022 as required by the MS4 permit. The 2022 monitoring period began on August 5 and concluded on September 19. Sampling events took place on August 5, August 8, August 26, and September 19. Approximately 9.3 inches of precipitation (including snow, reported as water equivalent) had been measured in 2022 at the National Oceanic and Atmospheric Administration (NOAA) National Weather Service Station located at TSAIA (PANC) before the first event was sampled. The PANC weather station has the longest record of measurements for the Anchorage Bowl and is considered the official station for the MOA. While not located in the monitoring corridor and not used to trigger individual monitoring events, the PANC weather station provides the best available data record for analyzing long-term trends. The

monitoring period is shown in conjunction with the cumulative annual precipitation recorded at the PANC weather station in Figure 2.



Source: NOAA 2022

Figure 2. 2022 Monitoring Period and Cumulative Precipitation (in. of Water) at the PANC Weather Station.

The 2022 Anchorage Bowl precipitation pattern had an irregular trend compared to the long-term trends: January through March had more precipitation, followed by a drier than average April through June; July through September had significantly more precipitation compared to the long-term averages; and October and November had normal amounts of precipitation compared to the long-term averages. In addition to the irregular precipitation pattern, the 2022 precipitation accumulation average for January through November was 24.78 inches which is higher than the long-term accumulation average of 15.26 inches.

During the 2022 SWM Program sampling period, Anchorage received average rainfall that was distributed dissimilar to historic trends. For August, the recorded rainfall of 6.80 inches was above the long-term average of 2.93 inches. For September, the recorded rainfall of 5.18 inches was above the long-term average of 3.10 inches. The highest monthly precipitation for the year occurred in August, unlike the historical average, which indicates highest monthly precipitation occurs in September. The rainfall recorded in 2022 at the PANC weather station compared to historical precipitation data is shown in Figure 3.

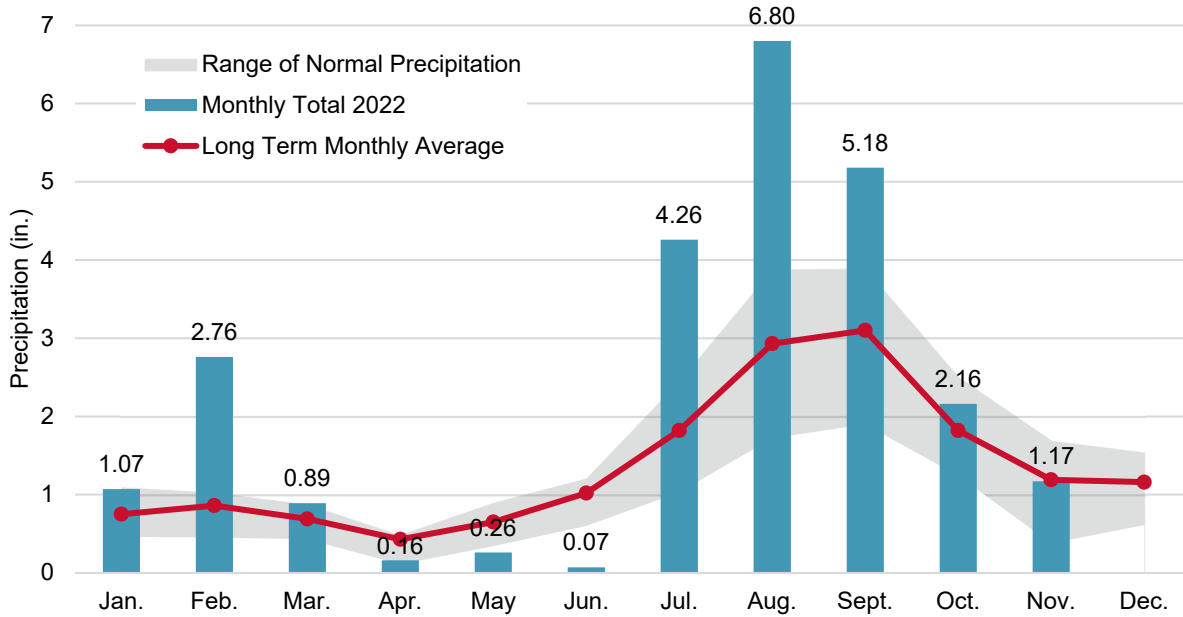


Figure 3. 2022 Monthly Precipitation Measured at the PANC Weather Station Compared to Normals.

Note: Normal range of precipitation shown is the range between the 25th and 75th percentiles of monthly precipitation averages recorded at the PANC weather station for the 30-year period from 1991 to 2020. Source: NOAA 2020 and NWS 2022b.

Four tipping bucket rain gauges installed within the monitoring area recorded precipitation throughout the monitoring period. The rain gauges were located along the monitoring corridor to provide a representation of the actual rainfall within the sampled subbasins. During precipitation events, the collection bucket in the gauge collects precipitation until it reaches the equivalent of 0.01 inch of precipitation whereupon the bucket tips, triggering a reed switch and recording an event with a time stamp. These events are stored in a data logger and downloaded into a computer program where they are summarized over different time intervals or graphed as a time series. The gauges were located at the Ben Boeke Indoor Ice Arena (“Ben Boeke”), near Lake Otis Parkway and Tudor Road (“Thomas”), at the Lynwood Retention Basin at SWM12 (“Lynwood”), and in South Anchorage near Elmore and Huffman Roads (“Eloise Spencer”) and represent the northern (i.e., Ben Boeke), middle (i.e., Thomas and Lynwood), and southern (i.e., Eloise Spencer) portions of the study area, respectively. The locations of the rain gauges installed in 2022 are shown on Figure 1. Daily rainfall records for the rain gauges are shown in Figure 4 and Figure 5.

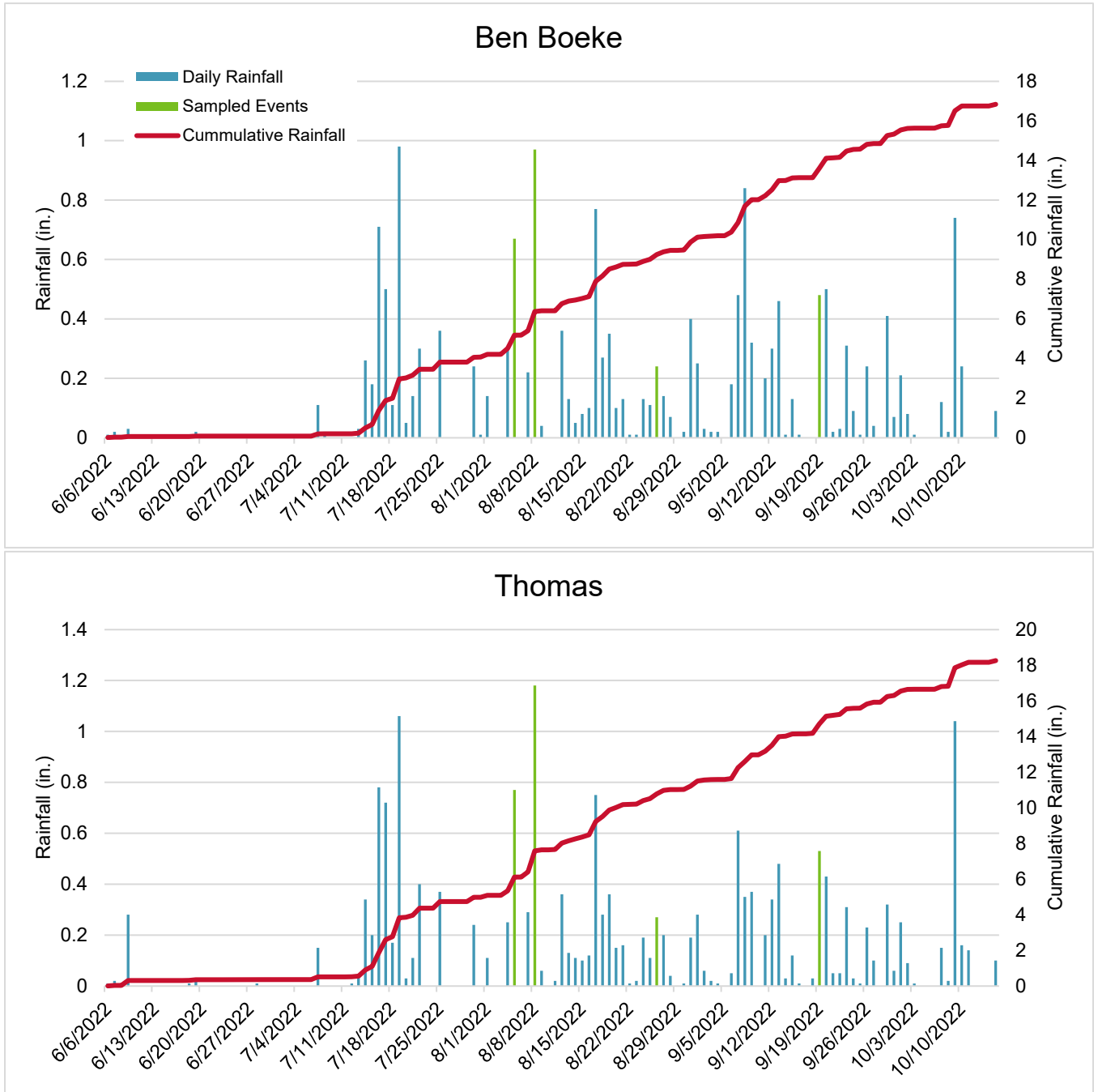


Figure 4. Rainfall Measured at the Ben Boeke and Thomas Rain Gauges by Calendar Day.

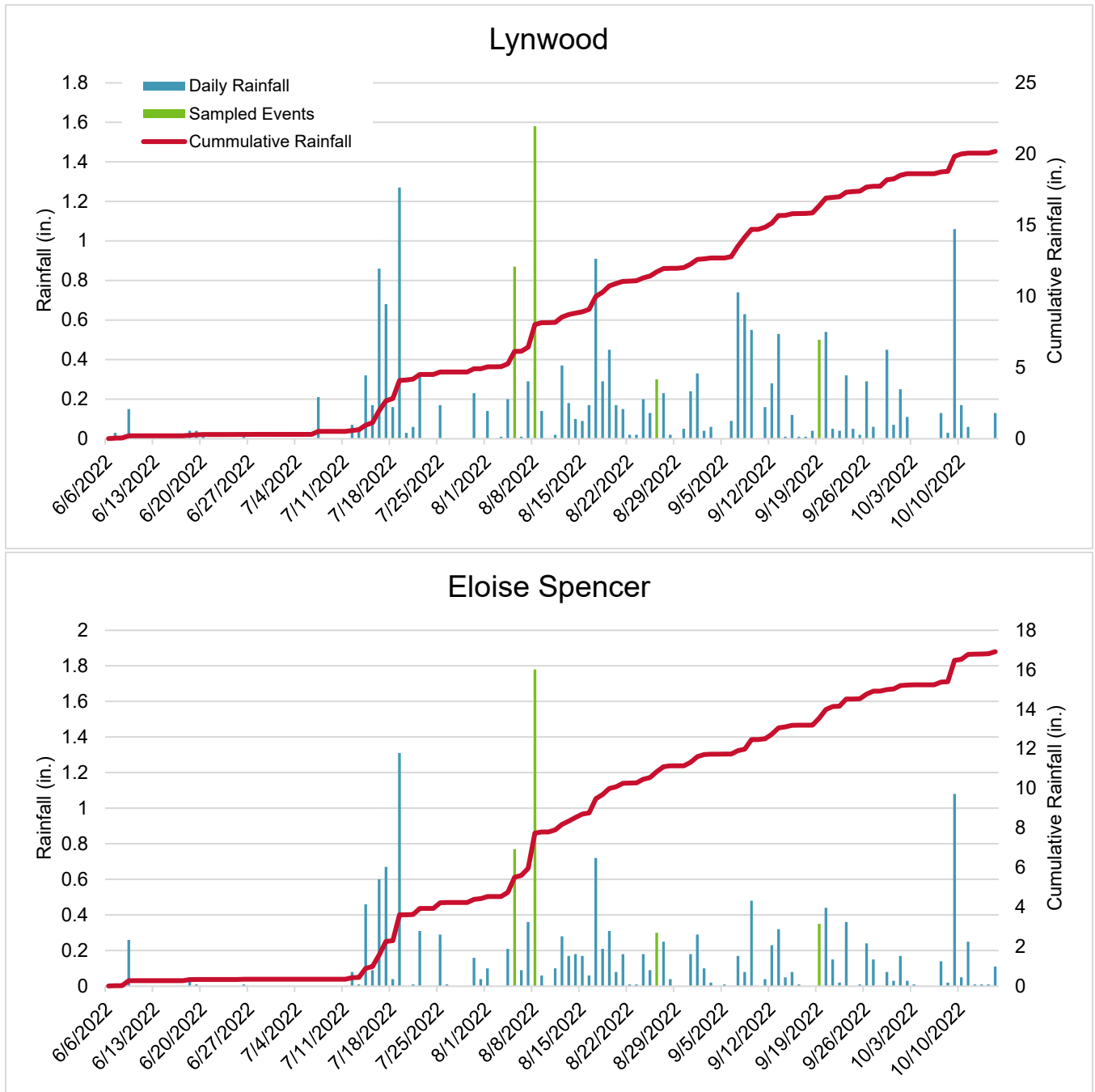


Figure 5. Rainfall Measured at the Lynwood and Eloise Spencer Rain Gauges by Calendar Day.

Actual rainfall during a single storm event can vary in different locations across the Anchorage Bowl. As in previous years, rainfall data from the PANC weather station were used to supplement data collected at the rain gauges to provide a time series of rainfall prior to and during the sampled storm events. However, these values can vary from the KTUU-midtown weather station, which is used to determine whether a rainfall event provides sufficient precipitation to trigger a sampling event. The KTUU-midtown weather station only keeps a rolling 72-hour record of data. Therefore, rain gage and PANC rainfall data for each sampling event is presented on a calendar-day basis in Table 4 and

demonstrates considerable variability in the geospatial distribution of precipitation throughout the monitoring corridor.

The QAP defines storm events on a 24-hour storm basis rather than a calendar-day basis, as storms often commence in the late evening. All four storm events met the criteria of exhibiting greater than 0.1 inch of rain in 24 hours. Sampling for each storm event was completed within 24 hours from the start of a storm. In all sampling events, precipitation recorded at the four rain gauges during the preceding 24-hour period was less than 0.1 inches. Based on this, all four storms that were sampled were considered to have met storm event criteria. Table 5 presents rainfall data for each sampling event on a 24-hour basis (as opposed to a calendar day basis).

2.4 Sampling Events

The first storm event sampled as part of the 2022 SWM Program occurred on August 5 (Storm 1). Sampling was initiated at 08:30, approximately 11.5 hours after the beginning of the storm and was completed by 11:35. The rain gauges measured between 0.89 and 0.97 inches of rainfall across the monitoring corridor from the beginning of the storm to the conclusion of sampling. This storm produced a total of 0.98 to 1.07 inches of precipitation over 15.5 hours.

The second sampled storm event occurred on August 8 (Storm 2). Sampling was initiated at 09:05, approximately 16 hours after the beginning of the storm and was completed by 13:20. The rain gauges measured between 0.84 and 1.49 inches of rainfall across the monitoring corridor from the beginning of the storm to the conclusion of sampling. This storm produced a total of 1.19 to 2.14 inches of precipitation over 31 hours.

The third sampled storm event occurred on August 26 (Storm 3). Sampling was initiated at 08:35, approximately 16 hours after the beginning of the storm and was completed by 12:10. The rain gauges measured between 0.13 and 0.22 inches of rainfall across the monitoring corridor from the beginning of the storm to the conclusion of sampling. This storm produced a total of 0.32 to 0.38 inches of precipitation over 29.5 hours, making it the smallest storm sampled during the 2022 program.

The fourth sampled storm event occurred on September 19 (Storm 4). Sampling was initiated at 08:40, approximately nine hours after the beginning of the storm and was completed by 12:10. The rain gauges measured between 0.27 and 0.45 inches of rainfall across the monitoring corridor from the beginning of the storm to the conclusion of sampling. This storm produced a total of 0.27 to 0.45 inches of precipitation over 10.5 hours.

The storms sampled in 2022 generally had low to average precipitation intensity spread over long durations. Outfalls with small drainage basins commonly rely on higher precipitation intensity to produce enough flow for sampling. When comparing this year's storms, Storm 2 was the most intense storm, raining the most of all the storms during sampling. In contrast, Storm 3 was the least intense storm, raining the least of all the storms during sampling.



Table 4. Precipitation Recorded During and Prior to Sampling Events (Measured by Calendar Day).

	Date	PANC Airport	Ben Boeke	Thomas	Lynwood	Eloise Spencer
		(in.)	(in.)	(in.)	(in.)	(in.)
	7/29/2022	0	0	0	0	0
	7/30/2022	0.17	0.24	0.24	0.23	0.16
	7/31/2022	0	0.01	0	0	0.04
	8/1/2022	0.39	0.14	0.11	0.14	0.1
	8/2/2022	0	0	0	0	0
	8/3/2022	0	0	0	0.01	0
	8/4/2022	0.07	0.3	0.25	0.2	0.21
Event 1	8/5/2022	0.62	0.67	0.77	0.87	0.77
	8/6/2022	0.07	0	0	0.01	0.09
	8/7/2022	0.23	0.22	0.29	0.29	0.36
Event 2	8/8/2022	1.48	0.97	1.18	1.58	1.78
	8/19/2022	0.52	0.35	0.36	0.45	0.31
	8/20/2022	0.15	0.1	0.15	0.17	0.08
	8/21/2022	0.11	0.13	0.16	0.15	0.18
	8/22/2022	0.04	0.01	0.01	0.02	0.01
	8/23/2022	0	0.01	0.02	0.02	0.01
	8/24/2022	0.1	0.13	0.19	0.2	0.18
	8/25/2022	0.1	0.11	0.11	0.13	0.09
Event 3	8/26/2022	0.18	0.24	0.27	0.30	0.30
	9/12/2022	0.29	0.3	0.34	0.28	0.23
	9/13/2022	0.38	0.46	0.48	0.53	0.32
	9/14/2022	0	0.01	0.03	0.01	0.05
	9/15/2022	0.06	0.13	0.12	0.12	0.08
	9/16/2022	0.01	0.01	0.01	0.01	0.01
	9/17/2022	0	0	0	0.01	0
	9/18/2022	0.01	0	0.03	0.04	0
Event 4	9/19/2022	0.56	0.48	0.53	0.50	0.35



Table 5. Precipitation Data for Each Sampling Event Presented on a 24-Hour Basis.

	Conclusion of Sampling	Time Period	Time Period Range	Rainfall Measured (Inches)			
				Ben Boeke	Thomas	Lynwood	Elosie Spencer
		Preceding 24 hours	11:35 8/3 to 11:35 8/4	0.00	0.00	0.01	0.00
Event 1	08/05/2022 at 11:35	24 Hour Storm Period	11:35 8/4 to 11:35 8/5	0.89	0.92	0.97	0.91
		Preceding 24 hours	13:20 8/6 to 13:20 9/7	0.00	0.00	0.01	0.08
Event 2	08/08/2022 at 13:20	24 Hour Storm Period	13:20 8/7 to 13:20 8/8	0.84	1.02	1.23	1.49
		Preceding 24 hours	12:10 8/24 to 12:10 8/25	0.07	0.10	0.09	0.07
Event 3	08/26/2022 at 12:10	24 Hour Storm Period	12:10 8/25 to 12:10 8/26	0.21	0.19	0.22	0.13
		Preceding 24 hours	12:10 9/17 to 12:10 9/18	0.00	0.00	0.00	0.00
Event 4	09/19/22 at 12:10	24 Hour Storm Period	12:10 9/18 to 12:10 9/19	0.34	0.45	0.44	0.27

2.5 Field Sampling Procedures

Sampling procedures were carried out in accordance with the methodology outlined in the QAP. No changes from previous years' sampling procedures were required in 2022.

Sampling bottles were prepared before the storm season so that the field team could quickly mobilize. Bottles were labeled with station location, sample number, number of bottles, and analysis type and method. Once a storm event was identified for sampling, the field team prepared sampling equipment. Portable water quality measurement instrumentation was calibrated immediately prior to going in the field for each event per the manufacturer's recommendation as outlined in Appendix H of the QAP. Date, time, and sampler's initials were recorded on each sample bottle in the field at the time of sampling.

The field team consisted of two people for safety and allowed separate field role designations. One person would record the field measurements and notes while the second person performed measurements and conducted grab sampling. Upon arrival at the outfall, the field team conducted flow measurements and placed the YSI Professional (Pro) Plus multi-probe into the outfall flow to allow the probes to equilibrate for at least two minutes prior to taking measurements.

An electromagnetic velocity meter and wading rod were used to collect flow measurements. The flow meter measures the average velocity of the outfall pipe over a twenty second period. The average velocity was used in conjunction with the water depth and pipe diameter to calculate the instantaneous flow of each outfall.

After measuring flow, the field team used the YSI multi-probe to measure DO, specific conductivity, pH, and temperature. Turbidity was measured in the field by collecting a discrete sample that was

analyzed on site with a portable Hach 2100P/Q turbidimeter. Water quality measurements were obtained from the water flowing out of the end of pipe prior to any mixing within the receiving waterbody. Field measurements were recorded on project-specific field log forms that were bound in the project field logbooks along with field instrument calibration logs (refer to Appendix E).

The field team obtained water samples for BOD₅, TSS, fecal coliform, dissolved copper, total hardness, TAH, and PAH in pre-cleaned laboratory-provided bottles. The water quality samples were collected from the water flowing from the outfall, and extra care was taken not to disturb accumulated sediment in the outfall pipe when collecting a water sample. To avoid having to perform decontamination procedures, all samples, with the exception of TAH, were collected directly into their respective sample containers. In the case of TAH, the sample was first collected into a pre-cleaned and certified 250-milliliter (mL) PAH bottle that was then used to carefully fill the 40-milliliter (mL) vials for TAH analyses. The PAH bottle was then topped off with additional water from the outfall discharge. Since the PAH bottles were pre-cleaned and certified, it was unnecessary to perform equipment rinsate analyses. Once the water samples were collected, the field team recorded visual observations at each outfall location.

The field team conducted replicate field measurements and laboratory analyses at a rate of 15 percent (%) per sampling event. This resulted in replicate field measurements being taken at two monitoring sites per sampling event for all parameters except TAH and PAH. TAH and PAH required one replicate field measurement since these samples are collected at fewer outfalls. TAH analyses also included a trip blank sample, provided by the laboratory, that accompanied the sample bottles in the field. Additional water for BOD₅, TSS, dissolved copper, TAH, and PAH was collected at one station to allow the laboratory to perform matrix spike/matrix spike duplicate (MS/MSD) analyses.

2.6 Sampling Handling and Chain of Custody Procedures

BOD₅, TSS, fecal coliform, dissolved Cu, hardness, TAH, and PAH samples were collected, preserved, and cooled for delivery to the laboratory as described in the QAP. Alaska Water Laboratories (AWL) is located in Wasilla, so no special sample shipping or packaging was required. Upon sample collection, all samples were kept chilled to 4°C ± 2°C with gel ice and delivered to the AWL laboratory by the field team following the sample collection effort. AWL was then in custody of the samples as they processed them and moved some of them to subsidiary laboratories. All samples were transferred to the laboratories under chain of custody (COC) procedures as outlined in the QAP. Copies of completed COCs are included with the laboratory data reports in Appendix C.

2.7 Laboratory Analyses

The water quality constituents selected for the SWM Program were established based upon the requirements of the MS4 permit. Laboratory analyses were conducted by AWL and subcontracted laboratories, which are certified to conduct such analyses. Analytical methods (refer to Table 2) were based on approved EPA methodology and included all necessary QA/QC procedures and analyses as outlined in the QAP.

The laboratory QA/QC activities provide information needed to assess potential laboratory contamination, analytical precision and accuracy, and representativeness. Analytical quality assurance for the SWM Program included:

- Employing analytical chemists trained in the required procedures and analytical methods

- Adherence to documented procedures, EPA methods, and laboratory standard operating procedures
- Calibration of analytical instruments
- Use of quality control samples, internal standards, surrogates, and standard reference materials (SRMs)
- Documentation of sample tracking and analysis

Internal laboratory control checks included the use of internal standards, method blanks, MS/MSDs, duplicates, laboratory control spikes and duplicates (LCS/LCSD), and SRMs as required by the sample analysis methodology. For additional details on laboratory QA/QC procedures, refer to the QAP.

2.8 Deviation from the QAP

There were no deviations from the QAP during the 2022 monitoring year with respect to field sampling procedures, sample handling, sample chain of custody, laboratory analysis, QA/QC, and data validation.

The YSI 556 multi-probe has been discontinued by its manufacturer and its use is being phased out. The YSI Pro Plus is the replacement probe that meets the sampling requirements outlined by the QAP. The YSI Pro Plus multi-probe was used during the 2022 sampling efforts.

2.9 QA/QC and Data Validation

QA/QC procedures were followed according to the QAP. The procedures included analytical checks (field replicates, trip blanks, MS/MSDs); instrument calibration; and procedures to assess data for precision, accuracy, representativeness, comparability, and completeness.

Verification analyses for laboratory parameters were conducted by AWL. The data review focused on criteria for the following QA and QC parameters and their overall effects on the data:

- Sample handling (chain of custody)
- Temperature blank
- Holding time compliance
- MS/MSD and LCS/LCSD results
- Field replicate comparison
- Data validation

AWL and its subsidiary laboratories are certified by the EPA and the Alaska Drinking Water Program and have an approved QA/QC program. Analytical methods and testing procedures were in adherence with EPA-approved protocols and guidelines. The analyses for the fecal coliform, BOD₅, TSS, dissolved copper, total hardness, PAH, and TAH were reported with appropriate method detection limits and report detection limits.

Sample custody was maintained for the samples. The coolers transporting the samples remained at ambient temperatures or were cooled to 4°C ± 2°C before being delivered to the laboratory within a few hours of each sampling event.

The QA/QC officer validated data reported by the laboratory. Data that was determined to be either biased low or high was flagged based on low or high recovery rates from laboratory control samples. Data that was considered suspicious was also flagged and, in some cases rejected. For a more detailed summary of field and laboratory data validation results, refer to Appendix D. Other QA/QC procedures in 2022 included the requirement that all field team members read the QAP. Each team consisted of one ADEC-qualified sampler and one sampler in training. The field team was also required to QC data at the end of each event to determine all data were collected and sampling information was complete.

3.0 Results and Discussion

3.1 Field Measurements

In situ field measurements taken as part of the 2022 SWM Program are presented in Figure 6 through Figure 11 and in Table 6. Reported measurements include flow, turbidity, DO, conductivity, pH, and temperature. Where relevant, *in situ* measurements are compared against Alaska Water Quality Standard (AWQS) benchmarks (refer to Table 9 for AWQS benchmarks used for comparisons). It should be noted that these AWQS benchmarks apply to the receiving waters and should be considered for comparison purposes only when reviewing stormwater.

Outfall flow rates are reported in Figure 6 and in Table 6. The flow rates were variable between sites and storm events, reflecting both the range in subbasin characteristics as well as the spatial and temporal variability of precipitation throughout the monitoring corridor. Outfall SWM08 had the highest mean flow rate (4.48 cubic feet per second (CFS)), as well as the maximum measured flow rate (9.90 CFS during Storm 2) of the 10 outfalls observed during this year's program. Outfall SWM06 had the lowest mean flow rate (0.08 CFS) of the outfalls sampled and SWM07 had the lowest measured flow rate (0.02 CFS during Storm 4) of the 10 outfalls observed. A correlation between storm precipitation intensity and flow rates can be seen. Storm 2 had the highest precipitation intensity and generally the highest flow rates. In contrast, Storm 3 had the lowest precipitation intensity and generally the lowest flow rates.

Measured turbidity levels are reported in Figure 7 and Table 6. Like flow rates, turbidity levels were variable between storms and across the monitoring corridor, with some outfalls demonstrating consistently low turbidity readings while others exhibited spikes in turbidity during one or more of the sampling events. Mean turbidity levels recorded during this year's program were below 50 Nephelometric Turbidity Units (NTU) at all outfalls, except SWM07 and SWM12. Outfall SWM10 had the lowest mean turbidity at 12.2 NTU. In contrast, outfall SWM12 had the highest mean turbidity at 205 NTU. The observed variability in turbidity measurements across outfalls and sampling events was expected as turbidity is highly dependent on specific drainage basin characteristics such as land use, land permeability, drainage slope, precipitation intensity, precipitation history, and other factors, all of which vary considerably site-to-site. Turbidity qualitatively appears to correlate to measured TSS, reported in Table 7.

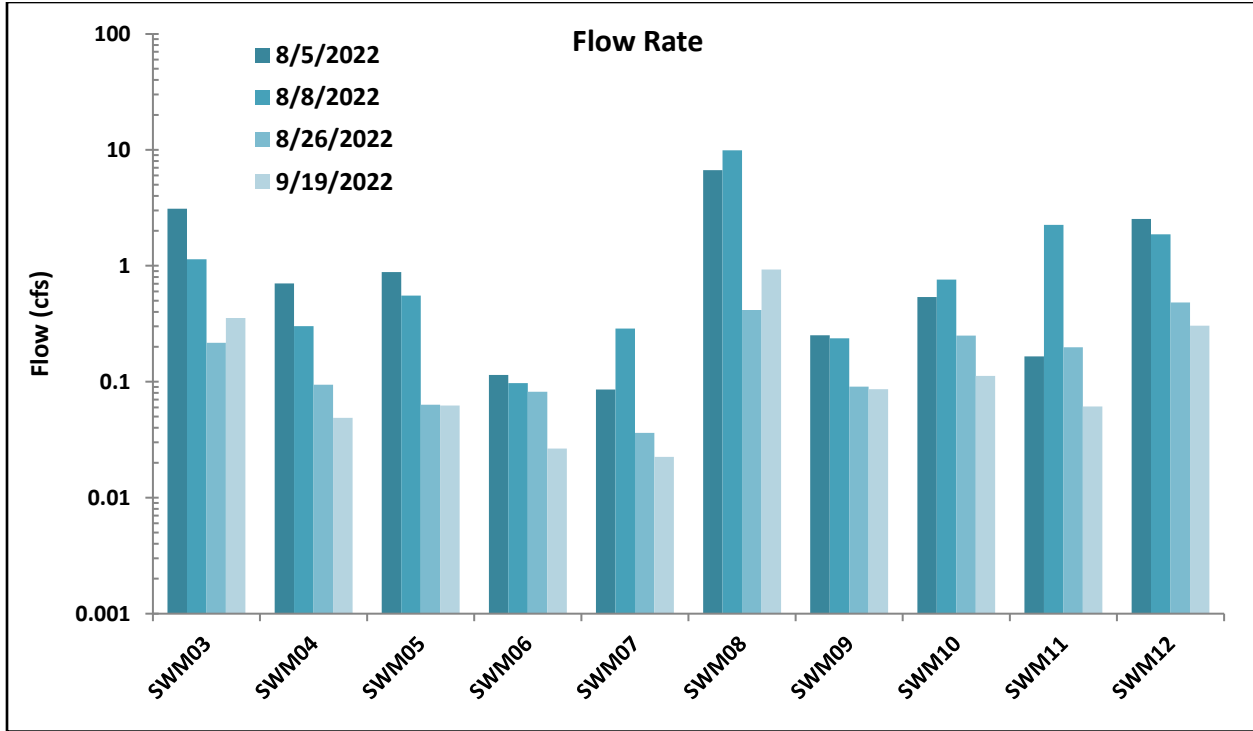


Figure 6. Flow Rates Measured at Monitoring Sites During All Four Events.

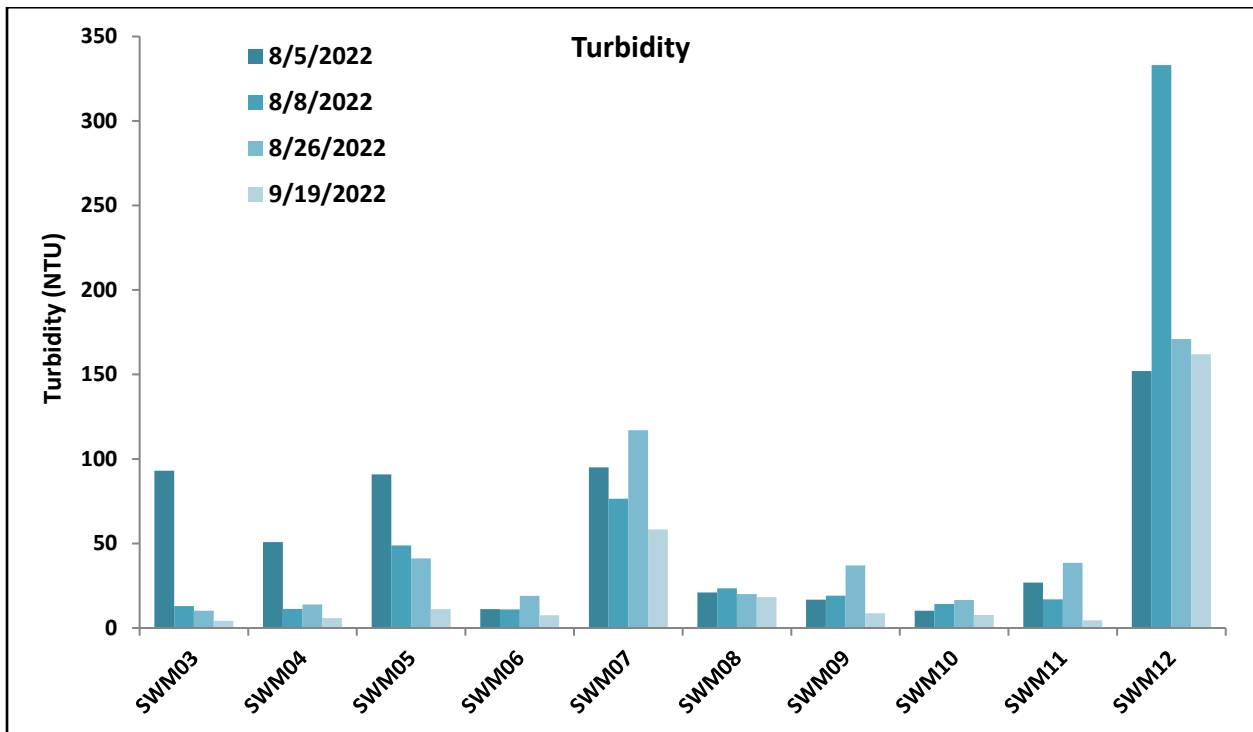
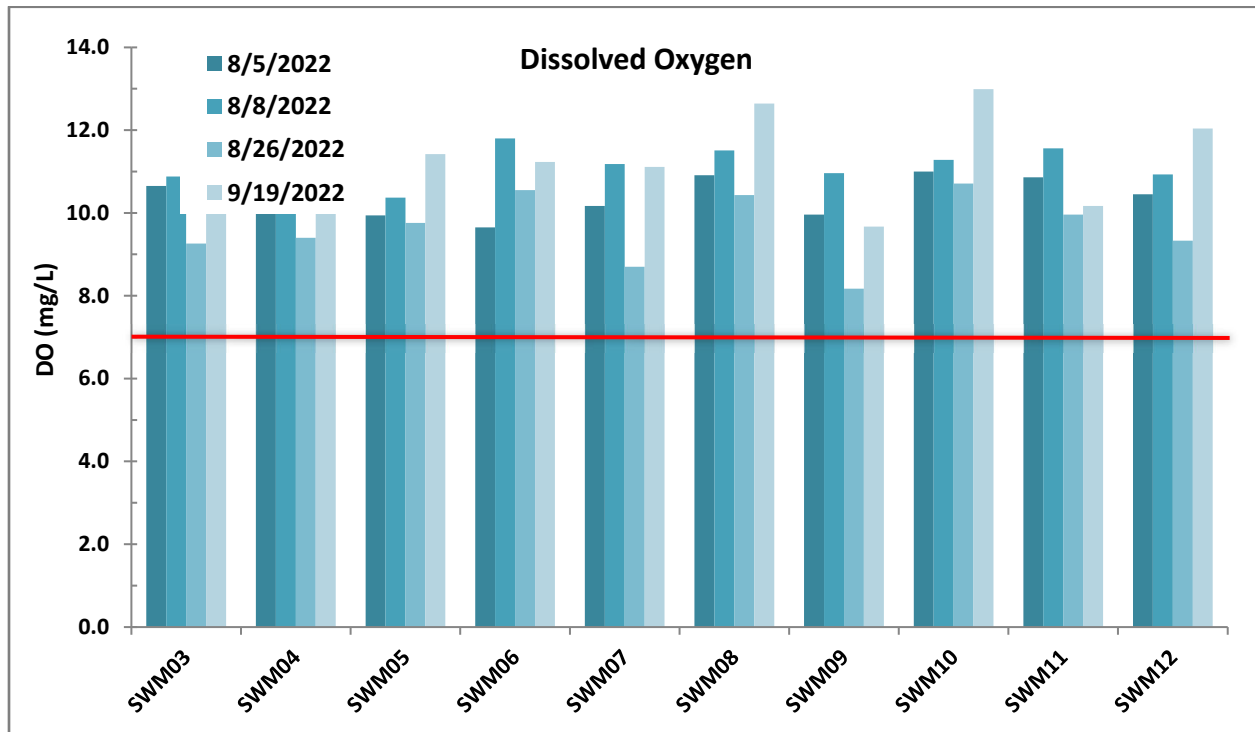


Figure 7. Turbidity Measured in Stormwater Sampled at Monitoring Sites During All Four Events.



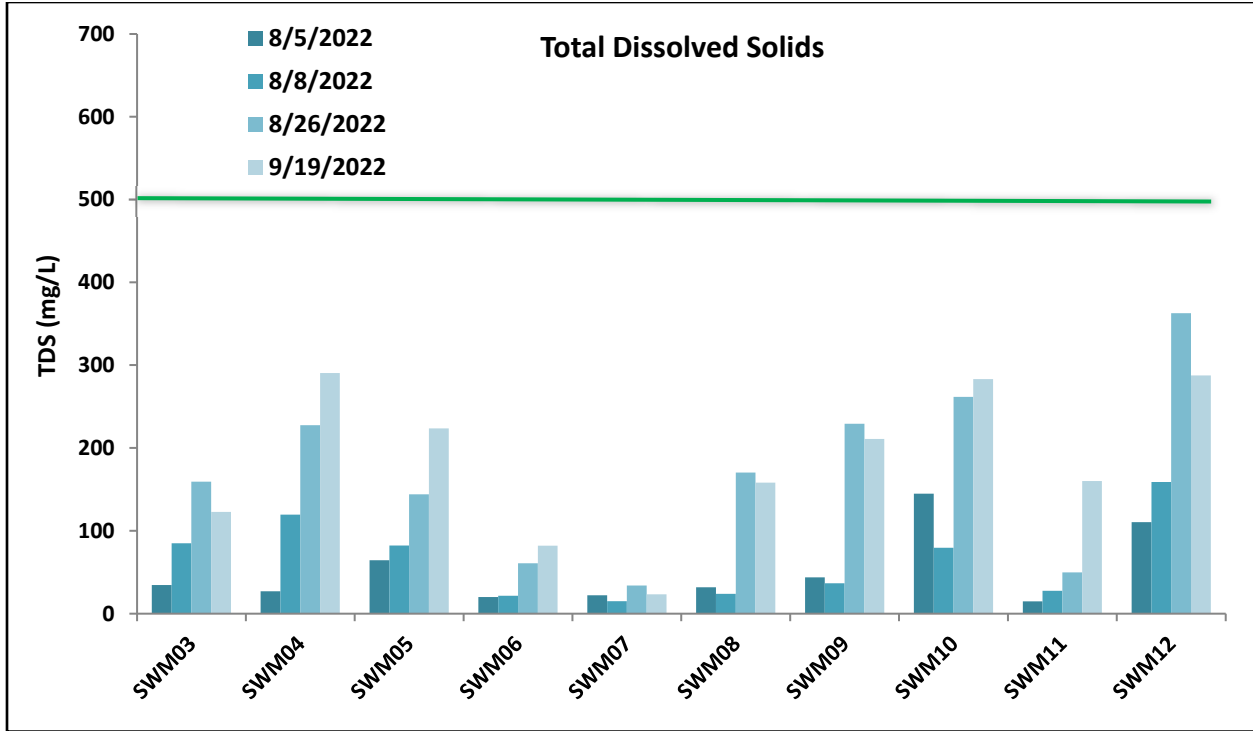
DO levels are reported in Figure 8 and in Table 6. Measured DO levels were typical for Alaska streams, with all measurements above the AWQS threshold of 7 milligrams/liter (mg/L) (Table 10) for anadromous stream or resident fish. Mean DO concentrations across the four sampled storm events ranged from a low of 8.17 mg/L at SWM09 to a high of 12.99 mg/L at SWM10. The highest measured DO concentrations occurred during Storm 4, which correlates with the colder water temperatures seen during that storm.

Although not required by the monitoring plan, specific conductivity was recorded at each site since it was available on the portable multi-parameter meter and is considered useful for interpretation of stormwater data. Specific conductivity was converted to total dissolved solids (TDS) concentrations so comparisons could be made with the AWQS criteria. TDS concentrations are reported in Figure 9 and in Table 6. Storms 3 and 4 had mean TDS concentrations greater than 100 mg/L when comparing all outfalls. It should also be noted that Storms 3 and 4 were generally lower in flow than other storms in this year’s program. Although elevated TDS can be indicative of contaminants, the highest concentrations measured were below expected ranges for stormwater (EPA 1983). Also, no TDS concentrations were found that exceeded the most restrictive AWQS criteria of 500 mg/L (Figure 14).



Red line indicates the AWQS dissolved oxygen criteria of ≥ 7 mg/L.

Figure 8. Dissolved Oxygen Measured in Stormwater Sampled at Monitoring Sites During All Four Events.

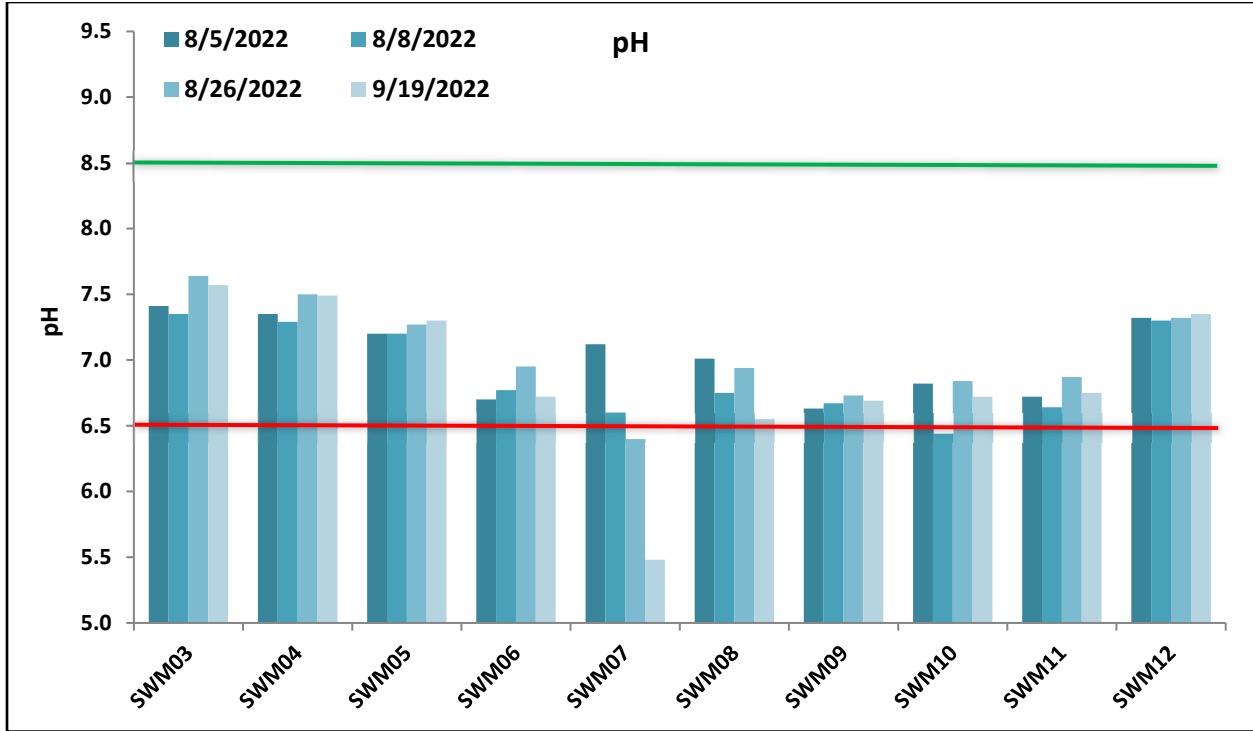


Green line indicates the AWQS total dissolved solids criteria of ≤ 500 mg/L.

Figure 9. Total Dissolved Solids Measured in Stormwater Sampled at Monitoring Sites During All Four Events.

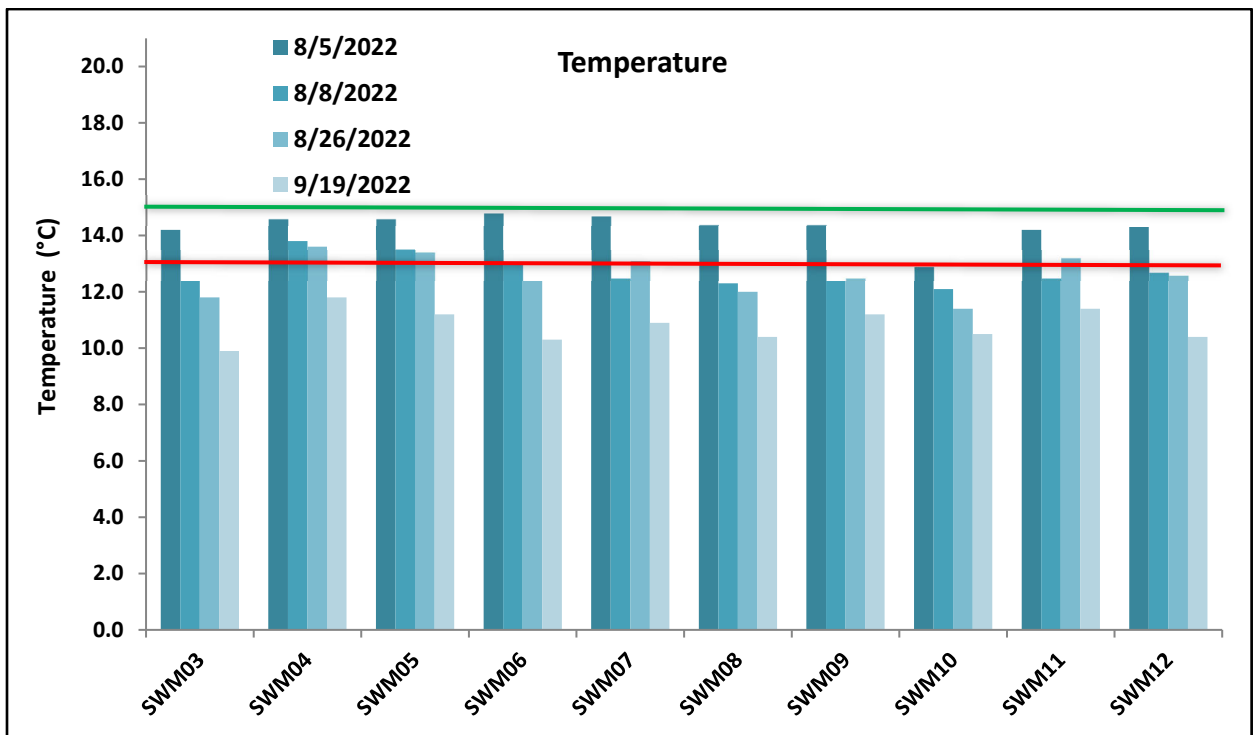
Measurements for pH are reported in Figure 10 and Table 6, and generally fall within AWQS criteria. Rainfall is often slightly acidic, and the National Atmospheric Deposition Program (NADP) indicates that rainfall in Alaska typically falls with a pH of 5.1 to 5.2 (NADP 2019). Measured pH levels during this year’s program varied between outfall locations and storm events, without a clear pattern in the data. The minimum recorded pH value occurred at SWM07 during Storm 4, and was 5.48, below the AWQS minimum guideline of 6.5 (Table 10) for the Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife. The maximum observed pH value of 7.64 was recorded during Storm 3 at SWM03. No pH measurements exceeded the AWQS maximum guideline of 8.5.

Temperature measurements are reported in Figure 11 and in Table 6. Temperature generally decreased with each consecutive monitoring event reflecting the progressively cooler fall weather. In the measured samples, SWM10 had the lowest mean temperature (11.7°C) while SWM04 had the highest mean temperature (13.5°C). All temperature measurements were found to be below the AWQS criterion of 15°C for fish migration routes and rearing areas.



Green line indicates the upper AWQS pH limit of 8.5 and red line indicates the lower AWQS pH limit of 6.5.

Figure 10. pH (units) Measured in Stormwater Sampled at Monitoring Sites During All Four Events.



Green line indicates the upper AWQS limit of 15°C for migration and rearing areas and red line indicates the lower AWQS limit of 13°C for spawning and egg/fry incubation.

Figure 11. Temperature (°C) Measured in Stormwater Sampled at Monitoring Sites During All Four Events.



Table 6. *Insitu* Parameters Measured at Monitoring Sites During All Four Sampling Events.

Station	Storm 1 05-Aug-2022	Storm 2 08-Aug-2022	Storm 3 26-Aug-2022	Storm 4 19-Sep-2022	Mean
<i>Flow Rate (CFS)</i>					
SWM03	3.10	1.14	0.22	0.35	1.20
SWM04	0.70	0.30	0.09	0.05	0.29
SWM05	0.88	0.55	0.06	0.06	0.39
SWM06	0.11	0.10	0.08	0.03	0.08
SWM07	0.09	0.29	0.04	0.02	0.11
SWM08	6.67	9.90	0.41	0.93	4.48
SWM09A	0.25	0.24	0.09	0.09	0.166
SWM10	0.54	0.76	0.25	0.11	0.41
SWM11	0.17	2.25	0.20	0.06	0.67
SWM12	2.53	1.87	0.48	0.30	1.30
<i>Turbidity (NTU)</i>					
SWM03	93.0	13.0	10.2	4.3	30.1
SWM04	50.8	11.3	13.9	5.9	20.5
SWM05	90.9	48.8	41.2	11.2	48.0
SWM06	11.2	11.0	19.0	7.6	12.2
SWM07	95.0	76.5	117	58.3	86.7
SWM08	21.0	23.5	20.1	18.3	20.7
SWM09A	16.7	19.1	37.0	8.7	20.4
SWM10	10.2	14.2	16.6	7.7	12.2
SWM11	26.9	16.9	38.5	4.5	21.7
SWM12	152	333	171	162	205
<i>Dissolved Oxygen (mg/L)</i>					
SWM03	10.65	10.88	9.26	10.77	10.39
SWM04	10.41	10.20	9.40	11.23	10.31
SWM05	9.94	10.37	9.76	11.42	10.37
SWM06	9.65	11.80	10.55	11.23	10.81
SWM07	10.17	11.18	8.70	11.11	10.29
SWM08	10.91	11.51	10.43	12.64	11.37
SWM09	9.96	10.96	8.17	9.67	9.69
SWM10	11.00	11.28	10.71	12.99	11.50
SWM11	10.86	11.56	9.96	10.17	10.64
SWM12	10.45	10.93	9.33	12.04	10.69



Station	Storm 1 05-Aug-2022	Storm 2 08-Aug-2022	Storm 3 26-Aug-2022	Storm 4 19-Sep-2022	Mean
Total Dissolved Solids (mg/L)					
SWM03	34.52	84.83	159.2	122.7	100.3
SWM04	26.91	119.5	227.4	290.5	166.1
SWM05	64.48	82.10	143.9	223.7	128.5
SWM06	19.89	21.58	60.71	81.90	46.0
SWM07	22.17	15.02	33.80	23.21	23.5
SWM08	31.72	23.92	170.3	158.1	96.0
SWM09	43.81	36.53	229.3	210.9	130.1
SWM10	144.7	79.43	261.6	283.0	192.2
SWM11	14.69	27.50	49.73	160.0	63.0
SWM12	110.4	158.8	362.7	287.6	229.9
pH					
SWM03	7.41	7.35	7.64	7.57	7.49
SWM04	7.35	7.29	7.50	7.49	7.41
SWM05	7.20	7.20	7.27	7.30	7.24
SWM06	6.70	6.77	6.95	6.72	6.79
SWM07	7.12	6.60	6.40	5.48	6.40
SWM08	7.01	6.75	6.94	6.55	6.81
SWM09A	6.63	6.67	6.73	6.69	6.68
SWM10	6.82	6.44	6.84	6.72	6.71
SWM11	6.72	6.64	6.87	6.75	6.75
SWM12	7.32	7.30	7.32	7.35	7.32
Temperature (°C)					
SWM03	14.2	12.4	11.8	9.9	12.1
SWM04	14.6	13.8	13.6	11.8	13.5
SWM05	14.6	13.5	13.4	11.2	13.2
SWM06	14.8	13.0	12.4	10.3	12.6
SWM07	14.7	12.5	13.1	10.9	12.8
SWM08	14.4	12.3	12.0	10.4	12.3
SWM09A	14.4	12.4	12.5	11.2	12.6
SWM10	12.9	12.1	11.4	10.5	11.7
SWM11	14.2	12.5	13.2	11.4	12.8
SWM12	14.3	12.7	12.6	10.4	12.5



Table 7. Concentrations of Microbiological and Conventional Parameters.

Station	Storm 1 05-Aug-2022	Storm 2 08-Aug-2022	Storm 3 26-Aug-2022	Storm 4 19-Sep-2022	Mean ^{1,2}
Biochemical Oxygen Demand (mg/L)					
SWM03	5.73	1.44	2.24	2.03	2.86
SWM04	1.74	1.02	1.57	0.83	1.29
SWM05	2.88	2.43	2.15	1.24	2.18
SWM06	1.94	2.72	3.05	5.12	3.21
SWM07	4.72	4.07	3.85	3.82	4.12
SWM08	2.61	2.97	2.09	2.95	2.66
SWM09A	1.74	1.86	1.72	1.79	1.78
SWM10	2.15	2.03	1.55	1.45	1.80
SWM11	2.51	2.07	5.24	1.46	2.82
SWM12	6.48	3.17	13.30	3.41	6.59
Total Suspended Solids (mg/L)					
SWM03	317	16.7U	13.7U	13.0U	84.7
SWM04	120	8.0U	8.5	22.0	38.5
SWM05	96.0	21.7	20.8	6.8U	35.5
SWM06	9.8	8.1	12.6	7.3U	8.5
SWM07	55.8	65.0	48.7	26.4	49.0
SWM08	18.5	23.3	7.9	7.7U	13.4
SWM09A	15.0	14.2	29.2	11.4	17.4
SWM10	7.5U	11.3	7.2U	7.0U	5.5
SWM11	23.5	19.9	32.5	7.5U	19.9
SWM12	157	135	98.0	81.3	118
Fecal Coliform (FC/100 mL)					
SWM03	3400	700	1291	127	791
SWM04	330	900	145	91	250
SWM05	4200	1400	4000	200	1473
SWM06	700	560	320	173	384
SWM07	12400	1273	936	636	1751
SWM08	1064	4700	1364	350	1243
SWM09A	645	290	1164	164	435
SWM10	164	390	380	27	160
SWM11	1491	2700	1155	127	877
SWM12	6300	9000	4200	209	2656

Footnotes: U = not detected at method detection limit (shown).

¹ Mean calculations use 1/2 the method detection for biochemical oxygen demand and total suspended solids.

² Mean calculations use geometric mean for fecal coliform.

In addition to the standard field measurements, the field team also recorded observations of odor and visible water color, clarity, floatables, deposits or stains, sheens, and debris. A hydrocarbon odor was noticed at SWM07 and SWM08 during all four of the sampling events. A plastic chemical odor was noticed at SWM09A during all four of the sampling events. Also, a sheen or scum was noticed at SWM09A during Storms 2, 3, and 4. Some stains (rust) were observed at SWM10, which may be an indication of corrosion of the stormwater piping or is simply the result of high iron content that is often seen in Anchorage streams. Other observations included some garbage-type debris, leaves, sticks, and algae. Other than hydrocarbons and turbidity, no attempt has been made to correlate the visual observations with the conventional or pollutant measurements.

3.2 Conventional Parameters (BOD₅ and TSS)

Biochemical oxygen demand (BOD₅) concentrations from the 2022 SWM Program are reported in Figure 12 and in Table 7. Concentrations ranged from a low of 0.83 mg/L at SWM04 during Storm 4 to a high of 13.3 mg/L measured at SWM12 during Storm 3. At SWM12 during Storm 3, a musty odor and cloudy, brown colored water were indications of excess organic matter than may contribute to the high BOD₅ measurement.

Measurements for concentrations of total suspended solids (TSS) are presented in Figure 13 and in Table 7. As noted earlier, TSS levels are generally correlated with turbidity measurements. As with turbidity, TSS concentrations were variable between storms and across the monitoring corridor, with some outfalls demonstrating consistently low TSS readings while others exhibited spikes in TSS concentrations. Outfalls with individual samples that tested below the detection limit used one half of the detection limit when calculating the mean. Eight of the ten outfalls sampled in this year's program have mean TSS concentrations below 50 mg/L, with a low TSS concentration of non-detect at various outfalls over the four storm events. In contrast, outfall SWM12 had the highest mean TSS measurement of 118 mg/L.

3.3 Fecal Coliform

Fecal Coliform measurements are presented in Figure 14 and in Table 7. In general, fecal coliform levels in 2022 were within average historical ranges with concentrations below those observed in 2017 and 2018 but slightly above those observed in 2019, 2020, and 2021. The outfall with the lowest geometric mean of fecal coliform was SWM10 with a concentration of 160 CFU/100mL. Outfalls SWM03, SWM04, SWM06, SWM09, SWM10, and SWM11 also exhibited fecal coliform geometric mean concentration below 1,000 CFU/100mL. The highest geometric mean fecal coliform concentration was found at SWM12 with a geometric mean concentration of 2,656 CFU/100mL.

The highest measured fecal coliform concentration as part of this year's program was 12,400 CFU/100mL at outfall SWM07 during Storm 1. Overall, peak concentrations found in 2022 decreased from peak concentrations during the 2017 and 2018 and were in line with 2020 and 2021 concentrations (peak concentrations were abnormally low in 2019). A previous analysis of fecal coliform in Anchorage streams indicated that the highest loads would most likely occur in August/September in association with peak runoff and rainfall (MOA 2003). Multi-year data collected as part of this SWM Program so far has not supported that conclusion and suggests that the highest fecal coliform levels should be expected in July for these ten specific outfalls. Yearly and seasonal trends are discussed in further detail in Section 3.7.



Despite the fact that the adopted fecal coliform benchmark of 200 CFU/100mL applied to streams was exceeded during most storms at most outfalls, overall mean concentrations were not alarming when compared to typical concentrations seen in warmer urban areas which can range from the 10,000s to 100,000s CFU/100mL (EPA 1983). However, the high year-to-year variability in fecal coliform measurements suggests the need to continue monitoring this parameter to better assess the performance of control measures.

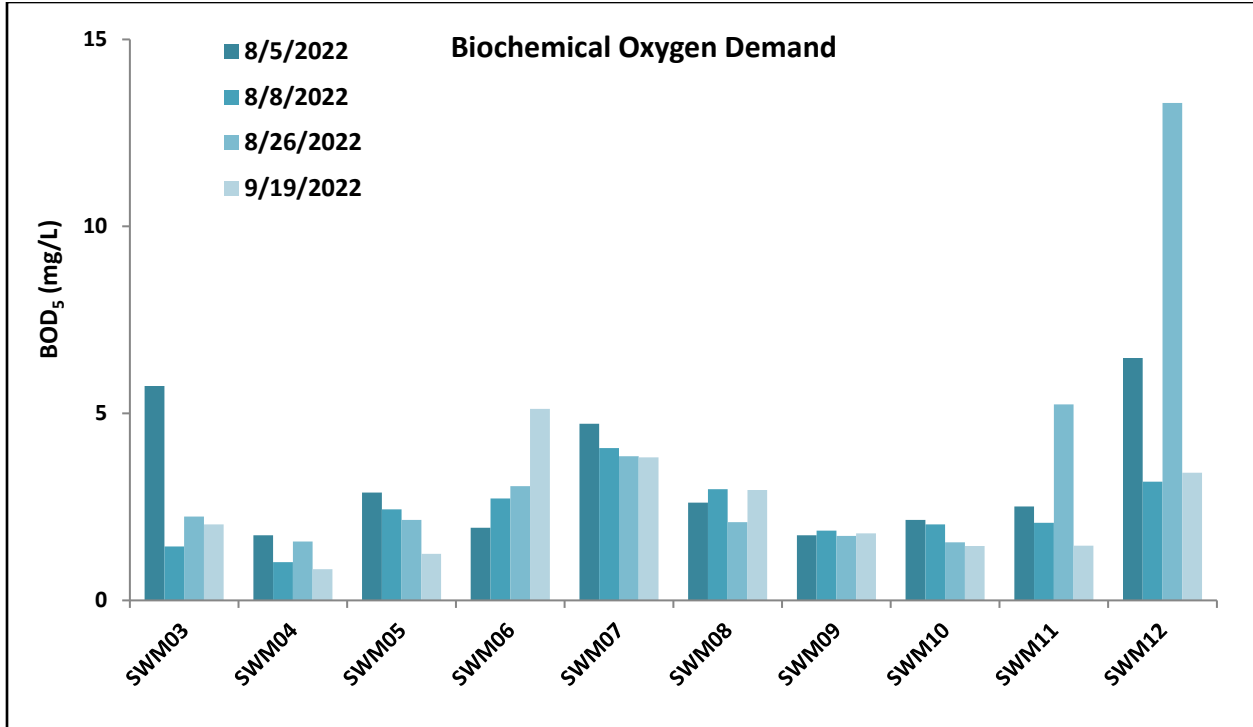


Figure 12. BOD₅ (mg/L) Measured in Stormwater Sampled at Monitoring Sites During All Four Events.

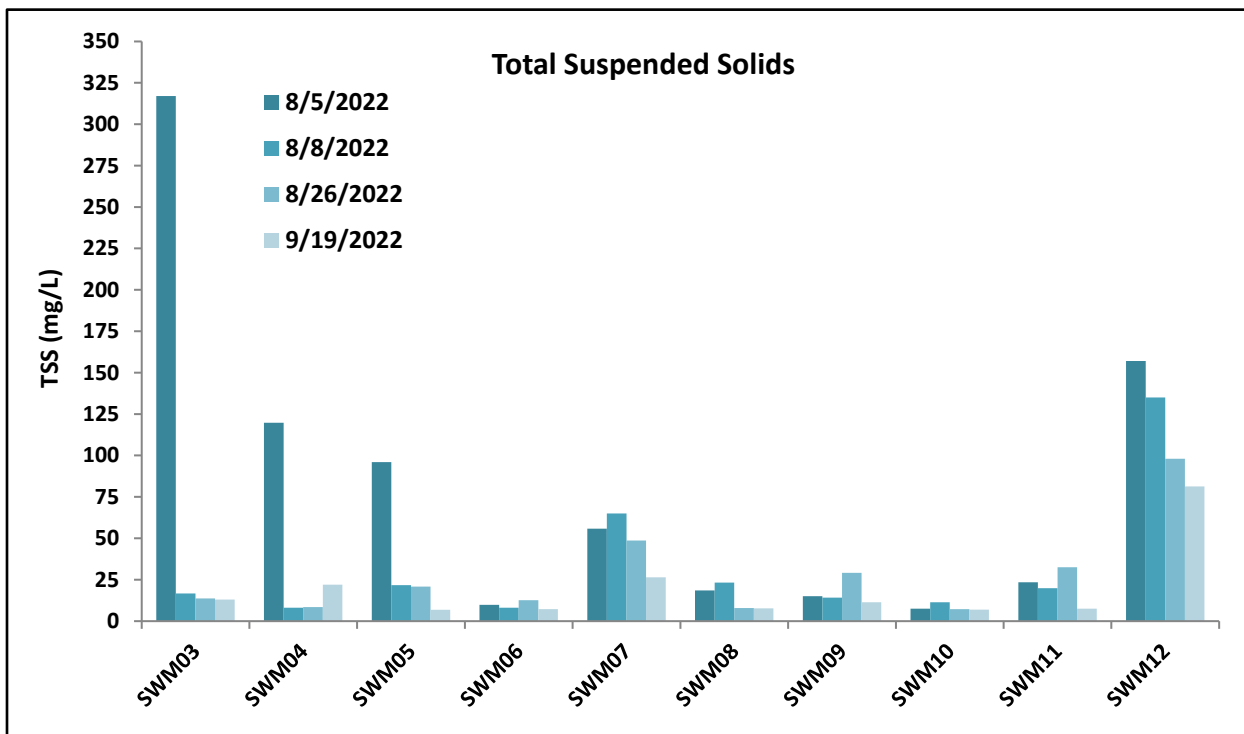
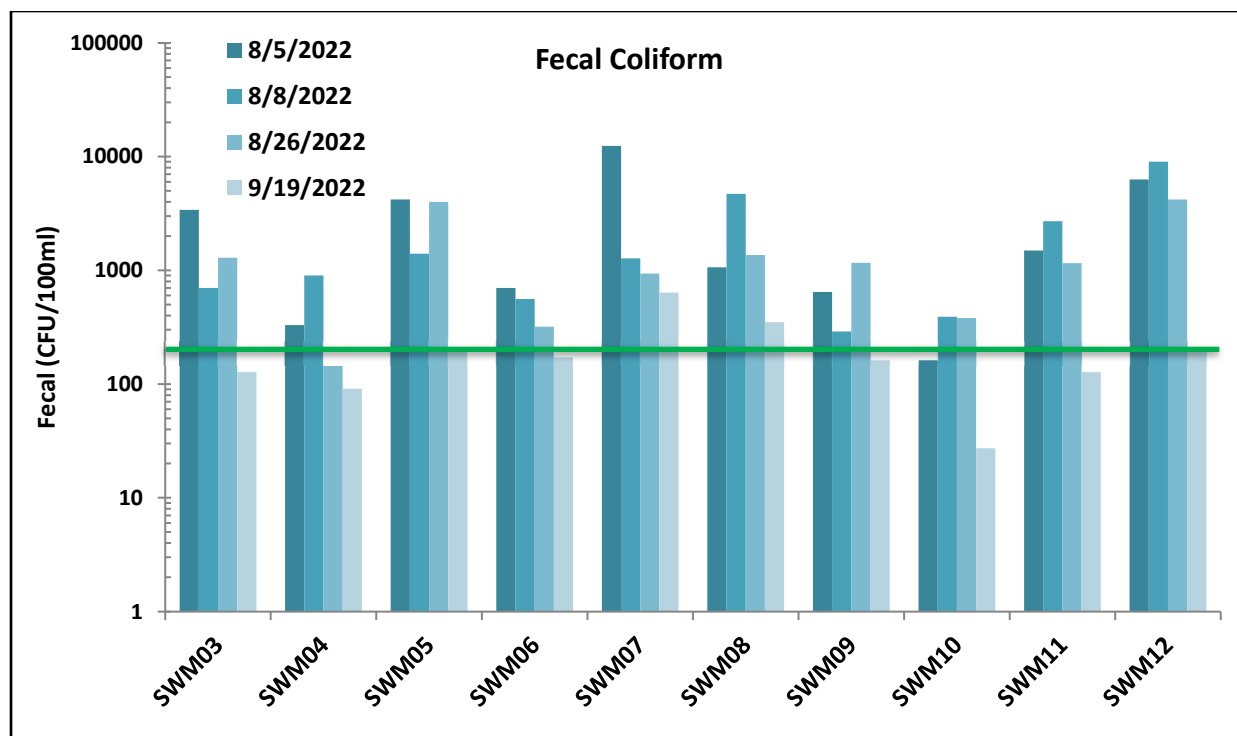


Figure 13. Total Suspended Solids Measured in Stormwater Sampled at Monitoring Sites During All Four Events.



Green line indicates upper AWQS fecal coliform limit of 200 CFU/100 mL.

Figure 14. Fecal Coliform (FC/100 mL) Measured in Stormwater Sampled at Monitoring Sites During All Four Events.

3.4 Metals and Hardness

Monitoring of dissolved copper and total water hardness were added to the Program in 2016 for all locations and storm events. The monitoring conducted in years prior to 2016 did not include these two parameters.

Hardness measurements are presented in Table 8 and Figure 15. Hardness is an important parameter for freshwater since it interacts with dissolved metals such as copper to affect metal toxicity thresholds. Mean hardness concentrations ranged from a low of 15.1 mg/L at SWM07 to a high of 141.8 mg/L at SWM12. Typically, within the same waterbody, hardness is inversely correlated to turbidity and TSS, and this was observed in the 2022 monitoring data.

Dissolved copper concentrations are presented in Table 8 and Figure 16. This year's dissolved copper concentrations decreased relative to 2016 – 2019 concentrations but increased relative to 2020 and 2021 concentrations. Dissolved copper concentrations ranged from 1.46 micrograms/liter ($\mu\text{g/L}$) at SWM09 during Storm 2 to a high of 36.0 $\mu\text{g/L}$ at SWM12 during Storm 1. SWM09 had the lowest mean copper concentration at 1.74 $\mu\text{g/L}$ while SWM12 had the highest mean copper concentration of 13.6 $\mu\text{g/L}$. The criteria for copper are calculated using a formula that integrates water hardness concentrations. For the State of Alaska, the chronic water quality criteria for copper ranges from 4.95 $\mu\text{g/L}$ at a hardness of 50 mg/L to a concentration of 8.96 $\mu\text{g/L}$ at a hardness value of 100 mg/L. The AWQS criteria applies to the receiving waters and is used for comparison purposes only when evaluating stormwater.

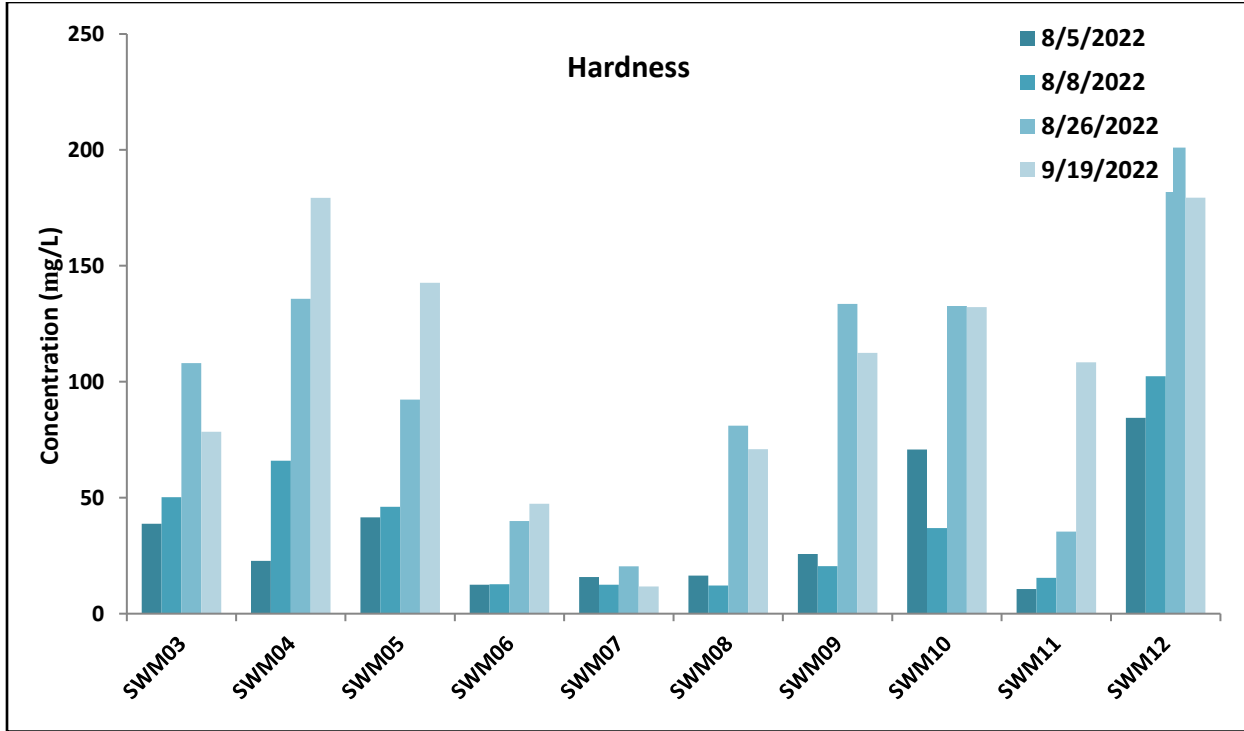
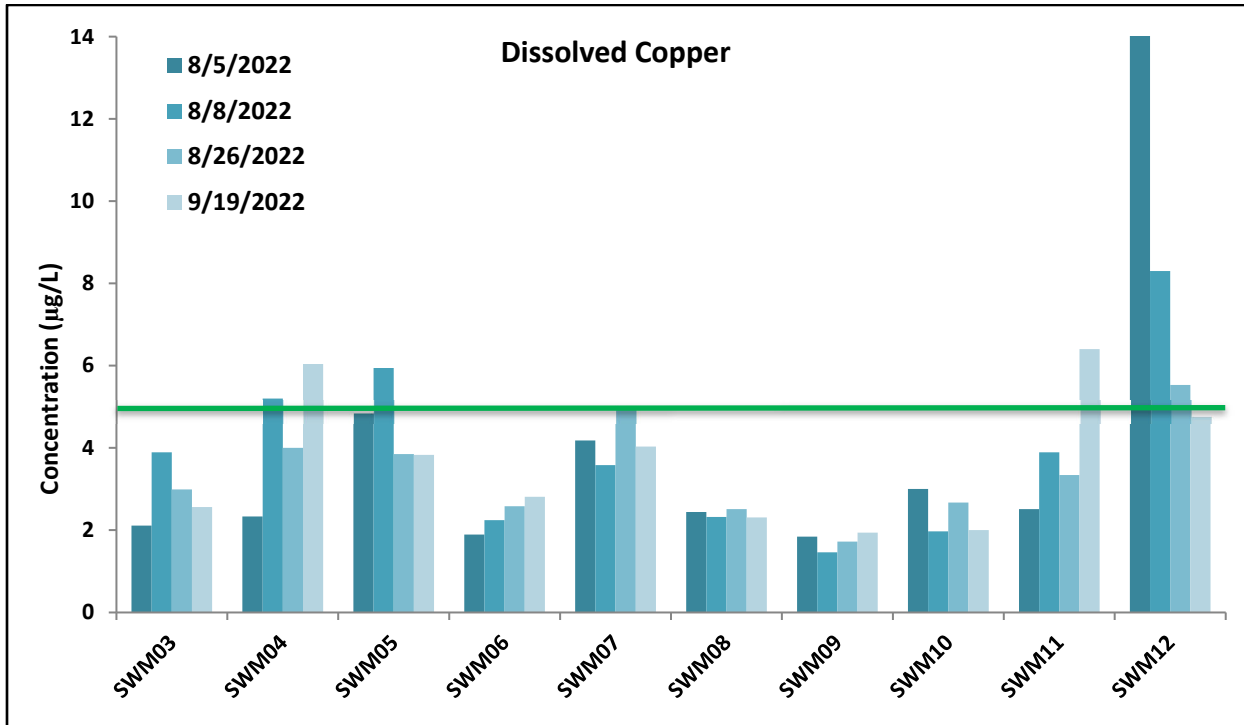


Figure 15. Water Hardness (mg/L) Measured in Stormwater Samples.



Green line indicates the upper AWQS chronic copper limit of 4.95 µg/L based on hardness value of 50 mg/L in the receiving water.

Figure 16. Dissolved Copper (µg/L) Measured in Stormwater Samples.



Table 8. Concentrations of Hardness and Dissolved Copper.

Station	Storm 1 05-Aug-2022	Storm 2 08-Aug-2022	Storm 3 26-Aug-2022	Storm 4 19-Sep-2022	Mean
Hardness (mg/L)					
SWM03	38.8	50.2	108.0	78.4	68.8
SWM04	22.7	66.0	135.7	179.3	100.9
SWM05	41.5	46.0	92.3	142.6	80.6
SWM06	12.5	12.6	39.9	47.3	28.1
SWM07	15.8	12.4	20.4	11.7	15.1
SWM08	16.4	12.1	81.0	70.9	45.1
SWM09A	25.7	20.4	133.5	112.4	73.0
SWM10	70.7	36.9	132.6	132.1	93.1
SWM11	10.6	15.4	35.3	108.4	42.4
SWM12	84.4	102.4	201.0	179.3	141.8
Dissolved Copper (µg/L)					
SWM03	2.11	3.89	2.99	2.56	2.89
SWM04	2.33	5.20	4.00	6.04	4.39
SWM05	4.84	5.94	3.85	3.83	4.62
SWM06	1.89	2.24	2.58	2.81	2.38
SWM07	4.18	3.58	4.93	4.03	4.18
SWM08	2.44	2.32	2.51	2.31	2.40
SWM09A	1.84	1.46	1.72	1.94	1.74
SWM10	3.00	1.97	2.67	2.00	2.41
SWM11	2.51	3.89	3.34	6.40	4.04
SWM12	36.0	8.30	5.53	4.76	13.6

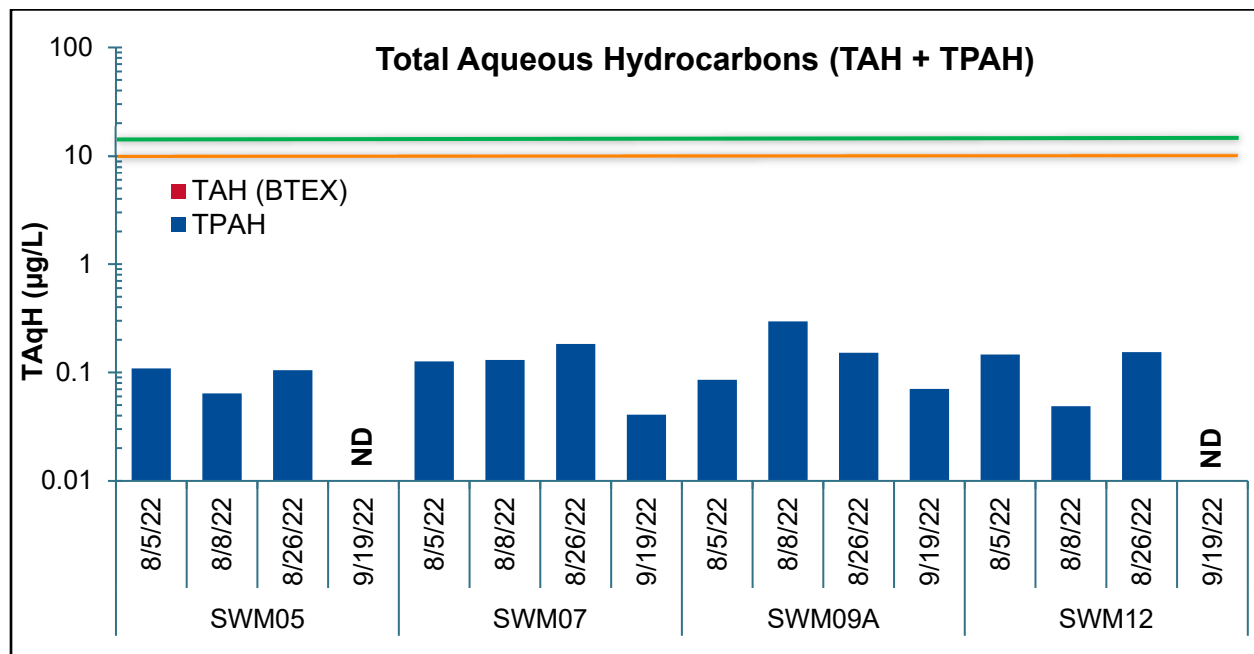


3.5 Hydrocarbons

Total aromatic hydrocarbons (TAH) and total polycyclic aromatic hydrocarbons (TPAH) were measured as part of the 2022 SWM Program at four selected outfalls: SWM05, SWM07, SWM09, and SWM12. In this year’s program, TPAH constituents were detected at all four monitoring sites, while TAH constituents were detected at none of the monitoring sites. For this study, TAH is reported as the summation of detected concentrations of benzene, ethylbenzene, toluene, and xylenes (BTEX). Since 2020, dichlorobenzene and chlorobenzene are not analyzed due to reclassification of these parameters by ADEC. Hydrocarbon measurements are presented in Figure 17 and in Table 9. All samples collected fell within the AWQS criteria (Table 10) of 10 µg/L for TAH and 15 µg/L for total aqueous hydrocarbons (TAqH), representing the summation of TAH and TPAH.

In this year’s program, TAH (BTEX) was non-detect in all of the samples. For comparison, BTEX was detected in four samples in 2020 and in five samples in 2021.

This year, TPAH was detected in all but two samples (SWM05 and SWM12 during Storm 4). TPAH concentrations detected ranged from 0.04 µg/L at SWM07 to 0.30 µg/L at SWM09A. For comparison, the average TPAH concentration in 2022 is lower than all other years it has been sampled (2012-2022). TPAH constituent concentrations varied between storm events and between the four outfalls tested. Across the outfalls, the most commonly detected TPAH compounds were combustion-related compounds including fluoranthene, phenanthrene, and pyrene.



Orange line indicates the upper AWQS TAH limit of 10 µg/L and green line indicates the upper AWQS TAqH limit of 15 µg/L. ND = no concentration detected in any analyte tested.

Figure 17. Total Aqueous Hydrocarbons (TAqH = TAH + TPAH) Measured in Stormwater Sampled at Monitoring Sites During All Four Events.

Contaminants, particularly TPAH, can be present in higher levels early in the storm runoff period as result of the first flush of accumulated contaminants from roadways and other urban surfaces. This was generally observed in the 2022 SWM Program, with the lowest concentrations occurring during



Storm 4. However, concentrations appear to be elevated during Storm 3 which could be attributed to low precipitation intensity over the monitoring corridor.

Of the outfalls tested for hydrocarbons, SWM05 and SWM09 have OGS units, while SWM07 and SWM12 do not. There does not appear to be a correlation between the presence of an OGS unit and measured hydrocarbon concentrations.



Table 9. Hydrocarbon Concentrations Measured in Stormwater at Four Sites During All Four Storm Events.

	SWM05 - OGS (Yes)				SWM07 - OGS (No)				SWM09A - OGS (Yes)				SWM12 - OGS (No)			
	8/5/22	8/8/22	8/26/22	9/19/22	8/5/22	8/8/22	8/26/22	9/19/22	8/5/22	8/8/22	8/26/22	9/19/22	8/5/22	8/8/22	8/26/22	9/19/22
Polycyclic Aromatic Hydrocarbons (µg/L)																
Acenaphthene	0.0223U	0.024U	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136U	0.014J	0.024U	0.0236U	0.0139U	0.0447U	0.0232U	0.0232U	0.0139U
Acenaphthylene	0.0223U	0.024U	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136U	0.0223U	0.024U	0.0236U	0.0139U	0.0447U	0.0232U	0.0232U	0.0139U
Anthracene	0.0223UJ-	0.024U	0.0236U	0.0139U	0.0232UJ-	0.0236U	0.0232U	0.0136U	0.0223UJ-	0.024U	0.0236U	0.0139U	0.0447UJ-	0.0232U	0.0232U	0.0139U
Benzo(a)anthracene	0.0152J-	0.024UJ-	0.0236U	0.0139U	0.0232UJ-	0.0236UJ-	0.0232U	0.0136U	0.0223UJ-	0.024UJ-	0.0236U	0.0139U	0.0447UJ-	0.0232UJ-	0.0232U	0.0139U
Benzo(a)pyrene	0.00895U	0.0096U	0.00945U	0.00574U	0.00925U	0.00945U	0.00925U	0.00564U	0.00895U	0.0096U	0.00945U	0.00574U	0.0179U	0.00925U	0.00925U	0.00574U
Benzo(b)fluoranthene	0.0223U	0.0205J	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136J	0.0223U	0.024U	0.0236U	0.0139U	0.0447U	0.0232U	0.0232U	0.0139U
Benzo(g,h,i)perylene	0.0203J	0.024U	0.0142J	0.0139U	0.0232U	0.0272J	0.0316J	0.0136U	0.0223U	0.024U	0.0236U	0.0139U	0.031J	0.0232U	0.0141J	0.0139U
Benzo(k)fluoranthene	0.0223U	0.024U	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136U	0.0223U	0.024U	0.0236U	0.0139U	0.0447U	0.0232U	0.0232U	0.0139U
Chrysene	0.0168J-	0.024U	0.0236U	0.0139U	0.0169J-	0.0213J	0.0164J	0.0136U	0.0223UJ-	0.024U	0.0236U	0.0139U	0.0177J-	0.0232U	0.0232U	0.0139U
Dibenzo(a,h)anthracene	0.00895U	0.0096U	0.00945U	0.00574U	0.00925U	0.00945U	0.00925U	0.00564U	0.00895U	0.0096U	0.00945U	0.00574U	0.0179U	0.00925U	0.00925U	0.00574U
Fluoranthene	0.0283J-	0.0227J-	0.025J	0.0139U	0.0303J-	0.0328J-	0.0339J	0.0136J	0.0234J-	0.0304J-	0.0194J	0.0139J	0.0275J-	0.0226J-	0.0165J	0.0139U
Fluorene	0.0223U	0.024U	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136U	0.0315J	0.09380	0.0434J	0.0139J	0.0447U	0.0232U	0.0232U	0.0139U
Indeno(1,2,3-cd)pyrene	0.0223U	0.024U	0.0236U	0.0139U	0.0232U	0.0236U	0.0232U	0.0136U	0.0223U	0.024U	0.0236U	0.0139U	0.0447U	0.0232U	0.0232U	0.0139U
Naphthalene	0.0447U	0.0481U	0.0471U	0.0287U	0.0463U	0.0471U	0.0463U	0.0282U	0.0447U	0.0481U	0.0471U	0.0287U	0.0895U	0.0463U	0.0654J	0.0287U
Phenanthrene	0.0447UJ-	0.0481U	0.0421J	0.0287U	0.0348J-	0.0471U	0.0549J	0.0282U	0.0447UJ-	0.1430	0.0639J	0.0287J	0.0327J-	0.0463U	0.0386J	0.0287U
Pyrene	0.0283J-	0.0208J	0.0235J	0.0139U	0.0446J-	0.04920	0.04640	0.0136J	0.0166J-	0.0291J	0.0252J	0.0139J	0.0373J-	0.0262J	0.0195J	0.0139U
Volatile Aromatic Hydrocarbons (µg/L)																
Benzene	0.2U	0.2U	0.2U	0.12U	0.2U	0.2U	0.2U	0.12U	0.2U	0.2U	0.2U	0.12U	0.2U	0.2U	0.2U	0.12U
Ethylbenzene	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U
o-Xylene	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U
P&M-Xylene	1U	1U	1U	0.62U	1U	1U	1U	0.62U	1U	1U	1U	0.62U	1U	1U	1U	0.62U
Toluene	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U	0.5U	0.5U	0.5U	0.31U
Hydrocarbon Summary Parameters (µg/L)																
TPAH	0.1089	0.064	0.1048	ND	0.1266	0.1305	0.1832	0.0408	0.0855	0.2963	0.1519	0.0704	0.1462	0.0488	0.1541	ND
TAH as BETX	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAqH (TPAH + TAH)	0.1089	0.064	0.1048	ND	0.1266	0.1305	0.1832	0.0408	0.0855	0.2963	0.1519	0.0704	0.1462	0.0488	0.1541	ND

Footnotes: U = Not detected at the reporting limit. J = Estimated value below the detection limit. J- = Estimated value may be biased low. UJ- = Not detected at the reporting limit but maybe be biased low. ND = no concentration detected in any analyte tested.

All detected concentrations are shown in bold. Hydrocarbon summary parameters only include detected concentrations.



Table 10. Pertinent Numeric Alaska Water Quality Standard (AWQS) Criteria.

Designated Use	Description of Standard
Fecal Coliform Bacteria	
(A) Water Supply (i) drinking, culinary and food processing	In a 30-day period, the geometric mean may not exceed 20/FC/100 ml, and not more than 10% of the samples may exceed 40 FC/100 ml.
(A) Water Supply (ii) agriculture, including irrigation and stock watering	The geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml. For products not normally cooked and for dairy sanitation of unpasteurized products, the criteria for drinking water supply, (1)(A)(i), apply.
(A) Water Supply (iii) aquaculture	For products normally cooked, the geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml. For products not normally cooked, the criteria for drinking water supply, (1)(A)(i), apply.
(A) Water Supply (iii) Industrial	Where worker contact is present, the geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml.
(B) Water Recreation (iv) contact recreation	In a 30-day period, the geometric mean of samples may not exceed 100 FC/100 ml, and not more than one sample or more than 10% of the samples if there are more than 10 samples, may exceed 200 FC/100 ml.
(B) Water Recreation (ii) secondary contact	In a 30-day period, the geometric mean of samples may not exceed 200 FC/100 ml, and not more than 10% of the total samples may exceed 400 FC/100 ml.
(C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	Not applicable.
Dissolved Oxygen (most restrictive shown)	
(A) Water Supply (iii) aquaculture (C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	DO must be greater than 7mg/L in surface waters. The concentration of total dissolved gas may not exceed 110% of saturation at any point of sample collection.
pH	
(A) Water Supply (i) drinking, culinary and food processing	May not be less than 6.0 or greater than 8.5.
(A) Water Supply (ii) agriculture, including irrigation and stock watering, & (iv) Industrial	May not be less than 5.0 or greater than 9.0.
(A) Water Supply (iii) aquaculture	May not be less than 6.5 or greater than 8.5. May not vary more than 0.5 pH unit from natural conditions.
(B) Water Recreation (iv) contact recreation	May not be less than 6.5 or greater than 8.5. If natural condition pH is outside this range, substances may not be added that cause an increase in the buffering capacity of the water.
(B) Water Recreation (ii) secondary contact	Same as (6)(A)(iv)
(C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	May not be less than 6.5 or greater than 8.5. May not vary more than 0.5 pH unit from natural conditions.



Designated Use		Description of Standard				
Petroleum Hydrocarbons						
(A) Water Supply (iii) aquaculture & (C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife.		TAQH in the water column may not exceed 15 µg/L. TAH in the water column may not exceed 10 µg/L. Surface waters and adjoining shorelines must be virtually free from floating oil, film, or discoloration.				
Dissolved Inorganic Substances (most restrictive shown)						
(A) Water Supply (i) drinking, culinary, and food processing		Total dissolved solids (TDS) from all sources may not exceed 500 mg/L.				
Temperature (most restrictive shown)						
(A) Water Supply (iii) aquaculture & (C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife.		The following maximum temperatures may not be exceeded, where applicable: Migration routes and rearing areas: 15°C Spawning areas, egg & fry incubation: 13°C				
Turbidity						
(A) Water Supply (i) drinking, culinary, and food processing		May not exceed 5 nephelometric turbidity units (NTU) above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.				
(A) Water Supply (ii) agriculture, including irrigation and stock watering		May not cause detrimental effects on indicated use.				
(A) Water Supply (iii) aquaculture		May not exceed 25 NTU above natural conditions. For all lake waters, may not exceed 5 NTU above natural conditions.				
(A) Water Supply (iv) industrial		May not cause detrimental effects on established water supply treatment levels.				
(B) Water Recreation (i) contact recreation		May not exceed 5 NTU above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 15 NTU. May not exceed 5 NTU above natural turbidity for all lake waters.				
(B) Water Recreation (ii) secondary recreation		May not exceed 10 NTU above natural conditions when natural turbidity is 50 NTU or less, and may not have more than 20% increase in turbidity when the natural turbidity is greater than 50 NTU, not to exceed a maximum increase of 15 NTU. For all lake waters, turbidity may not exceed 5 NTU above natural turbidity.				
(C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife		Same as (12)(A)(iii).				
Dissolved Copper (µg/L)						
Metal	mA	bA	mC	bC	Freshwater Conversion Factors (CF)	
					Acute (CMC)	Chronic (CCC)
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960

Hardness-dependent criteria may be calculated from the following for freshwater metals:

$$\text{Acute (dissolved)} = \exp \{mA[\ln(\text{hardness})] + bA\} \text{ (CF)}$$

$$\text{Chronic (dissolved)} = \exp \{mC[\ln(\text{hardness})] + bC\} \text{ (CF)}$$

3.6 Multi-Year Site Trends

Review of the SWM Program data record reveals persistent differences between outfalls with regards to measured parameters. This section discusses site trends for each parameter, and where applicable, statistical analysis is used to further examine these trends.

The stormwater outfall sampling conducted in 2022 represents the twelfth year of sampling under the SWM Program. These 12 years of sampling provide a data record for preliminary investigation of differences between the monitoring sites included in the program. General site differences were investigated through statistical analysis to compare outfalls where applicable for parameters that follow normal or log-normal distributions. Box plots have been prepared for visualization of the data record for each parameter tested (Figure 18 through Figure 26). The box plots depict the minimum, maximum, median, 25th-percentile, and 75th-percentile of the data collected over the 12-year monitoring period. It should be noted that outfalls SWM11 and SWM12 were added to the SWM Program in 2017 and therefore have six year data records. It is important to note that due to the relatively short data record, caution should be warranted when comparing outfalls. Given evolving land uses and myriad other influences, it can be difficult to compare multivariate environmental systems based on short data records.

Review of the SWM Program data record indicates that there are significant differences in outfall temperature across at least some of the 10 outfalls tested (ANOVA p-value of 0.0005). cursory observation of the box plot data (Figure 18) indicates that temperature readings tend to be lower at SWM03 and SWM10 than at the other outfalls. Similarly, SWM04 appears to trend warmer than other outfalls, and has a median temperature around two degrees Celsius higher than SWM03 and SWM10. These differences were found to be statistically significant (single factor ANOVA P-value of 7.19×10^{-9}), supporting the conclusion that there are significant, persistent differences in temperature between at least some of the outfalls.

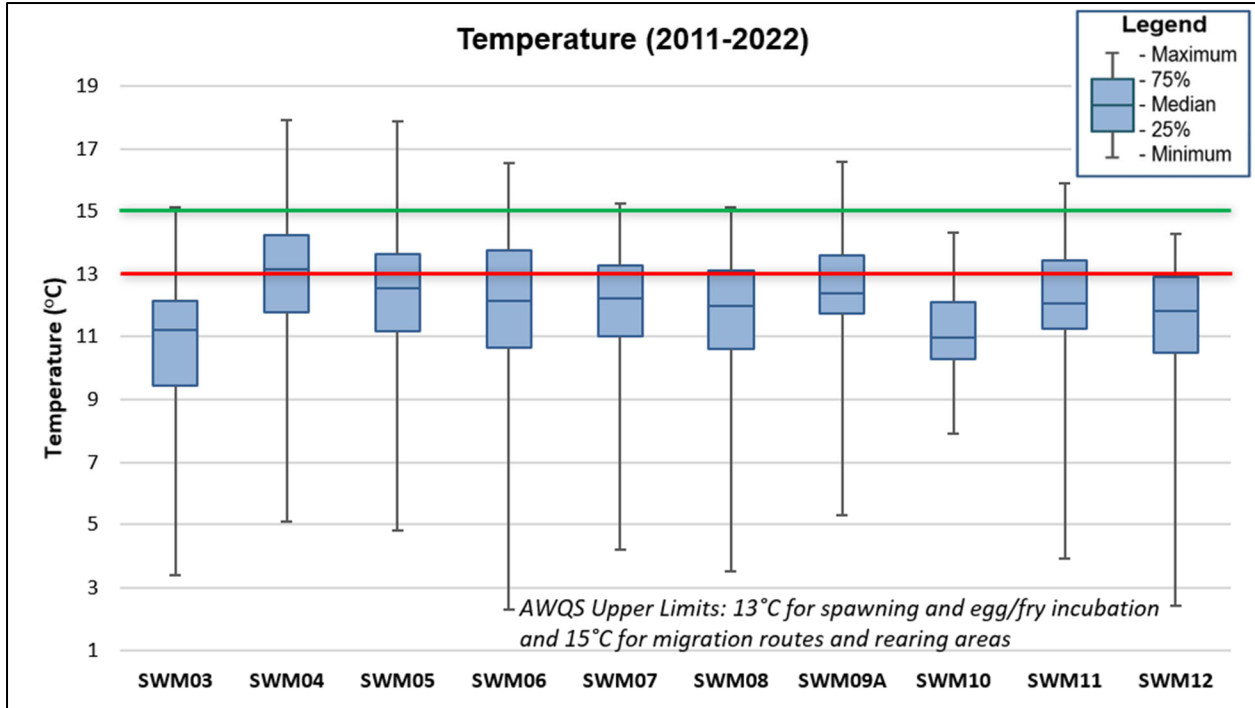


Figure 18. Station Box Plot of Temperature by Outfall, All Data 2011 Through 2022.

The box plot data record for DO is presented in Figure 19. Like temperature, DO concentrations are assumed to follow a normal distribution at each site. There is statistically significant variation between outfall sites (ANOVA p-value of 2.90×10^{-16}), but all sites generally are above the AWQS limit of 7 mg/L. Throughout the data record, SWM10 has the greatest median DO concentration of 11.1 mg/L and is statistically distinct from each of the other outfall sites. The elevated DO at SWM10 is potentially due to persistently lower water temperatures and turbulent flow in the outfall pipe prior to discharge.

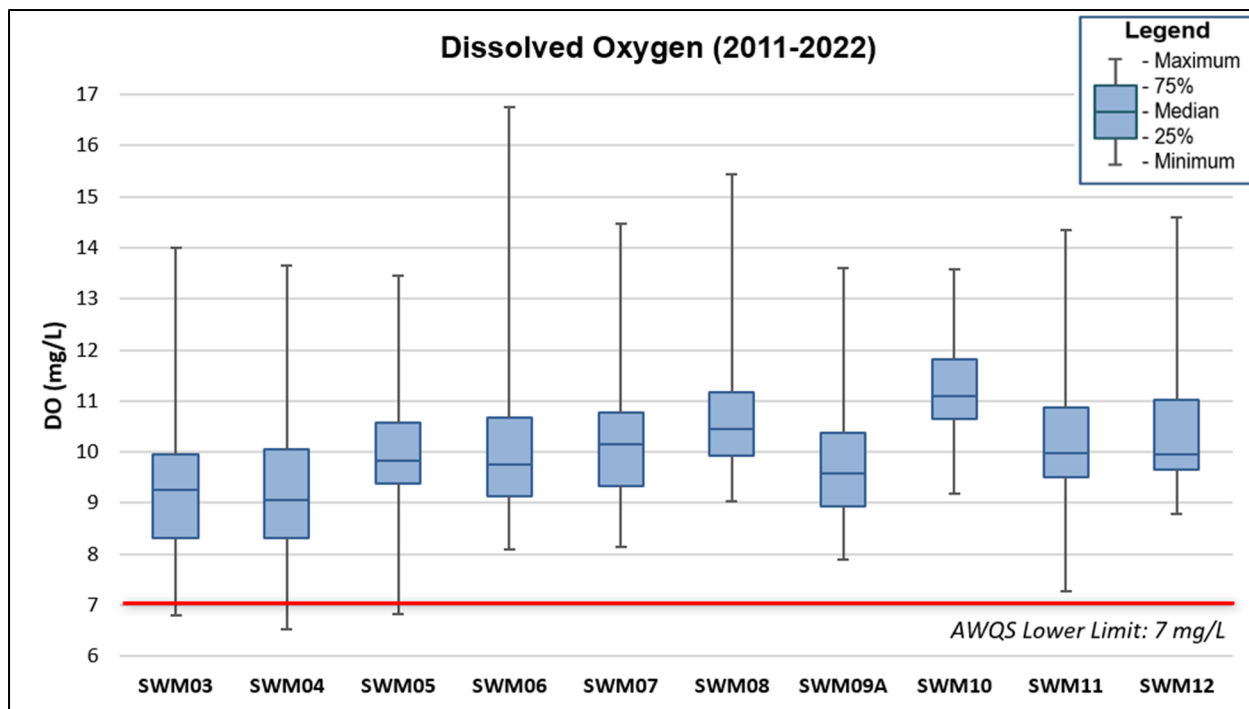


Figure 19. Station Box Plot of Dissolved Oxygen by Outfall, All Data 2011 Through 2022.

The median pH at outfalls SWM06, SWM8, SWM10, and SWM11 trend lower than at other outfalls with median values ranging from 6.99 to 7.07 (Figure 20). These four outfalls are statistically indistinguishable from one another with regards to mean pH (single factor ANOVA, P value of 0.49). There were several isolated individual measurements in the data record below the AWQS lower limit of 6.5 pH units, including a total of three measurements in 2022 (provided in Table 6). There were no isolated individual measurements in the 2022 that were above the AWQS upper limit of 8.5 pH units. Only two individual measurements in the data record have exceeded the AWQS pH criterion of 8.5 pH units, both of occurred in 2021. These deviations below a pH of 6.5 and above a pH of 8.5 appear to be isolated and likely not part of a broader trend.

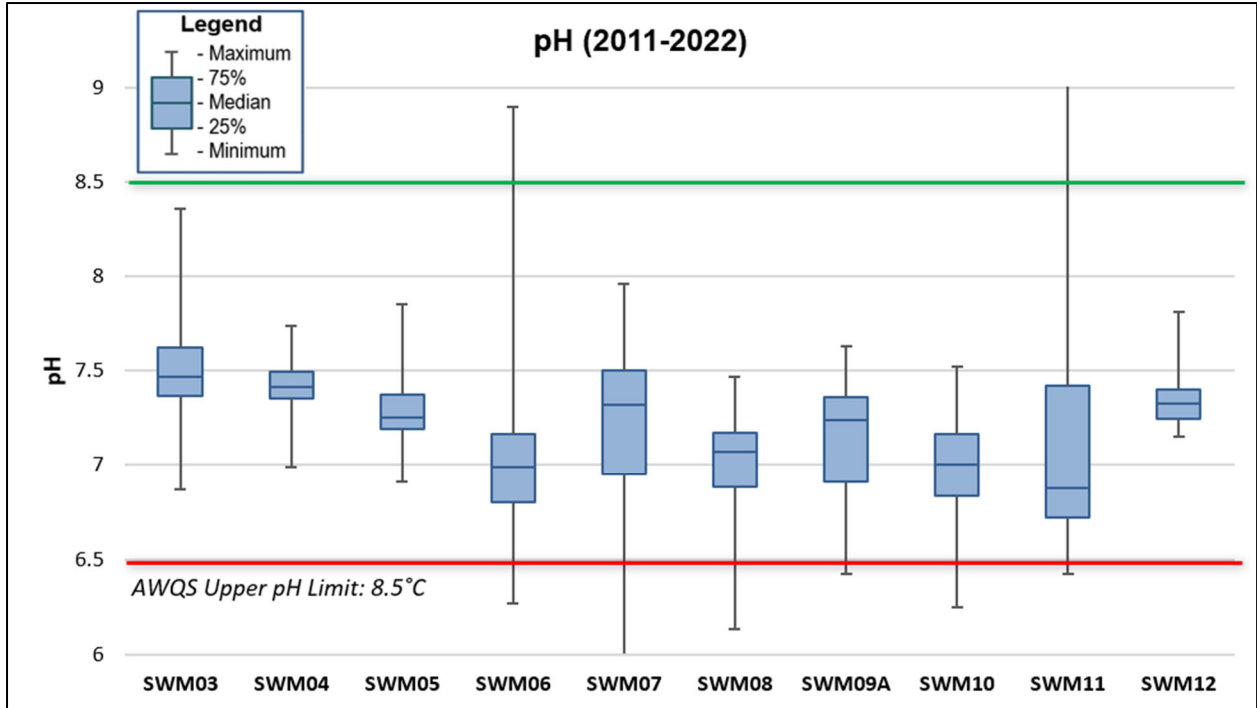


Figure 20. Station Box Plot of pH by Outfall, All Data 2011 Through 2022.

The data record for TDS is presented in Figure 21. TDS levels trend highest at SWM04 and SWM10 with median values of 170.0 and 184.0 mg/L, respectively. It should be noted that median TDS levels for both SWM04 and SWM10 fall well below the AWQS criterion of 500mg/L. Only a single sample in the data record, collected in 2013 at SWM04, has ever exceeded the AWQS threshold. The comparatively elevated TDS at SWM04 and SWM10 may be an indication of pollutants such as fertilizer, salts, or organic ions flushing from the contributing drainage basins. Both outfalls drain primarily residential areas.

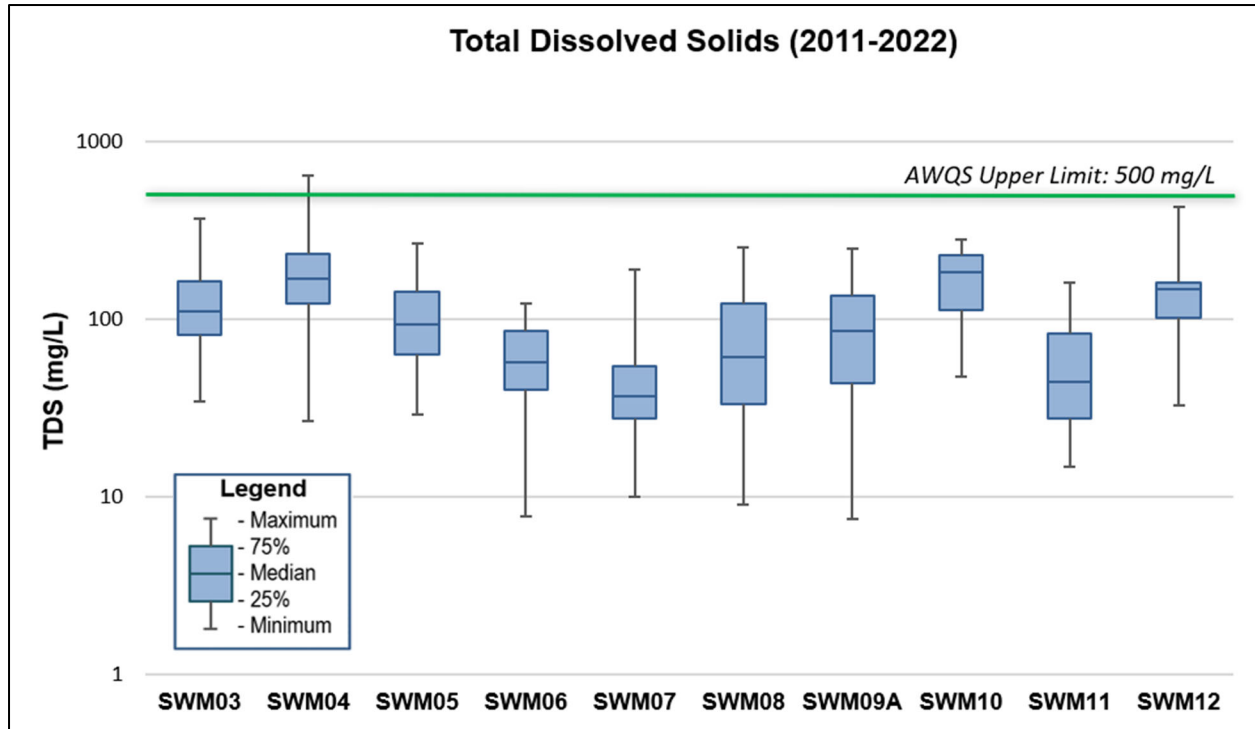


Figure 21. Station Box Plot of Total Dissolved Solids by Outfall, All Data 2011 Through 2022.

The box plots for TSS and turbidity are presented in Figure 22 and Figure 23, respectively. Over the record of monitoring, both TSS and turbidity have been highly variable between storms and locations, although there is a general positive correlation between TSS and turbidity visible in the box plots. The highest median TSS and turbidity concentrations were detected at SWM07 and at SWM12, with median TSS and turbidity concentrations over double those of any of the other outfalls in the data record. Further statistical analysis was not performed. Over the record of monitoring, Outfall SWM10 continues to exhibit the lowest median TSS and turbidity of the outfalls.

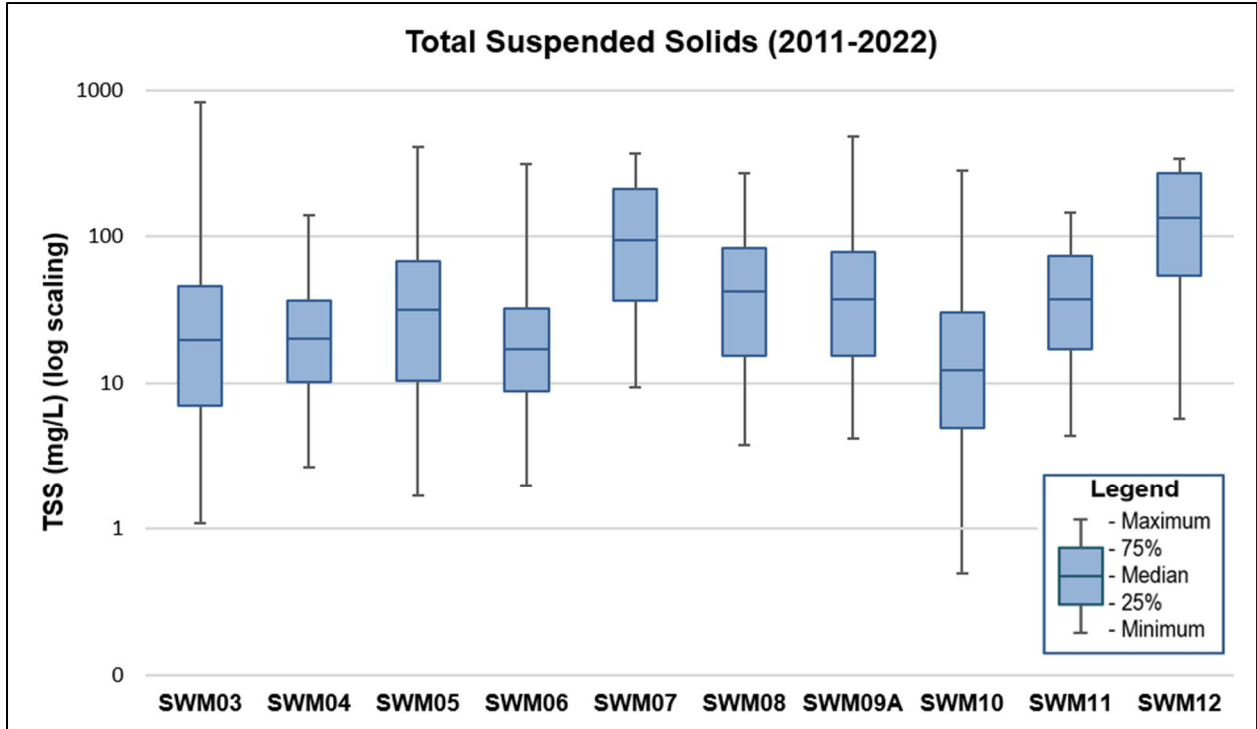


Figure 22. Station Box Plot of Total Suspended Solids by Outfall, All Data 2011 Through 2022.

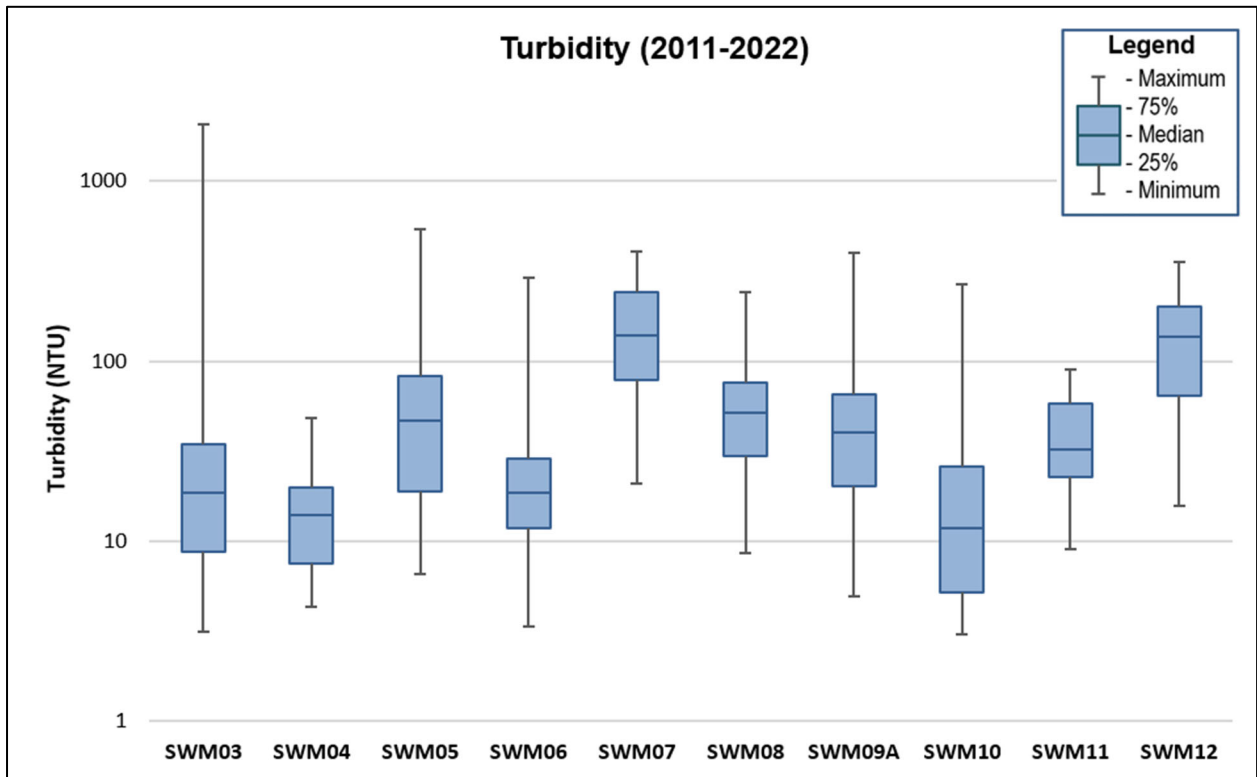


Figure 23. Station Box Plot of Turbidity by Outfall, All Data 2011 Through 2022.

SWM07 and SWM12 have the highest mean BOD₅ concentration seen throughout the data record (Figure 24), 5.79 mg/L and 6.48 mg/L respectively. Historic mean BOD₅ concentrations at SWM07 and SWM12 are statistically indistinguishable (P value 0.54). Both outfalls drain commercial/industrial land use areas that include a high percentage of streets, parking lots, and other impervious surfaces. The elevated BOD₅ concentrations at these outfalls may be a result of vehicle cooling liquid inputs (glycols) from streets and driveways. In contrast, SWM04 and SWM10 have the lowest mean BOD₅ concentration seen throughout the data record, both at 2.00 mg/L.

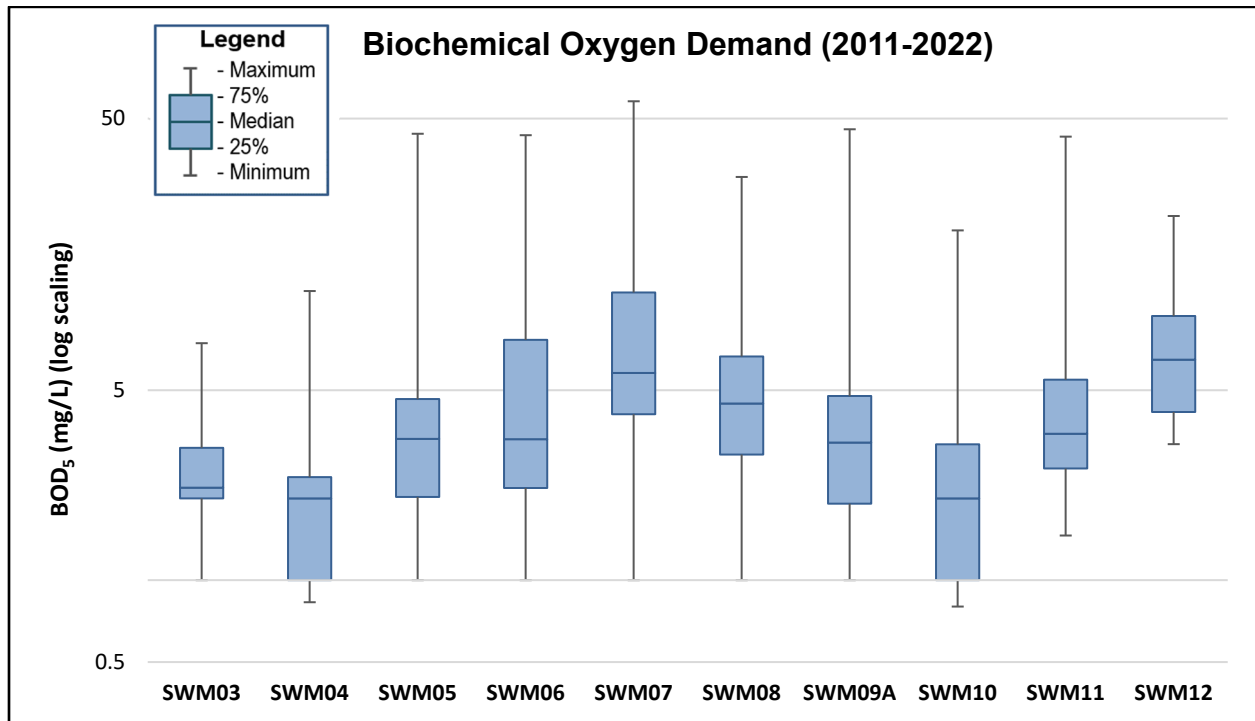


Figure 24. Station Box Plot of BOD₅ by Outfall, All Data 2011 Through 2022.

The box plot data record for fecal coliform is presented in Figure 25. Outfall sites SWM07, SWM11, and SWM12 have the highest median fecal coliform concentrations of the ten monitoring sites, with median concentrations of 2,100, 2,100 and 4,900 CFU/100mL respectively. SWM12 is emerging as the site presenting the highest fecal coliform concentrations with statistically significant (P=0.025) higher average and median concentrations than SWM07. The sources of the higher concentrations seen at SWM07, SWM11, and SWM12 are unknown, but it is likely that the factors contributing to elevated fecal coliform measurements differ at each site. Other locations with elevated fecal coliform concentrations include SWM05 and SWM08 which have median concentrations over 1,000 CFU/100mL. SWM10 consistently has the lowest fecal coliform concentrations with a median concentration of 230 CFU/100mL.

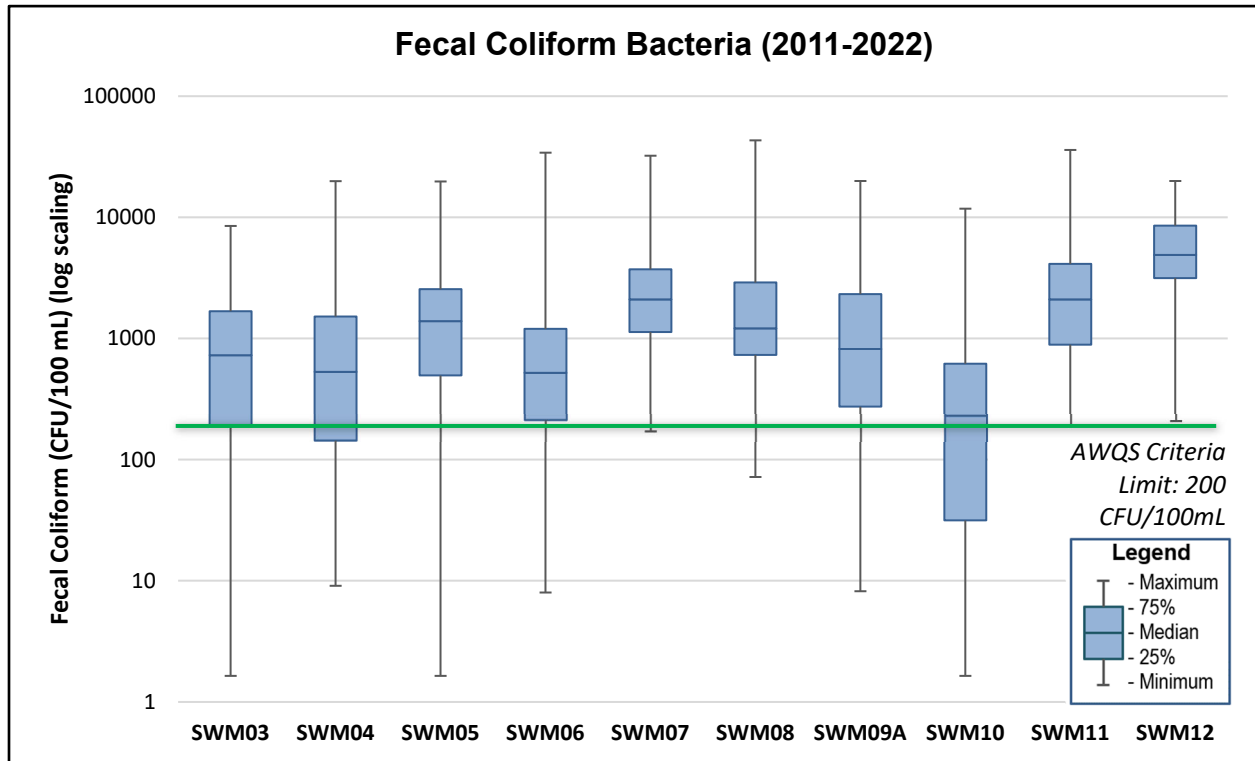


Figure 25. Station Box Plot of Fecal Coliform Bacteria by Outfall, All Data 2011 Through 2022.

The box plot for the flow rate data record is presented in Figure 26. Flow rate was highly variable between locations and between events, reflecting variability in both precipitation and basin characteristics throughout the monitoring corridor. For some outfalls, particularly for those with small drainage basins, flow rates responded rapidly to changes in precipitation. Outfall SWM08 drains the largest basin and has consistently higher flow rates than the other locations.

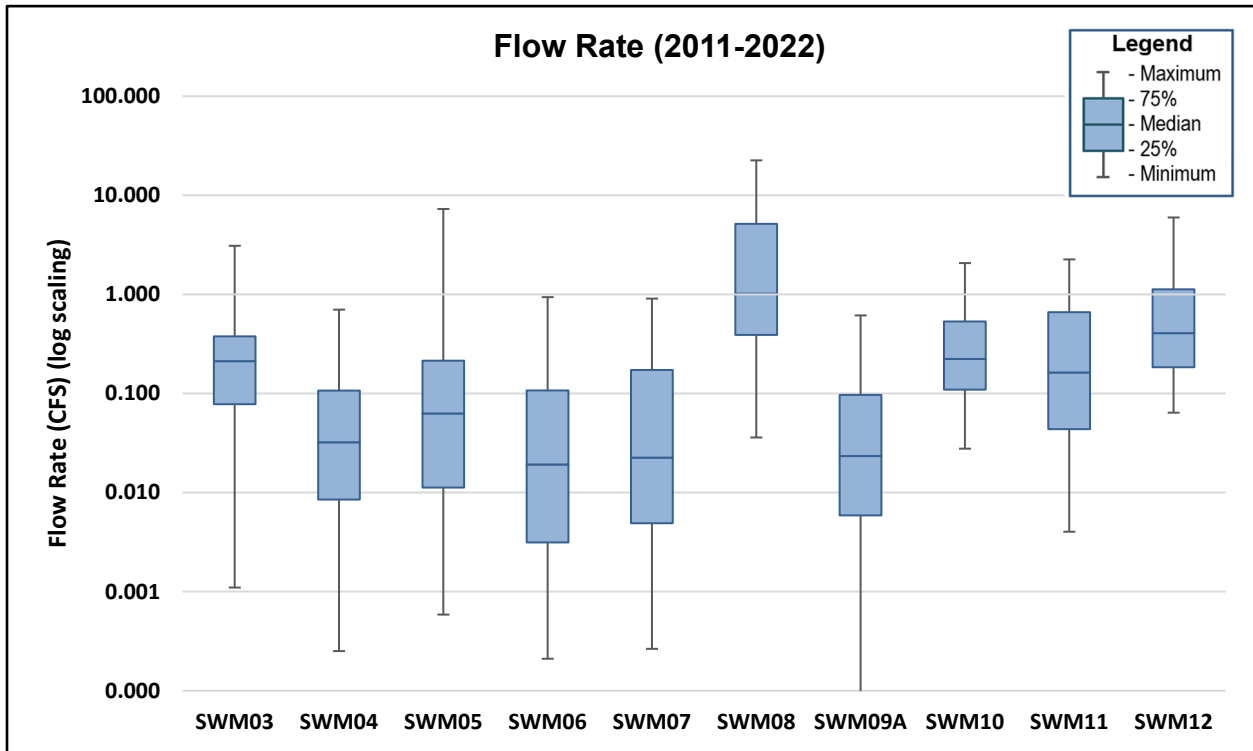


Figure 26. Station Box Plot of Flow Rate by Outfall, All Data 2011 Through 2022.

Box plots for hardness and dissolved copper concentrations are presented in Figure 27 and Figure 28 respectively. Hardness and copper were first added to the SWM Program in 2016, and as a result, these box plots represent a shorter seven year data record. There is a general inverse relationship visible between hardness and dissolved copper concentrations. SWM10 has the highest median hardness concentration and the lowest median dissolved copper concentrations among the 10 outfalls included in the SWM Program. Conversely, SWM07 had the lowest median hardness and the highest dissolved copper concentrations. No statistical analyses were performed based on the shorter data record, and further monitoring will be required to see if these trends continue.

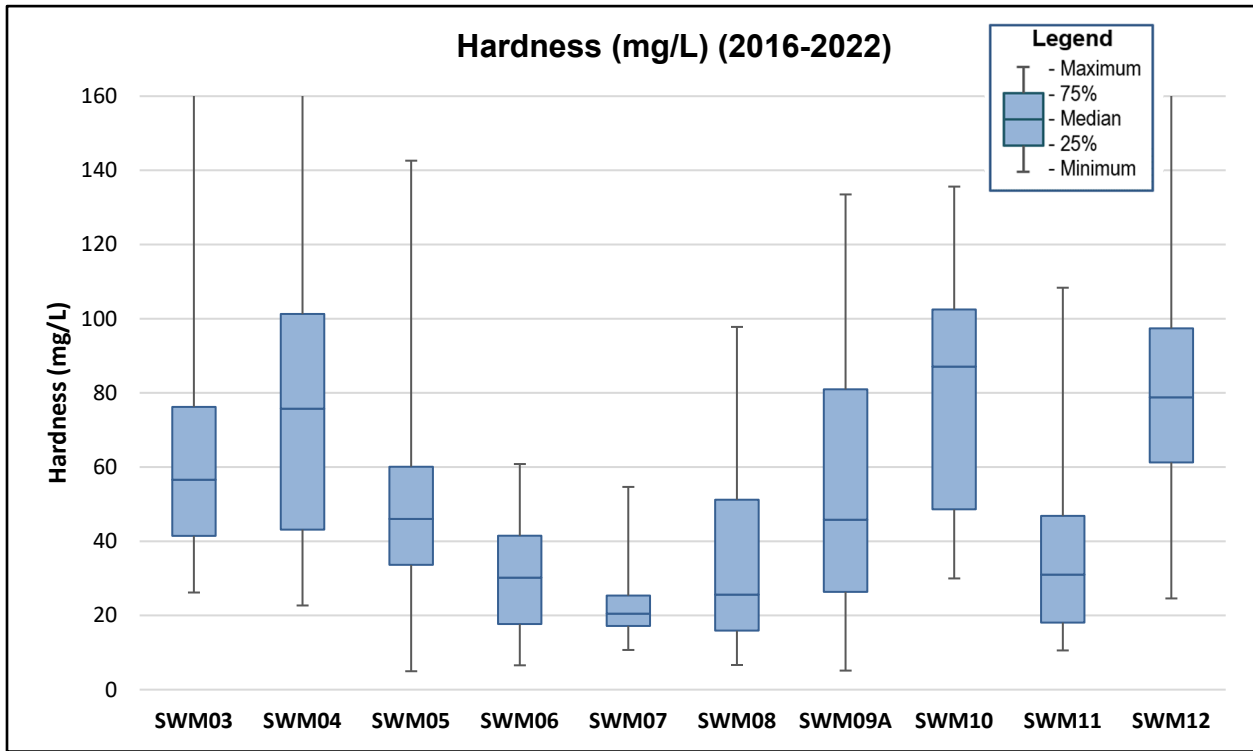


Figure 27. Station Box Plot of Hardness by Outfall, All Data 2016 Through 2022.

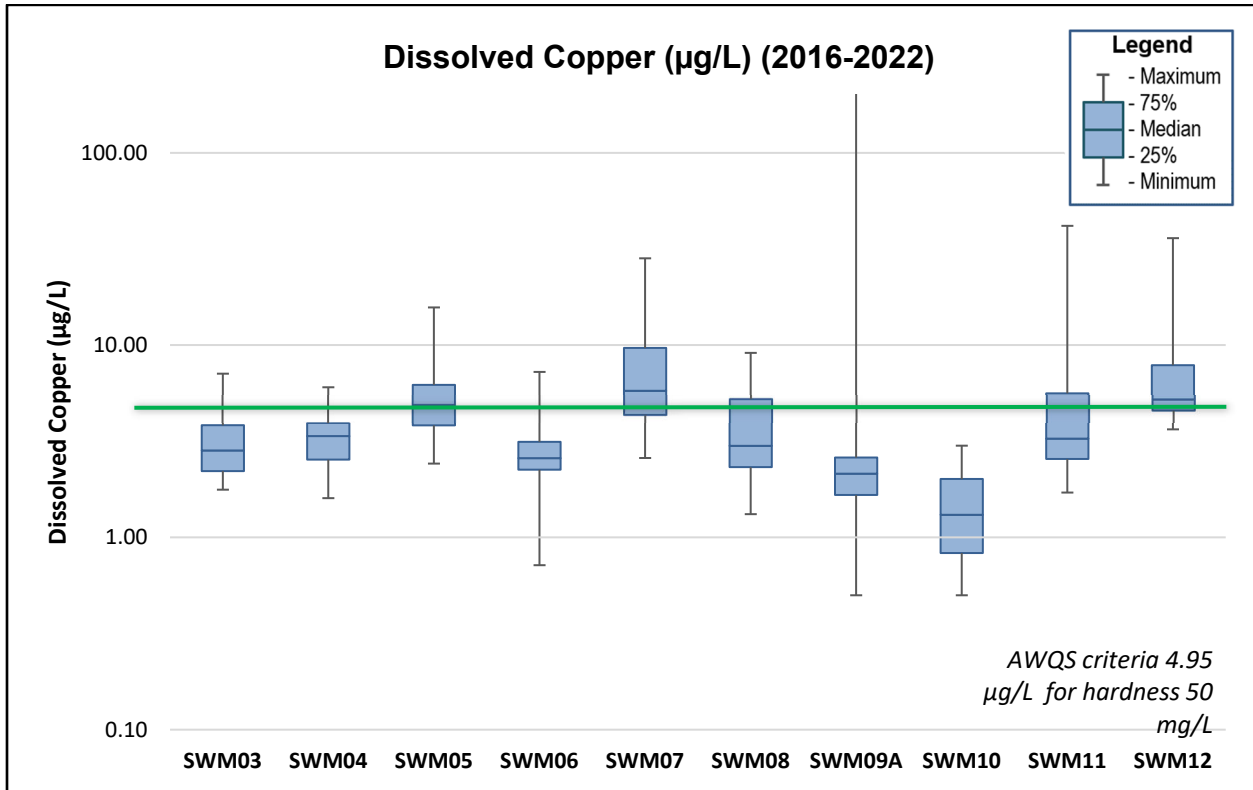


Figure 28. Station Box Plot of Dissolved Copper by Outfall, All Data 2016 Through 2022.

3.7 Seasonal and Yearly Trends

The SWM Program data record was examined for seasonal and yearly trends. The timing of outfall monitoring varies year-to-year depending on weather conditions and the timing of suitable storm events, and parameters can vary with season. Typically, sampling for the SWM Program begins in July and continues through September. The 2022 SWM Program first sampled on August 5 and concluded on September 19, falling within the typical window for sampling based on prior monitoring years.

Figure 29 presents the seasonal patterns for key parameters for the data record from 2011 through 2022, plotted against the day of the year. As expected, temperature fluctuates with season and was highest across all locations in July and August. DO fluctuates inversely to temperature, with the lowest DO concentrations occurring during the summer months when temperatures are highest, and increasing DO concentrations in the fall as water temperatures cool. Fecal coliform concentrations are not as highly correlated with seasonality as are temperature and DO. It appears that fecal coliform concentrations may decrease in the fall months, though more data is needed to support this conclusion. Seasonal pattern regression values are presented on each plot where the data have been fitted to a third-order polynomial.

There are significant year-to-year fluctuations for various parameters tested, but there do not appear to be any significant broader trends evident in the data. For example, fecal coliform concentrations vary each monitoring year, with spikes in the data occurring seemingly at random at many of the outfalls throughout the data record. There are spikes in the data (greater than 10,000 CFU/100mL) at two of the outfalls in 2016, six outfalls in 2017, five outfalls in 2018, none in 2019, one outfall in 2020, two outfalls in 2021 and one outfall in 2022. There is significant variability year to year in fecal coliform concentrations that can only partially be explained by seasonal patterns and does not appear to fit any long-term trends. Overall, fecal coliform levels in 2022 were below those observed in 2017 and 2018 but slightly elevated from those observed in 2019, 2020, and 2021.

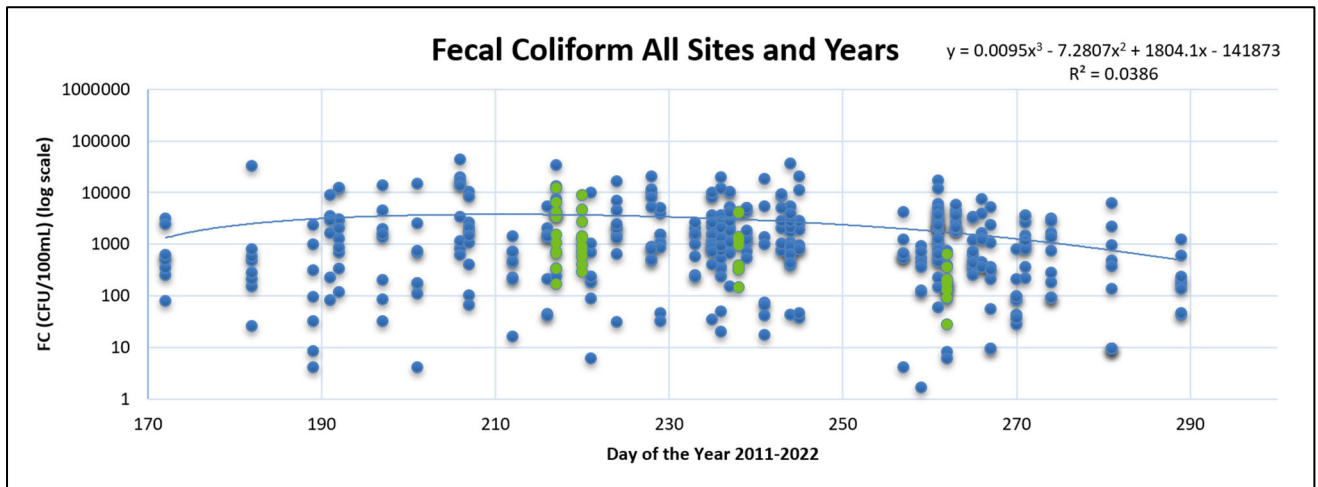
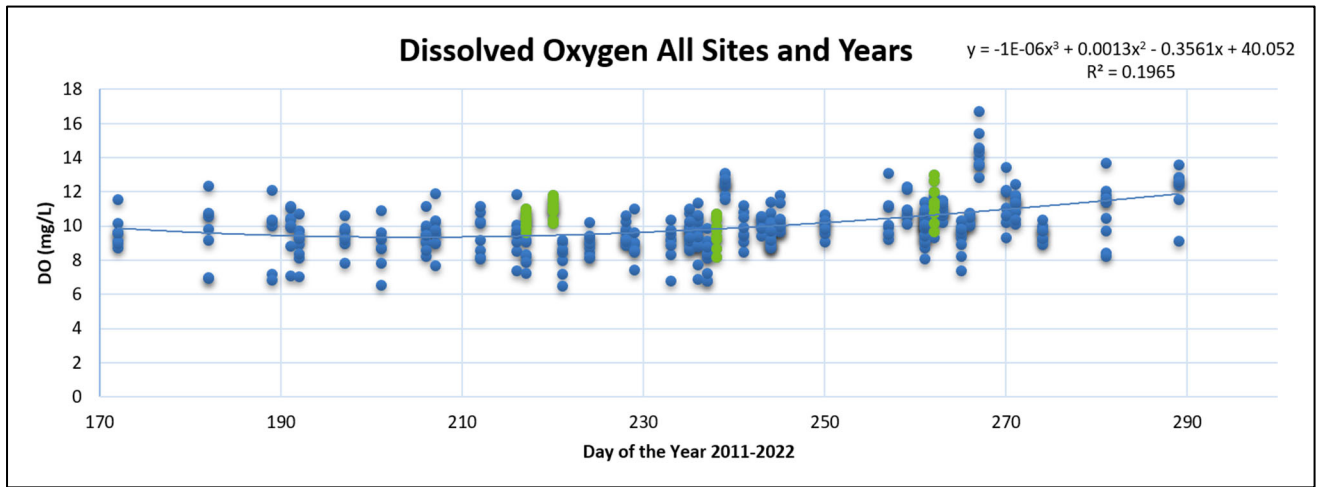
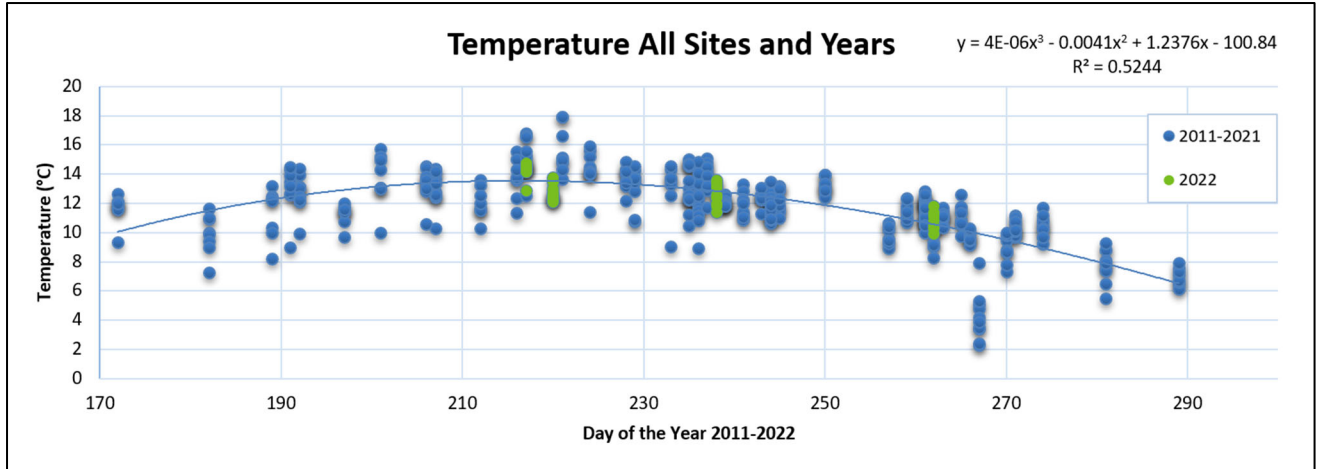


Figure 29. Seasonal Patterns for Temperature, DO, and Fecal Coliform, All Sites and All Years.

3.8 Annual Loading

Annual loadings for fecal coliform and hydrocarbons are presented in Figure 30 and Figure 31. These annual loadings are calculated using the Simple Method, which was developed under an EPA grant to provide Phase II communities with tools to protect their local watersheds (SMRC 2010). The Simple Method estimates stormwater runoff pollutant loads for urban areas based on the following parameters: subbasin drainage area and percent impervious cover, flow-weighted or event-mean stormwater runoff pollutant concentrations, and annual precipitation. Calculations are based on specific land uses (e.g., residential, commercial, industrial, roadways) to calculate annual pollutant loads for each land use type. The method can also be used for pollutant comparisons by more general land uses such as new suburban areas, older urban areas, central business districts, and highways. Equations and calculation methodology utilized for the Simple Method are detailed in Attachment B of the QAP (MOA 2020).

A major limitation for this method is using a single grab sample for each storm event rather than using flow-weighted data. SMRC 2010 does not address the Simple Method's applicability to organic compounds such as petroleum hydrocarbons, even though comparisons are provided in this report. Therefore, the loading data presented here are considered estimates that may provide useful information for making general comparisons, but do not provide the precision required for detailed comparisons.

Annual loading estimates were developed for both fecal coliform and hydrocarbons. Fecal coliform loading calculations (Figure 30) utilized the annual geometric mean for each location to account for the high variability in fecal coliform counts. For hydrocarbons, both TPAH and TAH (as BTEX) were examined. Hydrocarbon loading calculations (Figure 31) utilize the annual arithmetic mean for each location and individual samples that tested below the detection limit used one half of the detection limit when calculating the mean.

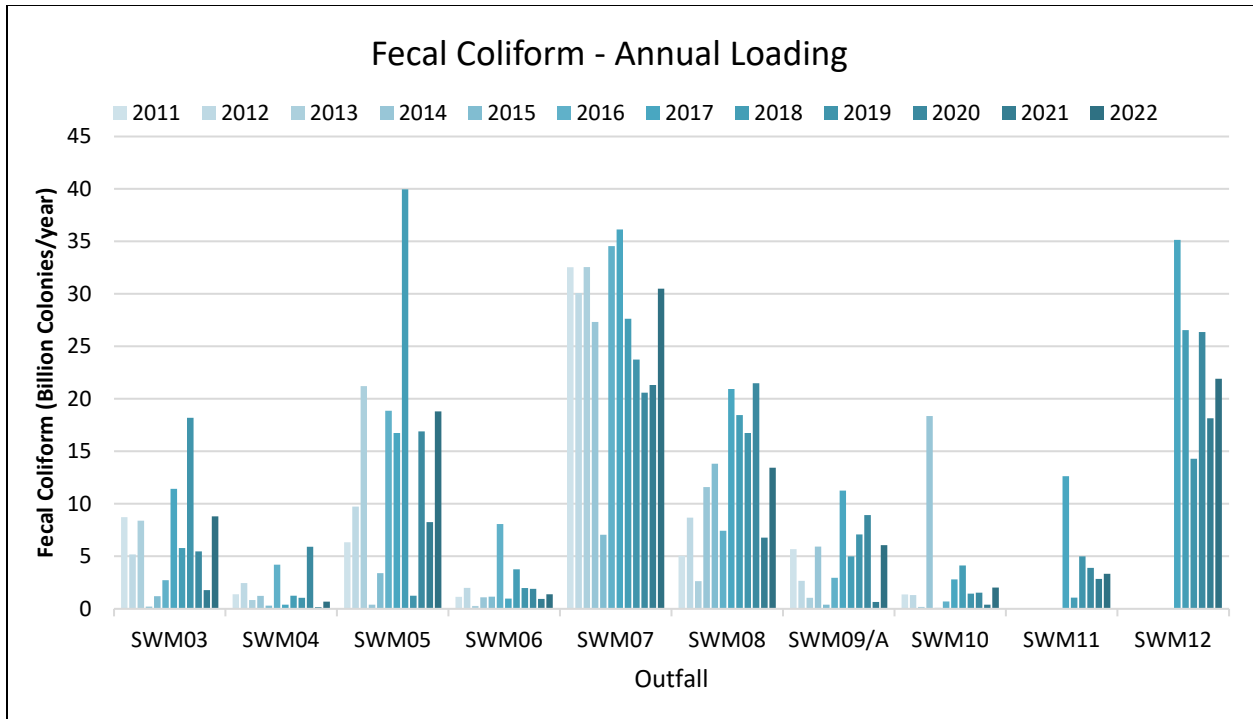
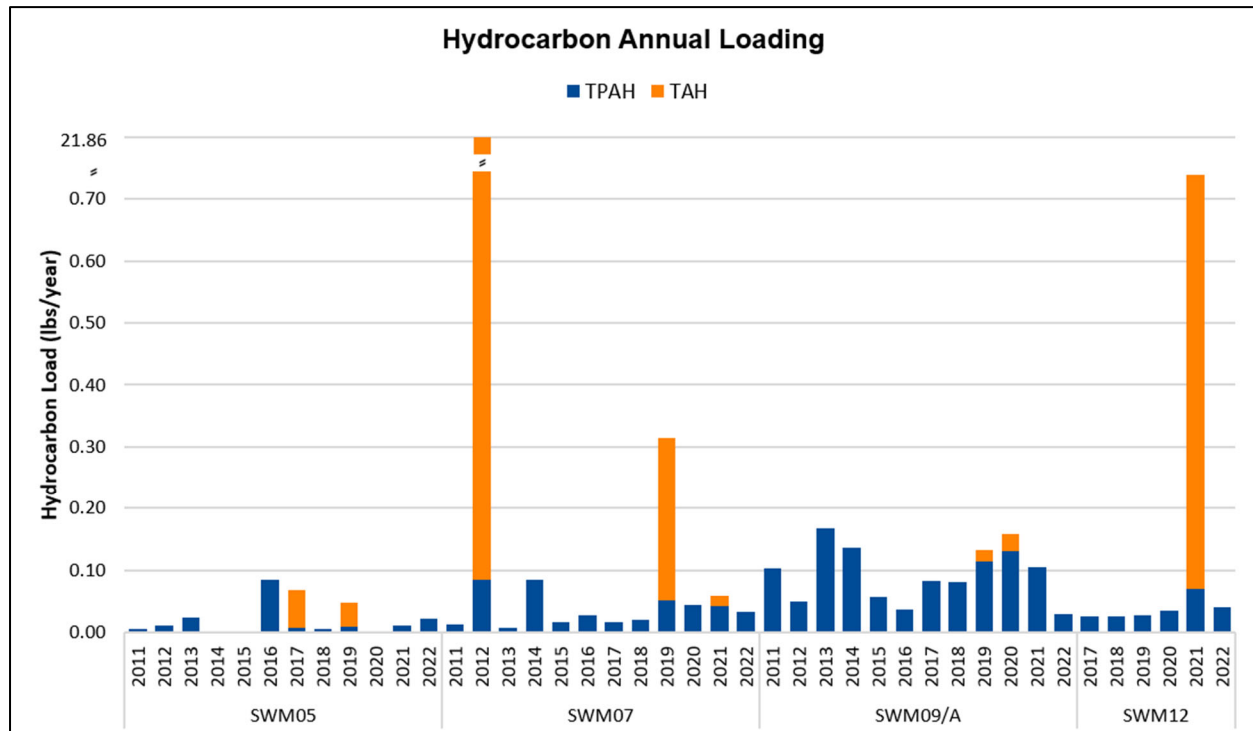


Figure 30. Fecal Coliform Annual Loading by Monitoring Site.



Note that the y-axis is non-linear.

Figure 31. Hydrocarbon Annual Loading by Monitoring Site.

SWM07 has had the highest annual fecal coliform loading concentration nine of the 12 Program years. In 2022, SWM07, which represents a commercial/industrial land use area, had an annual fecal coliform loading estimate of 30.5 billion colonies/year. For the other outfalls, SWM12 had the second largest annual fecal coliform loading, SWM05 had the third, and SWM08 had the fourth. The lowest fecal loading estimate was at SWM04, the only outfall this year with an estimate under 1.0 billion colonies/year. Fecal coliform counts and subsequent annual loading estimates continue to be highly variable and further sampling will be required to identify trends at these outfalls.

As determined by TAH and TPAH measurements, annual hydrocarbon loading estimates for 2022 were down at SWM07, SWM09A, and SWM12, and slightly up at SWM05 compared to 2021. TAH constituent detections were down to zero in 2022, compared to 2019 through 2021 where there were between four and seven detections. For TPAH, 14 of the 16 samples detected TPAH constituents, compared to 15 in 2021. While the number of TPAH detections didn't change drastically, the concentration of TPAH constituents generally decreased from 2021 to 2022. One factor that may be driving these lower hydrocarbon concentrations and subsequent annual loading estimates could be the higher precipitation received in July 2022 that could have flushed accumulated hydrocarbons through the storm sewer before sampling commenced. Continued monitoring will be required to determine if the decrease in hydrocarbon concentrations is part of a broader trend.

4.0 Summary and Conclusions

This report details the findings of the 2022 Municipality of Anchorage (MOA) stormwater monitoring program (SWM Program), satisfying the requirements of the current municipal MS4 permit (Permit No. AKS-052558). The Anchorage MS4 permit establishes control measures and requires the development of programs designed to prevent contaminants from entering the storm sewer system. The permit further identifies monitoring objectives, including stormwater outfall monitoring (Section 4.1.7 of the MS4 permit). The stormwater outfall monitoring program monitors 10 priority outfall locations that represent a variety of major land use areas within the Anchorage Bowl. The SWM Program tests these outfall locations at least four times each year during storm events for specific physical and chemical parameters. The stormwater sampling conducted during 2022 represents the 12th year of outfall monitoring under the current SWM Program.

The 2022 SWM Program successfully sampled four storm events at the 10 priority outfall locations included in the monitoring program. SWM09 was replaced with SWM09A due to new storm drain routing but is still representative of the original subbasin. Due to SWM07's proximity to SWM09A, slight basin size and percent impervious updates were made. This year's sampling events occurred on August 5, August 8, August 26, and September 19, 2022. Precipitation over the sampling period was notably higher than average.

Overall, sample results fell generally within AWQS criteria and in line with the results of previous monitoring years. None of the samples tested present any immediate concerns for the tested parameters. The data record was investigated to look for systemic differences between outfall sites and for seasonal and multi-year trends.

Fecal coliform levels measured in the 2022 SWM Program fell within historical ranges for the program, however, were noticeably elevated relative to 2021. Generally, SWM07 continues to have the highest annual fecal coliform loading with an estimate of 30.5 billion colonies/year. In contrast, SWM04 had the lowest calculated annual fecal coliform loading estimate in the analysis.

Annual hydrocarbon loading estimates for both TPAH and TAH detection in the 2022 program fell within historical ranges and all fell below AWQS criteria, measuring lower than those recorded during the 2021 monitoring year. This year, TAH was not detected in any of the collected samples. There were no patterns in the data that present cause for concern or fall outside of historical norms. Continued monitoring will be required to determine if the continued hydrocarbon detections are part of a broader trend.

5.0 References

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- SMRC 2010. Stormwater Managers Resource Center. Monitoring and Assessment Guidance, The Simple Method. Website: <http://www.stormwatercenter.net>



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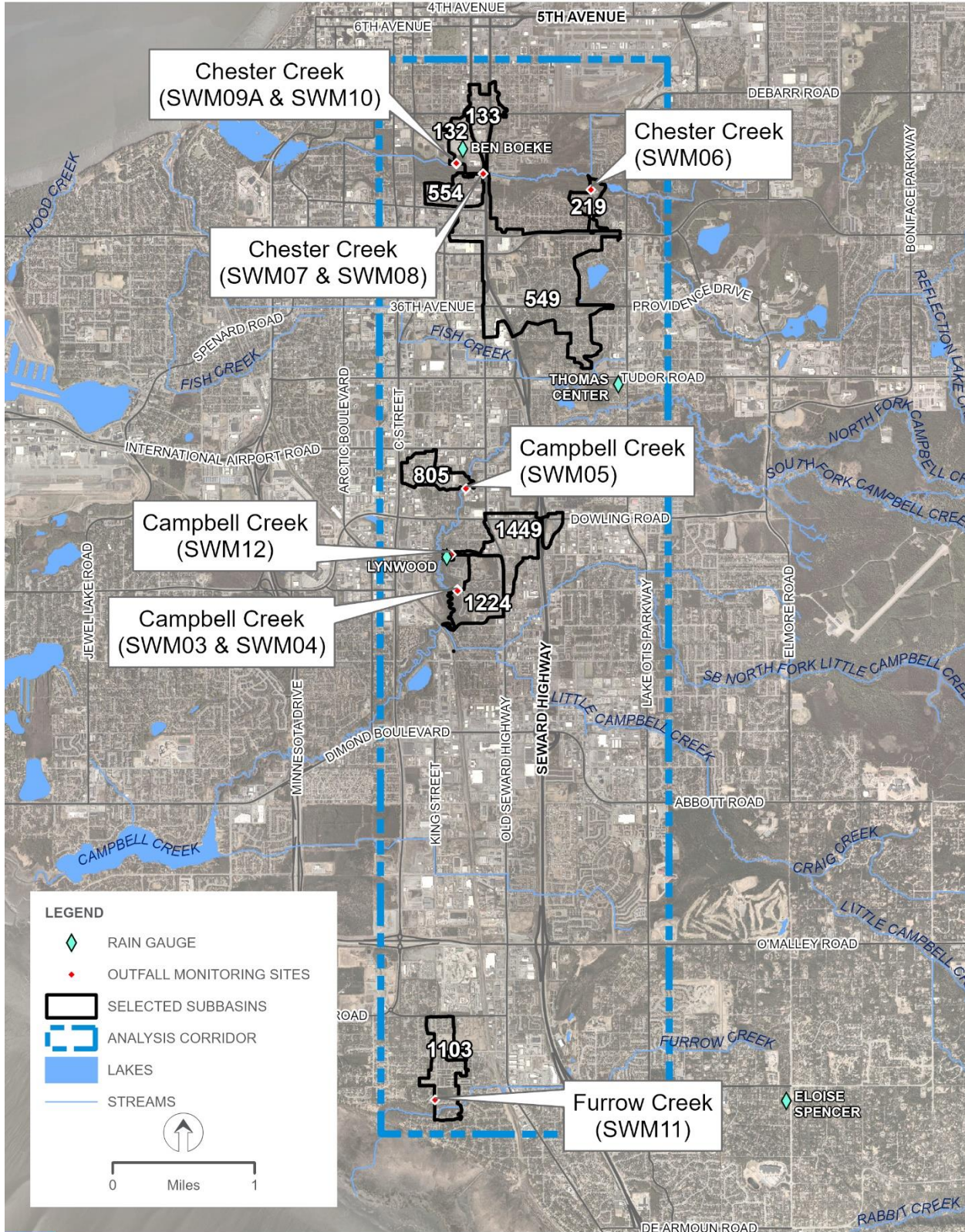


Appendix A

Outfall Site Maps

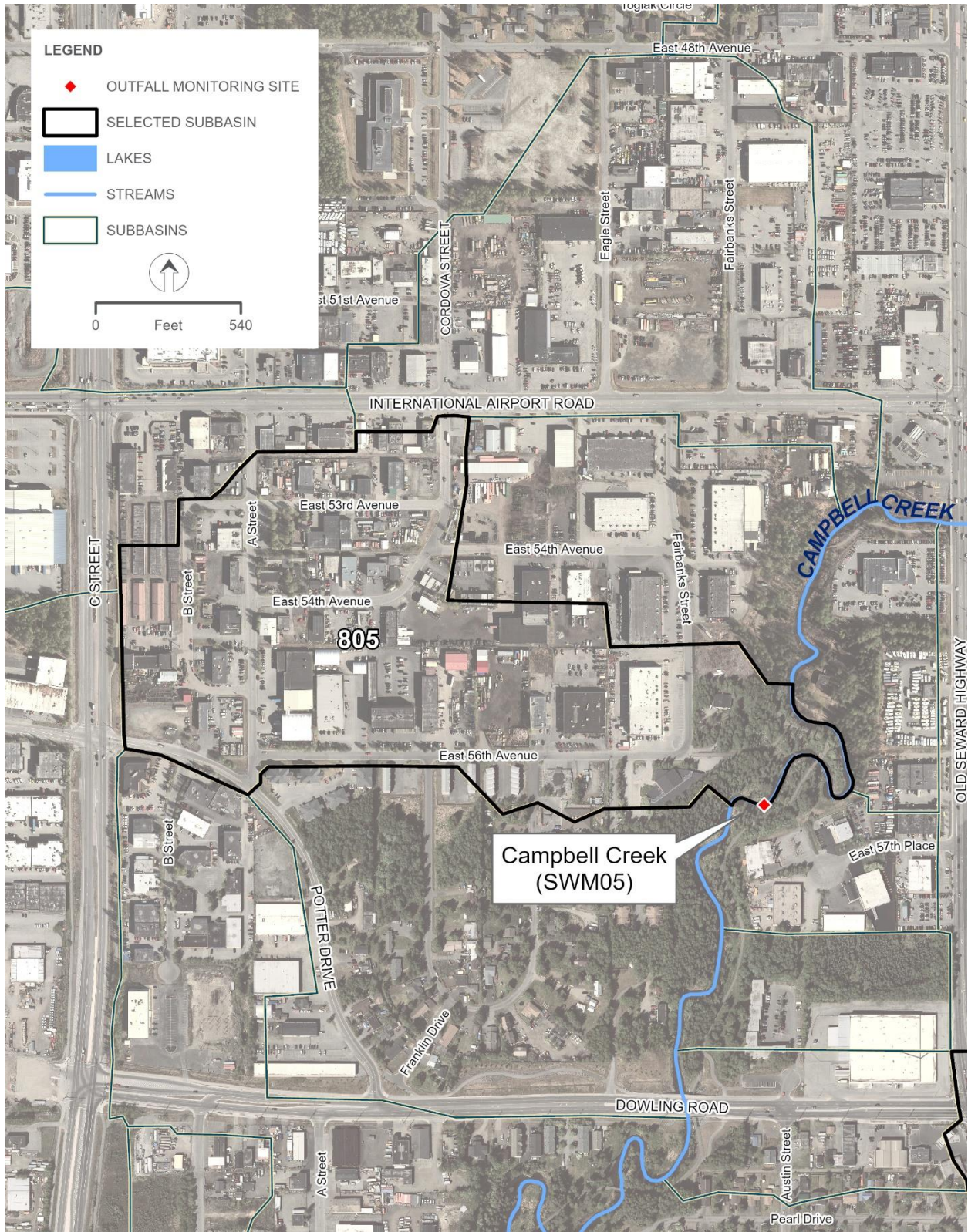


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**MOA STORMWATER OUTFALL MONITORING
TEN PRIORITY OUTFALL MONITORING SITES**

FIGURE 1



**MOA STORMWATER OUTFALL MONITORING
SAMPLING STATION SWM05, UPDATED SUBBASIN 805**

FIGURE 2



LEGEND

- ◆ OUTFALL MONITORING SITE
- SELECTED SUBBASIN
- LAKES
- STREAMS
- SUBBASINS

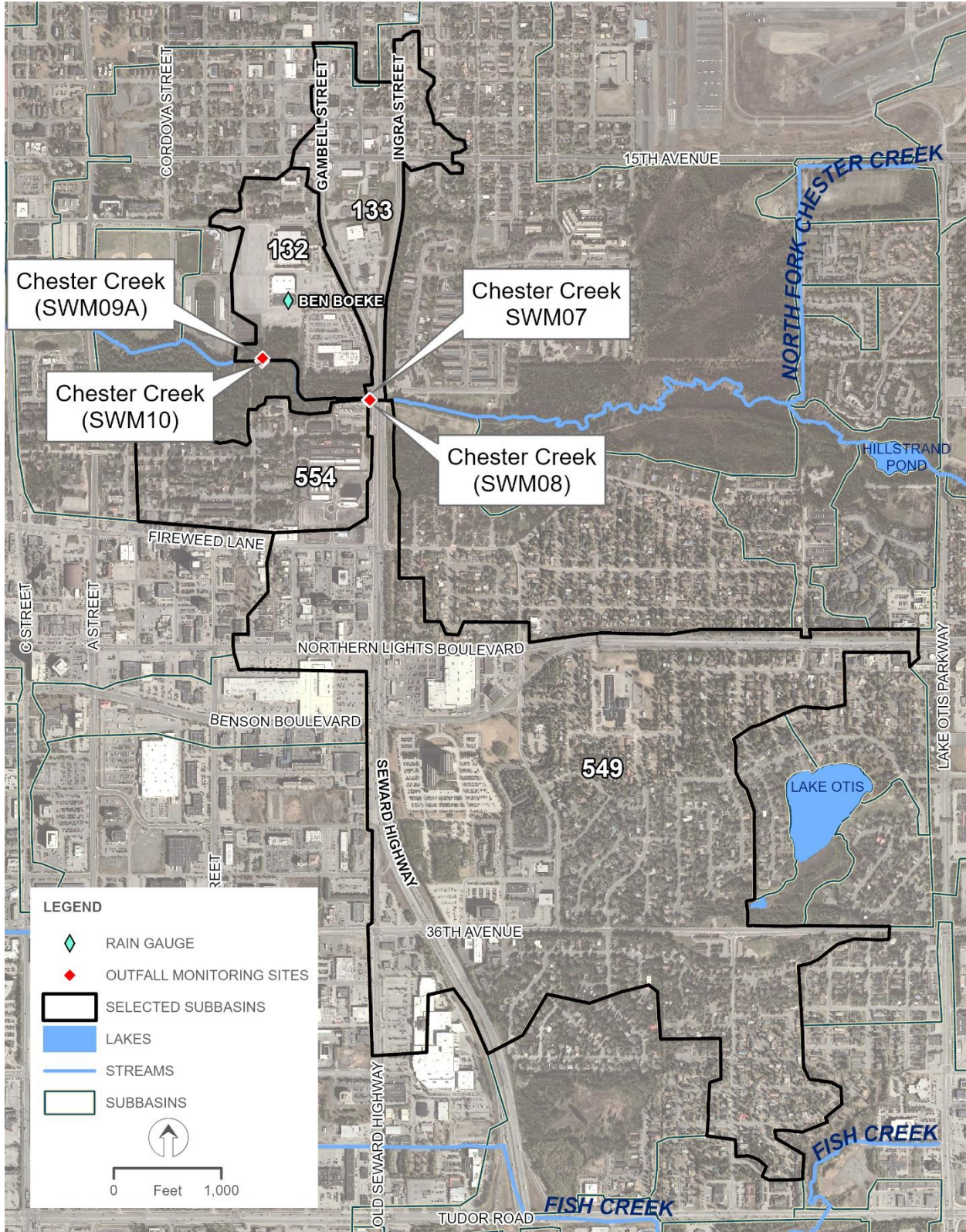
0 Feet 430

Zarvis Place



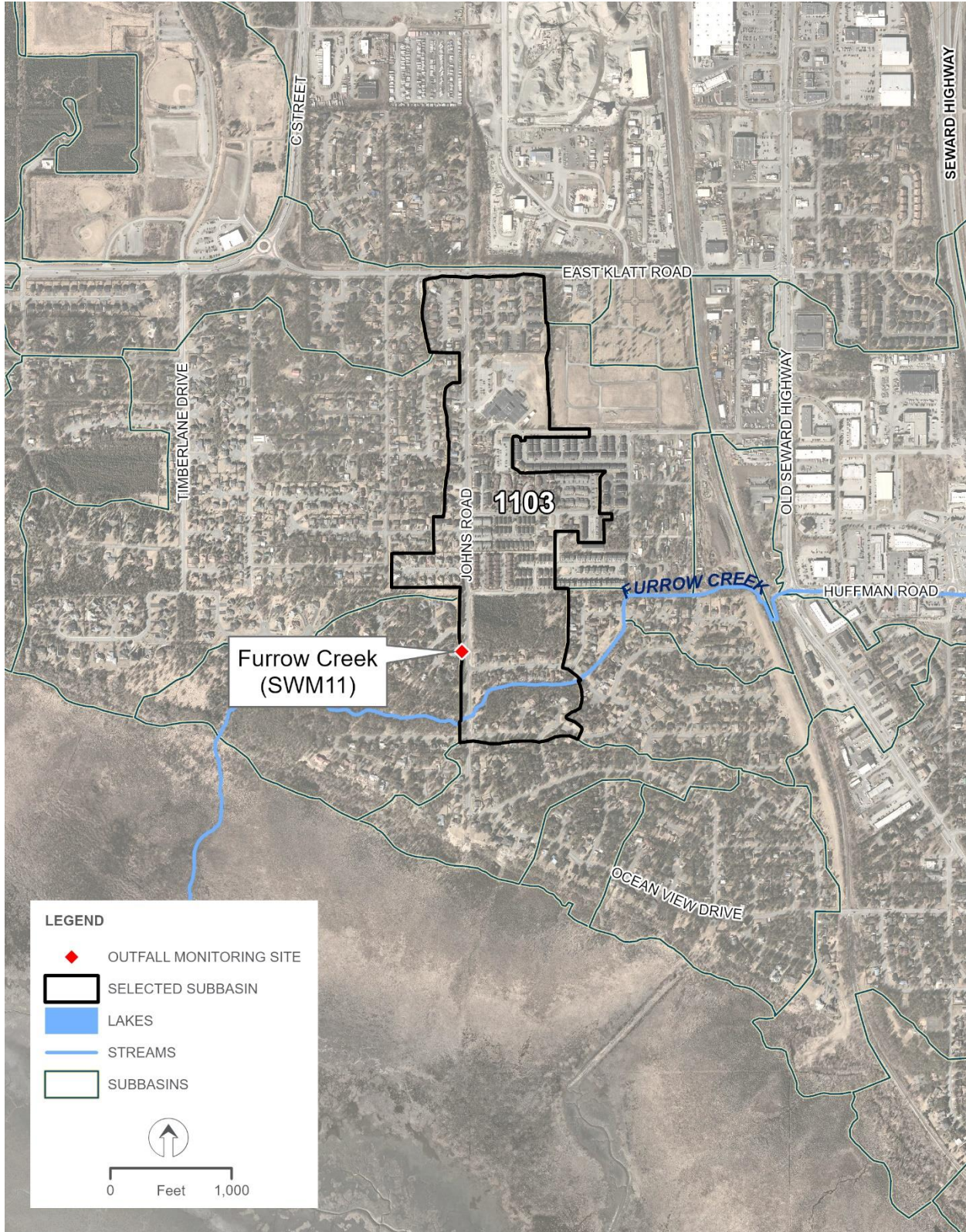
**MOA STORMWATER OUTFALL MONITORING
SAMPLING STATION SWM06, UPDATED SUBBASIN 219**

FIGURE 3



MOA STORMWATER OUTFALL MONITORING SAMPLING STATIONS SWM07, SWM08, SWM09 AND SWM10, UPDATED SUBBASINS 132, 133, 549, AND 554 FIGURE 4





MOA STORMWATER OUTFALL MONITORING
SAMPLING STATION SWM11, UPDATED SUBBASIN 1103

FIGURE 5

PATH: Z:\07964 ANCH DPW\10343181_2022 SWM ANALYSIS AND REPORT\7.2_WIP\MAP_DOCS\SWM_2022.APRX - USER: SNORTON - DATE: 12/9/2022



LEGEND

- RAIN GAUGE
- OUTFALL MONITORING SITES
- SELECTED SUBBASINS
- LAKES
- STREAMS
- SUBBASINS

0 Feet 970

**MOA STORMWATER OUTFALL MONITORING
SAMPLING STATIONS SWM03, SWM04, AND SWM12,
UPDATED SUBBASINS 1224 AND 1449**

FIGURE 6





Appendix B

Photographs



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Photograph 1. Outfall SWM03 (1224-1), Fairweather Loop off Sylvan Drive.



Photograph 2. Outfall SWM04 (1224-2), Fairweather Loop off Sylvan Drive.



Photograph 3. Outfall SWM05 (207-1), East 56th Avenue at Save School.



Photograph 4. Outfall SWM06 (314-22), Maplewood Street off of Northern Lights Boulevard.



Photograph 5. Outfall SWM07 (484-1), New Seward Highway at Chester Creek.



Photograph 6. Outfall SWM08 (86-1), New Seward Highway at Chester Creek.



Photograph 7. Outfall SWM09A (499-1), Anchorage Football Stadium & Ben Boeke Ice Arena.



Photograph 8. Outfall SWM10 (525-2), Eagle Street at Chester Creek.



Photograph 9. Outfall SWM11 (348-3), Johns Road at Botanical Circle.



Photograph 10. Outfall SWM12 (1454-1), Lynwood Retention Basin.



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Appendix C

Laboratory Data Packages and Chain of Custodies



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Appendix C1
Laboratory Data Package
Storm Event #1



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281 N Main St., STE # 101
Wasilla AK, 99654
907-373-6130

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project Name MOA Stormwater Monitoring - Sampling 1 2022
AWL # AWL-22-02534
PWS # None

Please direct any questions regarding the final report to Mary@AKWaterLabs.com or Matt@AKWaterLabs.com, or call 907-373-6130.

The results presented in this report meet the requirement of the laboratory's certifications and internal QC processes. Any exceptions will be noted in the case narratives attached. Reports with subcontracted laboratory data will be attached in full, with their quality control recoveries and case narrations.

The attached should contain analytical results for the analyses submitted on the client chain of custody. The information includes no opinions of the analysts or labs, data is represented after meeting certified testing requirements, and quality control measures.

Reproduction of the report in full requires the written approval of the laboratory.

Signature of Laboratory Management Date

Alaska Laboratory# AK01000

Client Project Name MOA Stormwater Monitoring - AWL # AWL-22-02534
Sampling 1 2022

Receipt Date and Time 8/5/22 14:09 Due Date 8/26/2022

Cooler/Sample Temp (C) 7.79, 7.99 Sampler Initials CH

Sample Receipt Comments Samples received by MCC on 8/5/2022 at 7.79, 7.99C (RT#1), on frozen ice. All hardness samples received at pH<2. Dissolved Cu filtered in lab. 0/0 bubbles in client VOA vials, 2/2 bubbles <6mm received in TB VOA vials. No BOD, FC, TSS MS/MSD in analysis. Duplicate results reported under AWL-22-02524-013.

Samples Received

Microbiological

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
SWM 03-01	AWL-22-02534-001-2	8/5/2022 11:05	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 04-01	AWL-22-02534-002-2	8/5/2022 11:10	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 05-01	AWL-22-02534-003-2	8/5/2022 10:08	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 06-01	AWL-22-02534-004-2	8/5/2022 8:30	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 07-01	AWL-22-02534-005-2	8/5/2022 9:00	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 08-01	AWL-22-02534-006-2	8/5/2022 9:05	8/5/2022 15:36	Fecal Coliform	7.79C
SWM 08-01 DUP	AWL-22-02534-007-2	8/5/2022 9:10	8/5/2022 15:36	Fecal Coliform	7.79C
SWM-09A-01	AWL-22-02534-008-2	8/5/2022 9:30	8/5/2022 15:55	Fecal Coliform	7.79C
SWM 10-01	AWL-22-02534-009-2	8/5/2022 9:40	8/5/2022 15:55	Fecal Coliform	7.79C
SWM 11-01	AWL-22-02534-010-2	8/5/2022 11:35	8/5/2022 15:55	Fecal Coliform	7.79C
SWM 12-01	AWL-22-02534-011-2	8/5/2022 10:30	8/5/2022 15:55	Fecal Coliform	7.99C
SWM 12-01 DUP	AWL-22-02534-013-2	8/5/2022 10:35	8/5/2022 15:55	Fecal Coliform	7.99C

Chemical

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
SWM 03-01	AWL-22-02534-001-1	8/5/2022 11:05	8/5/2022 15:04	BOD	7.79C
SWM 03-01	AWL-22-02534-001-1	8/5/2022 11:05	8/5/2022 15:40	TSS	7.79C
SWM 03-01	AWL-22-02534-001-4	8/5/2022 11:05	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 04-01	AWL-22-02534-002-1	8/5/2022 11:10	8/5/2022 15:04	BOD	7.79C
SWM 04-01	AWL-22-02534-002-1	8/5/2022 11:10	8/5/2022 15:40	TSS	7.79C
SWM 04-01	AWL-22-02534-002-4	8/5/2022 11:10	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 05-01	AWL-22-02534-003-1	8/5/2022 10:08	8/5/2022 15:04	BOD	7.79C
SWM 05-01	AWL-22-02534-003-1	8/5/2022 10:08	8/5/2022 15:40	TSS	7.79C
SWM 05-01	AWL-22-02534-003-4	8/5/2022 10:08	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 06-01	AWL-22-02534-004-1	8/5/2022 8:30	8/5/2022 15:04	BOD	7.79C
SWM 06-01	AWL-22-02534-004-1	8/5/2022 8:30	8/5/2022 15:40	TSS	7.79C
SWM 06-01	AWL-22-02534-004-4	8/5/2022 8:30	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 07-01	AWL-22-02534-005-1	8/5/2022 9:00	8/5/2022 15:04	BOD	7.79C
SWM 07-01	AWL-22-02534-005-1	8/5/2022 9:00	8/5/2022 15:40	TSS	7.79C
SWM 07-01	AWL-22-02534-005-4	8/5/2022 9:00	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 08-01	AWL-22-02534-006-1	8/5/2022 9:05	8/5/2022 15:04	BOD	7.79C
SWM 08-01	AWL-22-02534-006-1	8/5/2022 9:05	8/5/2022 15:40	TSS	7.79C
SWM 08-01	AWL-22-02534-006-4	8/5/2022 9:05	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 08-01 DUP	AWL-22-02534-007-1	8/5/2022 9:10	8/5/2022 15:04	BOD	7.79C
SWM 08-01 DUP	AWL-22-02534-007-1	8/5/2022 9:10	8/5/2022 15:40	TSS	7.79C
SWM 08-01 DUP	AWL-22-02534-007-4	8/5/2022 9:10	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM-09A-01	AWL-22-02534-008-1	8/5/2022 9:30	8/5/2022 15:04	BOD	7.79C
SWM-09A-01	AWL-22-02534-008-1	8/5/2022 9:30	8/5/2022 15:40	TSS	7.79C
SWM-09A-01	AWL-22-02534-008-4	8/5/2022 9:30	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 10-01	AWL-22-02534-009-1	8/5/2022 9:40	8/5/2022 15:04	BOD	7.79C
SWM 10-01	AWL-22-02534-009-1	8/5/2022 9:40	8/5/2022 15:40	TSS	7.79C
SWM 10-01	AWL-22-02534-009-4	8/5/2022 9:40	9/22/2022 13:00	Hardness	Calc from Ca and Mg

SWM 11-01	AWL-22-02534-010-1	8/5/2022 11:35	8/5/2022 15:04	BOD	7.79C
SWM 11-01	AWL-22-02534-010-1	8/5/2022 11:35	8/5/2022 15:40	TSS	7.79C
SWM 11-01	AWL-22-02534-010-4	8/5/2022 11:35	9/22/2022 13:00	Hardness	Calc from Ca and Mg
SWM 12-01	AWL-22-02534-011-1	8/5/2022 10:30	8/5/2022 15:04	BOD	7.99C
SWM 12-01	AWL-22-02534-011-1	8/5/2022 10:30	8/5/2022 15:40	TSS	7.99C
SWM 12-01	AWL-22-02534-011-4	8/5/2022 10:30	9/22/2022 13:15	Hardness	Calc from Ca and Mg
SWM 12-01 DUP	AWL-22-02534-013-1	8/5/2022 10:35	8/5/2022 15:04	BOD	7.99C
SWM 12-01 DUP	AWL-22-02534-013-1	8/5/2022 10:35	8/5/2022 15:40	TSS	7.99C
SWM 12-01 DUP	AWL-22-02534-013-4	8/5/2022 10:35	9/22/2022 13:15	Hardness	Calc from Ca and Mg

Subcontracted

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
SWM 03-01	AWL-22-02534-001-3	8/5/2022 11:05	9/9/2022 16:10	200.8 DISS	
SWM 03-01	AWL-22-02534-001-4	8/5/2022 11:05	8/24/2022 11:55	200.7	
SWM 04-01	AWL-22-02534-002-3	8/5/2022 11:10	9/9/2022 16:29	200.8 DISS	
SWM 04-01	AWL-22-02534-002-4	8/5/2022 11:10	8/24/2022 12:06	200.7	
SWM 05-01	AWL-22-02534-003-6	8/5/2022 10:08	8/16/2022 18:20	624	
SWM 05-01	AWL-22-02534-003-5	8/5/2022 10:08	8/15/2022 19:05	625 SIM	
SWM 05-01	AWL-22-02534-003-3	8/5/2022 10:08	9/9/2022 16:32	200.8 DISS	
SWM 05-01	AWL-22-02534-003-4	8/5/2022 10:08	8/24/2022 12:09	200.7	
SWM 06-01	AWL-22-02534-004-3	8/5/2022 8:30	9/9/2022 16:35	200.8 DISS	
SWM 06-01	AWL-22-02534-004-4	8/5/2022 8:30	8/24/2022 12:11	200.7	
SWM 07-01	AWL-22-02534-005-6	8/5/2022 9:00	8/16/2022 18:35	624	
SWM 07-01	AWL-22-02534-005-5	8/5/2022 9:00	8/15/2022 19:26	625 SIM	
SWM 07-01	AWL-22-02534-005-3	8/5/2022 9:00	9/9/2022 16:37	200.8 DISS	
SWM 07-01	AWL-22-02534-005-4	8/5/2022 9:00	8/24/2022 12:14	200.7	
SWM 08-01	AWL-22-02534-006-3	8/5/2022 9:05	9/9/2022 16:40	200.8 DISS	
SWM 08-01	AWL-22-02534-006-4	8/5/2022 9:05	8/24/2022 12:17	200.7	
SWM 08-01 DUP	AWL-22-02534-007-3	8/5/2022 9:10	9/9/2022 16:43	200.8 DISS	
SWM 08-01 DUP	AWL-22-02534-007-4	8/5/2022 9:10	8/24/2022 12:20	200.7	
SWM-09A-01	AWL-22-02534-008-6	8/5/2022 9:30	8/16/2022 18:50	624	
SWM-09A-01	AWL-22-02534-008-5	8/5/2022 9:30	8/15/2022 19:46	625 SIM	
SWM-09A-01	AWL-22-02534-008-3	8/5/2022 9:30	9/9/2022 16:45	200.8 DISS	
SWM-09A-01	AWL-22-02534-008-4	8/5/2022 9:30	8/24/2022 12:22	200.7	
SWM 10-01	AWL-22-02534-009-3	8/5/2022 9:40	9/9/2022 16:48	200.8 DISS	
SWM 10-01	AWL-22-02534-009-4	8/5/2022 9:40	8/24/2022 12:25	200.7	
SWM 11-01	AWL-22-02534-010-3	8/5/2022 11:35	9/9/2022 16:56	200.8 DISS	
SWM 11-01	AWL-22-02534-010-4	8/5/2022 11:35	8/24/2022 12:28	200.7	
SWM 12-01	AWL-22-02534-011-6	8/5/2022 10:30	8/17/2022 1:32	624	
SWM 12-01	AWL-22-02534-011-5	8/5/2022 10:30	8/15/2022 20:07	625 SIM	
SWM 12-01	AWL-22-02534-011-3	8/5/2022 10:30	9/9/2022 16:16	200.8 DISS	
SWM 12-01	AWL-22-02534-011-4	8/5/2022 10:30	8/24/2022 12:31	200.7	
SWM 12-01 DUP	AWL-22-02534-013-6	8/5/2022 10:30	8/16/2022 19:05	624	
SWM 12-01 DUP	AWL-22-02534-013-5	8/5/2022 10:30	8/15/2022 21:09	625 SIM	
SWM 12-01 DUP	AWL-22-02534-013-3	8/5/2022 10:30	9/9/2022 16:59	200.8 DISS	
SWM 12-01 DUP	AWL-22-02534-013-4	8/5/2022 10:30	8/24/2022 12:46	200.7	
SWM TripBlank-01	AWL-22-02534-012-1	8/5/2022 8:30	8/16/2022 16:50	624	

Analytical Methods

Analyte	Method	Comments
Fecal Coliform	SM9222D MF	
BOD	SM5210B	
TSS	SM2540D	
Hardness	SM2340B	
200.7	200.7	Subcontracted to ALS Kelso; Ca, Mg for Hardness Calculation; Batch 775116 : The Method Blank associated with this batch recovered Magnesium above the MDL, below the MRL, however recover was less than the laboratory detection limit. Data is considered reportable, and QC recovery within method criteria. All QC met method criteria.
200.8	200.8	Dissolved, Cu; Batch MMS11671 : The Matrix Spike associated with this batch recovered Copper above the MDL, below the MRL, and within control limits. All QC met method criteria.
TAH	624	Subcontracted to SGS ANC; Batch VMS21881 : All QC met method criteria.

PAH	625 SIM	<p>Subcontracted to SGS ANC: PAH; Batch XMS13299: The Parent Sample, AWL-22-02543-011, was diluted due to double-spiked internal standards. PAH MRL values are elevated due to this sample dilution. The BMS, BMSD associated with this batch recovered several analytes outside of control ranges: Anthracene (MS, MSD), Benzo(a)Anthracene (MS, MSD), Benzo(b)Fluoranthene (MS), Chrysene (MS, MSD), Fluoranthene (MS, MSD), Phenanthrene (MS, MSD), and Pyrene (MS, MSD). These analytes have been flagged with a 'Q' in the report to indicate the MS value was recovered outside of control limits. The BMS accompanied surrogate Fluoranthene-d10 was recovered outside of control limits, however all client samples recovered the sample surrogate Fluoranthene-d10 within control limits. All other QC met method criteria, and data is considered acceptable for reporting.</p>
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Cert Required
 CMDP # WW

Log In Initials: MCC 8-2-22
 DQO Initials: JTR 8-9-22 (WC/MCR)/ AKS 8-12-22

Comments: ****WEEKEND FEE**** Duplicate results reported as separate sample - amended sample time to parent sample for QC purposes. Listed Trip Blank as first time on COC to ensure coupled to all samples. Full subcontract reports will be included at the end of the report, after COCs. MCC 10-10-22

Definitions:

DUP	Sample Duplicate
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MRL	Method Reporting Limit
MB	Method Blank
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
TNTC	Count is Too Numerous To Count
<MDL	Result recovery is below the detectable laboratory limit, listed as the MDL

Data Qualifiers:

B	The result of both the method blank and the target sample are above the MDL.
D	Sample analysis accomplished through dilution.
J	The reported result is an estimated value above the LOD but below
U	Result is below the MDL, PQL, LOD, or LOQ
*	LCS/LCSD or Sample DUP fails all Duplicate criteria.
H	Holding time exceeded
E	Exceeds MCL

General Comments:

- 1.0) Basis: "As Received" = analyzed as received from client; "Dry" = dried prior to being analyzed; "Dry Weight Corrected" = analyzed as received; result corrected for percent moisture.

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 11:05
 PWS# None
 AWL Batch ID: 080522-01-FC
 AWL # AWL-22-02534
 Sample Location SWM 03-01
 AWL ID/ Fraction AWL-22-02534-001-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	3400	CFU/100mL	100			100.00	SM9222D MF	AKS	8/5/22 15:36	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 11:10
 PWS# None
 AWL Batch ID: 080522-01-FC
 AWL # AWL-22-02534
 Sample Location SWM 04-01
 AWL ID/ Fraction AWL-22-02534-002-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	330	CFU/100mL	10			10.00	SM9222D MF	AKS	8/5/22 15:36	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 10:08
 PWS# None
 AWL Batch ID: 080522-01-FC
 AWL # AWL-22-02534
 Sample SWM 05-01
 Location
 AWL ID/ Fraction AWL-22-02534-003-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	4200	CFU/100mL	100			100.00	SM9222D MF	AKS	8/5/22 15:36	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 1 2022 **Collection**
 DW Y/N N Date / time 8/5/22 9:00
 PWS# None
 AWL Batch ID: 080522-01-FC
 AWL # AWL-22-02534
 Sample Location SWM 07-01
 AWL ID/ Fraction AWL-22-02534-005-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	12400	CFU/100mL	100			100.00	SM9222D MF	AKS	8/5/22 15:36	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 1 2022 **Collection**
 DW Y/N N Date / time 8/5/22 9:10
 PWS# None AWL Batch ID: 080522-01-FC
 AWL # AWL-22-02534
 Sample Location SWM 08-01 DUP
 AWL ID/ Fraction AWL-22-02534-007-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1063.64	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/5/22 15:36	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:30
 PWS# None
 AWL Batch ID: 080522-02-FC
 AWL # AWL-22-02534
 Sample Location SWM-09A-01
 AWL ID/ Fraction AWL-22-02534-008-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	645.45	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/5/22 15:55	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:40
 PWS# None
 AWL Batch ID: 080522-02-FC
 AWL # AWL-22-02534
 Sample Location SWM 10-01
 AWL ID/ Fraction AWL-22-02534-009-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	163.64	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/5/22 15:55	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 11:35
 PWS# None
 AWL Batch ID: 080522-02-FC
 AWL # AWL-22-02534
 Sample Location SWM 11-01
 AWL ID/ Fraction AWL-22-02534-010-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1490.91	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/5/22 15:55	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 1 2022 **Collection**
 DW Y/N N Date / time 8/5/22 10:30
 PWS# None AWL Batch ID: 080522-02-FC
 AWL # AWL-22-02534
 Sample SWM 12-01
 Location
 AWL ID/ Fraction AWL-22-02534-011-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	5600	CFU/100mL	100			100	SM9222D MF	AKS	8/5/22 15:55	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 10:35
 PWS# None
 AWL Batch ID: 080522-02-FC
 AWL # AWL-22-02534
 Sample Location SWM 12-01 DUP
 AWL ID/ Fraction AWL-22-02534-013-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	6300	CFU/100mL	100			100	SM9222D MF	AKS	8/5/22 15:55	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 11:10
 PWS# None

AWL # AWL-22-02534
 Sample SWM 04-01
 Location
 AWL ID/ Fraction AWL-22-02534-002-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.74	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	119.72	mg/L	30.9083	13.8889			2.78	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	22.71	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-002-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 10:08
 PWS# None

AWL # AWL-22-02534
 Sample SWM 05-01
 Location
 AWL ID/ Fraction AWL-22-02534-003-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.88	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	96.00	mg/L	27.8175	12.5			2.5	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	41.48	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-003-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 8:30
 PWS# None

AWL # AWL-22-02534
 Sample SWM 06-01
 Location
 AWL ID/ Fraction AWL-22-02534-004-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.94	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	9.82	mg/L	16.558	7.44048		J	1.49	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	12.47	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-004-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(Hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:00
 PWS# None

AWL # AWL-22-02534
 Sample SWM 07-01
 Location
 AWL ID/ Fraction AWL-22-02534-005-4 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	4.72	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	55.75	mg/L	27.8175	12.5			2.50	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	15.75	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-005-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(Hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:05
 PWS# None

AWL # AWL-22-02534
 Sample SWM 08-01
 Location
 AWL ID/ Fraction AWL-22-02534-006-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.61	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	18.50	mg/L	18.545	8.33		J	1.67	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	15.97	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-006-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(Hardness)
AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:10
 PWS# None

AWL # AWL-22-02534
 Sample SWM 08-01 DUP
 Location
 AWL ID/ Fraction AWL-22-02534-007-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.31	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	17.68	mg/L	17.8891	8.04		J	1.61	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	16.38	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-007-4										

Analyst Batching initials/date
 Analyst Reviewer initials/date

JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:30
 PWS# None

AWL # AWL-22-02534
 Sample SWM-09A-01
 Location
 AWL ID/ Fraction AWL-22-02534-008-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.74	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	15.00	mg/L	16.8591	7.58		J	1.52	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	25.67	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-008-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 9:40
 PWS# None

AWL # AWL-22-02534
 Sample SWM 10-01
 Location
 AWL ID/ Fraction AWL-22-02534-009-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.15	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	<MDL	mg/L	16.6323	7.47		U	1.49	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments	Final results for TSS recovered under the MDL at 6.43 mg/L. JTR 8-15-22										
Hardness	70.74	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-009-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 11:35
 PWS# None

AWL # AWL-22-02534
 Sample SWM 11-01
 Location
 AWL ID/ Fraction AWL-22-02534-010-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.51	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	23.45	mg/L	16.4115	7.37			1.47	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	10.58	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:00	092222-01-Hardness
Comments	AWL-22-02534-010-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 10:30
 PWS# None

AWL # AWL-22-02534
 Sample SWM 12-01
 Location
 AWL ID/ Fraction AWL-22-02534-011-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	6.15	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	157.00	mg/L	55.635	25			5	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	84.38	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:15	092222-02-Hardness
Comments	AWL-22-02534-011-4										

Analyst Batching initials/date JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 Analyst reviewer initials/date AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 1 2022
 DW Y/N N Date / time 8/5/22 10:35
 PWS# None

AWL # AWL-22-02534
 Sample SWM 12-01 DUP
 Location
 AWL ID/ Fraction AWL-22-02534-013-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	6.48	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/5/22 15:04	080522-01-BOD
Comments											
TSS	98.00	mg/L	55.635	25			5	SM2540D	JTR	8/5/22 15:40	080522-02-TSS
Comments											
Hardness	82.10	mg/L	1	1			1	SM2340B	MJG	9/22/22 13:15	092222-02-Hardness
Comments	AWL-22-02534-0013-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 8-15-22 (TSS), AKS 8-15-22(BOD), MJG 9-22-22(hardness)
 AKS 8-15-22(TSS), JTR 8-17-22 (BOD), JTR 9-26-22 (Hardness)

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 11:05
PWS# None

AWL # AWL-22-02534
Sample Location SWM 03-01
AWL ID/ Fraction AWL-22-02534-001-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.11	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:10	MMS116 71
Comments	Lab Sample ID: 1224919001										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 03-01 **Collection**
AWL ID/ Fraction AWL-22-02534-001-4 Matrix SW Date / time 8/5/2022 11:05

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	8970	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 11:55	775116
Magnesium	3970	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 11:55	775116
Comments	Sample K2209554-001										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 11:10
PWS# None

AWL # AWL-22-02534
Sample Location SWM 03-01
AWL ID/ Fraction AWL-22-02534-002-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.33	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:29	MMS116 71
Comments	Lab Sample ID: 1224919002										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 03-01 **Collection**
AWL ID/ Fraction AWL-22-02534-002-4 Matrix SW Date / time 8/5/2022 11:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	5630	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 11:55	775116
Magnesium	2100	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 11:55	775116
Comments	Sample K2209554-002										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 10:08
PWS# None

AWL # AWL-22-02534
Sample Location SWM 05-01
AWL ID/ Fraction AWL-22-02534-003-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/16/2022 18:20	VMS21880
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:20	VMS21880
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/16/2022 18:20	VMS21880
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:20	VMS21880
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:20	VMS21880
Comments	Sample 1224648001										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Sample Location SWM 05-01 **Collection**
AWL ID/ Fraction AWL-22-02534-003-5 Matrix SW Date / time 8/5/2022 10:08

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Acenaphthene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Anthracene	<0.0223	ug/L	0.0446	0.0134		Q, U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Benzo(a)anthracene	0.0152	ug/L	0.0446	0.0134		Q, J	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Benzo(a)pyrene	<0.00895	ug/L	0.0179	0.00554		U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Benzo(b)fluoranthene	<0.0223	ug/L	0.0446	0.0134		Q,U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Benzo(g,h,i)perylene	0.0203	ug/L	0.0446	0.0134		J	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Benzo(k)fluoranthene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Chrysene	0.0168	ug/L	0.0446	0.0134		Q, J	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299
Dibenzo(a,h)anthracene	<0.00895	ug/L	0.0179	0.00554		U	1	625 SIM	SGS ANCH	8/15/2022 19:05	XMS13299

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 10:08
PWS# None

AWL # AWL-22-02534
Sample SWM 05-01
Location
AWL ID/ Fraction AWL-22-02534-003-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.84	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 16:32	MMS116 71
Comments	Lab Sample ID: 1224919003										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample SWM 05-01 **Collection**
Location
AWL ID/ Fraction AWL-22-02534-003-4 Matrix SW Date / time 8/5/2022 10:08

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	11500	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:09	775116
Magnesium	3100	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:09	775116
Comments	Sample K2209554-003										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 8:30
PWS# None

AWL # AWL-22-02534
Sample SWM 06-01
Location
AWL ID/ Fraction AWL-22-02534-004-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.89	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:35	MMS116 71
Comments	Lab Sample ID: 1224919004										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample SWM 06-01 **Collection**
Location
AWL ID/ Fraction AWL-22-02534-004-4 Matrix SW Date / time 8/5/2022 8:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3490	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:11	775116
Magnesium	911	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:11	775116
Comments	Sample K2209554-004										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:00
PWS# None

AWL # AWL-22-02534
Sample Location SWM 07-01
AWL ID/ Fraction AWL-22-02534-005-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/16/2022 18:35	VMS21880
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:35	VMS21880
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/16/2022 18:35	VMS21880
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:35	VMS21880
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:35	VMS21880
Comments	Sample 1224648003										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Sample Location SWM 07-01 **Collection**
AWL ID/ Fraction AWL-22-02534-005-5 Matrix SW Date / time 8/5/2022 9:00

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Anthracene	<0.0232	ug/L	0.0463	0.0139		U,Q	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U,Q	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U,Q	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Chrysene	0.0169	ug/L	0.0463	0.0139		J, Q	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	8/15/2022 19:26	XMS13299

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:00
PWS# None

AWL # AWL-22-02534
Sample Location SWM 07-01
AWL ID/ Fraction AWL-22-02534-005-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.18	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 16:37	MMS11671
Comments	Lab Sample ID: MMS11671										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 07-01 **Collection**
AWL ID/ Fraction AWL-22-02534-005-4 Matrix SW Date / time 8/5/2022 9:00

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3670	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:14	775116
Magnesium	1600	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:14	775116
Comments	Sample K2209554-005										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:05
PWS# None

AWL # AWL-22-02534
Sample Location SWM 08-01
AWL ID/ Fraction AWL-22-02534-006-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.37	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:40	MMS116 71
Comments	Lab Sample ID: 1224919006										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 08-01 **Collection**
AWL ID/ Fraction AWL-22-02534-006-4 Matrix SW Date / time 8/5/2022 9:05

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	4680	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:17	775116
Magnesium	1040	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:17	775116
Comments	Sample K2209554-006										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:10
PWS# None

AWL # AWL-22-02534
Sample SWM 08-01 DUP
Location
AWL ID/ Fraction AWL-22-02534-007-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.44	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:43	MMS11671
Comments	Lab Sample ID: 1224919007										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample SWM 08-01 DUP **Collection**
Location
AWL ID/ Fraction AWL-22-02534-007-4 Matrix SW Date / time 8/5/2022 9:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	4810	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:20	775116
Magnesium	1060	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:20	775116
Comments	Sample K2209554-007										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
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Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022
DW Y/N N Date / time 8/5/2022 9:30
PWS# None

AWL # AWL-22-02534
Sample Location SWM-09A-01
AWL ID/ Fraction AWL-22-02534-008-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/16/2022 18:50	VMS21880
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:50	VMS21880
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/16/2022 18:50	VMS21880
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:50	VMS21880
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 18:50	VMS21880
Comments	Sample 1224648005										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Sample Location SWM-09A-01 **Collection**
AWL ID/ Fraction AWL-22-02534-008-5 Matrix SW Date / time 8/5/2022 9:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Acenaphthene	0.0140	ug/L	0.0446	0.0134		J	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Anthracene	<0.0223	ug/L	0.0446	0.0134		U, Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Benzo(a)anthracene	<0.0223	ug/L	0.0446	0.0134		U, Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Benzo(a)pyrene	<0.00895	ug/L	0.0179	0.00554		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Benzo(b)fluoranthene	<0.0223	ug/L	0.0446	0.0134		U, Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Benzo(g,h,i)perylene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Benzo(k)fluoranthene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Chrysene	<0.0223	ug/L	0.0446	0.0134		U, Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299
Dibenzo(a,h)anthracene	<0.00895	ug/L	0.0179	0.00554		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS13299

Fluoranthene	0.0234	ug/L	0.0446	0.0134		J, Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Fluorene	0.0315	ug/L	0.0446	0.0134		J	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Indeno(1,2,3-cd)pyrene	<0.0223	ug/L	0.0446	0.0134		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Naphthalene	<0.0447	ug/L	0.0893	0.0277		U	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Phenanthrene	<0.0447	ug/L	0.0893	0.0277		U,Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Pyrene	0.0166	ug/L	0.0446	0.0134		J,Q	1	625 SIM	SGS ANCH	8/15/2022 19:46	XMS1329 9
Comments	Sample 1224648006										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aqueous Aromatic HydroCarbons (TAqH)	0.0855	ug/L					1	Calculation	MCC	8/30/2022 15:06	TAqH
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L				U	1	Calculation	MCC	8/30/2022 15:06	TAH

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date MJG 9-6-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:30
PWS# None

AWL # AWL-22-02534
Sample Location SWM-09A-01
AWL ID/ Fraction AWL-22-02534-008-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.84	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:45	MMS116 71
Comments	Lab Sample ID: 1224919008										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM-09A-01 **Collection**
AWL ID/ Fraction AWL-22-02534-008-4 Matrix SW Date / time 8/5/2022 9:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	7460	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:22	775116
Magnesium	1710	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:22	775116
Comments	Sample K2209554-008										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 9:40
PWS# None

AWL # AWL-22-02534
Sample Location SWM 10-01
AWL ID/ Fraction AWL-22-02534-009-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.00	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 16:48	MMS116 71
Comments	Lab Sample ID: 1224919009										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 10-01 **Collection**
AWL ID/ Fraction AWL-22-02534-009-4 Matrix SW Date / time 8/5/2022 9:40

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	20000	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:25	775116
Magnesium	5050	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:25	775116
Comments	Sample K2209554-009										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 11:35
PWS# None

AWL # AWL-22-02534
Sample Location SWM 11-01
AWL ID/ Fraction AWL-22-02534-010-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.51	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 16:56	MMS11671
Comments	Lab Sample ID: 1224919010										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 11-01 **Collection**
AWL ID/ Fraction AWL-22-02534-010-4 Matrix SW Date / time 8/5/2022 11:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3290	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:28	775116
Magnesium	575	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:28	775116
Comments	Sample K2209554-010										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks
Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022
DW Y/N N Date / time 8/5/2022 10:30
PWS# None
AWL # AWL-22-02534
Sample Location SWM 12-01
AWL ID/ Fraction AWL-22-02534-011-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/17/2022 1:32	VMS2188 1
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 1:32	VMS2188 1
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/17/2022 1:32	VMS2188 1
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 1:32	VMS2188 1
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 1:32	VMS2188 1
Comments	Sample 1224648007										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Sample Location SWM 12-01 **Collection**
AWL ID/ Fraction AWL-22-02534-011-5 Matrix SW Date / time 8/5/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0447	ug/L	0.0893	0.0268		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Acenaphthene	<0.0447	ug/L	0.0893	0.0268		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Anthracene	<0.0447	ug/L	0.0893	0.0268		U,Q	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Benzo(a)anthracene	<0.0447	ug/L	0.0893	0.0268		U,Q	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Benzo(a)pyrene	<0.0179	ug/L	0.0357	0.0111		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Benzo(b)fluoranthene	<0.0447	ug/L	0.0893	0.0268		U,Q	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Benzo(g,h,i)perylene	<0.0447	ug/L	0.0893	0.0268		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Benzo(k)fluoranthene	<0.0447	ug/L	0.0893	0.0268		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Chrysene	<0.0447	ug/L	0.0893	0.0268		U,Q	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9
Dibenzo(a,h)anthracene	<0.0179	ug/L	0.0357	0.0111		U	1	625 SIM	SGS ANCH	8/15/2022 20:07	XMS1329 9

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 10:30
PWS# None

AWL # AWL-22-02534
Sample Location SWM 12-01
AWL ID/ Fraction AWL-22-02534-011-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	36.0	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 16:16	MMS116 71
Comments	Lab Sample ID: 1224919011										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 12-01 **Collection**
AWL ID/ Fraction AWL-22-02534-011-4 Matrix SW Date / time 8/5/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	23800	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:31	775116
Magnesium	6060	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:31	775116
Comments	Sample K2209554-011										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks
Project MOA Stormwater Monitoring - Sampling 1 2022 **Collection**
DW Y/N N Date / time 8/5/2022 10:30
PWS# None
AWL # AWL-22-02534
Sample Location SWM 12-01 DUP
AWL ID/ Fraction AWL-22-02534-013-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/16/2022 19:05	VMS21880
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 19:05	VMS21880
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/16/2022 19:05	VMS21880
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 19:05	VMS21880
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 19:05	VMS21880
Comments	Sample 1224648013										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-2-22

Sample Location SWM 12-01 DUP **Collection**
AWL ID/ Fraction AWL-22-02534-013-5 Matrix SW Date / time 8/5/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0245	ug/L	0.0490	0.0147		U	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Acenaphthene	<0.0245	ug/L	0.0490	0.0147		U	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Anthracene	<0.0245	ug/L	0.0490	0.0147		U,Q	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Benzo(a)anthracene	<0.0245	ug/L	0.0490	0.0147		U,Q	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Benzo(a)pyrene	<0.00980	ug/L	0.0196	0.00608		U	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Benzo(b)fluoranthene	<0.0245	ug/L	0.0490	0.0147		U,Q	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Benzo(g,h,i)perylene	0.0310	ug/L	0.0490	0.0147		J	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Benzo(k)fluoranthene	<0.0245	ug/L	0.0490	0.0147		U	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Chrysene	0.0177	ug/L	0.0490	0.0147		J,Q	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Dibenzo(a,h)anthracene	<0.00980	ug/L	0.0196	0.00608		U	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299
Fluoranthene	0.0275	ug/L	0.0490	0.0147		J,Q	1	625 SIM	SGS ANCH	8/15/2022 21:09	XMS13299

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 10:30
PWS# None

AWL # AWL-22-02534
Sample Location SWM 12-01 DUP
AWL ID/ Fraction AWL-22-02534-013-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.79	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 16:59	MMS116 71
Comments	Lab Sample ID: 1224919014										

Analyst Batching initials/date MJG 9-21-22
Analyst Reviewer initials/date MCC 9-26-22

Sample Location SWM 12-01 DUP **Collection**
AWL ID/ Fraction AWL-22-02534-013-4 Matrix SW Date / time 8/5/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	23100	ug/L	21	3			1	200.7	ALS KELSO	8/24/2022 12:46	775116
Magnesium	5930	ug/L	5.3	0.4			1	200.7	ALS KELSO	8/24/2022 12:46	775116
Comments	Sample K2209554-012										

Analyst Batching initials/date MCC 8-30-22
Analyst Reviewer initials/date JKR 9-1-22

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project MOA Stormwater Monitoring - **Collection**
Sampling 1 2022

DW Y/N N Date / time 8/5/2022 8:30
PWS# None

AWL # AWL-22-02534
Sample Location SWM TripBlank-01
AWL ID/ Fraction AWL-22-02534-012-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/16/2022 16:50	VMS2188 0
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 16:50	VMS2188 0
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/16/2022 16:50	VMS2188 0
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 16:50	VMS2188 0
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/16/2022 16:50	VMS2188 0
Comments	Sample 1224648015										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 8-30-22
JKR 9-2-22

Alaska Laboratory# AK01000

Analysis QC Results

BOD SM 5210B

Batch ID 080522-01-BOD

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
BOD	0.17		0.3	0.9		AKS	8/5/22 15:04

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
BOD	209.10		223	93.77	85-115	AKS	8/5/22 15:04

Sample Duplicate Parent ID AWL-22-02534-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
BOD	5.36		5.73	6.67	≤20	AKS	8/5/22 15:04

Total Suspended Solids SM2540D

Batch ID 080522-02-TSS

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
TSS	0.00		5	11.1		JTR	8/5/2022 15:40

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
TSS	87.00		96.2	90.43659	90-110	JTR	8/5/2022 15:40

Sample Duplicate 1 Parent ID AWL-22-02534-002-1

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	126.77		119.72	5.72	≤20	JTR	8/5/2022 15:40

Sample Duplicate 2 Parent ID AWL-22-02534-011-1

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	102.50		98.00	4.49	≤20	JTR	8/5/2022 15:40

AWL-22-02 534

AWL Chain of Custody

Custody form **MUST** be signed
Please provide as much information as possible



Alaska Water Laboratories
281 N Main st, Suite # 101
Wasilla, AK 99654
907-373-6130

Client/Company Name & Address: HDR Inc. 582 E. 36th Ave. Suite 500 Anchorage, AK 99503-4169		Public Water System (PWS) ID: Project Name/ID :		Quote Number AWL #	
Contact Person: Cindy Helmericks Phone No: 907.644.2017 Fax No: --- E-mail: cindy.helmericks@hdrinc.com		Invoice Contact Name & Address & Phone: HDR Inc. ATTN: Calley Hall 582 E. 36th Ave. Suite 500, Anchorage, AK 99503-4169 Calley.Hall@hdrinc.com, 907.644.2048		Account #: Check Credit	
Special Instructions/Requirements:		Requested Date for Results: Results to STATE: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Requested Analysis/Method	
Kit Preparation/Shipping Charge:		Specify if REPEAT sample		PO/Contract No.: 10343108, Task 1.0	
Client Sample Identification (Name, Designation, Location, etc.)		Turnaround Time (TAT) for Results <input checked="" type="checkbox"/> Standard Expedited (prior authorization required) *Specify Requested Due Date if not standard		Routine Non-Routine	
Date Sampled Time Sampled Matrix (DW, WW, SO) No. of Containers		2540D - Total Suspended Solids 2540D - Total Suspended Solids (Lab Filter) EPA 200.8/2340B - Total Hardness HNO3 EPA 625 SIM - TaqH EPA 624 - TAH Preservative: HCl		Comments	
Relinquished by: Courtney Holston Date: 08/05/22 Time: 13:30		Date: 08/05/22 Time: 10:30 Matrix: WS No. of Containers: 2		Prim, MS/MSD Trip Blanks (3)	
Relinquished by:		Date: 08/05/22 Time: 09:00 Matrix: WS No. of Containers: 2		Duplicate for 12-01	
Relinquished by:		Date: 08/05/22 Time: 10:35 Matrix: WS No. of Containers: 4		Dup data for 12-01	
Relinquished by:		Date:		Date:	
Relinquished by:		Date:		Date:	
Relinquished by:		Date:		Date:	
Name of Sampler: (printed) Cynthia (Cindy) Helmericks		Received by: MOC Date: 8-5-22 Time: 14:09		Section To Be Completed by AWL Intact Broken Custody Seal (circle): Temperature on arrival: 7.79C °C Thermo ID: RT#1 Recv Notes: All TAH samples near 7.79C No bubbles in vials 217 bubble < to main in TB	
Temp: TB (circled) Cooler Ice: Frozen (circled) Wet		Delivery Method (Circle) Courier USPS/Mail Hand		Delivery Method (Circle)	

No BOD, FC, TSS MS Dups
Duplicate reported under AWL-22-02534-013



August 25, 2022

Service Request No:K2209554

Mary Curry
Alaska Water Laboratories
281 N. Main Street, Suite #101
Wasilla, AK 99654

Laboratory Results for: AWL-22-02534

Dear Mary,

Enclosed are the results of the sample(s) submitted to our laboratory August 19, 2022
For your reference, these analyses have been assigned our service request number **K2209554**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water

Service Request: K2209554
Date Received: 08/19/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Twelve surface water samples were received for analysis at ALS Environmental on 08/19/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy

Date 08/25/2022



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-02534-001-4		Lab ID: K2209554-001				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	8970		3	21	ug/L	200.7
Magnesium	3970		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-002-4		Lab ID: K2209554-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	5630		3	21	ug/L	200.7
Magnesium	2100		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-003-4		Lab ID: K2209554-003				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	11500		3	21	ug/L	200.7
Magnesium	3100		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-004-4		Lab ID: K2209554-004				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3490		3	21	ug/L	200.7
Magnesium	911		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-005-4		Lab ID: K2209554-005				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3670		3	21	ug/L	200.7
Magnesium	1600		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-006-4		Lab ID: K2209554-006				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	4680		3	21	ug/L	200.7
Magnesium	1040		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-007-4		Lab ID: K2209554-007				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	4810		3	21	ug/L	200.7
Magnesium	1060		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-008-4		Lab ID: K2209554-008				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	7460		3	21	ug/L	200.7
Magnesium	1710		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-009-4		Lab ID: K2209554-009				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	20000		3	21	ug/L	200.7
Magnesium	5050		0.4	5.3	ug/L	200.7



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-02534-010-4	Lab ID: K2209554-010
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3290		3	21	ug/L	200.7
Magnesium	575		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-011-4	Lab ID: K2209554-011
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	23800		3	21	ug/L	200.7
Magnesium	6060		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02534-013-4	Lab ID: K2209554-012
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	23100		3	21	ug/L	200.7
Magnesium	5930		0.4	5.3	ug/L	200.7



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Alaska Water Laboratories
Project: AWL-22-02534

Service Request:K2209554

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2209554-001	AWL-22-02534-001-4	8/5/2022	1105
K2209554-002	AWL-22-02534-002-4	8/5/2022	1110
K2209554-003	AWL-22-02534-003-4	8/5/2022	1008
K2209554-004	AWL-22-02534-004-4	8/5/2022	0830
K2209554-005	AWL-22-02534-005-4	8/5/2022	0900
K2209554-006	AWL-22-02534-006-4	8/5/2022	0905
K2209554-007	AWL-22-02534-007-4	8/5/2022	0910
K2209554-008	AWL-22-02534-008-4	8/5/2022	0930
K2209554-009	AWL-22-02534-009-4	8/5/2022	0940
K2209554-010	AWL-22-02534-010-4	8/5/2022	1135
K2209554-011	AWL-22-02534-011-4	8/5/2022	1030
K2209554-012	AWL-22-02534-013-4	8/5/2022	1030

152209554



281 N Main St., STE # 101
Wasilla AK. 99654
907-373-6130

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab: ALS		
Client Project Name: AWL-22-02534	Certification Required: WW			
Requested Due Date (if not standard TAT): Standard	Notes : Level 2 report QC on client samples - Please provide LINKO Report to MDL edd			
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-02534-001-4	8/5/2022 11:05	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-002-4	8/5/2022 11:10	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-003-4	8/5/2022 10:08	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-004-4	8/5/2022 8:30	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-005-4	8/5/2022 9:00	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-006-4	8/5/2022 9:05	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-007-4	8/5/2022 9:10	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-008-4	8/5/2022 9:30	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-009-4	8/5/2022 9:40	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-010-4	8/5/2022 11:35	200.7	Ca, Mg - HNO3	SW
AWL-22-02534-011-4	8/5/2022 10:30	200.7	Ca, Mg - HNO3: PARENT/ MS/MSD	SW
AWL-22-02534-013-4	8/5/2022 10:30	200.7	Ca, Mg - HNO3; DUP Vol - Report DUP as separate sample	SW
Relinquished By: mcc	Date&Time: 8/15/22 15:51	Received By: 	Date&Time: 8/19/22 0830	Temp: CoC Seal? Y / N pH: Ice: Frozen Melted / None
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp: CoC Seal? Y / N pH: Ice: Frozen Melted / None

Cooler Receipt and Preservation Form

Client Alaska water laboratories Service Request K22 095541

Received: 8/19/22 Opened: 8/19/22 By: LM Unloaded: 8/19/22 By: LM

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other _____ NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
—	—	—	—	—	—	9405 8036 9930 - 0323 0069 31	

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen Partially Thawed Thawed*

6. Packing material: *Inserts* Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
14. Was C12/Res negative? NA Y N
15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
 - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
 - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02534/

Service Request: K2209554

Sample Name: AWL-22-02534-001-4
Lab Code: K2209554-001
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-002-4
Lab Code: K2209554-002
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-003-4
Lab Code: K2209554-003
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-004-4
Lab Code: K2209554-004
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-005-4
Lab Code: K2209554-005
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02534/

Service Request: K2209554

Sample Name: AWL-22-02534-006-4
Lab Code: K2209554-006
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-007-4
Lab Code: K2209554-007
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-008-4
Lab Code: K2209554-008
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-009-4
Lab Code: K2209554-009
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-010-4
Lab Code: K2209554-010
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02534/

Service Request: K2209554

Sample Name: AWL-22-02534-011-4
Lab Code: K2209554-011
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02534-013-4
Lab Code: K2209554-012
Sample Matrix: Surface Water

Date Collected: 08/5/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
ABOYER

Analyzed By
AMCKORNEY



Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Metals

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-001-4
Lab Code: K2209554-001

Service Request: K2209554
Date Collected: 08/05/22 11:05
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	8970	ug/L	21	3	1	08/24/22 11:55	08/23/22	
Magnesium	200.7	3970	ug/L	5.3	0.4	1	08/24/22 11:55	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-002-4
Lab Code: K2209554-002

Service Request: K2209554
Date Collected: 08/05/22 11:10
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	5630	ug/L	21	3	1	08/24/22 12:06	08/23/22	
Magnesium	200.7	2100	ug/L	5.3	0.4	1	08/24/22 12:06	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-003-4
Lab Code: K2209554-003

Service Request: K2209554
Date Collected: 08/05/22 10:08
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	11500	ug/L	21	3	1	08/24/22 12:09	08/23/22	
Magnesium	200.7	3100	ug/L	5.3	0.4	1	08/24/22 12:09	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-004-4
Lab Code: K2209554-004

Service Request: K2209554
Date Collected: 08/05/22 08:30
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3490	ug/L	21	3	1	08/24/22 12:11	08/23/22	
Magnesium	200.7	911	ug/L	5.3	0.4	1	08/24/22 12:11	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-005-4
Lab Code: K2209554-005

Service Request: K2209554
Date Collected: 08/05/22 09:00
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3670	ug/L	21	3	1	08/24/22 12:14	08/23/22	
Magnesium	200.7	1600	ug/L	5.3	0.4	1	08/24/22 12:14	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-006-4
Lab Code: K2209554-006

Service Request: K2209554
Date Collected: 08/05/22 09:05
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	4680	ug/L	21	3	1	08/24/22 12:17	08/23/22	
Magnesium	200.7	1040	ug/L	5.3	0.4	1	08/24/22 12:17	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-007-4
Lab Code: K2209554-007

Service Request: K2209554
Date Collected: 08/05/22 09:10
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	4810	ug/L	21	3	1	08/24/22 12:20	08/23/22	
Magnesium	200.7	1060	ug/L	5.3	0.4	1	08/24/22 12:20	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-008-4
Lab Code: K2209554-008

Service Request: K2209554
Date Collected: 08/05/22 09:30
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	7460	ug/L	21	3	1	08/24/22 12:22	08/23/22	
Magnesium	200.7	1710	ug/L	5.3	0.4	1	08/24/22 12:22	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-009-4
Lab Code: K2209554-009

Service Request: K2209554
Date Collected: 08/05/22 09:40
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	20000	ug/L	21	3	1	08/24/22 12:25	08/23/22	
Magnesium	200.7	5050	ug/L	5.3	0.4	1	08/24/22 12:25	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-010-4
Lab Code: K2209554-010

Service Request: K2209554
Date Collected: 08/05/22 11:35
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3290	ug/L	21	3	1	08/24/22 12:28	08/23/22	
Magnesium	200.7	575	ug/L	5.3	0.4	1	08/24/22 12:28	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-011-4
Lab Code: K2209554-011

Service Request: K2209554
Date Collected: 08/05/22 10:30
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	23800	ug/L	21	3	1	08/24/22 12:31	08/23/22	
Magnesium	200.7	6060	ug/L	5.3	0.4	1	08/24/22 12:31	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: AWL-22-02534-013-4
Lab Code: K2209554-012

Service Request: K2209554
Date Collected: 08/05/22 10:30
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	23100	ug/L	21	3	1	08/24/22 12:46	08/23/22	
Magnesium	200.7	5930	ug/L	5.3	0.4	1	08/24/22 12:46	08/23/22	



QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water
Sample Name: Method Blank
Lab Code: KQ2214080-01

Service Request: K2209554
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	ND U	ug/L	21	3	1	08/24/22 11:31	08/23/22	
Magnesium	200.7	4.7 J	ug/L	5.3	0.4	1	08/24/22 11:31	08/23/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water

Service Request: K2209554
Date Collected: 08/05/22
Date Received: 08/19/22
Date Analyzed: 08/24/22
Date Extracted: 08/23/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-02534-011-4
Lab Code: K2209554-011
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2214080-06

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	23800	33800	10000	100	70-130
Magnesium	6060	16200	10000	101	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water

Service Request: K2209554
Date Collected: 08/05/22
Date Received: 08/19/22
Date Analyzed: 08/24/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-02534-011-4
Lab Code: K2209554-011

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2214080-05 Result			
Calcium	200.7	21	3	23800	23600	23700	<1	20
Magnesium	200.7	5.3	0.4	6060	5990	6030	1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02534
Sample Matrix: Surface Water

Service Request: K2209554
Date Analyzed: 08/24/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2214080-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Calcium	200.7	12400	12500	99	85-115
Magnesium	200.7	12500	12500	100	85-115

Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1224648**

Client Project: **AWL-22-02534**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Justin Nelson
2022.08.30
07:05:07 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1224648**

Project Name/Site: **AWL-22-02534**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

AWL-22-02543-011-005 (1224648010) PS

8270D SIM - PAH LOQs are elevated due to sample dilution. The sample was diluted due to double-spiked internal standard.

AWL-22-02543...(1224648010BMS) (1224648011) BMS

8270D SIM - PAH BMS recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy requirements.

8270D SIM -PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. Refer to the LCS for accuracy requirements.

AWL-22-0254...(1224648010BMSD) (1224648012) BMSD

8270D SIM -PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH BMSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy requirements.

1224648010MS (1679127) MS

8270D SIM - PAH MS recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy requirements.

8270D SIM -PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. Refer to the LCS for accuracy requirements.

1224648010MSD (1679128) MSD

8270D SIM - PAH MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy requirements.

8270D SIM -PAH surrogate recovery for fluoranthene-d10 does not meet QC criteria. Refer to the LCS for accuracy requirements.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 08/29/2022 5:00:58PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02534-003-006	1224648001	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-003-005	1224648002	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-005-006	1224648003	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-005-005	1224648004	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-008-006	1224648005	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-008-005	1224648006	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-011-006	1224648007	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543...(1224648007BM	1224648008	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-0254...(1224648007BMS	1224648009	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-011-005	1224648010	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543...(1224648010BM	1224648011	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-0254...(1224648010BMS	1224648012	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-013-006	1224648013	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-013-005	1224648014	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)
AWL-22-02543-012-001	1224648015	08/05/2022	08/08/2022	Water (Surface, Eff., Ground)

Method

EPA 602/624
EPA 625M SIM (PAH) LV

Method Description

602 Aromatics by 624 (W)
625 PAH SIM GC/MS Low Volume

Detectable Results Summary

Client Sample ID: **AWL-22-02543-003-005**

Lab Sample ID: 1224648002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo(a)Anthracene	0.0152J	ug/L
Benzo[g,h,i]perylene	0.0203J	ug/L
Chrysene	0.0168J	ug/L
Fluoranthene	0.0283J	ug/L
Pyrene	0.0283J	ug/L

Client Sample ID: **AWL-22-02543-005-005**

Lab Sample ID: 1224648004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chrysene	0.0169J	ug/L
Fluoranthene	0.0303J	ug/L
Phenanthrene	0.0348J	ug/L
Pyrene	0.0446J	ug/L

Client Sample ID: **AWL-22-02543-008-005**

Lab Sample ID: 1224648006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Acenaphthene	0.0140J	ug/L
Fluoranthene	0.0234J	ug/L
Fluorene	0.0315J	ug/L
Pyrene	0.0166J	ug/L

Client Sample ID: **AWL-22-02543-011-005**

Lab Sample ID: 1224648010

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Pyrene	0.0330J	ug/L

Client Sample ID: **AWL-22-02543-013-005**

Lab Sample ID: 1224648014

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[g,h,i]perylene	0.0310J	ug/L
Chrysene	0.0177J	ug/L
Fluoranthene	0.0275J	ug/L
Phenanthrene	0.0327J	ug/L
Pyrene	0.0373J	ug/L



Results of **AWL-22-02534-003-006**

Client Sample ID: **AWL-22-02534-003-006**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648001
Lab Project ID: 1224648

Collection Date: 08/05/22 10:08
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/16/22 18:20
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:20
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:20
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/16/22 18:20
Toluene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:20
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		08/16/22 18:20
4-Bromofluorobenzene (surr)	94.8	85-114		%	1		08/16/22 18:20
Toluene-d8 (surr)	103	89-112		%	1		08/16/22 18:20

Batch Information

Analytical Batch: VMS21880
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/16/22 18:20
Container ID: 1224648001-A

Prep Batch: VXX39022
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of AWL-22-02543-003-005

Client Sample ID: **AWL-22-02543-003-005**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224648002
 Lab Project ID: 1224648

Collection Date: 08/05/22 10:08
 Received Date: 08/08/22 14:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Acenaphthylene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Anthracene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Benzo(a)Anthracene	0.0152 J	0.0446	0.0134	ug/L	1		08/15/22 19:05
Benzo[a]pyrene	0.00895 U	0.0179	0.00554	ug/L	1		08/15/22 19:05
Benzo[b]Fluoranthene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Benzo[g,h,i]perylene	0.0203 J	0.0446	0.0134	ug/L	1		08/15/22 19:05
Benzo[k]fluoranthene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Chrysene	0.0168 J	0.0446	0.0134	ug/L	1		08/15/22 19:05
Dibenzo[a,h]anthracene	0.00895 U	0.0179	0.00554	ug/L	1		08/15/22 19:05
Fluoranthene	0.0283 J	0.0446	0.0134	ug/L	1		08/15/22 19:05
Fluorene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Indeno[1,2,3-c,d] pyrene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:05
Naphthalene	0.0447 U	0.0893	0.0277	ug/L	1		08/15/22 19:05
Phenanthrene	0.0447 U	0.0893	0.0277	ug/L	1		08/15/22 19:05
Pyrene	0.0283 J	0.0446	0.0134	ug/L	1		08/15/22 19:05
Surrogates							
2-Methylnaphthalene-d10 (surr)	57.7	42-86		%	1		08/15/22 19:05
Fluoranthene-d10 (surr)	55.3	50-97		%	1		08/15/22 19:05

Batch Information

Analytical Batch: XMS13299
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 08/15/22 19:05
 Container ID: 1224648002-A

Prep Batch: XXX46797
 Prep Method: SW3535A
 Prep Date/Time: 08/12/22 18:30
 Prep Initial Wt./Vol.: 280 mL
 Prep Extract Vol: 1 mL



Results of **AWL-22-02543-005-006**

Client Sample ID: **AWL-22-02543-005-006**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648003
Lab Project ID: 1224648

Collection Date: 08/05/22 09:00
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/16/22 18:35
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:35
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:35
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/16/22 18:35
Toluene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:35
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/16/22 18:35
4-Bromofluorobenzene (surr)	93.1	85-114		%	1		08/16/22 18:35
Toluene-d8 (surr)	101	89-112		%	1		08/16/22 18:35

Batch Information

Analytical Batch: VMS21880
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/16/22 18:35
Container ID: 1224648003-A

Prep Batch: VXX39022
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of AWL-22-02543-005-005

Client Sample ID: **AWL-22-02543-005-005**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224648004
 Lab Project ID: 1224648

Collection Date: 08/05/22 09:00
 Received Date: 08/08/22 14:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		08/15/22 19:26
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Chrysene	0.0169 J	0.0463	0.0139	ug/L	1		08/15/22 19:26
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		08/15/22 19:26
Fluoranthene	0.0303 J	0.0463	0.0139	ug/L	1		08/15/22 19:26
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		08/15/22 19:26
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		08/15/22 19:26
Phenanthrene	0.0348 J	0.0926	0.0287	ug/L	1		08/15/22 19:26
Pyrene	0.0446 J	0.0463	0.0139	ug/L	1		08/15/22 19:26
Surrogates							
2-Methylnaphthalene-d10 (surr)	55.6	42-86		%	1		08/15/22 19:26
Fluoranthene-d10 (surr)	56.7	50-97		%	1		08/15/22 19:26

Batch Information

Analytical Batch: XMS13299
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 08/15/22 19:26
 Container ID: 1224648004-A

Prep Batch: XXX46797
 Prep Method: SW3535A
 Prep Date/Time: 08/12/22 18:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Results of AWL-22-02543-008-006

Client Sample ID: **AWL-22-02543-008-006**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224648005
 Lab Project ID: 1224648

Collection Date: 08/05/22 09:30
 Received Date: 08/08/22 14:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/16/22 18:50
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:50
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:50
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/16/22 18:50
Toluene	0.500 U	1.00	0.310	ug/L	1		08/16/22 18:50
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/16/22 18:50
4-Bromofluorobenzene (surr)	93.2	85-114		%	1		08/16/22 18:50
Toluene-d8 (surr)	101	89-112		%	1		08/16/22 18:50

Batch Information

Analytical Batch: VMS21880
 Analytical Method: EPA 602/624
 Analyst: S.S
 Analytical Date/Time: 08/16/22 18:50
 Container ID: 1224648005-A

Prep Batch: VXX39022
 Prep Method: SW5030B
 Prep Date/Time: 08/16/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02543-008-005**

Client Sample ID: **AWL-22-02543-008-005**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648006
Lab Project ID: 1224648

Collection Date: 08/05/22 09:30
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0140 J	0.0446	0.0134	ug/L	1		08/15/22 19:46
Acenaphthylene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Anthracene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Benzo(a)Anthracene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Benzo[a]pyrene	0.00895 U	0.0179	0.00554	ug/L	1		08/15/22 19:46
Benzo[b]Fluoranthene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Benzo[g,h,i]perylene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Benzo[k]fluoranthene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Chrysene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Dibenzo[a,h]anthracene	0.00895 U	0.0179	0.00554	ug/L	1		08/15/22 19:46
Fluoranthene	0.0234 J	0.0446	0.0134	ug/L	1		08/15/22 19:46
Fluorene	0.0315 J	0.0446	0.0134	ug/L	1		08/15/22 19:46
Indeno[1,2,3-c,d] pyrene	0.0223 U	0.0446	0.0134	ug/L	1		08/15/22 19:46
Naphthalene	0.0447 U	0.0893	0.0277	ug/L	1		08/15/22 19:46
Phenanthrene	0.0447 U	0.0893	0.0277	ug/L	1		08/15/22 19:46
Pyrene	0.0166 J	0.0446	0.0134	ug/L	1		08/15/22 19:46
Surrogates							
2-Methylnaphthalene-d10 (surr)	55.7	42-86		%	1		08/15/22 19:46
Fluoranthene-d10 (surr)	58.9	50-97		%	1		08/15/22 19:46

Batch Information

Analytical Batch: XMS13299
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/15/22 19:46
Container ID: 1224648006-A

Prep Batch: XXX46797
Prep Method: SW3535A
Prep Date/Time: 08/12/22 18:30
Prep Initial Wt./Vol.: 280 mL
Prep Extract Vol: 1 mL



Results of **AWL-22-02543-011-006**

Client Sample ID: **AWL-22-02543-011-006**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648007
Lab Project ID: 1224648

Collection Date: 08/05/22 10:30
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 01:32
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:32
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:32
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 01:32
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:32
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/17/22 01:32
4-Bromofluorobenzene (surr)	100	85-114		%	1		08/17/22 01:32
Toluene-d8 (surr)	99.5	89-112		%	1		08/17/22 01:32

Batch Information

Analytical Batch: VMS21881
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/17/22 01:32
Container ID: 1224648007-A

Prep Batch: VXX39025
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **AWL-22-02543-011-005**

Client Sample ID: **AWL-22-02543-011-005**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648010
Lab Project ID: 1224648

Collection Date: 08/05/22 10:30
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Acenaphthylene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Anthracene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Benzo(a)Anthracene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Benzo[a]pyrene	0.0179 U	0.0357	0.0111	ug/L	2		08/15/22 20:07
Benzo[b]Fluoranthene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Benzo[g,h,i]perylene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Benzo[k]fluoranthene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Chrysene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Dibenzo[a,h]anthracene	0.0179 U	0.0357	0.0111	ug/L	2		08/15/22 20:07
Fluoranthene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Fluorene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Indeno[1,2,3-c,d] pyrene	0.0447 U	0.0893	0.0268	ug/L	2		08/15/22 20:07
Naphthalene	0.0895 U	0.179	0.0554	ug/L	2		08/15/22 20:07
Phenanthrene	0.0895 U	0.179	0.0554	ug/L	2		08/15/22 20:07
Pyrene	0.0330 J	0.0893	0.0268	ug/L	2		08/15/22 20:07
Surrogates							
2-Methylnaphthalene-d10 (surr)	58.9	42-86		%	2		08/15/22 20:07
Fluoranthene-d10 (surr)	57.1	50-97		%	2		08/15/22 20:07

Batch Information

Analytical Batch: XMS13299
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/15/22 20:07
Container ID: 1224648010-A

Prep Batch: XXX46797
Prep Method: SW3535A
Prep Date/Time: 08/12/22 18:30
Prep Initial Wt./Vol.: 280 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02543-013-006

Client Sample ID: **AWL-22-02543-013-006**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224648013
 Lab Project ID: 1224648

Collection Date: 08/05/22 10:30
 Received Date: 08/08/22 14:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/16/22 19:05
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/16/22 19:05
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/16/22 19:05
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/16/22 19:05
Toluene	0.500 U	1.00	0.310	ug/L	1		08/16/22 19:05
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/16/22 19:05
4-Bromofluorobenzene (surr)	95.3	85-114		%	1		08/16/22 19:05
Toluene-d8 (surr)	103	89-112		%	1		08/16/22 19:05

Batch Information

Analytical Batch: VMS21880
 Analytical Method: EPA 602/624
 Analyst: S.S
 Analytical Date/Time: 08/16/22 19:05
 Container ID: 1224648013-A

Prep Batch: VXX39022
 Prep Method: SW5030B
 Prep Date/Time: 08/16/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02543-013-005**

Client Sample ID: **AWL-22-02543-013-005**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648014
Lab Project ID: 1224648

Collection Date: 08/05/22 10:30
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Acenaphthylene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Benzo(a)Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Benzo[a]pyrene	0.00980 U	0.0196	0.00608	ug/L	1		08/15/22 21:09
Benzo[b]Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Benzo[g,h,i]perylene	0.0310 J	0.0490	0.0147	ug/L	1		08/15/22 21:09
Benzo[k]fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Chrysene	0.0177 J	0.0490	0.0147	ug/L	1		08/15/22 21:09
Dibenzo[a,h]anthracene	0.00980 U	0.0196	0.00608	ug/L	1		08/15/22 21:09
Fluoranthene	0.0275 J	0.0490	0.0147	ug/L	1		08/15/22 21:09
Fluorene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Indeno[1,2,3-c,d] pyrene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/22 21:09
Naphthalene	0.0490 U	0.0980	0.0304	ug/L	1		08/15/22 21:09
Phenanthrene	0.0327 J	0.0980	0.0304	ug/L	1		08/15/22 21:09
Pyrene	0.0373 J	0.0490	0.0147	ug/L	1		08/15/22 21:09
Surrogates							
2-Methylnaphthalene-d10 (surr)	52.9	42-86		%	1		08/15/22 21:09
Fluoranthene-d10 (surr)	52.4	50-97		%	1		08/15/22 21:09

Batch Information

Analytical Batch: XMS13299
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/15/22 21:09
Container ID: 1224648014-A

Prep Batch: XXX46797
Prep Method: SW3535A
Prep Date/Time: 08/12/22 18:30
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of **AWL-22-02543-012-001**

Client Sample ID: **AWL-22-02543-012-001**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224648015
Lab Project ID: 1224648

Collection Date: 08/05/22 08:30
Received Date: 08/08/22 14:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/16/22 16:50
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/16/22 16:50
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/16/22 16:50
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/16/22 16:50
Toluene	0.500 U	1.00	0.310	ug/L	1		08/16/22 16:50
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		08/16/22 16:50
4-Bromofluorobenzene (surr)	94.3	85-114		%	1		08/16/22 16:50
Toluene-d8 (surr)	102	89-112		%	1		08/16/22 16:50

Batch Information

Analytical Batch: VMS21880
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/16/22 16:50
Container ID: 1224648015-A

Prep Batch: VXX39022
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1841627 [VXX/39022]
 Blank Lab ID: 1679904

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1224648001, 1224648003, 1224648005, 1224648013, 1224648015

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	94.7	85-114		%
Toluene-d8 (surr)	102	89-112		%

Batch Information

Analytical Batch: VMS21880
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S
 Analytical Date/Time: 8/16/2022 2:34:00PM

Prep Batch: VXX39022
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224648 [VXX39022]
 Blank Spike Lab ID: 1679905
 Date Analyzed: 08/16/2022 15:19

Spike Duplicate ID: LCSD for HBN 1224648 [VXX39022]
 Spike Duplicate Lab ID: 1679906
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224648001, 1224648003, 1224648005, 1224648013, 1224648015

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.8	99	30	30.3	101	(79-120)	1.60	(< 20)
Ethylbenzene	30	30.1	100	30	30.4	101	(79-121)	1.10	(< 20)
o-Xylene	30	30.0	100	30	30.6	102	(78-122)	1.90	(< 20)
P & M -Xylene	60	61.1	102	60	61.7	103	(80-121)	0.90	(< 20)
Toluene	30	29.0	97	30	29.2	97	(80-121)	0.65	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		98	30		98	(81-118)	0.27	
4-Bromofluorobenzene (surr)	30		95	30		94	(85-114)	0.70	
Toluene-d8 (surr)	30		102	30		101	(89-112)	0.98	

Batch Information

Analytical Batch: VMS21880
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S

Prep Batch: VXX39022
 Prep Method: SW5030B
 Prep Date/Time: 08/16/2022 06:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/29/2022 5:01:08PM

Method Blank

Blank ID: MB for HBN 1841644 [VXX/39025]
 Blank Lab ID: 1679974

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1224648007

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	97.9	85-114		%
Toluene-d8 (surr)	102	89-112		%

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S
 Analytical Date/Time: 8/16/2022 10:33:00PM

Prep Batch: VXX39025
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224648 [VXX39025]
 Blank Spike Lab ID: 1679975
 Date Analyzed: 08/16/2022 22:48

Spike Duplicate ID: LCSD for HBN 1224648 [VXX39025]
 Spike Duplicate Lab ID: 1679976
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224648007

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.2	97	30	29.7	99	(79-120)	1.60	(< 20)
Ethylbenzene	30	30.0	100	30	30.1	100	(79-121)	0.12	(< 20)
o-Xylene	30	30.5	102	30	30.4	101	(78-122)	0.14	(< 20)
P & M -Xylene	60	61.4	102	60	60.6	101	(80-121)	1.30	(< 20)
Toluene	30	29.0	97	30	29.1	97	(80-121)	0.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		96	30		96	(81-118)	0.06	
4-Bromofluorobenzene (surr)	30		93	30		94	(85-114)	0.55	
Toluene-d8 (surr)	30		102	30		102	(89-112)	0.61	

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S

Prep Batch: VXX39025
 Prep Method: SW5030B
 Prep Date/Time: 08/16/2022 06:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Billable Matrix Spike Summary

Original Sample ID: 1224648007
 MS Sample ID: 1224648008 BMS
 MSD Sample ID: 1224648009 BMSD

Analysis Date: 08/17/2022 1:32
 Analysis Date: 08/16/2022 23:18
 Analysis Date: 08/16/2022 23:33
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.200U	30.0	31.3	104	30.0	29.9	100	79-120	4.30	(< 20)
Ethylbenzene	0.500U	30.0	31.3	104	30.0	30.5	102	79-121	2.60	(< 20)
o-Xylene	0.500U	30.0	31.7	106	30.0	30.9	103	78-122	2.60	(< 20)
P & M -Xylene	1.00U	60.0	63.6	106	60.0	61.8	103	80-121	2.80	(< 20)
Toluene	0.500U	30.0	30.4	101	30.0	29.7	99	80-121	2.20	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	28.8	96	30.0	29.0	97	81-118	0.92	
4-Bromofluorobenzene (surr)		30.0	29	97	30.0	30.1	100	85-114	3.90	
Toluene-d8 (surr)		30.0	30.5	102	30.0	30.6	102	89-112	0.50	

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S
 Analytical Date/Time: 8/16/2022 11:18:00PM

Prep Batch: VXX39025
 Prep Method: Volatiles Extraction 8240/8260 FULL
 Prep Date/Time: 8/16/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 08/29/2022 5:01:14PM



Method Blank

Blank ID: MB for HBN 1841362 [XXX/46797]
Blank Lab ID: 1679125

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1224648002, 1224648004, 1224648006, 1224648010, 1224648014

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	64.1	42-86		%
Fluoranthene-d10 (surr)	69.5	50-97		%

Batch Information

Analytical Batch: XMS13299
Analytical Method: EPA 625M SIM (PAH) LV
Instrument: Agilent GC 7890B/5977A SWA
Analyst: NGG
Analytical Date/Time: 8/15/2022 4:41:00PM

Prep Batch: XXX46797
Prep Method: SW3535A
Prep Date/Time: 8/12/2022 6:30:04PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 08/29/2022 5:01:16PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224648 [XXX46797]

Blank Spike Lab ID: 1679126

Date Analyzed: 08/15/2022 17:01

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224648002, 1224648004, 1224648006, 1224648010, 1224648014

Results by EPA 625M SIM (PAH) LV

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.26	63	(48-114)
Acenaphthylene	2	1.28	64	(35-121)
Anthracene	2	1.38	69	(53-119)
Benzo(a)Anthracene	2	1.40	70	(59-120)
Benzo[a]pyrene	2	1.54	77	(53-120)
Benzo[b]Fluoranthene	2	1.52	76	(53-126)
Benzo[g,h,i]perylene	2	1.71	86	(44-128)
Benzo[k]fluoranthene	2	1.54	77	(54-125)
Chrysene	2	1.49	75	(57-120)
Dibenzo[a,h]anthracene	2	1.71	85	(44-131)
Fluoranthene	2	1.38	69	(58-120)
Fluorene	2	1.32	66	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.67	84	(48-130)
Naphthalene	2	1.10	55	(43-114)
Phenanthrene	2	1.40	70	(53-115)
Pyrene	2	1.39	70	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2		45	(42-86)
Fluoranthene-d10 (surr)	2		60	(50-97)

Batch Information

Analytical Batch: XMS13299

Analytical Method: EPA 625M SIM (PAH) LV

Instrument: Agilent GC 7890B/5977A SWA

Analyst: NGG

Prep Batch: XXX46797

Prep Method: SW3535A

Prep Date/Time: 08/12/2022 18:30

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Billable Matrix Spike Summary

Original Sample ID: 1224648010
 MS Sample ID: 1224648011 BMS
 MSD Sample ID: 1224648012 BMSD

Analysis Date: 08/15/2022 20:07
 Analysis Date: 08/15/2022 20:27
 Analysis Date: 08/15/2022 20:48
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
		Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Acenaphthene	0.0447U	1.85	.952	51	1.85	0.917	50	48-114	3.70	(< 20)
Acenaphthylene	0.0447U	1.85	.988	53	1.85	0.933	50	35-121	5.70	(< 20)
Anthracene	0.0447U	1.85	.935	51 *	1.85	0.896	48 *	53-119	4.30	(< 20)
Benzo(a)Anthracene	0.0447U	1.85	.93	50 *	1.85	0.884	48 *	59-120	5.10	(< 20)
Benzo[a]pyrene	0.0179U	1.85	1.03	56	1.85	0.985	53	53-120	4.80	(< 20)
Benzo[b]Fluoranthene	0.0447U	1.85	1.03	56	1.85	0.978	53 *	53-126	5.20	(< 20)
Benzo[g,h,i]perylene	0.0447U	1.85	1.13	61	1.85	1.06	58	44-128	5.60	(< 20)
Benzo[k]fluoranthene	0.0447U	1.85	1.06	57	1.85	1.01	55	54-125	5.00	(< 20)
Chrysene	0.0447U	1.85	.964	52 *	1.85	0.921	50 *	57-120	4.60	(< 20)
Dibenzo[a,h]anthracene	0.0179U	1.85	1.12	60	1.85	1.06	57	44-131	5.70	(< 20)
Fluoranthene	0.0447U	1.85	.908	49 *	1.85	0.864	47 *	58-120	4.90	(< 20)
Fluorene	0.0447U	1.85	.974	53	1.85	0.927	50	50-118	4.90	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0447U	1.85	1.12	60	1.85	1.06	57	48-130	5.30	(< 20)
Naphthalene	0.0895U	1.85	.925	50	1.85	0.876	47	43-114	5.40	(< 20)
Phenanthrene	0.0895U	1.85	.977	53 *	1.85	0.945	51 *	53-115	3.40	(< 20)
Pyrene	0.0330J	1.85	.912	48 *	1.85	0.861	45 *	53-121	5.80	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.85	.822	44	1.85	0.805	43	42-86	2.10	
Fluoranthene-d10 (surr)		1.85	.816	44 *	1.85	0.797	43 *	50-97	2.40	

Batch Information

Analytical Batch: XMS13299
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 8/15/2022 8:27:00PM

Prep Batch: XXX46797
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/12/2022 6:30:04PM
 Prep Initial Wt./Vol.: 270.00mL
 Prep Extract Vol: 1.00mL

1224648



907-373-6130

Profile # 386968 JM

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab: <i>SGS JM</i> BEA - South Bend Lab 110 S Hill Street South Bend, IN 46617																																																																			
Client Project Name:	AWL-22-02534	Certification Required:	WW																																																																		
Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report * DO NOT REPORT 1-Methylnaphthalene and 2-Methylnaphthalene for any client sample results. QC on client samples - Please provide LINKO Report to MDL edd																																																																			
Samples																																																																					
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix																																																																	
AWL-22-02534-003-006	8/5/2022 10:08	624	TAH	SW																																																																	
AWL-22-02534-003-005	8/5/2022 10:08	625 SIM	PAH (2)	SW																																																																	
AWL-22-02534-005-006	8/5/2022 9:00	624	TAH	SW																																																																	
AWL-22-02534-005-005	8/5/2022 9:00	625 SIM	PAH (2)	SW																																																																	
AWL-22-02534-008-006	8/5/2022 9:30	624	TAH	SW																																																																	
AWL-22-02534-008-005	8/5/2022 9:30	625 SIM	PAH (2)	SW																																																																	
AWL-22-02534-011-006	8/5/2022 10:30	624	TAH; Parent and MS Volume	SW																																																																	
AWL-22-02534-011-005	8/5/2022 10:30	625 SIM	PAH; Parent and MS Volume (2 + 2) + 2	SW																																																																	
AWL-22-02534-013-006	8/5/2022 10:30	624	TAH; DUP Vol - Report as separate sample ID	SW																																																																	
AWL-22-02534-013-005	8/5/2022 10:30	625 SIM	PAH; DUP Vol - Report as separate sample ID	SW																																																																	
AWL-22-02534-012-001	8/5/2022 8:30	624	TAH: TRIP BLANK	SW																																																																	
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SGS Workorder #:

1224648

1224648

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
-----------------	--------------------------	------------------------

Chain of Custody / Temperature Requirements		<i>Note: Temperature and COC seal information is found on the chain of custody form</i>
--	--	---

DOD only: Did all sample coolers have a corresponding COC?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note containers received with ice:		
Identify any containers received at non-compliant temperature: <i>(Use form FS-0029 if more space is needed)</i>		

Holding Time / Documentation / Sample Condition Requirement		<i>Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.</i>
--	--	---

Were samples received within analytical holding time?	Yes	
Do sample labels match COC? Record discrepancies.	Yes	
<i>Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.</i>		
Were analytical requests clear? <i>(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)</i>	Yes	
Were proper containers (type/mass/volume/preservative) used? <i>Note: Exemption for metals analysis by 200.8/6020 in water.</i>	Yes	

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)		
---	--	--

Were all soil VOAs received with a corresponding % solids container?	N/A	
Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with Methanol+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):		
--	--	--



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1224648001-A	HCL to pH < 2	OK			
1224648001-B	HCL to pH < 2	OK			
1224648001-C	HCL to pH < 2	OK			
1224648002-A	No Preservative Required	OK			
1224648002-B	No Preservative Required	OK			
1224648003-A	HCL to pH < 2	OK			
1224648003-B	HCL to pH < 2	OK			
1224648003-C	HCL to pH < 2	OK			
1224648004-A	No Preservative Required	OK			
1224648004-B	No Preservative Required	OK			
1224648005-A	HCL to pH < 2	OK			
1224648005-B	HCL to pH < 2	OK			
1224648005-C	HCL to pH < 2	OK			
1224648006-A	No Preservative Required	OK			
1224648006-B	No Preservative Required	OK			
1224648007-A	HCL to pH < 2	OK			
1224648007-B	HCL to pH < 2	OK			
1224648007-C	HCL to pH < 2	OK			
1224648008-A	HCL to pH < 2	OK			
1224648008-B	HCL to pH < 2	OK			
1224648008-C	HCL to pH < 2	OK			
1224648009-A	HCL to pH < 2	OK			
1224648009-B	HCL to pH < 2	OK			
1224648009-C	HCL to pH < 2	OK			
1224648010-A	No Preservative Required	OK			
1224648010-B	No Preservative Required	OK			
1224648011-A	No Preservative Required	OK			
1224648011-B	No Preservative Required	OK			
1224648012-A	No Preservative Required	OK			
1224648012-B	No Preservative Required	OK			
1224648013-A	HCL to pH < 2	OK			
1224648013-B	HCL to pH < 2	OK			
1224648013-C	HCL to pH < 2	OK			
1224648014-A	No Preservative Required	OK			
1224648014-B	No Preservative Required	OK			
1224648015-A	HCL to pH < 2	OK			
1224648015-B	HCL to pH < 2	OK			
1224648015-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1224919**

Client Project: **AWL-22-02534**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Justin Nelson
2022.09.14
16:12:54 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Print Date: 09/14/2022 10:56:24AM

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1224919**

Project Name/Site: **AWL-22-02534**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/14/2022 10:56:26AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02534-001-3	1224919001	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-002-3	1224919002	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-003-3	1224919003	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-004-3	1224919004	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-005-3	1224919005	08/05/2022	08/14/2022	Water (Surface, Eff., Ground)
AWL-22-02534-006-3	1224919006	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-007-3	1224919007	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-008-3	1224919008	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-009-3	1224919009	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-010-3	1224919010	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-011-3	1224919011	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534...(1224919011BM	1224919012	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-0253...(1224919011BMS	1224919013	08/05/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02534-013-3	1224919014	08/05/2022	08/14/2022	Water (Surface, Eff., Ground)

Method
EP200.8

Method Description
Metals in Drinking Water by ICP-MS DISSO

Detectable Results Summary

Client Sample ID: AWL-22-02534-001-3 Lab Sample ID: 1224919001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.11J	ug/L
Client Sample ID: AWL-22-02534-002-3 Lab Sample ID: 1224919002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.33J	ug/L
Client Sample ID: AWL-22-02534-003-3 Lab Sample ID: 1224919003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.84	ug/L
Client Sample ID: AWL-22-02534-004-3 Lab Sample ID: 1224919004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.89J	ug/L
Client Sample ID: AWL-22-02534-005-3 Lab Sample ID: 1224919005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.18	ug/L
Client Sample ID: AWL-22-02534-006-3 Lab Sample ID: 1224919006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.37J	ug/L
Client Sample ID: AWL-22-02534-007-3 Lab Sample ID: 1224919007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.44J	ug/L
Client Sample ID: AWL-22-02534-008-3 Lab Sample ID: 1224919008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.84J	ug/L
Client Sample ID: AWL-22-02534-009-3 Lab Sample ID: 1224919009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.00	ug/L
Client Sample ID: AWL-22-02534-010-3 Lab Sample ID: 1224919010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.51J	ug/L
Client Sample ID: AWL-22-02534-011-3 Lab Sample ID: 1224919011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	36.0	ug/L
Client Sample ID: AWL-22-02534-013-3 Lab Sample ID: 1224919014	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.79	ug/L

Print Date: 09/14/2022 10:56:31AM



Results of **AWL-22-02534-001-3**

Client Sample ID: **AWL-22-02534-001-3**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224919001
Lab Project ID: 1224919

Collection Date: 08/05/22 11:05
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.11 J	3.00	1.00	ug/L	1		09/09/22 16:10

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 16:10
Container ID: 1224919001-A

Prep Batch: MXX35381
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02534-002-3**

Client Sample ID: **AWL-22-02534-002-3**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224919002
Lab Project ID: 1224919

Collection Date: 08/05/22 11:10
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.33 J	3.00	1.00	ug/L	1		09/09/22 16:29

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 16:29
Container ID: 1224919002-A

Prep Batch: MXX35381
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02534-003-3**

Client Sample ID: **AWL-22-02534-003-3**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224919003
Lab Project ID: 1224919

Collection Date: 08/05/22 10:08
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.84	3.00	1.00	ug/L	1		09/09/22 16:32

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 16:32
Container ID: 1224919003-A

Prep Batch: MXX35381
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02534-004-3

Client Sample ID: **AWL-22-02534-004-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919004
 Lab Project ID: 1224919

Collection Date: 08/05/22 08:30
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.89 J	3.00	1.00	ug/L	1		09/09/22 16:35

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:35
 Container ID: 1224919004-A

Prep Batch: MXX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-005-3

Client Sample ID: **AWL-22-02534-005-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919005
 Lab Project ID: 1224919

Collection Date: 08/05/22 09:00
 Received Date: 08/14/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.18	3.00	1.00	ug/L	1		09/09/22 16:37

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:37
 Container ID: 1224919005-A

Prep Batch: MXX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-006-3

Client Sample ID: **AWL-22-02534-006-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919006
 Lab Project ID: 1224919

Collection Date: 08/05/22 09:05
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.37 J	3.00	1.00	ug/L	1		09/09/22 16:40

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:40
 Container ID: 1224919006-A

Prep Batch: MX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-007-3

Client Sample ID: **AWL-22-02534-007-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919007
 Lab Project ID: 1224919

Collection Date: 08/05/22 09:10
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.44 J	3.00	1.00	ug/L	1		09/09/22 16:43

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:43
 Container ID: 1224919007-A

Prep Batch: MX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-02534-008-3**

Client Sample ID: **AWL-22-02534-008-3**
Client Project ID: **AWL-22-02534**
Lab Sample ID: 1224919008
Lab Project ID: 1224919

Collection Date: 08/05/22 09:30
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.84 J	3.00	1.00	ug/L	1		09/09/22 16:45

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 16:45
Container ID: 1224919008-A

Prep Batch: MXX35381
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02534-009-3

Client Sample ID: **AWL-22-02534-009-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919009
 Lab Project ID: 1224919

Collection Date: 08/05/22 09:40
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.00	3.00	1.00	ug/L	1		09/09/22 16:48

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:48
 Container ID: 1224919009-A

Prep Batch: MXX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-010-3

Client Sample ID: **AWL-22-02534-010-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919010
 Lab Project ID: 1224919

Collection Date: 08/05/22 11:35
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.51 J	3.00	1.00	ug/L	1		09/09/22 16:56

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:56
 Container ID: 1224919010-A

Prep Batch: MXX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-011-3

Client Sample ID: **AWL-22-02534-011-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919011
 Lab Project ID: 1224919

Collection Date: 08/05/22 10:30
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	36.0	3.00	1.00	ug/L	1		09/09/22 16:16

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:16
 Container ID: 1224919011-A

Prep Batch: MXX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02534-013-3

Client Sample ID: **AWL-22-02534-013-3**
 Client Project ID: **AWL-22-02534**
 Lab Sample ID: 1224919014
 Lab Project ID: 1224919

Collection Date: 08/05/22 10:30
 Received Date: 08/14/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.79	3.00	1.00	ug/L	1		09/09/22 16:59

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 16:59
 Container ID: 1224919014-A

Prep Batch: MX35381
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Method Blank

Blank ID: MB for HBN 1841850 [MXX/35381]
Blank Lab ID: 1680697

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1224919001, 1224919002, 1224919003, 1224919004, 1224919005, 1224919006, 1224919007, 1224919008, 1224919009, 1224919010, 1224919011, 1224919014

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	1.50U	3.00	1.00	ug/L

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: HGS
Analytical Date/Time: 9/9/2022 4:02:44PM

Prep Batch: MXX35381
Prep Method: E200.2
Prep Date/Time: 8/22/2022 10:18:30AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/14/2022 10:56:34AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224919 [MXX35381]
 Blank Spike Lab ID: 1680698
 Date Analyzed: 09/09/2022 16:05

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224919001, 1224919002, 1224919003, 1224919004, 1224919005, 1224919006, 1224919007,
 1224919008, 1224919009, 1224919010, 1224919011, 1224919014

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	1040	104	(85-115)

Batch Information

Analytical Batch: **MMS11671**
 Analytical Method: **EP200.8**
 Instrument: **P7 Agilent 7800**
 Analyst: **HGS**

Prep Batch: **MXX35381**
 Prep Method: **E200.2**
 Prep Date/Time: **08/22/2022 10:18**
 Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/14/2022 10:56:37AM



Matrix Spike Summary

Original Sample ID: 1680695
MS Sample ID: 1680700 MS
MSD Sample ID:

Analysis Date: 09/09/2022 16:10
Analysis Date: 09/09/2022 16:13
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224919001, 1224919011

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	2.11J	1000	1040	104				70-130		

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: HGS
Analytical Date/Time: 9/9/2022 4:13:29PM

Prep Batch: MX35381
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/22/2022 10:18:00AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:56:38AM



Matrix Spike Summary

Original Sample ID: 1680696
MS Sample ID: 1680701 MS
MSD Sample ID: 1680702 MSD

Analysis Date: 09/09/2022 16:16
Analysis Date: 09/09/2022 16:24
Analysis Date: 09/09/2022 16:27
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224919002, 1224919003, 1224919004, 1224919005, 1224919006, 1224919007, 1224919008, 1224919009, 1224919010, 1224919011, 1224919014

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	36.0	1000	1060	103	1000	1060	103	70-130	0.00	(< 20)

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: HGS
Analytical Date/Time: 9/9/2022 4:24:19PM

Prep Batch: MXX35381
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/22/2022 10:18:00AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:56:38AM



Billable Matrix Spike Summary

Original Sample ID: 1224919011
MS Sample ID: 1224919012 BMS
MSD Sample ID: 1224919013 BMSD

Analysis Date: 09/09/2022 16:16
Analysis Date: 09/09/2022 16:24
Analysis Date: 09/09/2022 16:27
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	36.0	1000	1060	103	1000	1060	103	70-130	0.00	(< 20)

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: HGS
Analytical Date/Time: 9/9/2022 4:24:19PM

Prep Batch: MX35381
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/22/2022 10:18:00AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:56:38AM



FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	SGS ANC	
Client Project Name:	AWL-22-02534	Certification Required:	WW	
Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report; Samples preserved after AWL filtration at lab	QC on client samples - Report to MDL	Please provide LINKO edd
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-02534-001-3	8/5/2022 11:05	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-002-3	8/5/2022 11:10	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-003-3	8/5/2022 10:08	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-004-3	8/5/2022 8:30	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-005-3	8/5/2022 9:00	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-006-3	8/5/2022 9:05	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-007-3	8/5/2022 9:10	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-008-3	8/5/2022 9:30	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-009-3	8/5/2022 9:40	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-010-3	8/5/2022 11:35	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
AWL-22-02534-011-3	8/5/2022 10:30	200.8	Diss Cu - HNO3 - AWL FILTERED; PARENT/ MS/ MSD	SW
AWL-22-02534-013-3	8/5/2022 10:30	200.8	Diss Cu - HNO3 - AWL FILTERED; DUP - report as separate sample	SW
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
mcc	8-16-22 09:02			3.2
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
		DLF	8/16/22 14:43	
				CoC Seal? Y/N
				pH:
				Ice: Frozen
				Melted / None

1A
2A
3A
4A
5A
6A
7A
8A
9A
10A
11A
12A
13A
14A

1A
intact



SGS Workorder #:

1224919

1224919

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
-----------------	--------------------------	------------------------

Chain of Custody / Temperature Requirements

Note: Temperature and COC seal information is found on the chain of custody form

DOD only: Did all sample coolers have a corresponding COC? **Yes**

If <0°C, were sample containers ice free? **Yes**

Note containers received with ice:

Identify any containers received at non-compliant temperature:

(Use form FS-0029 if more space is needed)

Holding Time / Documentation / Sample Condition Requirement:

Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.

Were samples received within analytical holding time? **Yes**

Do sample labels match COC? Record discrepancies. **Yes**

Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear? **Yes**

(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Were proper containers (type/mass/volume/preservative) used? **Yes**

Note: Exemption for metals analysis by 200.8/6020 in water.

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)

Were all soil VOAs received with a corresponding % solids container? **N/A**

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples? **N/A**

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)? **N/A**

Were all soil VOAs field extracted with Methanol+BFB? **N/A**

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1224919001-A	HNO3 to pH < 2	OK			
1224919002-A	HNO3 to pH < 2	OK			
1224919003-A	HNO3 to pH < 2	OK			
1224919004-A	HNO3 to pH < 2	OK			
1224919005-A	HNO3 to pH < 2	OK			
1224919006-A	HNO3 to pH < 2	OK			
1224919007-A	HNO3 to pH < 2	OK			
1224919008-A	HNO3 to pH < 2	OK			
1224919009-A	HNO3 to pH < 2	OK			
1224919010-A	HNO3 to pH < 2	OK			
1224919011-A	HNO3 to pH < 2	OK			
1224919011-B	HNO3 to pH < 2	OK			
1224919012-A	HNO3 to pH < 2	OK			
1224919012-B	HNO3 to pH < 2	OK			
1224919013-A	HNO3 to pH < 2	OK			
1224919013-B	HNO3 to pH < 2	OK			
1224919014-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Appendix C2
Laboratory Data Package
Storm Event #2



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281 N Main St., STE # 101
Wasilla AK, 99654
907-373-6130

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project Name MOA Stormwater Monitoring - Sampling 2 2022
AWL # AWL-22-02542
PWS # None

Please direct any questions regarding the final report to Mary@AKWaterLabs.com or Matt@AKWaterLabs.com, or call 907-373-6130.

The results presented in this report meet the requirement of the laboratory's certifications and internal QC processes. Any exceptions will be noted in the case narratives attached. Reports with subcontracted laboratory data will be attached in full, with their quality control recoveries and case narrations.

The attached should contain analytical results for the analyses submitted on the client chain of custody. The information includes no opinions of the analysts or labs, data is represented after meeting certified testing requirements, and quality control measures.

Reproduction of the report in full requires the written approval of the laboratory.

Signature of Laboratory Management Date

Alaska Laboratory# AK01000

Client Project Name MOA Stormwater Monitoring - Sampling 2 2022 AWL # AWL-22-02542
 Receipt Date and Time 8/8/2022 15:25 Due Date 8/29/2022
 Cooler/Sample Temp (C) 4.19, 3.59, 5.29 Sampler Initials KG, MA

Sample Receipt Comments Sample received by MCC on 8/8/2022 at 4.19, 3.59, 5.29C, (RT#1), on frozen ice. All TAH samples received at 4.19C (RT#1). No client VOA had bubbles. Trip Blank had 2/2 bubbles < 6mm. pH < 2 for all Hardness samples.

Samples Received

Microbiological

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
SWM 03-02	AWL-22-02542-001-2	8/8/2022 12:10	8/8/2022 15:53	Fecal Coliform	5.29C
SWM 04-02	AWL-22-02542-002-2	8/8/2022 12:20	8/8/2022 15:53	Fecal Coliform	5.29C
SWM 05-02	AWL-22-02542-003-2	8/8/2022 13:20	8/8/2022 15:53	Fecal Coliform	5.29C
SWM 06-02	AWL-22-02542-004-2	8/8/2022 11:10	8/8/2022 15:53	Fecal Coliform	5.29C
SWM 07-02	AWL-22-02542-005-2	8/8/2022 9:05	8/8/2022 15:53	Fecal Coliform	5.29C
SWM 08-02	AWL-22-02542-006-2	8/8/2022 9:20	8/8/2022 15:53	Fecal Coliform	3.59C
SWM 08-02 DUP	AWL-22-02542-007-2	8/8/2022 9:25	8/8/2022 15:53	Fecal Coliform	3.59C
SWM 09A-02	AWL-22-02542-008-2	8/8/2022 10:10	8/8/2022 16:09	Fecal Coliform	3.59C
SWM 10-02	AWL-22-02542-009-2	8/8/2022 10:30	8/8/2022 16:09	Fecal Coliform	3.59C
SWM 11-02	AWL-22-02542-010-2	8/8/2022 11:45	8/8/2022 16:09	Fecal Coliform	3.59C
SWM 12-02	AWL-22-02542-011-2	8/8/2022 12:45	8/8/2022 16:09	Fecal Coliform	4.19C
SWM 12-02 DUP	AWL-22-02542-013-2	8/8/2022 12:45	8/8/2022 16:09	Fecal Coliform	4.19C

Chemical

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
SWM 03-02	AWL-22-02542-001-1	8/8/2022 12:10	8/9/2022 10:44	BOD	5.29C
SWM 03-02	AWL-22-02542-001-1	8/8/2022 12:10	8/11/2022 15:42	TSS	5.29C
SWM 03-02	AWL-22-02542-001-4	8/8/2022 12:10	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 04-02	AWL-22-02542-002-1	8/8/2022 12:20	8/9/2022 10:44	BOD	5.29C
SWM 04-02	AWL-22-02542-002-1	8/8/2022 12:20	8/11/2022 15:42	TSS	5.29C
SWM 04-02	AWL-22-02542-002-4	8/8/2022 12:20	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 05-02	AWL-22-02542-003-1	8/8/2022 13:20	8/9/2022 10:44	BOD	5.29C
SWM 05-02	AWL-22-02542-003-1	8/8/2022 13:20	8/11/2022 15:42	TSS	5.29C
SWM 05-02	AWL-22-02542-003-4	8/8/2022 13:20	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 06-02	AWL-22-02542-004-1	8/8/2022 11:10	8/9/2022 10:44	BOD	5.29C
SWM 06-02	AWL-22-02542-004-1	8/8/2022 11:10	8/11/2022 15:42	TSS	5.29C
SWM 06-02	AWL-22-02542-004-4	8/8/2022 11:10	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 07-02	AWL-22-02542-005-1	8/8/2022 9:05	8/9/2022 10:44	BOD	5.29C
SWM 07-02	AWL-22-02542-005-1	8/8/2022 9:05	8/11/2022 15:42	TSS	5.29C
SWM 07-02	AWL-22-02542-005-4	8/8/2022 9:05	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 08-02	AWL-22-02542-006-1	8/8/2022 9:20	8/9/2022 10:44	BOD	5.29C
SWM 08-02	AWL-22-02542-006-1	8/8/2022 9:20	8/11/2022 15:42	TSS	5.29C
SWM 08-02	AWL-22-02542-006-4	8/8/2022 9:20	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 08-02 DUP	AWL-22-02542-007-1	8/8/2022 9:25	8/9/2022 10:44	BOD	3.59C
SWM 08-02 DUP	AWL-22-02542-007-1	8/8/2022 9:25	8/11/2022 15:42	TSS	3.59C
SWM 08-02 DUP	AWL-22-02542-007-4	8/8/2022 9:25	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 09A-02	AWL-22-02542-008-1	8/8/2022 10:10	8/9/2022 10:44	BOD	3.59C
SWM 09A-02	AWL-22-02542-008-1	8/8/2022 10:10	8/11/2022 15:42	TSS	3.59C
SWM 09A-02	AWL-22-02542-008-4	8/8/2022 10:10	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 10-02	AWL-22-02542-009-1	8/8/2022 10:30	8/9/2022 10:44	BOD	3.59C
SWM 10-02	AWL-22-02542-009-1	8/8/2022 10:30	8/11/2022 15:42	TSS	3.59C

SWM 10-02	AWL-22-02542-009-4	8/8/2022 10:30	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 11-02	AWL-22-02542-010-1	8/8/2022 11:45	8/9/2022 10:44	BOD	3.59C
SWM 11-02	AWL-22-02542-010-1	8/8/2022 11:45	8/11/2022 15:42	TSS	3.59C
SWM 11-02	AWL-22-02542-010-4	8/8/2022 11:45	10/24/2022 11:51	Hardness	Calc from Ca and Mg
SWM 12-02	AWL-22-02542-011-1	8/8/2022 12:45	8/9/2022 10:44	BOD	4.19C
SWM 12-02	AWL-22-02542-011-1	8/8/2022 12:45	8/11/2022 15:42	TSS	4.19C
SWM 12-02	AWL-22-02542-011-4	8/8/2022 12:45	10/24/2022 11:56	Hardness	Calc from Ca and Mg
SWM 12-02 DUP	AWL-22-02542-013-1	8/8/2022 12:45	8/9/2022 10:44	BOD	4.19C
SWM 12-02 DUP	AWL-22-02542-013-1	8/8/2022 12:45	8/11/2022 15:42	TSS	4.19C
SWM 12-02 DUP	AWL-22-02542-013-4	8/8/2022 12:45	10/24/2022 11:56	Hardness	Calc from Ca and Mg

Subcontracted

Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-02	AWL-22-02542-001-3	8/8/2022 12:10	9/9/2022 15:22	200.8 DISS	
SWM 03-02	AWL-22-02542-001-4	8/8/2022 12:10	9/6/2022 10:19	200.7	
SWM 04-02	AWL-22-02542-002-3	8/8/2022 12:20	9/9/2022 15:24	200.8 DISS	
SWM 04-02	AWL-22-02542-002-4	8/8/2022 12:20	9/6/2022 10:26	200.7	
SWM 05-02	AWL-22-02542-003-6	8/8/2022 13:20	8/17/2022 2:47	624	
SWM 05-02	AWL-22-02542-003-5	8/8/2022 13:20	8/22/2022 16:07	625 SIM	
SWM 05-02	AWL-22-02542-003-3	8/8/2022 13:20	9/9/2022 15:27	200.8 DISS	
SWM 05-02	AWL-22-02542-003-4	8/8/2022 13:20	9/6/2022 10:37	200.7	
SWM 06-02	AWL-22-02542-004-3	8/8/2022 11:10	9/9/2022 15:30	200.8 DISS	
SWM 06-02	AWL-22-02542-004-4	8/8/2022 11:10	9/6/2022 10:47	200.7	
SWM 07-02	AWL-22-02542-005-6	8/8/2022 9:05	8/17/2022 3:01	624	
SWM 07-02	AWL-22-02542-005-5	8/8/2022 9:05	8/22/2022 16:28	625 SIM	
SWM 07-02	AWL-22-02542-005-3	8/8/2022 9:05	9/9/2022 15:33	200.8 DISS	
SWM 07-02	AWL-22-02542-005-4	8/8/2022 9:05	9/6/2022 10:50	200.7	
SWM 08-02	AWL-22-02542-006-3	8/8/2022 9:20	9/9/2022 15:35	200.8 DISS	
SWM 08-02	AWL-22-02542-006-4	8/8/2022 9:20	9/6/2022 10:52	200.7	
SWM 08-02 DUP	AWL-22-02542-007-3	8/8/2022 9:25	9/9/2022 15:38	200.8 DISS	
SWM 08-02 DUP	AWL-22-02542-007-4	8/8/2022 9:25	9/6/2022 10:55	200.7	
SWM 09A-02	AWL-22-02542-008-6	8/8/2022 10:10	8/17/2022 3:16	624	The Surrogate recovery for Toluene-d8 for this sample does not meet QC criteria, however all associated analytes for this sample were not reported above the LOQ.
SWM 09A-02	AWL-22-02542-008-5	8/8/2022 10:10	8/22/2022 16:48	625 SIM	
SWM 09A-02	AWL-22-02542-008-3	8/8/2022 10:10	9/9/2022 15:41	200.8 DISS	
SWM 09A-02	AWL-22-02542-008-4	8/8/2022 10:10	9/6/2022 10:58	200.7	
SWM 10-02	AWL-22-02542-009-3	8/8/2022 10:30	9/9/2022 15:43	200.8 DISS	
SWM 10-02	AWL-22-02542-009-4	8/8/2022 10:30	9/6/2022 11:00	200.7	
SWM 11-02	AWL-22-02542-010-3	8/8/2022 11:45	9/9/2022 15:51	200.8 DISS	
SWM 11-02	AWL-22-02542-010-4	8/8/2022 11:45	9/6/2022 11:11	200.7	
SWM 12-02	AWL-22-02542-011-6	8/8/2022 12:45	8/19/2022 2:12	624	
SWM 12-02	AWL-22-02542-011-5	8/8/2022 12:45	8/22/2022 17:09	625 SIM	
SWM 12-02	AWL-22-02542-011-3	8/8/2022 12:45	9/9/2022 15:00	200.8 DISS	
SWM 12-02	AWL-22-02542-011-4	8/8/2022 12:45	9/6/2022 10:39	200.7	
SWM 12-02 DUP	AWL-22-02542-013-6	8/8/2022 12:45	8/17/2022 3:31	624	
SWM 12-02 DUP	AWL-22-02542-013-5	8/8/2022 12:45	8/22/2022 18:11	625 SIM	
SWM 12-02 DUP	AWL-22-02542-013-3	8/8/2022 12:45	9/9/2022 15:54	200.8 DISS	
SWM 12-02 DUP	AWL-22-02542-013-4	8/8/2022 12:45	9/6/2022 11:14	200.7	
SWM TripBlank-02	AWL-22-02542-012-1	8/8/2022 9:05	8/17/2022 1:02	624	TRIP BLANK

Analytical Methods

Analyte	Method	Comments
Fecal Coliform	SM9222D MF	
BOD	SM5210B	
TSS	SM2540D	

Hardness	SM2340B	
200.7	200.7	Subcontracted to ALS Kelso: Ca, Mg for Hardness Calculation; Batch 776394 : The Method Blank associated with this batch recovered Calcium above the MDL, below the MRL, and within method control limits. All QC met method criteria.
200.8	200.8	Subcontracted to SGS: Dissolved, Cu; Batch MMS11671 : All QC met method criteria.
PAH	624	Subcontracted to SGS: PAH; Batch SMX13308 : The Matrix Spike associated with this batch recovered Benzo(a)Anthracene, Benzo(b)Fluoranthene, and Fluoranthene outside of method control limits. All other QC met method criteria. Analysis of client samples under batch XMS13300 with a non-project sample providing passing QC indicates possible matrix interferences as the Matrix Spike associated with batch XMS13308 was AWL-22-02542-011-05, the SWM 12-02 Parent Sample identified for this project. Other QC recoveries for analytes reported met method criteria.
TAqH	625 SIM	Subcontracted to SGS: TAH; Billable QC for samples AWL-22-03242-003-6; AWL-22-02542-005-6; AWL-22-02542-013-6 (Duplicate); AWL-22-03242-012-1 (Trip Blank) was split from Parent sample, despite sub COC request and subcontract lab notification prior. All sample sites aside from SWM-12-02 Parent were run under Batch VMS21181 : All QC met method criteria; Sample AWL-22-02542-011-6 (Parent ID) was run under Batch VMS21893 : All QC met method criteria.

Cert Required
 CMDP # WW

Log In Initials: MCC 8-9-22
 DQO Initials: AKS 8-12-22

Comments: Duplicate results reported as separate sample - amended sample time to parent sample for QC purposes, with sampler approval. Listed Trip Blank as first time on COC to ensure coupled to all samples. Results flagged with a 'U' from SGS Environmental are defined as "Indicates the analyte was analyzed for but not detected", therefore the surrogate limits reported in the SGS report include a '<' to indicate this was not a client sample recovery. Final TAqH Calculations only include the client sample recoveries that were detected in SGS Environmental final results.

Definitions:

DUP	Sample Duplicate
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MRL	Method Reporting Limit
MB	Method Blank
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
TNTC	Count is Too Numerous To Count
<MDL	Result recovery is below the detectable laboratory limit, listed as the MDL

Data Qualifiers:

B	The result of both the method blank and the target sample are above the MDL.
D	Sample analysis accomplished through dilution.
J	The reported result is an estimated value above the LOD but below
U	Result is below the MDL, PQL, LOD, or LOQ
*	LCS/LCSD or Sample DUP fails all Duplicate criteria.
H	Holding time exceeded
E	Exceeds MCL

General Comments:

- 1.0) Basis: "As Received" = analyzed as received from client; "Dry" = dried prior to being analyzed; "Dry Weight Corrected" = analyzed as received; result corrected for percent moisture.

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:10
 PWS# None
 AWL Batch ID: 080822-01-FC
 AWL # AWL-22-02542
 Sample Location SWM 03-02
 AWL ID/ Fraction AWL-22-02542-001-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	700	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:20
 PWS# None AWL Batch ID: 080822-01-FC
 AWL # AWL-22-02542
 Sample Location SWM 04-02
 AWL ID/ Fraction AWL-22-02542-002-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	900.09	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/22 13:20
 PWS# None
 AWL # AWL-22-02542
 Sample Location SWM 05-02
 AWL ID/ Fraction AWL-22-02542-003-2 Matrix SW
 AWL Batch ID: 080822-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1,400	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 11:10
 PWS# None
 AWL Batch ID: 080822-01-FC
 AWL # AWL-22-02542
 Sample Location SWM 06-02
 AWL ID/ Fraction AWL-22-02542-004-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	560	CFU/100mL	10			10	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 9:05
 PWS# None
 AWL # AWL-22-02542
 Sample Location SWM 07-02
 AWL ID/ Fraction AWL-22-02542-005-2 Matrix SW
 AWL Batch ID: 080822-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1272.73	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 9:20
 PWS# None
 AWL # AWL-22-02542
 Sample SWM 08-02
 Location
 AWL ID/ Fraction AWL-22-02542-006-2 Matrix SW
 AWL Batch ID: 080822-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	3200	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

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 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/22 9:25
 PWS# None
 AWL # AWL-22-02542
 Sample Location SWM 08-02 DUP
 AWL ID/ Fraction AWL-22-02542-007-2 Matrix SW
 AWL Batch ID: 080822-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	4700	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 15:53	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 10:10
 PWS# None
 AWL Batch ID: 080822-02-FC
 AWL # AWL-22-02542
 Sample Location SWM 09A-02
 AWL ID/ Fraction AWL-22-02542-008-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	290	CFU/100mL	10			10.00	SM9222D MF	AKS	8/8/22 16:09	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 10:30
 PWS# None
 AWL Batch ID: 080822-02-FC
 AWL # AWL-22-02542
 Sample Location SWM 10-02
 AWL ID/ Fraction AWL-22-02542-009-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	390	CFU/100mL	10			10.00	SM9222D MF	AKS	8/8/22 16:09	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 11:45
 PWS# None
 AWL Batch ID: 080822-02-FC
 AWL # AWL-22-02542
 Sample Location SWM 11-02
 AWL ID/ Fraction AWL-22-02542-010-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	2700	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 16:09	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/22 12:45
 PWS# None AWL Batch ID: 080822-02-FC
 AWL # AWL-22-02542
 Sample SWM 12-02
 Location
 AWL ID/ Fraction AWL-22-02542-011-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	9000	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 16:09	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:45
 PWS# None
 AWL Batch ID: 080822-02-FC
 AWL # AWL-22-02542
 Sample SWM 12-02 DUP
 Location
 AWL ID/ Fraction AWL-22-02542-013-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	8700	CFU/100mL	100			100	SM9222D MF	AKS	8/8/22 16:09	

Analyst Batching initials/date AKS 8-15-22
 Analyst reviewer initials/date JTR 8-15-22

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:10
 PWS# None

AWL # AWL-22-02542
 Sample SWM 03-02
 Location
 AWL ID/ Matrix SW
 Fraction

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.44	mg/L	1.5	0.45		J	1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	<MDL	mg/L	37.09	16.6667		U	3.33	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments	Final results for TSS recovered under the MDL at 9.67 mg/L. JTR 8-16-22										
Hardness	50.17	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-001-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:20
 PWS# None

AWL # AWL-22-02542
 Sample SWM 04-02
 Location
 AWL ID/ Fraction AWL-22-02542-002-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.02	mg/L	1.5	0.45		J	1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	<MDL	mg/L	17.8891	8.04		U	1.61	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments	Final results for TSS recovered under the MDL at 6.91 mg/L. JTR 8-16-22										
Hardness	65.95	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-002-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 11:10
 PWS# None

AWL # AWL-22-02542
 Sample SWM 06-02
 Location
 AWL ID/ Fraction AWL-22-02542-004-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.72	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	8.07	mg/L	16.9361	7.61035		J	1.52	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	12.64	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-004-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 9:05
 PWS# None

AWL # AWL-22-02542
 Sample SWM 07-02
 Location
 AWL ID/ Fraction AWL-22-02542-005-4 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	4.07	mg/L	1.5	0.45		D	1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	65.00	mg/L	27.8175	12.5			2.50	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	12.43	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-005-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 9:20
 PWS# None

AWL # AWL-22-02542
 Sample SWM 08-02
 Location
 AWL ID/ Fraction AWL-22-02542-006-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.82	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	23.26	mg/L	16.8082	7.55			1.51	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	11.57	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-006-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 9:25
 PWS# None

AWL # AWL-22-02542
 Sample SWM 08-02 DUP
 Location
 AWL ID/ Fraction AWL-22-02542-007-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.97	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	21.68	mg/L	17.606	7.91			1.58	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	12.13	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-007-4										

Analyst Batching initials/date
 Analyst Reviewer initials/date

AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 10:10
 PWS# None

AWL # AWL-22-02542
 Sample SWM 09A-02
 Location
 AWL ID/ Fraction AWL-22-02542-008-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.86	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	14.15	mg/L	17.69	7.95		J	1.59	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	20.44	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-008-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 10:30
 PWS# None

AWL # AWL-22-02542
 Sample SWM 10-02
 Location
 AWL ID/ Fraction AWL-22-02542-009-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.03	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	11.34	mg/L	16.3873	7.36		J	1.47	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	36.88	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-009-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 11:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 11-02
 Location
 AWL ID/ Fraction AWL-22-02542-010-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.07	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	19.91	mg/L	16.6572	7.49			1.50	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	15.40	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:51	102422-01Hardness
Comments	AWL-22-02542-010-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 12-02
 Location
 AWL ID/ Fraction AWL-22-02542-011-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.17	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	135.00	mg/L	55.635	25			5	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	99.21	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:56	102422-02-Hardness
Comments	AWL-22-02542-011-4										

Analyst Batching initials/date AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/22 12:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 12-02 DUP
 Location
 AWL ID/ Fraction AWL-22-02542-013-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.76	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/9/22 10:44	080922-01-BOD
Comments											
TSS	132.00	mg/L	55.635	25			5	SM2540D	JTR	8/11/2022 15:42	081122-01-TSS
Comments											
Hardness	102.35	mg/L	1	1			1	SM2340B	MCC	10/24/22 11:56	102422-02-Hardness
Comments	AWL-22-02542-013-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 8-15-22(BOD), JTR 8-16-22 (TSS), MCC 10-24-22 (Hardness)
JTR 8-16-22 (BOD), AKS 8-16-22(TSS), MJG 10-24-22(hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 12:10
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 03-02
 AWL ID/ Fraction AWL-22-02542-001-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.89	ug/L	3.0	1			1	200.8	SGS ANC	9/9/2022 15:22	MMS116 71
Comments	Lab sample ID 1224917001										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample Location SWM 03-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-001-4 Matrix SW Date / time 8/8/2022 12:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	14500	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 10:19	776394
Magnesium	3390	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:19	776394
Comments	Sample K2209559-001										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 12:20
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 04-02
 AWL ID/ Fraction AWL-22-02542-002-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	5.20	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:24	MMS116 71
Comments	Lab Sample ID 1224917002										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-24-22

Sample Location SWM 04-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-002-4 Matrix SW Date / time 8/8/2022 12:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	19500	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 10:26	776394
Magnesium	4190	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:26	776394
Comments	Sample K2209559-002										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/2022 13:20
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 05-02
 AWL ID/ Fraction AWL-22-02542-003-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/17/2022 2:47	VMS2188 1
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 2:47	VMS2188 1
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/17/2022 2:47	VMS2188 1
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 2:47	VMS2188 1
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 2:47	VMS2188 1
Comments	Lab Sample ID 1224698001										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-24-22

Sample Location SWM 05-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-003-5 Matrix SW Date / time 8/8/2022 13:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Acenaphthene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Anthracene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Benzo(a)anthracene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Benzo(a)pyrene	<0.0096	ug/L	0.0192	0.00596		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Benzo(b)fluoranthene	<0.0205	ug/L	0.0481	0.0144		J	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Benzo(g,h,i)perylene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Benzo(k)fluoranthene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Chrysene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8
Dibenzo(a,h)anthracene	<0.0096	ug/L	0.01920	0.00596		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS1330 8

Fluoranthene	0.0227	ug/L	0.0481	0.0144		J	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Fluorene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Indeno(1,2,3-cd)pyrene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Naphthalene	<0.0481	ug/L	0.0962	0.0298		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Phenanthrene	<0.0481	ug/L	0.0962	0.0298		U	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Pyrene	0.0208	ug/L	0.0481	0.0144		J	1	625 SIM	SGS ANCH	8/22/2022 16:07	XMS13308
Comments	Lab Sample ID 1224698002										

Analyst Batching initials/date MJG 10-4-22
Analyst Reviewer initials/date MCC 10-24-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Hydrocarbons (TAqH)	0.0435	ug/L		0.0298			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 10-25-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 13:20
 PWS# None

AWL # AWL-22-02542
 Sample SWM 05-02
 Location
 AWL ID/ Fraction AWL-22-02542-003-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	5.94	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:27	MMS116 71
Comments	Lab Sample ID 1224917003										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 05-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-003-4 Matrix SW Date / time 8/8/2022 13:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	13900	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 10:37	776394
Magnesium	2750	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:37	776394
Comments	Sample K2209559-003										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 11:10
 PWS# None

AWL # AWL-22-02542
 Sample SWM 06-02
 Location
 AWL ID/ Fraction AWL-22-02542-004-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.24	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 15:30	MMS116 71
Comments	Lab Sample ID 1224917004										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 06-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-004-4 Matrix SW Date / time 8/8/2022 11:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3600	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 10:47	776394
Magnesium	886	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:47	776394
Comments	Sample K2209559-004										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

Fluorene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 16:28	XMS13308
Indeno(1,2,3-cd)pyrene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 16:28	XMS13308
Naphthalene	<0.0471	ug/L	0.0943	0.0292		U	1	625 SIM	SGS ANCH	8/22/2022 16:28	XMS13308
Phenanthrene	<0.0471	ug/L	0.0943	0.0292		U	1	625 SIM	SGS ANCH	8/22/2022 16:28	XMS13308
Pyrene	0.0492	ug/L	0.0472	0.0142			1	625 SIM	SGS ANCH	8/22/2022 16:28	XMS13308
Comments	Lab Sample ID 1224698004										

Analyst Batching initials/date MJG 10-4-22
Analyst Reviewer initials/date MCC 10-24-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Hydrocarbons (TAQH)	0.1305	ug/L		0.0292			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 10-25-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 9:05
 PWS# None

AWL # AWL-22-02542
 Sample SWM 07-02
 Location
 AWL ID/ Fraction AWL-22-02542-005-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.58	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:33	MMS116 71
Comments	Lab Sample ID 1224917005										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 07-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-005-4 Matrix SW Date / time 8/8/2022 9:05

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	2950	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 10:50	776394
Magnesium	1230	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:50	776394
Comments	Sample K2209559-005										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 9:20
 PWS# None

AWL # AWL-22-02542
 Sample SWM 08-02
 Location
 AWL ID/ Fraction AWL-22-02542-006-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.28	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 15:35	MMS116 71
Comments	Lab Sample ID 1224917006										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 08-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-006-4 Matrix SW Date / time 8/8/2022 9:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3340	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 10:52	776394
Magnesium	784	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:52	776394
Comments	Sample K2209559-006										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 9:25
 PWS# None

AWL # AWL-22-02542
 Sample SWM 08-02 DUP
 Location
 AWL ID/ Fraction AWL-22-02542-007-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.32	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 15:38	MMS116 71
Comments	Lab Sample ID 1224917007										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 08-02 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-007-4 Matrix SW Date / time 8/8/2022 9:25

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3550	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 10:55	776394
Magnesium	792	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:55	776394
Comments	Sample K2209559-007										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 10:10
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 09A-02
 AWL ID/ Fraction AWL-22-02542-008-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/17/2022 3:16	VMS2188 1
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:16	VMS2188 1
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/17/2022 3:16	VMS2188 1
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:16	VMS2188 1
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:16	VMS2188 1
Comments	Lab Sample ID 1224698005										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-24-22

Sample Location SWM 09A-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-008-5 Matrix SW Date / time 8/8/2022 10:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Acenaphthene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Anthracene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Benzo(a)anthracene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Benzo(a)pyrene	<0.00960	ug/L	0.0192	0.00596		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Benzo(b)fluoranthene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Benzo(g,h,i)perylene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Benzo(k)fluoranthene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Chrysene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Dibenzo(a,h)anthracene	<0.00960	ug/L	0.0192	0.00596		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8
Fluoranthene	0.0304	ug/L	0.0481	0.0144		J	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS1330 8

Fluorene	0.0938	ug/L	0.0481	0.0144			1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS13308
Indeno(1,2,3-cd)pyrene	<0.0240	ug/L	0.0481	0.0144		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS13308
Naphthalene	<0.0481	ug/L	0.0962	0.0298		U	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS13308
Phenanthrene	0.143	ug/L	0.0962	0.0298			1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS13308
Pyrene	<0.0291	ug/L	0.0481	0.0144		J	1	625 SIM	SGS ANCH	8/22/2022 16:48	XMS13308
Comments	Lab Sample ID 1224698006										

Analyst Batching initials/date MJG 10-4-22
Analyst Reviewer initials/date MCC 10-24-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Hydrocarbons (TAqH)	0.2672	ug/L		0.0298			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 10-25-22

Alaska Laboratory# AK01000

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 10:10
 PWS# None

AWL # AWL-22-02542
 Sample SWM 09A-02
 Location
 AWL ID/ Fraction AWL-22-02542-008-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.46	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 15:41	MMS116 71
Comments	Lab Sample ID 122497008										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 09A-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-008-4 Matrix SW Date / time 8/8/2022 10:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	5910	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 10:58	776394
Magnesium	1380	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:58	776394
Comments	Sample K2209559-008										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 10:30
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 10-02
 AWL ID/ Fraction AWL-22-02542-009-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.97	ug/L	3.00	1.00		J	1	200.8	SGS ANC	9/9/2022 15:43	MMS116 71
Comments	Lab Sample ID 1224917009										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample Location SWM 10-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-009-4 Matrix SW Date / time 8/8/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	10400	ug/L	21	3			1	200.7	ALS KELSO	9/6/2022 11:00	776394
Magnesium	2650	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 11:00	776394
Comments	Sample K2209559-009										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJg 10-24-22

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 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 11:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 11-02
 Location
 AWL ID/ Fraction AWL-22-02542-010-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.89	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:51	MMS116 71
Comments	Lab Sample ID 1224917010										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 11-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-010-4 Matrix SW Date / time 8/8/2022 11:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	4840	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 11:11	776394
Magnesium	806	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 11:11	776394
Comments	Sample K2209559-010										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

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 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/2022 12:45
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 12-02
 AWL ID/ Fraction AWL-22-02542-011-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/19/2022 2:12	VMS21893
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/19/2022 2:12	VMS21893
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/19/2022 2:12	VMS21893
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/19/2022 2:12	VMS21893
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/19/2022 2:12	VMS21893
Comments	Lab Sample ID 1224698007										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-24-22

Sample Location SWM 12-02 **Collection**
 AWL ID/ Fraction AWL-22-02542-011-5 Matrix SW Date / time 8/8/2022 12:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	8/22/2022 17:09	XMS13308

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 12:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 12-02
 Location
 AWL ID/ Fraction AWL-22-02542-011-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	8.27	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:00	MMS116 71
Comments	Lab Sample ID 1224917011										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 12-02 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-011-4 Matrix SW Date / time 8/8/2022 12:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	25300	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 10:39	776394
Magnesium	8750	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 10:39	776394
Comments	Sample K2209559-011										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 2 2022 **Collection**
 DW Y/N N Date / time 8/8/2022 12:45
 PWS# None

AWL # AWL-22-02542
 Sample Location SWM 12-02 DUP
 AWL ID/ Fraction AWL-22-02542-013-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	8/17/2022 3:31	VMS2188 1
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:31	VMS2188 1
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	8/17/2022 3:31	VMS2188 1
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:31	VMS2188 1
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	8/17/2022 3:31	VMS2188 1
Comments	Lab Sample ID 1224698013										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-24-22

Sample Location SWM 12-02 DUP **Collection**
 AWL ID/ Fraction AWL-22-02542-013-5 Matrix SW Date / time 8/8/2022 12:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Acenaphthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Benzo(a)anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Benzo(a)pyrene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Benzo(b)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Benzo(g,h,i)perylene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Benzo(k)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Chrysene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8
Dibenzo(a,h)anthracene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS1330 8

Fluoranthene	0.0204	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Fluorene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Indeno(1,2,3-cd)pyrene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Naphthalene	<0.0471	ug/L	0.0962	0.0298		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Phenanthrene	<0.0471	ug/L	0.0962	0.0298		U	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Pyrene	0.0218	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	8/22/2022 18:11	XMS13308
Comments	Lab Sample ID 1224698014										

Analyst Batching initials/date
Analyst Reviewer initials/date

MJG 10-4-22
MCC 10-24-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620			1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Hydrocarbons (TAqH)	0.0422	ug/L		0.0298			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 10-24-22
MJG 10-25-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 2 2022
 DW Y/N N Date / time 8/8/2022 12:45
 PWS# None

AWL # AWL-22-02542
 Sample SWM 12-02 DUP
 Location
 AWL ID/ Fraction AWL-22-02542-013-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	8.30	ug/L	3.00	1.00			1	200.8	SGS ANC	9/9/2022 15:54	MMS116 71
Comments	Lab Sample ID 1224917014										

Analyst Batching initials/date MJG 10-4-22
 Analyst Reviewer initials/date MCC 10-7-22

Sample SWM 12-02 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-02542-013-4 Matrix SW Date / time 8/8/2022 12:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	26000	ug/L	21.0	3			1	200.7	ALS KELSO	9/6/2022 11:14	776394
Magnesium	9090	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/6/2022 11:14	776394
Comments	Sample K2209559-012										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 10-24-22

Alaska Laboratory# AK01000

Analysis QC Results

BOD SM 5210B

Batch ID 080922-01-BOD

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
BOD	0.16		0.3	0.9		AKS	8/9/22 10:44

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
BOD	196.10		223	87.94	85-115	AKS	8/9/22 10:44

Sample Duplicate Parent ID AWL-22-02542-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
BOD	1.46		1.44	1.38	≤20	AKS	8/9/22 10:44

Total Suspended Solids SM2540D

Batch ID 081122-01-TSS

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
TSS	0.00		5	11.1		JTR	8/11/2022 15:42

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
TSS	87.00		96.2	90.44	90-110	JTR	8/11/2022 15:42

Sample Duplicate Parent ID AWL-22-02587-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	64.00		71.50	11.07011	≤20	JTR	8/11/2022 15:42

Sample Duplicate 2 Parent ID AWL-22-02559-004

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	11400.00		11433.33	0.29	≤20	JTR	8/11/2022 15:42



es
01

AWL-22- 02542

907-353-0150



AWL Chain of Custody

Custody form MUST be signed
Please provide as much information as possible

Client/Company Name & Address: HDR Inc. 582 E. 36th Ave. Suite 500 Anchorage, AK 99503-4169		Public Water System (PWS) ID: Project Name/ID: <i>SWM Sampling 2 2022</i>		Quote Number AWL #		AWL Staff	
Contact Person: Cindy Helmericks Phone No: 907.644.2017 ext 407.2 31.9 305(c) Fax No: --- E-mail: cindy.helmericks@hdrinc.com		Turnaround Time (TAT) for Results <input checked="" type="checkbox"/> Standard Expedited (prior authorization required) *Specify Requested Due Date if not standard		Account #: Check Invoice Contact Name & Address & Phone: HDR Inc. ATTN: Calley Hall 582 E. 36th Ave. Suite 500, Anchorage, AK 99503-4169 Calley.Hall@hdrinc.com, 907.644.2048		PO/Contract No.: 10343108, Task 1.0	
Requested Date for Results: Results to STATE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Routine Non-Routine Specify if REPEAT sample		Requested Analysis/Method			
Special Instructions/Requirements: <i>* Weekend Fees</i>							
Kit Preparation/Shipping Charge: Client Sample Identification (Name, Designation, Location, etc.)		Date Sampled Time Sampled Matrix (DW, WW, SO) No. of Containers		EPA 200.8/2340B - Total Hardness HNO3 EPA 625 SIM - TAqH EPA 624 - TAH Preservative: HCl Comments			
1 SWM 03-02 2 SWM 04-02 3 SWM 05-02 4 SWM 06-02 5 SWM 07-02 6 SWM 08-02 7 SWM 08-02 Dup 8 SWM 09-02 09A-02 9 SWM 10-02 10 SWM 11-02		8/8/22 12:10 WS 4 8/8/22 12:20 WS 4 8/8/22 13:20 WS 4 8/8/22 11:10 WS 4 8/8/22 9:05 WS 4 8/8/22 9:20 WS 4 8/8/22 9:25 WS 4 8/8/22 10:10 WS 4 8/8/22 10:30 WS 4 8/8/22 11:45 WS 4		2540D - Total Suspended Solids 200.8 - Dissolved Cu (Lab Filter) 9222D - Fecal Coliform Preserv.: Na2SO4 2540D - Total Suspended Solids 5210B - BOD 5.29c 5.29c 5.29c 5.29c 5.29c 5.29c 3.59c 3.59c 3.59c 3.59c			
Relinquished by: <i>Kay Schuchman</i>		Date Time 8/8/22 15:25		Section To Be Completed by AWL Custody Seal (circle): Intact Broken Temperature on arrival: 4.19, 3.59, 5.29c °C Thermo ID: RT#1 Recv Notes: all TAH Rev @ 84.1c TB 2/2 bubble lower.			
Relinquished by:		Date Time		Temp (TB) Cooler Ice (Frozen) Wet			
Relinquished by:		Date Time		Delivery Method (Circle) Courier USPS/Mail Hand			
Name of Sampler: (printed) <i>KG MA</i>		Date Time					

AWL Chain of Custody
Custody form MUST be signed
Please provide as much information as possible



Alaska Water Laboratories
281 N Main st, Suite # 101
Wasilla, AK 99654
907-373-6130

Client/Company Name & Address: HDR Inc. 582 E. 36th Ave. Suite 500 Anchorage, AK 99503-4169		Public Water System (PWS) ID: _____		Quote Number _____		AWL Staff	
Contact Person: Cindy Helmericks Phone No.: 907.644.2017 Fax No.: ---		Project Name/ID: _____		Account #: _____		Check _____	
E-mail: cindy.helmericks@hdrinc.com		Turnaround Time (TAT) for Results <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Expedited (prior authorization required)		Invoice Contact Name & Address & Phone: HDR Inc. ATTN: Calley Hall 582 E. 36th Ave. Suite 500, Anchorage, AK 99503-4169 Calley.Hall@hdrinc.com , 907.644.2048		Credit _____	
Special Instructions/Requirements: _____		Requested Date for Results: _____		PO/Contract No.: 10343108, Task 1.0		Requested Analysis/Method	
Kit Preparation/Shipping Charge: _____		Results to STATE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Specify if REPEAT sample _____		Requested Analysis/Method	
Client Sample Identification (Name, Designation, Location, etc.)		Date Sampled		Time Sampled		Matrix (DW, WW, SO)	
11 SW/M 12-02 12 SWM TripBlank-02 13 SWM 12-02 Dup 14 _____ 15 _____ 16 _____ 17 _____ 18 _____ 19 _____ 20 _____		8/8/22 ↓ 12:45 9:05 12:55 12:45 (22)		12:45 9:05 12:55 12:45		WS 21 WS 2 WS 9 _____ _____ _____ _____ _____ _____ _____ _____	
Relinquished by: _____		Date _____		Time _____		Received by: _____	
Relinquished by: _____		Date _____		Time _____		Received by: _____	
Relinquished by: _____		Date _____		Time _____		Received by: _____	
Name of Sampler: (printed) _____		Date _____		Time _____		Received by: _____	
Section To Be Completed by AWL		Temperature on arrival: _____ °C		Custody Seal (circle): Intact _____ Broken _____ Absent _____		Thermo ID _____	
Temp _____		Ice _____		TB _____		Cooler _____	
Temp _____		Ice _____		Frozen _____		Wet _____	
Delivery Method (Circle)		Courier _____		USPS/Mail _____		Hand _____	
Recv Notes: _____		Temp _____		Ice _____		TB _____	
Temp _____		Ice _____		Frozen _____		Wet _____	



September 06, 2022

Service Request No:K2209559

Mary Curry
Alaska Water Laboratories
281 N. Main Street, Suite #101
Wasilla, AK 99654

Laboratory Results for: AWL-22-02542

Dear Mary,

Enclosed are the results of the sample(s) submitted to our laboratory August 19, 2022
For your reference, these analyses have been assigned our service request number **K2209559**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Received: 08/19/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Twelve surface water samples were received for analysis at ALS Environmental on 08/19/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy

Date 09/06/2022



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-02542-001-4		Lab ID: K2209559-001				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	14500		3	21	ug/L	200.7
Magnesium	3390		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-002-4		Lab ID: K2209559-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	19500		3	21	ug/L	200.7
Magnesium	4190		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-003-4		Lab ID: K2209559-003				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	13900		3	21	ug/L	200.7
Magnesium	2750		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-004-4		Lab ID: K2209559-004				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3600		3	21	ug/L	200.7
Magnesium	886		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-005-4		Lab ID: K2209559-005				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	2950		3	21	ug/L	200.7
Magnesium	1230		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-006-4		Lab ID: K2209559-006				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3340		3	21	ug/L	200.7
Magnesium	784		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-007-4		Lab ID: K2209559-007				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3550		3	21	ug/L	200.7
Magnesium	792		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-008-4		Lab ID: K2209559-008				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	5910		3	21	ug/L	200.7
Magnesium	1380		0.4	5.3	ug/L	200.7
CLIENT ID: AWL-22-02542-009-4		Lab ID: K2209559-009				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	10400		3	21	ug/L	200.7
Magnesium	2650		0.4	5.3	ug/L	200.7



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Alaska Water Laboratories
Project: AWL-22-02542

Service Request:K2209559

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2209559-001	AWL-22-02542-001-4	8/8/2022	1210
K2209559-002	AWL-22-02542-002-4	8/8/2022	1220
K2209559-003	AWL-22-02542-003-4	8/8/2022	1320
K2209559-004	AWL-22-02542-004-4	8/8/2022	1110
K2209559-005	AWL-22-02542-005-4	8/8/2022	0905
K2209559-006	AWL-22-02542-006-4	8/8/2022	0920
K2209559-007	AWL-22-02542-007-4	8/8/2022	0925
K2209559-008	AWL-22-02542-008-4	8/8/2022	1010
K2209559-009	AWL-22-02542-009-4	8/8/2022	1030
K2209559-010	AWL-22-02542-010-4	8/8/2022	1145
K2209559-011	AWL-22-02542-011-4	8/8/2022	1245
K2209559-012	AWL-22-02542-012-4	8/8/2022	1245

112209559

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	ALS	
Client Project Name:	AWL-22-02542	Certification Required:	WW	
Requested Due Date (if not standard TAT):	Standard	Notes : Level 2 report	QC on client samples - Please provide LINKO Report to MDL edd	
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-02542-001-4	8/8/2022 12:10	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-002-4	8/8/2022 12:20	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-003-4	8/8/2022 13:20	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-004-4	8/8/2022 11:10	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-005-4	8/8/2022 9:05	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-006-4	8/8/2022 9:20	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-007-4	8/8/2022 9:25	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-008-4	8/8/2022 10:10	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-009-4	8/8/2022 10:30	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-010-4	8/8/2022 11:45	200.7	Ca, Mg - HNO3	SW
AWL-22-02542-011-4	8/8/2022 12:45	200.7	Ca, Mg - HNO3: PARENT/ MS/MSD	SW
AWL-22-02542-013-4	8/8/2022 12:45	200.7	Ca, Mg - HNO3; DUP Vol - Report DUP as separate sample	SW
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
mcc	8/15/22 15:51	8/19/22	8/19/22 0830	
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
				CoC Seal? Y / N
				pH:
				Ice: Frozen Melted / None

Cooler Receipt and Preservation Form

Client Alaska water laboratories Service Request K22 09559
 Received: 8/19/22 Opened: 8/19/22 By: LM Unloaded: 8/19/22 By: LM

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other _____ NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
—	—	—	—	—	—	9405 8036 9930 - 0323 0069 31	

4. Was a Temperature Blank present in cooler? NA Y N If yes, note the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
 5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ic, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
 - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
 - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02542/

Service Request: K2209559

Sample Name: AWL-22-02542-001-4
Lab Code: K2209559-001
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-002-4
Lab Code: K2209559-002
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-003-4
Lab Code: K2209559-003
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-004-4
Lab Code: K2209559-004
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-005-4
Lab Code: K2209559-005
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02542/

Service Request: K2209559

Sample Name: AWL-22-02542-006-4
Lab Code: K2209559-006
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-007-4
Lab Code: K2209559-007
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-008-4
Lab Code: K2209559-008
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-009-4
Lab Code: K2209559-009
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-010-4
Lab Code: K2209559-010
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02542/

Service Request: K2209559

Sample Name: AWL-22-02542-011-4
Lab Code: K2209559-011
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02542-012-4
Lab Code: K2209559-012
Sample Matrix: Surface Water

Date Collected: 08/8/22
Date Received: 08/19/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY



Sample Results

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Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-001-4
Lab Code: K2209559-001

Service Request: K2209559
Date Collected: 08/08/22 12:10
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	14500	ug/L	21	3	1	09/06/22 10:19	08/30/22	
Magnesium	200.7	3390	ug/L	5.3	0.4	1	09/06/22 10:19	08/30/22	

ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-002-4
Lab Code: K2209559-002

Service Request: K2209559
Date Collected: 08/08/22 12:20
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	19500	ug/L	21	3	1	09/06/22 10:26	08/30/22	
Magnesium	200.7	4190	ug/L	5.3	0.4	1	09/06/22 10:26	08/30/22	

ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-003-4
Lab Code: K2209559-003

Service Request: K2209559
Date Collected: 08/08/22 13:20
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	13900	ug/L	21	3	1	09/06/22 10:37	08/30/22	
Magnesium	200.7	2750	ug/L	5.3	0.4	1	09/06/22 10:37	08/30/22	

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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-004-4
Lab Code: K2209559-004

Service Request: K2209559
Date Collected: 08/08/22 11:10
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3600	ug/L	21	3	1	09/06/22 10:47	08/30/22	
Magnesium	200.7	886	ug/L	5.3	0.4	1	09/06/22 10:47	08/30/22	

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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-005-4
Lab Code: K2209559-005

Service Request: K2209559
Date Collected: 08/08/22 09:05
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	2950	ug/L	21	3	1	09/06/22 10:50	08/30/22	
Magnesium	200.7	1230	ug/L	5.3	0.4	1	09/06/22 10:50	08/30/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-006-4
Lab Code: K2209559-006

Service Request: K2209559
Date Collected: 08/08/22 09:20
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3340	ug/L	21	3	1	09/06/22 10:52	08/30/22	
Magnesium	200.7	784	ug/L	5.3	0.4	1	09/06/22 10:52	08/30/22	

ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-007-4
Lab Code: K2209559-007

Service Request: K2209559
Date Collected: 08/08/22 09:25
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3550	ug/L	21	3	1	09/06/22 10:55	08/30/22	
Magnesium	200.7	792	ug/L	5.3	0.4	1	09/06/22 10:55	08/30/22	

ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-008-4
Lab Code: K2209559-008

Service Request: K2209559
Date Collected: 08/08/22 10:10
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	5910	ug/L	21	3	1	09/06/22 10:58	08/30/22	
Magnesium	200.7	1380	ug/L	5.3	0.4	1	09/06/22 10:58	08/30/22	

ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-009-4
Lab Code: K2209559-009

Service Request: K2209559
Date Collected: 08/08/22 10:30
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	10400	ug/L	21	3	1	09/06/22 11:00	08/30/22	
Magnesium	200.7	2650	ug/L	5.3	0.4	1	09/06/22 11:00	08/30/22	

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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-010-4
Lab Code: K2209559-010

Service Request: K2209559
Date Collected: 08/08/22 11:45
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	4840	ug/L	21	3	1	09/06/22 11:11	08/30/22	
Magnesium	200.7	806	ug/L	5.3	0.4	1	09/06/22 11:11	08/30/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-011-4
Lab Code: K2209559-011

Service Request: K2209559
Date Collected: 08/08/22 12:45
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	25300	ug/L	21	3	1	09/06/22 10:39	08/30/22	
Magnesium	200.7	8750	ug/L	5.3	0.4	1	09/06/22 10:39	08/30/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: AWL-22-02542-012-4
Lab Code: K2209559-012

Service Request: K2209559
Date Collected: 08/08/22 12:45
Date Received: 08/19/22 08:30
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	26000	ug/L	21	3	1	09/06/22 11:14	08/30/22	
Magnesium	200.7	9090	ug/L	5.3	0.4	1	09/06/22 11:14	08/30/22	



QC Summary Forms

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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water
Sample Name: Method Blank
Lab Code: KQ2214078-01

Service Request: K2209559
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	5 J	ug/L	21	3	1	09/06/22 10:13	08/30/22	
Magnesium	200.7	5.5	ug/L	5.3	0.4	1	09/06/22 10:13	08/30/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Collected: 08/08/22
Date Received: 08/19/22
Date Analyzed: 09/6/22
Date Extracted: 08/30/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-02542-001-4
Lab Code: K2209559-001
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2214078-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	14500	23800	10000	92	70-130
Magnesium	3390	13700	10000	103	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Collected: 08/08/22
Date Received: 08/19/22
Date Analyzed: 09/6/22
Date Extracted: 08/30/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-02542-011-4
Lab Code: K2209559-011
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2214078-06

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	25300	34100	10000	88	70-130
Magnesium	8750	18700	10000	99	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Collected: 08/08/22
Date Received: 08/19/22
Date Analyzed: 09/06/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-02542-001-4
Lab Code: K2209559-001

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2214078-03 Result			
Calcium	200.7	21	3	14500	14500	14500	<1	20
Magnesium	200.7	5.3	0.4	3390	3380	3390	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Collected: 08/08/22
Date Received: 08/19/22
Date Analyzed: 09/06/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-02542-011-4
Lab Code: K2209559-011

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2214078-05 Result			
Calcium	200.7	21	3	25300	25100	25200	<1	20
Magnesium	200.7	5.3	0.4	8750	8740	8750	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02542
Sample Matrix: Surface Water

Service Request: K2209559
Date Analyzed: 09/06/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2214078-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Calcium	200.7	12200	12500	98	85-115
Magnesium	200.7	12900	12500	103	85-115

Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1224698**

Client Project: **AWL-22-02542**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Justin Nelson
2022.08.31
11:43:19 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1224698**

Project Name/Site: **AWL-22-02542**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

AWL-22-02542-008-6 (1224698005) PS

8260D - Surrogate recovery for toluene-d8 does not meet QC criteria. All associated analytes are not being reported about the LOQ.

AWL-22-02542...(1224698010BMS) (1224698011) BMS

8270D SIM -PAH BMS recoveries for several analytes do not meet QC criteria. See LCS for accuracy requirements.

AWL-22-0254...(1224698010BMSD) (1224698012) BMSD

8270D SIM -PAH BMSD recoveries for fluoranthene and benzo(a)anthracene do not meet QC criteria. See LCS for accuracy requirements.

AWL-22-02542-013-5 (1224698014) PS

8270D SIM -PAH Surrogate recovery for fluoranthene-d10 does not meet QC criteria.

1224658004MSD (1679336) MSD

8270D SIM -PAH surrogate recoveries for fluoranthene-d10 and 2-methylnaphthalene-d10 do not meet QC criteria.

LCSD for HBN 1841931 [VXX/3904 (1680844) LCSD

8260D - LCSD RPD for chloroethane does not meet QC criteria. This analyte is not reported above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 08/31/2022 9:40:07AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02542-003-6	1224698001	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-003-5	1224698002	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-005-6	1224698003	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-005-5	1224698004	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-008-6	1224698005	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-008-5	1224698006	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-011-6	1224698007	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542...(1224698007BM	1224698008	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-0254...(1224698007BMS	1224698009	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-011-5	1224698010	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542...(1224698010BM	1224698011	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-0254...(1224698010BMS	1224698012	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-013-6	1224698013	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-013-5	1224698014	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)
AWL-22-02542-012-1	1224698015	08/08/2022	08/09/2022	Water (Surface, Eff., Ground)

Method

EPA 602/624
EPA 625M SIM (PAH) LV

Method Description

602 Aromatics by 624 (W)
625 PAH SIM GC/MS Low Volume

Detectable Results Summary

Client Sample ID: **AWL-22-02542-003-5**

Lab Sample ID: 1224698002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[b]Fluoranthene	0.0205J	ug/L
Fluoranthene	0.0227J	ug/L
Pyrene	0.0208J	ug/L

Client Sample ID: **AWL-22-02542-005-5**

Lab Sample ID: 1224698004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[g,h,i]perylene	0.0272J	ug/L
Chrysene	0.0213J	ug/L
Fluoranthene	0.0328J	ug/L
Pyrene	0.0492	ug/L

Client Sample ID: **AWL-22-02542-008-5**

Lab Sample ID: 1224698006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0304J	ug/L
Fluorene	0.0938	ug/L
Phenanthrene	0.143	ug/L
Pyrene	0.0291J	ug/L

Client Sample ID: **AWL-22-02542-011-5**

Lab Sample ID: 1224698010

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0226J	ug/L
Pyrene	0.0262J	ug/L

Client Sample ID: **AWL-22-02542-013-5**

Lab Sample ID: 1224698014

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0204J	ug/L
Pyrene	0.0218J	ug/L



Results of **AWL-22-02542-003-6**

Client Sample ID: **AWL-22-02542-003-6**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698001
Lab Project ID: 1224698

Collection Date: 08/08/22 13:20
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 02:47
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 02:47
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 02:47
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 02:47
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 02:47
Surrogates							
1,2-Dichloroethane-D4 (surr)	111	81-118		%	1		08/17/22 02:47
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/17/22 02:47
Toluene-d8 (surr)	101	89-112		%	1		08/17/22 02:47

Batch Information

Analytical Batch: VMS21881
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/17/22 02:47
Container ID: 1224698001-A

Prep Batch: VXX39025
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of AWL-22-02542-003-5

Client Sample ID: **AWL-22-02542-003-5**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224698002
 Lab Project ID: 1224698

Collection Date: 08/08/22 13:20
 Received Date: 08/09/22 14:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		08/22/22 16:07
Benzo[b]Fluoranthene	0.0205 J	0.0481	0.0144	ug/L	1		08/22/22 16:07
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		08/22/22 16:07
Fluoranthene	0.0227 J	0.0481	0.0144	ug/L	1		08/22/22 16:07
Fluorene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:07
Naphthalene	0.0481 U	0.0962	0.0298	ug/L	1		08/22/22 16:07
Phenanthrene	0.0481 U	0.0962	0.0298	ug/L	1		08/22/22 16:07
Pyrene	0.0208 J	0.0481	0.0144	ug/L	1		08/22/22 16:07
Surrogates							
2-Methylnaphthalene-d10 (surr)	61.3	42-86		%	1		08/22/22 16:07
Fluoranthene-d10 (surr)	69.5	50-97		%	1		08/22/22 16:07

Batch Information

Analytical Batch: XMS13308
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 08/22/22 16:07
 Container ID: 1224698002-A

Prep Batch: XXX46798
 Prep Method: SW3535A
 Prep Date/Time: 08/14/22 13:00
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of **AWL-22-02542-005-6**

Client Sample ID: **AWL-22-02542-005-6**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698003
Lab Project ID: 1224698

Collection Date: 08/08/22 09:05
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 03:01
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:01
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:01
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 03:01
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:01
Surrogates							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		08/17/22 03:01
4-Bromofluorobenzene (surr)	90.9	85-114		%	1		08/17/22 03:01
Toluene-d8 (surr)	106	89-112		%	1		08/17/22 03:01

Batch Information

Analytical Batch: VMS21881
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/17/22 03:01
Container ID: 1224698003-A

Prep Batch: VXX39025
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **AWL-22-02542-005-5**

Client Sample ID: **AWL-22-02542-005-5**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698004
Lab Project ID: 1224698

Collection Date: 08/08/22 09:05
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Acenaphthylene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Benzo(a)Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Benzo[a]pyrene	0.00945 U	0.0189	0.00585	ug/L	1		08/22/22 16:28
Benzo[b]Fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Benzo[g,h,i]perylene	0.0272 J	0.0472	0.0142	ug/L	1		08/22/22 16:28
Benzo[k]fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Chrysene	0.0213 J	0.0472	0.0142	ug/L	1		08/22/22 16:28
Dibenzo[a,h]anthracene	0.00945 U	0.0189	0.00585	ug/L	1		08/22/22 16:28
Fluoranthene	0.0328 J	0.0472	0.0142	ug/L	1		08/22/22 16:28
Fluorene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Indeno[1,2,3-c,d] pyrene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 16:28
Naphthalene	0.0471 U	0.0943	0.0292	ug/L	1		08/22/22 16:28
Phenanthrene	0.0471 U	0.0943	0.0292	ug/L	1		08/22/22 16:28
Pyrene	0.0492	0.0472	0.0142	ug/L	1		08/22/22 16:28
Surrogates							
2-Methylnaphthalene-d10 (surr)	61.6	42-86		%	1		08/22/22 16:28
Fluoranthene-d10 (surr)	64.8	50-97		%	1		08/22/22 16:28

Batch Information

Analytical Batch: XMS13308
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/22/22 16:28
Container ID: 1224698004-A

Prep Batch: XXX46798
Prep Method: SW3535A
Prep Date/Time: 08/14/22 13:00
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02542-008-6

Client Sample ID: **AWL-22-02542-008-6**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224698005
 Lab Project ID: 1224698

Collection Date: 08/08/22 10:10
 Received Date: 08/09/22 14:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 03:16
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:16
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:16
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 03:16
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:16
Surrogates							
1,2-Dichloroethane-D4 (surr)	113	81-118		%	1		08/17/22 03:16
4-Bromofluorobenzene (surr)	106	85-114		%	1		08/17/22 03:16
Toluene-d8 (surr)	114 *	89-112		%	1		08/17/22 03:16

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Analyst: S.S
 Analytical Date/Time: 08/17/22 03:16
 Container ID: 1224698005-A

Prep Batch: VXX39025
 Prep Method: SW5030B
 Prep Date/Time: 08/16/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02542-008-5**

Client Sample ID: **AWL-22-02542-008-5**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698006
Lab Project ID: 1224698

Collection Date: 08/08/22 10:10
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		08/22/22 16:48
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		08/22/22 16:48
Fluoranthene	0.0304 J	0.0481	0.0144	ug/L	1		08/22/22 16:48
Fluorene	0.0938	0.0481	0.0144	ug/L	1		08/22/22 16:48
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/22/22 16:48
Naphthalene	0.0481 U	0.0962	0.0298	ug/L	1		08/22/22 16:48
Phenanthrene	0.143	0.0962	0.0298	ug/L	1		08/22/22 16:48
Pyrene	0.0291 J	0.0481	0.0144	ug/L	1		08/22/22 16:48
Surrogates							
2-Methylnaphthalene-d10 (surr)	56.7	42-86		%	1		08/22/22 16:48
Fluoranthene-d10 (surr)	66.5	50-97		%	1		08/22/22 16:48

Batch Information

Analytical Batch: XMS13308
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/22/22 16:48
Container ID: 1224698006-A

Prep Batch: XXX46798
Prep Method: SW3535A
Prep Date/Time: 08/14/22 13:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02542-011-6

Client Sample ID: **AWL-22-02542-011-6**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224698007
 Lab Project ID: 1224698

Collection Date: 08/08/22 12:45
 Received Date: 08/09/22 14:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/19/22 02:12
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/19/22 02:12
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/19/22 02:12
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/19/22 02:12
Toluene	0.500 U	1.00	0.310	ug/L	1		08/19/22 02:12
Surrogates							
1,2-Dichloroethane-D4 (surr)	98.7	81-118		%	1		08/19/22 02:12
4-Bromofluorobenzene (surr)	103	85-114		%	1		08/19/22 02:12
Toluene-d8 (surr)	106	89-112		%	1		08/19/22 02:12

Batch Information

Analytical Batch: VMS21893
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 08/19/22 02:12
 Container ID: 1224698007-A

Prep Batch: VXX39045
 Prep Method: SW5030B
 Prep Date/Time: 08/18/22 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of AWL-22-02542-011-5

Client Sample ID: **AWL-22-02542-011-5**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224698010
 Lab Project ID: 1224698

Collection Date: 08/08/22 12:45
 Received Date: 08/09/22 14:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		08/22/22 17:09
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		08/22/22 17:09
Fluoranthene	0.0226 J	0.0463	0.0139	ug/L	1		08/22/22 17:09
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		08/22/22 17:09
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		08/22/22 17:09
Phenanthrene	0.0463 U	0.0926	0.0287	ug/L	1		08/22/22 17:09
Pyrene	0.0262 J	0.0463	0.0139	ug/L	1		08/22/22 17:09
Surrogates							
2-Methylnaphthalene-d10 (surr)	61.1	42-86		%	1		08/22/22 17:09
Fluoranthene-d10 (surr)	56	50-97		%	1		08/22/22 17:09

Batch Information

Analytical Batch: XMS13308
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 08/22/22 17:09
 Container ID: 1224698010-A

Prep Batch: XXX46798
 Prep Method: SW3535A
 Prep Date/Time: 08/14/22 13:00
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Results of AWL-22-02542-013-6

Client Sample ID: **AWL-22-02542-013-6**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224698013
 Lab Project ID: 1224698

Collection Date: 08/08/22 12:45
 Received Date: 08/09/22 14:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 03:31
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:31
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:31
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 03:31
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 03:31
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/17/22 03:31
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/17/22 03:31
Toluene-d8 (surr)	99.8	89-112		%	1		08/17/22 03:31

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Analyst: S.S
 Analytical Date/Time: 08/17/22 03:31
 Container ID: 1224698013-A

Prep Batch: VXX39025
 Prep Method: SW5030B
 Prep Date/Time: 08/16/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02542-013-5**

Client Sample ID: **AWL-22-02542-013-5**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698014
Lab Project ID: 1224698

Collection Date: 08/08/22 12:45
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Acenaphthylene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Benzo(a)Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Benzo[a]pyrene	0.00945 U	0.0189	0.00585	ug/L	1		08/22/22 18:11
Benzo[b]Fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Benzo[g,h,i]perylene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Benzo[k]fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Chrysene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Dibenzo[a,h]anthracene	0.00945 U	0.0189	0.00585	ug/L	1		08/22/22 18:11
Fluoranthene	0.0204 J	0.0472	0.0142	ug/L	1		08/22/22 18:11
Fluorene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Indeno[1,2,3-c,d] pyrene	0.0236 U	0.0472	0.0142	ug/L	1		08/22/22 18:11
Naphthalene	0.0471 U	0.0943	0.0292	ug/L	1		08/22/22 18:11
Phenanthrene	0.0471 U	0.0943	0.0292	ug/L	1		08/22/22 18:11
Pyrene	0.0218 J	0.0472	0.0142	ug/L	1		08/22/22 18:11
Surrogates							
2-Methylnaphthalene-d10 (surr)	52.6	42-86		%	1		08/22/22 18:11
Fluoranthene-d10 (surr)	47.3 *	50-97		%	1		08/22/22 18:11

Batch Information

Analytical Batch: XMS13308
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 08/22/22 18:11
Container ID: 1224698014-A

Prep Batch: XXX46798
Prep Method: SW3535A
Prep Date/Time: 08/14/22 13:00
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL



Results of **AWL-22-02542-012-1**

Client Sample ID: **AWL-22-02542-012-1**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224698015
Lab Project ID: 1224698

Collection Date: 08/08/22 09:05
Received Date: 08/09/22 14:45
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/17/22 01:02
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:02
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:02
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/17/22 01:02
Toluene	0.500 U	1.00	0.310	ug/L	1		08/17/22 01:02
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/17/22 01:02
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/17/22 01:02
Toluene-d8 (surr)	102	89-112		%	1		08/17/22 01:02

Batch Information

Analytical Batch: VMS21881
Analytical Method: EPA 602/624
Analyst: S.S
Analytical Date/Time: 08/17/22 01:02
Container ID: 1224698015-A

Prep Batch: VXX39025
Prep Method: SW5030B
Prep Date/Time: 08/16/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1841644 [VXX/39025]
 Blank Lab ID: 1679974

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1224698001, 1224698003, 1224698005, 1224698013, 1224698015

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	97.9	85-114		%
Toluene-d8 (surr)	102	89-112		%

Batch Information

Analytical Batch: VMS21881
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: S.S
 Analytical Date/Time: 8/16/2022 10:33:00PM

Prep Batch: VXX39025
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224698 [VXX39025]
 Blank Spike Lab ID: 1679975
 Date Analyzed: 08/16/2022 22:48

Spike Duplicate ID: LCSD for HBN 1224698 [VXX39025]
 Spike Duplicate Lab ID: 1679976
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224698001, 1224698003, 1224698005, 1224698013, 1224698015

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.2	97	30	29.7	99	(79-120)	1.60	(< 20)
Ethylbenzene	30	30.0	100	30	30.1	100	(79-121)	0.12	(< 20)
o-Xylene	30	30.5	102	30	30.4	101	(78-122)	0.14	(< 20)
P & M -Xylene	60	61.4	102	60	60.6	101	(80-121)	1.30	(< 20)
Toluene	30	29.0	97	30	29.1	97	(80-121)	0.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		96	30		96	(81-118)	0.06	
4-Bromofluorobenzene (surr)	30		93	30		94	(85-114)	0.55	
Toluene-d8 (surr)	30		102	30		102	(89-112)	0.61	

Batch Information

Analytical Batch: **VMS21881**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **S.S**

Prep Batch: **VXX39025**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/16/2022 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/31/2022 9:40:17AM

Method Blank

Blank ID: MB for HBN 1841931 [VXX/39045]
 Blank Lab ID: 1680842

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1224698007

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	99	85-114		%
Toluene-d8 (surr)	104	89-112		%

Batch Information

Analytical Batch: VMS21893
 Analytical Method: EPA 602/624
 Instrument: VPA 780/5975 GC/MS
 Analyst: AZL
 Analytical Date/Time: 8/18/2022 6:45:00PM

Prep Batch: VXX39045
 Prep Method: SW5030B
 Prep Date/Time: 8/18/2022 12:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224698 [VXX39045]
 Blank Spike Lab ID: 1680843
 Date Analyzed: 08/18/2022 19:00

Spike Duplicate ID: LCSD for HBN 1224698 [VXX39045]
 Spike Duplicate Lab ID: 1680844
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224698007

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.8	103	30	29.4	98	(79-120)	4.50	(< 20)
Ethylbenzene	30	32.9	110	30	31.8	106	(79-121)	3.60	(< 20)
o-Xylene	30	32.8	109	30	31.7	106	(78-122)	3.30	(< 20)
P & M -Xylene	60	66.3	110	60	63.8	106	(80-121)	3.80	(< 20)
Toluene	30	31.2	104	30	30.3	101	(80-121)	3.00	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		105	30		104	(81-118)	0.41	
4-Bromofluorobenzene (surr)	30		99	30		100	(85-114)	0.84	
Toluene-d8 (surr)	30		103	30		105	(89-112)	1.00	

Batch Information

Analytical Batch: VMS21893
 Analytical Method: EPA 602/624
 Instrument: VPA 780/5975 GC/MS
 Analyst: AZL

Prep Batch: VXX39045
 Prep Method: SW5030B
 Prep Date/Time: 08/18/2022 00:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/31/2022 9:40:21AM



Billable Matrix Spike Summary

Original Sample ID: 1224698007
MS Sample ID: 1224698008 BMS
MSD Sample ID: 1224698009 BMSD

Analysis Date: 08/19/2022 2:12
Analysis Date: 08/18/2022 22:31
Analysis Date: 08/18/2022 22:45
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.200U	30.0	30.5	102	30.0	29.8	99	79-120	2.30	(< 20)
Ethylbenzene	0.500U	30.0	33.3	111	30.0	33.2	111	79-121	0.15	(< 20)
o-Xylene	0.500U	30.0	32.9	110	30.0	32.4	108	78-122	1.60	(< 20)
P & M -Xylene	1.00U	60.0	66.3	110	60.0	65.3	109	80-121	1.50	(< 20)
Toluene	0.500U	30.0	31.9	106	30.0	31.5	105	80-121	1.40	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	29.8	99	30.0	29.4	98	81-118	1.60	
4-Bromofluorobenzene (surr)		30.0	30.3	101	30.0	30.0	100	85-114	1.10	
Toluene-d8 (surr)		30.0	31.6	105	30.0	31.8	106	89-112	0.57	

Batch Information

Analytical Batch: VMS21893
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: AZL
Analytical Date/Time: 8/18/2022 10:31:00PM

Prep Batch: VXX39045
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 8/18/2022 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 08/31/2022 9:40:23AM



Method Blank

Blank ID: MB for HBN 1841401 [XXX/46798]
Blank Lab ID: 1679333

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1224698002, 1224698004, 1224698006, 1224698010, 1224698014

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	62.4	42-86		%
Fluoranthene-d10 (surr)	73.1	50-97		%

Batch Information

Analytical Batch: XMS13300
Analytical Method: EPA 625M SIM (PAH) LV
Instrument: Agilent GC 7890B/5977A SWA
Analyst: NGG
Analytical Date/Time: 8/17/2022 8:56:00PM

Prep Batch: XXX46798
Prep Method: SW3535A
Prep Date/Time: 8/14/2022 1:00:12PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 08/31/2022 9:40:24AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224698 [XXX46798]

Blank Spike Lab ID: 1679334

Date Analyzed: 08/17/2022 21:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224698002, 1224698004, 1224698006, 1224698010, 1224698014

Results by EPA 625M SIM (PAH) LV

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.45	73	(48-114)
Acenaphthylene	2	1.45	73	(35-121)
Anthracene	2	1.52	76	(53-119)
Benzo(a)Anthracene	2	1.43	72	(59-120)
Benzo[a]pyrene	2	1.50	75	(53-120)
Benzo[b]Fluoranthene	2	1.48	74	(53-126)
Benzo[g,h,i]perylene	2	1.65	83	(44-128)
Benzo[k]fluoranthene	2	1.59	80	(54-125)
Chrysene	2	1.50	75	(57-120)
Dibenzo[a,h]anthracene	2	1.64	82	(44-131)
Fluoranthene	2	1.46	73	(58-120)
Fluorene	2	1.47	73	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.63	81	(48-130)
Naphthalene	2	1.30	65	(43-114)
Phenanthrene	2	1.53	77	(53-115)
Pyrene	2	1.47	73	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2		61	(42-86)
Fluoranthene-d10 (surr)	2		70	(50-97)

Batch Information

Analytical Batch: XMS13300

Analytical Method: EPA 625M SIM (PAH) LV

Instrument: Agilent GC 7890B/5977A SWA

Analyst: NGG

Prep Batch: XXX46798

Prep Method: SW3535A

Prep Date/Time: 08/14/2022 13:00

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1224658004
 MS Sample ID: 1679335 MS
 MSD Sample ID: 1679336 MSD

Analysis Date: 08/17/2022 21:57
 Analysis Date: 08/17/2022 19:33
 Analysis Date: 08/17/2022 19:54
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224698002, 1224698004, 1224698006, 1224698010, 1224698014

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0236U	1.96	1.33	68	2.00	1.36	68	48-114	2.10	(< 20)
Acenaphthylene	0.0236U	1.96	1.33	68	2.00	1.35	68	35-121	1.20	(< 20)
Anthracene	0.0236U	1.96	1.38	71	2.00	1.37	69	53-119	0.69	(< 20)
Benzo(a)Anthracene	0.0236U	1.96	1.33	68	2.00	1.44	72	59-120	7.70	(< 20)
Benzo[a]pyrene	0.00945U	1.96	1.41	72	2.00	1.52	76	53-120	7.30	(< 20)
Benzo[b]Fluoranthene	0.0236U	1.96	1.4	71	2.00	1.51	76	53-126	8.00	(< 20)
Benzo[g,h,i]perylene	0.0236U	1.96	1.65	84	2.00	1.70	85	44-128	2.90	(< 20)
Benzo[k]fluoranthene	0.0236U	1.96	1.49	76	2.00	1.60	80	54-125	7.30	(< 20)
Chrysene	0.0236U	1.96	1.39	71	2.00	1.51	75	57-120	7.90	(< 20)
Dibenzo[a,h]anthracene	0.00945U	1.96	1.62	83	2.00	1.69	85	44-131	4.30	(< 20)
Fluoranthene	0.0236U	1.96	1.34	68	2.00	1.40	70	58-120	4.40	(< 20)
Fluorene	0.0236U	1.96	1.34	69	2.00	1.36	68	50-118	0.89	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0236U	1.96	1.62	82	2.00	1.69	85	48-130	4.50	(< 20)
Naphthalene	0.0471U	1.96	1.28	65	2.00	1.30	65	43-114	2.10	(< 20)
Phenanthrene	0.0471U	1.96	1.4	72	2.00	1.41	70	53-115	0.32	(< 20)
Pyrene	0.0236U	1.96	1.33	68	2.00	1.39	70	53-121	4.70	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.96	1.27	65	2.00	0.00	0	* 42-86	200.00	
Fluoranthene-d10 (surr)		1.96	1.38	70	2.00	0.0128	1	* 50-97	196.00	

Batch Information

Analytical Batch: XMS13300
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 8/17/2022 7:33:00PM

Prep Batch: XXX46798
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/14/2022 1:00:12PM
 Prep Initial Wt./Vol.: 255.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/31/2022 9:40:28AM



Billable Matrix Spike Summary

Original Sample ID: 1224698010
 MS Sample ID: 1224698011 BMS
 MSD Sample ID: 1224698012 BMSD

Analysis Date: 08/22/2022 17:09
 Analysis Date: 08/22/2022 17:29
 Analysis Date: 08/22/2022 17:50
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0232U	1.85	1.24	67	1.89	1.30	69	48-114	4.80	(< 20)
Acenaphthylene	0.0232U	1.85	1.25	67	1.89	1.32	70	35-121	5.40	(< 20)
Anthracene	0.0232U	1.85	1.15	62	1.89	1.19	63	53-119	3.80	(< 20)
Benzo(a)Anthracene	0.0232U	1.85	.989	53 *	1.89	1.02	54 *	59-120	3.30	(< 20)
Benzo[a]pyrene	0.00925U	1.85	.988	53	1.89	1.02	54	53-120	2.70	(< 20)
Benzo[b]Fluoranthene	0.0232U	1.85	.973	53 *	1.89	1.01	53	53-126	3.20	(< 20)
Benzo[g,h,i]perylene	0.0232U	1.85	.963	52	1.89	0.963	51	44-128	0.06	(< 20)
Benzo[k]fluoranthene	0.0232U	1.85	1.03	56	1.89	1.08	57	54-125	4.10	(< 20)
Chrysene	0.0232U	1.85	1.06	57	1.89	1.09	58	57-120	2.20	(< 20)
Dibenzo[a,h]anthracene	0.00925U	1.85	1.02	55	1.89	1.02	54	44-131	0.57	(< 20)
Fluoranthene	0.0226J	1.85	1.04	55 *	1.89	1.10	57 *	58-120	5.20	(< 20)
Fluorene	0.0232U	1.85	1.22	66	1.89	1.29	69	50-118	5.70	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0232U	1.85	.955	52	1.89	0.969	51	48-130	1.50	(< 20)
Naphthalene	0.0463U	1.85	1.18	64	1.89	1.25	66	43-114	5.60	(< 20)
Phenanthrene	0.0463U	1.85	1.18	64	1.89	1.26	67	53-115	6.40	(< 20)
Pyrene	0.0262J	1.85	1.02	54	1.89	1.08	56	53-121	5.10	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.85	1.05	57	1.89	1.10	58	42-86	4.70	
Fluoranthene-d10 (surr)		1.85	.96	52	1.89	1.03	55	50-97	7.20	

Batch Information

Analytical Batch: XMS13308
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 8/22/2022 5:29:00PM

Prep Batch: XXX46798
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/14/2022 1:00:12PM
 Prep Initial Wt./Vol.: 270.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/31/2022 9:40:28AM



Profile #386968 JM

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab: SGS ENV Anch																						
Client Project Name: AWL-22-02542	Certification Required: WW																							
Requested Due Date (if not standard TAT): Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report * DO NOT REPORT 1-Methylnapthalene and 2-Methylnapthalene for any client sample results. QC on client samples - Please provide LINKO Report to MDL edd																							
Samples																								
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix																				
AWL-22-02542-003-6	8/8/2022 13:20	624	TAH	SW																				
AWL-22-02542-003-5	8/8/2022 13:20	625 SIM	PAH	SW																				
AWL-22-02542-005-6	8/8/2022 9:05	624	TAH	SW																				
AWL-22-02542-005-5	8/8/2022 9:05	625 SIM	PAH	SW																				
AWL-22-02542-008-6	8/8/2022 10:10	624	TAH	SW																				
AWL-22-02542-008-5	8/8/2022 10:10	625 SIM	PAH	SW																				
AWL-22-02542-011-6	8/8/2022 12:45	624	TAH; Parent and MS Volume	SW																				
AWL-22-02542-011-5	8/8/2022 12:45	625 SIM	PAH; Parent and MS Volume	SW																				
AWL-22-02542-013-6	8/8/2022 12:45	624	TAH; DUP Vol - Report as separate sample ID	SW																				
AWL-22-02542-013-5	8/8/2022 12:45	625 SIM	PAH; DUP Vol - Report as separate sample ID	SW																				
AWL-22-02542-012-1	8/8/2022 9:05	624	TAH: TRIP BLANK	SW																				
<table border="1"> <tr> <th>Relinquished By:</th> <th>Date&Time:</th> <th>Received By:</th> <th>Date&Time:</th> <th>Temp:</th> </tr> <tr> <td><i>MOS</i></td> <td>8-9-22 11:13</td> <td></td> <td></td> <td></td> </tr> <tr> <th>Relinquished By:</th> <th>Date&Time:</th> <th>Received By:</th> <th>Date&Time:</th> <th>Temp:</th> </tr> <tr> <td></td> <td></td> <td><i>CS</i></td> <td>8/9/22 14:45</td> <td></td> </tr> </table>					Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:	<i>MOS</i>	8-9-22 11:13				Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:			<i>CS</i>	8/9/22 14:45	
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:																				
<i>MOS</i>	8-9-22 11:13																							
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:																				
		<i>CS</i>	8/9/22 14:45																					
CoC Seal? Y / N pH: Ice: Frozen Melted / None																								
CoC Seal? <u>Y</u> / N pH: Ice: <u>Frozen</u> Melted / None																								

① AC
② AB
③ AC
④ AB
⑤ AC
⑥ AB
⑦ AC ⑧ AC ⑨ A
⑩ AB ⑪ AB ⑫ A
⑬ ABC
⑭ AB
⑮ AC

2.7 D58



SGS Workorder #:

1224698



1 2 2 4 6 9 8

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
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Chain of Custody / Temperature Requirements		<i>Note: Temperature and COC seal information is found on the chain of custody form</i>
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DOD only: Did all sample coolers have a corresponding COC?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note containers received with ice:		
Identify any containers received at non-compliant temperature: <i>(Use form FS-0029 if more space is needed)</i>		

Holding Time / Documentation / Sample Condition Requirement		<i>Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.</i>
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Were samples received within analytical holding time?	Yes	
Do sample labels match COC? Record discrepancies.	Yes	
<i>Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.</i>		
Were analytical requests clear? <i>(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)</i>	Yes	
Were proper containers (type/mass/volume/preservative) used? <i>Note: Exemption for metals analysis by 200.8/6020 in water.</i>	Yes	

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)		
---	--	--

Were all soil VOAs received with a corresponding % solids container?	N/A	
Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with Methanol+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):		
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Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1224698001-A	HCL to pH < 2	OK			
1224698001-B	HCL to pH < 2	OK			
1224698001-C	HCL to pH < 2	OK			
1224698002-A	No Preservative Required	OK			
1224698002-B	No Preservative Required	OK			
1224698003-A	HCL to pH < 2	OK			
1224698003-B	HCL to pH < 2	OK			
1224698003-C	HCL to pH < 2	OK			
1224698004-A	No Preservative Required	OK			
1224698004-B	No Preservative Required	OK			
1224698005-A	HCL to pH < 2	OK			
1224698005-B	HCL to pH < 2	OK			
1224698005-C	HCL to pH < 2	OK			
1224698006-A	No Preservative Required	OK			
1224698006-B	No Preservative Required	OK			
1224698007-A	HCL to pH < 2	OK			
1224698007-B	HCL to pH < 2	OK			
1224698007-C	HCL to pH < 2	OK			
1224698008-A	HCL to pH < 2	OK			
1224698008-B	HCL to pH < 2	OK			
1224698008-C	HCL to pH < 2	OK			
1224698009-A	HCL to pH < 2	OK			
1224698009-B	HCL to pH < 2	OK			
1224698009-C	HCL to pH < 2	OK			
1224698010-A	No Preservative Required	OK			
1224698010-B	No Preservative Required	OK			
1224698011-A	No Preservative Required	OK			
1224698011-B	No Preservative Required	OK			
1224698012-A	No Preservative Required	OK			
1224698012-B	No Preservative Required	OK			
1224698013-A	HCL to pH < 2	OK			
1224698013-B	HCL to pH < 2	OK			
1224698013-C	HCL to pH < 2	OK			
1224698014-A	No Preservative Required	OK			
1224698014-B	No Preservative Required	OK			
1224698015-A	HCL to pH < 2	OK			
1224698015-B	HCL to pH < 2	OK			
1224698015-C	HCL to pH < 2	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1224917**

Client Project: **AWL-22-02542**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Justin Nelson
2022.09.14
16:07:17 -08'00'

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1224917**

Project Name/Site: **AWL-22-02542**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/14/2022 10:55:41AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02542-001-3	1224917001	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-002-3	1224917002	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-003-3	1224917003	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-004-3	1224917004	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-005-3	1224917005	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-006-3	1224917006	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-007-3	1224917007	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-008-3	1224917008	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-009-3	1224917009	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-010-3	1224917010	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-011-3	1224917011	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542...(1224917011BM	1224917012	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-0254...(1224917011BMS	1224917013	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)
AWL-22-02542-013-3	1224917014	08/08/2022	08/16/2022	Water (Surface, Eff., Ground)

Method
EP200.8

Method Description
Metals in Drinking Water by ICP-MS DISSO

Detectable Results Summary

Client Sample ID: AWL-22-02542-001-3 Lab Sample ID: 1224917001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.89	ug/L
Client Sample ID: AWL-22-02542-002-3 Lab Sample ID: 1224917002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	5.20	ug/L
Client Sample ID: AWL-22-02542-003-3 Lab Sample ID: 1224917003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	5.94	ug/L
Client Sample ID: AWL-22-02542-004-3 Lab Sample ID: 1224917004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.24J	ug/L
Client Sample ID: AWL-22-02542-005-3 Lab Sample ID: 1224917005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.58	ug/L
Client Sample ID: AWL-22-02542-006-3 Lab Sample ID: 1224917006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.28J	ug/L
Client Sample ID: AWL-22-02542-007-3 Lab Sample ID: 1224917007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.32J	ug/L
Client Sample ID: AWL-22-02542-008-3 Lab Sample ID: 1224917008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.46J	ug/L
Client Sample ID: AWL-22-02542-009-3 Lab Sample ID: 1224917009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.97J	ug/L
Client Sample ID: AWL-22-02542-010-3 Lab Sample ID: 1224917010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.89	ug/L
Client Sample ID: AWL-22-02542-011-3 Lab Sample ID: 1224917011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	8.27	ug/L
Client Sample ID: AWL-22-02542-013-3 Lab Sample ID: 1224917014	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	8.30	ug/L

Print Date: 09/14/2022 10:55:46AM

Results of AWL-22-02542-001-3

Client Sample ID: **AWL-22-02542-001-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917001
 Lab Project ID: 1224917

Collection Date: 08/08/22 12:10
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.89	3.00	1.00	ug/L	1		09/09/22 15:22

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:22
 Container ID: 1224917001-A

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-02542-002-3**

Client Sample ID: **AWL-22-02542-002-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917002
Lab Project ID: 1224917

Collection Date: 08/08/22 12:20
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.20	3.00	1.00	ug/L	1		09/09/22 15:24

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:24
Container ID: 1224917002-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02542-003-3**

Client Sample ID: **AWL-22-02542-003-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917003
Lab Project ID: 1224917

Collection Date: 08/08/22 13:20
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.94	3.00	1.00	ug/L	1		09/09/22 15:27

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:27
Container ID: 1224917003-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02542-004-3**

Client Sample ID: **AWL-22-02542-004-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917004
Lab Project ID: 1224917

Collection Date: 08/08/22 11:10
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.24 J	3.00	1.00	ug/L	1		09/09/22 15:30

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:30
Container ID: 1224917004-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02542-005-3

Client Sample ID: **AWL-22-02542-005-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917005
 Lab Project ID: 1224917

Collection Date: 08/08/22 09:05
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.58	3.00	1.00	ug/L	1		09/09/22 15:33

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:33
 Container ID: 1224917005-A

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02542-006-3

Client Sample ID: **AWL-22-02542-006-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917006
 Lab Project ID: 1224917

Collection Date: 08/08/22 09:20
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.28 J	3.00	1.00	ug/L	1		09/09/22 15:35

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:35
 Container ID: 1224917006-A

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-02542-007-3**

Client Sample ID: **AWL-22-02542-007-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917007
Lab Project ID: 1224917

Collection Date: 08/08/22 09:25
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.32 J	3.00	1.00	ug/L	1		09/09/22 15:38

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:38
Container ID: 1224917007-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02542-008-3**

Client Sample ID: **AWL-22-02542-008-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917008
Lab Project ID: 1224917

Collection Date: 08/08/22 10:10
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.46 J	3.00	1.00	ug/L	1		09/09/22 15:41

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:41
Container ID: 1224917008-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02542-009-3

Client Sample ID: **AWL-22-02542-009-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917009
 Lab Project ID: 1224917

Collection Date: 08/08/22 10:30
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.97 J	3.00	1.00	ug/L	1		09/09/22 15:43

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:43
 Container ID: 1224917009-A

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-02542-010-3**

Client Sample ID: **AWL-22-02542-010-3**
Client Project ID: **AWL-22-02542**
Lab Sample ID: 1224917010
Lab Project ID: 1224917

Collection Date: 08/08/22 11:45
Received Date: 08/16/22 14:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.89	3.00	1.00	ug/L	1		09/09/22 15:51

Batch Information

Analytical Batch: MMS11671
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 09/09/22 15:51
Container ID: 1224917010-A

Prep Batch: MXX35380
Prep Method: E200.2
Prep Date/Time: 08/22/22 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02542-011-3

Client Sample ID: **AWL-22-02542-011-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917011
 Lab Project ID: 1224917

Collection Date: 08/08/22 12:45
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	8.27	3.00	1.00	ug/L	1		09/09/22 15:00

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:00
 Container ID: 1224917011-B

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02542-013-3

Client Sample ID: **AWL-22-02542-013-3**
 Client Project ID: **AWL-22-02542**
 Lab Sample ID: 1224917014
 Lab Project ID: 1224917

Collection Date: 08/08/22 12:45
 Received Date: 08/16/22 14:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	8.30	3.00	1.00	ug/L	1		09/09/22 15:54

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 09/09/22 15:54
 Container ID: 1224917014-B

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 08/22/22 10:18
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Method Blank

Blank ID: MB for HBN 1841848 [MXX/35380]
 Blank Lab ID: 1680686

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1224917001, 1224917002, 1224917003, 1224917004, 1224917005, 1224917006, 1224917007, 1224917008, 1224917009, 1224917010, 1224917011, 1224917014

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	1.50U	3.00	1.00	ug/L

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 9/9/2022 2:47:16PM

Prep Batch: MXX35380
 Prep Method: E200.2
 Prep Date/Time: 8/22/2022 10:18:32AM
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Print Date: 09/14/2022 10:55:49AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1224917 [MXX35380]
 Blank Spike Lab ID: 1680687
 Date Analyzed: 09/09/2022 14:49

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224917001, 1224917002, 1224917003, 1224917004, 1224917005, 1224917006, 1224917007,
 1224917008, 1224917009, 1224917010, 1224917011, 1224917014

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	1030	103	(85-115)

Batch Information

Analytical Batch: **MMS11671**
 Analytical Method: **EP200.8**
 Instrument: **P7 Agilent 7800**
 Analyst: **HGS**

Prep Batch: **MXX35380**
 Prep Method: **E200.2**
 Prep Date/Time: **08/22/2022 10:18**
 Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/14/2022 10:55:52AM

Matrix Spike Summary

Original Sample ID: 1680683
 MS Sample ID: 1680689 MS
 MSD Sample ID:

Analysis Date: 09/09/2022 14:55
 Analysis Date: 09/09/2022 14:58
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224917011

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	6.27	1000	1030	102				70-130		

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 9/9/2022 2:58:01PM

Prep Batch: MX35380
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 8/22/2022 10:18:00AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:55:53AM

Matrix Spike Summary

Original Sample ID: 1680684
 MS Sample ID: 1680690 MS
 MSD Sample ID: 1680694 MSD

Analysis Date: 09/09/2022 15:00
 Analysis Date: 09/09/2022 15:03
 Analysis Date: 09/09/2022 15:06
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1224917001, 1224917002, 1224917003, 1224917004, 1224917005, 1224917006, 1224917007, 1224917008, 1224917009, 1224917010, 1224917011, 1224917014

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	8.27	1000	1030	102	1000	1020	101	70-130	1.40	(< 20)

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 9/9/2022 3:03:25PM

Prep Batch: MX35380
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 8/22/2022 10:18:00AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:55:53AM

Billable Matrix Spike Summary

Original Sample ID: 1224917011
 MS Sample ID: 1224917012 BMS
 MSD Sample ID: 1224917013 BMSD

Analysis Date: 09/09/2022 15:00
 Analysis Date: 09/09/2022 15:03
 Analysis Date: 09/09/2022 15:06
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	8.27	1000	1030	102	1000	1020	101	70-130	1.40	(< 20)

Batch Information

Analytical Batch: MMS11671
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 9/9/2022 3:03:25PM

Prep Batch: MXX35380
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 8/22/2022 10:18:00AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/14/2022 10:55:53AM

1224917



281 N M



Profile # 3869689

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab: SGS ANC		
Client Project Name: AWL-22-02542	Certification Required: WW			
Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report; Samples 1-10 preserved after AWL filtration; Filter and preserve Sample AWL-22-02452-011, AWL-22-02452-013 prior to 8/19		
QC on client samples - Report to MDL				
Please provide LINKO edd				
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
1A AWL-22-02542-001-3	8/8/2022 12:10	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
2A AWL-22-02542-002-3	8/8/2022 12:20	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
3A AWL-22-02542-003-3	8/8/2022 13:20	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
4A AWL-22-02542-004-3	8/8/2022 11:10	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
5A AWL-22-02542-005-3	8/8/2022 9:05	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
6A AWL-22-02542-006-3	8/8/2022 9:20	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
7A AWL-22-02542-007-3	8/8/2022 9:25	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
8A AWL-22-02542-008-3	8/8/2022 10:10	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
9A AWL-22-02542-009-3	8/8/2022 10:30	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
10A AWL-22-02542-010-3	8/8/2022 11:45	200.8	Diss Cu - HNO3 - AWL FILTERED	SW
11AB AWL-22-02542-011-3	8/8/2022 12:45	200.8	Diss Cu - HNO3 - FILTER AT SGS prior to 8/19/22; PARENT/ MS/ MSD	SW
14AB AWL-22-02542-013-3	8/8/2022 12:45	200.8	Diss Cu - HNO3 - FILTER AT SGS prior to 8/19/22; DUP - report as separate sample	SW
Relinquished By: Mca	Date&Time: 8-16-22 09:02	Received By: 	Date&Time:	Temp: 3.2 CoC Seal? Y / N pH: Ice: Frozen Melted / None
Relinquished By: 	Date&Time:	Received By: DLF	Date&Time: 8/16/22 14:43	Temp: CoC Seal? Y / N pH: Ice: Frozen Melted / None

- 1A
- 2A
- 3A
- 4A
- 5A
- 6A
- 7A
- 8A
- 9A
- 10A
- 11AB
- 14AB

12AB 13AB

COOLRV

IF intact



SGS Workorder #:

1224917

1224917

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
-----------------	--------------------------	------------------------

Chain of Custody / Temperature Requirements

Note: Temperature and COC seal information is found on the chain of custody form

DOD only: Did all sample coolers have a corresponding COC? **Yes**

If <0°C, were sample containers ice free? **Yes**

Note containers received with ice:

Identify any containers received at non-compliant temperature:

(Use form FS-0029 if more space is needed)

Holding Time / Documentation / Sample Condition Requirement:

Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.

Were samples received within analytical holding time? **Yes**

Do sample labels match COC? Record discrepancies. **Yes**

Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear? **Yes**

(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Were proper containers (type/mass/volume/preservative) used? **Yes**

Note: Exemption for metals analysis by 200.8/6020 in water.

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)

Were all soil VOAs received with a corresponding % solids container? **N/A**

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples? **N/A**

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)? **N/A**

Were all soil VOAs field extracted with Methanol+BFB? **N/A**

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1224917001-A	HNO3 to pH < 2	OK			
1224917002-A	HNO3 to pH < 2	OK			
1224917003-A	HNO3 to pH < 2	OK			
1224917004-A	HNO3 to pH < 2	OK			
1224917005-A	HNO3 to pH < 2	OK			
1224917006-A	HNO3 to pH < 2	OK			
1224917007-A	HNO3 to pH < 2	OK			
1224917008-A	HNO3 to pH < 2	OK			
1224917009-A	HNO3 to pH < 2	OK			
1224917010-A	HNO3 to pH < 2	OK			
1224917011-A	No Preservative Required	OK			
1224917011-B	HNO3 to pH < 2	OK			
1224917012-A	No Preservative Required	OK			
1224917012-B	HNO3 to pH < 2	OK			
1224917013-A	No Preservative Required	OK			
1224917013-B	HNO3 to pH < 2	OK			
1224917014-A	No Preservative Required	OK			
1224917014-B	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



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Appendix C3
Laboratory Data Package
Storm Event #3



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281 N Main St., STE # 101
Wasilla AK, 99654
907-373-6130

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project Name MOA Stormwater Monitoring - Sampling 3 2022
AWL # AWL-22-02771
PWS # None

Please direct any questions regarding the final report to Mary@AKWaterLabs.com or Matt@AKWaterLabs.com, or call 907-373-6130.

The results presented in this report meet the requirement of the laboratory's certifications and internal QC processes. Any exceptions will be noted in the case narratives attached. Reports with subcontracted laboratory data will be attached in full, with their quality control recoveries and case narrations.

The attached should contain analytical results for the analyses submitted on the client chain of custody. The information includes no opinions of the analysts or labs, data is represented after meeting certified testing requirements, and quality control measures.

Reproduction of the report in full requires the written approval of the laboratory.

Signature of Laboratory Management Date

Alaska Laboratory# AK01000

Client Project Name MOA Stormwater
Monitoring - Sampling 3 AWL # AWL-22-02771
2022

Receipt Date and Time 8/26/22 13:58 Due Date 9/16/2022

Cooler/Sample Temp (C) B#1: 5.89, B#2: 4.69, R#1: 3.19 Sampler Initials KI

Sample Receipt Comments Samples received 8-31-22 by MJG in three separate coolers: Blue#1: 5.89C, Blue #2: 4.69C, and Red #1: 3.19C all on frozen ice; All 200.7 Metals had a pH<2.

Samples Received

Microbiological					
Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-03	AWL-22-02771-001-2	8/26/2022 11:05	8/26/2022 14:32	Fecal Coliform	
SWM 04-03	AWL-22-02771-002-2	8/26/2022 11:15	8/26/2022 14:32	Fecal Coliform	
SWM 05-03	AWL-22-02771-003-2	8/26/2022 12:10	8/26/2022 14:32	Fecal Coliform	
SWM 06-03	AWL-22-02771-004-2	8/26/2022 10:10	8/26/2022 14:32	Fecal Coliform	
SWM 07-03	AWL-22-02771-005-2	8/26/2022 8:35	8/26/2022 14:32	Fecal Coliform	
SWM 08-03	AWL-22-02771-006-2	8/26/2022 8:55	8/26/2022 14:32	Fecal Coliform	
SWM 08-03 DUP	AWL-22-02771-007-2	8/26/2022 8:55	8/26/2022 14:32	Fecal Coliform	
SWM 09A-03	AWL-22-02771-008-2	8/26/2022 9:30	8/26/2022 14:48	Fecal Coliform	
SWM 10-03	AWL-22-02771-009-2	8/26/2022 9:45	8/26/2022 14:48	Fecal Coliform	
SWM 11-03	AWL-22-02771-010-2	8/26/2022 10:40	8/26/2022 14:48	Fecal Coliform	
SWM 12-03	AWL-22-02771-011-2	8/26/2022 11:35	8/26/2022 14:48	Fecal Coliform	
SWM 12-03 DUP	AWL-22-02771-013-2	8/26/2022 11:35	8/26/2022 14:48	Fecal Coliform	

Chemical

Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-03	AWL-22-02771-001-1	8/26/2022 11:05	8/26/2022 15:35	BOD	
SWM 03-03	AWL-22-02771-001-1	8/26/2022 11:05	8/31/2022 15:04	TSS	
SWM 03-03	AWL-22-02771-001-4	8/26/2022 11:05	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 04-03	AWL-22-02771-002-1	8/26/2022 11:15	8/26/2022 15:35	BOD	
SWM 04-03	AWL-22-02771-002-1	8/26/2022 11:15	8/31/2022 15:04	TSS	
SWM 04-03	AWL-22-02771-002-4	8/26/2022 11:15	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 05-03	AWL-22-02771-003-1	8/26/2022 12:10	8/26/2022 15:35	BOD	
SWM 05-03	AWL-22-02771-003-1	8/26/2022 12:10	8/31/2022 15:04	TSS	
SWM 05-03	AWL-22-02771-003-4	8/26/2022 12:10	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 06-03	AWL-22-02771-004-1	8/26/2022 10:10	8/26/2022 15:35	BOD	
SWM 06-03	AWL-22-02771-004-1	8/26/2022 10:10	8/31/2022 15:04	TSS	
SWM 06-03	AWL-22-02771-004-4	8/26/2022 10:10	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 07-03	AWL-22-02771-005-1	8/26/2022 8:35	8/26/2022 15:35	BOD	
SWM 07-03	AWL-22-02771-005-1	8/26/2022 8:35	8/31/2022 15:04	TSS	
SWM 07-03	AWL-22-02771-005-4	8/26/2022 8:35	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 08-03	AWL-22-02771-006-1	8/26/2022 8:55	8/26/2022 15:35	BOD	
SWM 08-03	AWL-22-02771-006-1	8/26/2022 8:55	8/31/2022 15:04	TSS	
SWM 08-03	AWL-22-02771-006-4	8/26/2022 8:55	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 08-03 DUP	AWL-22-02771-007-1	8/26/2022 8:55	8/26/2022 15:35	BOD	
SWM 08-03 DUP	AWL-22-02771-007-1	8/26/2022 8:55	8/31/2022 15:04	TSS	
SWM 08-03 DUP	AWL-22-02771-007-4	8/26/2022 8:55	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 09A-03	AWL-22-02771-008-1	8/26/2022 9:30	8/26/2022 15:35	BOD	
SWM 09A-03	AWL-22-02771-008-1	8/26/2022 9:30	8/31/2022 15:04	TSS	
SWM 09A-03	AWL-22-02771-008-4	8/26/2022 9:30	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 10-03	AWL-22-02771-009-1	8/26/2022 9:45	8/26/2022 15:35	BOD	
SWM 10-03	AWL-22-02771-009-1	8/26/2022 9:45	8/31/2022 15:04	TSS	

SWM 10-03	AWL-22-02771-009-4	8/26/2022 9:45	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 11-03	AWL-22-02771-010-1	8/26/2022 10:40	8/26/2022 15:35	BOD	
SWM 11-03	AWL-22-02771-010-1	8/26/2022 10:40	8/31/2022 15:04	TSS	
SWM 11-03	AWL-22-02771-010-4	8/26/2022 10:40	10/24/2022 15:00	Hardness	Calc from Ca and Mg
SWM 12-03	AWL-22-02771-011-1	8/26/2022 11:35	8/26/2022 15:35	BOD	
SWM 12-03	AWL-22-02771-011-1	8/26/2022 11:35	8/31/2022 15:04	TSS	
SWM 12-03	AWL-22-02771-011-4	8/26/2022 11:35	10/24/2022 15:01	Hardness	Calc from Ca and Mg
SWM 12-03 DUP	AWL-22-02771-013-1	8/26/2022 11:35	8/26/2022 15:35	BOD	
SWM 12-03 DUP	AWL-22-02771-013-1	8/26/2022 11:35	8/31/2022 15:04	TSS	
SWM 12-03 DUP	AWL-22-02771-013-4	8/26/2022 11:35	10/24/2022 15:01	Hardness	Calc from Ca and Mg

Subcontracted

Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-03	AWL-22-02771-001-3	8/26/2022 11:05	9/15/2022 22:26	200.8 DISS	
SWM 03-03	AWL-22-02771-001-4	8/26/2022 11:05	9/13/2022 12:44	200.7	
SWM 04-03	AWL-22-02771-002-3	8/26/2022 11:15	9/15/2022 22:30	200.8 DISS	
SWM 04-03	AWL-22-02771-002-4	8/26/2022 11:15	9/13/2022 12:47	200.7	
SWM 05-03	AWL-22-02771-003-6	8/26/2022 12:10	9/2/2022 4:58	624	
SWM 05-03	AWL-22-02771-003-5	8/26/2022 12:10	9/3/2022 1:56	625 SIM	
SWM 05-03	AWL-22-02771-003-3	8/26/2022 12:10	9/15/2022 22:33	200.8 DISS	
SWM 05-03	AWL-22-02771-003-4	8/26/2022 12:10	9/13/2022 12:49	200.7	
SWM 06-03	AWL-22-02771-004-3	8/26/2022 10:10	9/15/2022 22:36	200.8 DISS	
SWM 06-03	AWL-22-02771-004-4	8/26/2022 10:10	9/13/2022 12:52	200.7	
SWM 07-03	AWL-22-02771-005-6	8/26/2022 8:35	9/2/2022 5:13	624	
SWM 07-03	AWL-22-02771-005-5	8/26/2022 8:35	9/3/2022 2:17	625 SIM	
SWM 07-03	AWL-22-02771-005-3	8/26/2022 8:35	9/15/2022 22:39	200.8 DISS	
SWM 07-03	AWL-22-02771-005-4	8/26/2022 8:35	9/13/2022 12:55	200.7	
SWM 08-03	AWL-22-02771-006-3	8/26/2022 8:55	9/15/2022 22:42	200.8 DISS	
SWM 08-03	AWL-22-02771-006-4	8/26/2022 8:55	9/13/2022 13:05	200.7	
SWM 08-03 DUP	AWL-22-02771-007-3	8/26/2022 8:55	9/15/2022 22:45	200.8 DISS	
SWM 08-03 DUP	AWL-22-02771-007-4	8/26/2022 8:55	9/13/2022 13:08	200.7	
SWM 09A-03	AWL-22-02771-008-6	8/26/2022 9:30	9/2/2022 5:28	624	
SWM 09A-03	AWL-22-02771-008-5	8/26/2022 9:30	9/3/2022 2:38	625 SIM	
SWM 09A-03	AWL-22-02771-008-3	8/26/2022 9:30	9/15/2022 22:48	200.8 DISS	
SWM 09A-03	AWL-22-02771-008-4	8/26/2022 9:30	9/13/2022 13:11	200.7	
SWM 10-03	AWL-22-02771-009-3	8/26/2022 9:45	9/15/2022 22:51	200.8 DISS	
SWM 10-03	AWL-22-02771-009-4	8/26/2022 9:45	9/13/2022 13:13	200.7	
SWM 11-03	AWL-22-02771-010-3	8/26/2022 10:40	9/15/2022 23:00	200.8 DISS	
SWM 11-03	AWL-22-02771-010-4	8/26/2022 10:40	9/13/2022 13:16	200.7	
SWM 12-03	AWL-22-02771-011-6	8/26/2022 11:35	09/03/2022 02:22	624	Parent/MS/MSD
SWM 12-03	AWL-22-02771-011-5	8/26/2022 11:35	9/6/2022 19:16	625 SIM	Parent/MS/MSD
SWM 12-03	AWL-22-02771-011-3	8/26/2022 11:35	9/15/2022 21:56	200.8 DISS	Parent/MS/MSD
SWM 12-03	AWL-22-02771-011-4	8/26/2022 11:35	9/13/2022 13:18	200.7	Parent/MS/MSD
SWM 12-03 DUP	AWL-22-02771-013-6	8/26/2022 11:35	9/3/2022 3:51	624	DUP
SWM 12-03 DUP	AWL-22-02771-013-5	8/26/2022 11:35	9/3/2022 2:58	625 SIM	DUP
SWM 12-03 DUP	AWL-22-02771-013-3	8/26/2022 11:35	9/15/2022 23:03	200.8 DISS	DUP
SWM 12-03 DUP	AWL-22-02771-013-4	8/26/2022 11:35	9/13/2022 13:29	200.7	DUP
SWM TripBlank-03	AWL-22-02771-012-1	8/26/2022 8:35	9/3/2022 2:07	624	Trip Blanks

Analytical Methods

Analyte	Method	Comments
Fecal Coliform	SM9222D MF	
BOD	SM5210B	
TSS	SM2540D	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22
Hardness	SM2340B	
200.7	200.7	Subcontracted to ALS Kelso: Ca, Mg for Hardness Calculation; Batch 777260 : The Method Blank associated with this batch recovered Calcium above the MDL, below the MRL, and within method control limits. All QC met method criteria.

200.8	200.8	Subcontracted to SGS ANC: Dissolved, Cu; Batch MMS11677 : All QC met method criteria.
PAH	624	Subcontracted to SGS ANC: PAH; Batch XMS13328 : QC for samples AWL-22-02771-003-5, AWL-22-02771-005-5, AWL-22-02771-008-5, AWL-22-02771-013-5 Duplicate Sample; Sample AWL-22-02771-008-5 was flagged as requiring manual integration for Fluoranthene due to a Split Peak. All QC reported was recovered within specified method control limits, and no issues with this batch have been narrated. Batch XMS13329 : Reported as QC for sample AWL-22-02771-011-5. All QC reported was recovered within method specified control limits. Batch XMS1330 and Batch XMS13331 : QC for Sample AWL-22-02771-011-5 (Parent Sample). Batch XMS13331 reported only the Fluoranthene CCV verification via edd, which was recovered within CCV control limits. All QC reported for these batches was recovered within method specified control limits.
TAqH	625 SIM	Subcontracted to SGS ANC: TAH; Batch VMS21958 : Analysis of AWL-22-02771-003, AWL-22-02771-005, AWL-22-02771-007, and AWL-22-02771-008 All QC met method criteria. Batch VMS21963 : Billable MS/Dup recoveries - Analysis of AWL-22-02771-011, AWL-22-02771-012, AWL-22-02771-013. All QC met method criteria.

Cert Required
CMDP #

WW

Log In Initials: AKS 8-31-22
DQO Initials: MCC 8-31-22

Comments: Duplicate results reported as separate sample - amended sample time to parent sample for QC purposes. Listed Trip Blank as first time on COC to ensure coupled to all samples. Samples flagged with a 'U' from SGS Anchorage are identified as not having the analyte present in the sample when analyzed. Values reported as limits are typically laboratory surrogates added to client samples to confirm recovery of analytes is accurate during analysis. Client should review results flagged with a 'U' from SGS as being a non-detect for the analyte.

Definitions:

DUP	Sample Duplicate
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MRL	Method Reporting Limit
MB	Method Blank
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
TNTC	Count is Too Numerous To Count
<MDL	Result recovery is below the detectable laboratory limit, listed as the MDL

Data Qualifiers:

B	The result of both the method blank and the target sample are above the MDL.
D	Sample analysis accomplished through dilution.
J	The reported result is an estimated value above the LOD but below
U	Result is below the MDL, PQL, LOD, or LOQ
*	LCS/LCSD or Sample DUP fails all Duplicate criteria.
H	Holding time exceeded
E	Exceeds MCL

General Comments:

- 1.0) Basis: "As Received" = analyzed as received from client; "Dry" = dried prior to being analyzed; "Dry Weight Corrected" = analyzed as received; result corrected for percent moisture.

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:05
 PWS# None
 AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample Location SWM 03-03
 AWL ID/ Fraction AWL-22-02771-001-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1290.91	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:15
 PWS# None
 AWL # AWL-22-02771
 Sample Location SWM 04-03
 AWL ID/ Fraction AWL-22-02771-002-2 Matrix SW
 AWL Batch ID: 082622-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	145.45	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 12:10
 PWS# None AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample Location SWM 05-03
 AWL ID/ Fraction AWL-22-02771-003-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	4,000	CFU/100mL	100			100.00	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 10:10
 PWS# None
 AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample Location SWM 06-03
 AWL ID/ Fraction AWL-22-02771-004-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	320	CFU/100mL	10			10.00	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 8:35
 PWS# None
 AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample SWM 07-03
 Location
 AWL ID/ Fraction AWL-22-02771-005-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	936.36	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 8:55
 PWS# None
 AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample SWM 08-03
 Location
 AWL ID/ Fraction AWL-22-02771-006-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1363.64	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 8:55
 PWS# None
 AWL Batch ID: 082622-01-FC
 AWL # AWL-22-02771
 Sample SWM 08-03 DUP
 Location
 AWL ID/ Fraction AWL-22-02771-007-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1318.18	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:32	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 9:30
 PWS# None
 AWL # AWL-22-02771
 Sample Location SWM 09A-03
 AWL ID/ Fraction AWL-22-02771-008-2 Matrix SW
 AWL Batch ID: 082622-02-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1163.64	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:48	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 9:45
 PWS# None
 AWL Batch ID: 082622-02-FC
 AWL # AWL-22-02771
 Sample Location SWM 10-03
 AWL ID/ Fraction AWL-22-02771-009-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	380	CFU/100mL	10			10.00	SM9222D MF	AKS	8/26/2022 14:48	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 10:40
 PWS# None
 AWL Batch ID: 082622-02-FC
 AWL # AWL-22-02771
 Sample SWM 11-03
 Location
 AWL ID/ Fraction AWL-22-02771-010-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	1154.55	CFU/100mL	9.091			9.09	SM9222D MF	AKS	8/26/2022 14:48	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:35
 PWS# None
 AWL Batch ID: 082622-02-FC
 AWL # AWL-22-02771
 Sample Location SWM 12-03
 AWL ID/ Fraction AWL-22-02771-011-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	3700	CFU/100mL	100			100	SM9222D MF	AKS	8/26/2022 14:48	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:35
 PWS# None
 AWL Batch ID: 082622-02-FC
 AWL # AWL-22-02771
 Sample SWM 12-03 DUP
 Location
 AWL ID/ Fraction AWL-22-02771-013-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	4200	CFU/100mL	100			100	SM9222D MF	AKS	8/26/2022 14:48	

Analyst Batching initials/date AKS 9-1-22
 Analyst reviewer initials/date JTR 9-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:05
 PWS# None

AWL # AWL-22-02771
 Sample SWM 03-03
 Location
 AWL ID/ Fraction AWL-22-02771-001-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.24	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	<MDL	mg/L	30.4849	13.6986		Q, U	2.74	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	Final results for TSS recovered under the MDL at 6.03 mg/L. The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	108.01	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-001-4										

Analyst Batching initials/date JTR 9-2-22 (TSS), AK 9-6-22(BOD), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:15
 PWS# None

AWL # AWL-22-02771
 Sample SWM 04-03
 Location
 AWL ID/ Fraction AWL-22-02771-002-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.57	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	8.45	mg/L	15.6718	7.04		J, Q	1.41	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	135.74	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-002-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
AKS 9-6-22 (TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 12:10
 PWS# None

AWL # AWL-22-02771
 Sample SWM 05-03
 Location
 AWL ID/ Fraction AWL-22-02771-003-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.15	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	20.80	mg/L	22.254	10		J, Q	2	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	92.28	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-003-4										

Analyst Batching initials/date JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 10:10
 PWS# None

AWL # AWL-22-02771
 Sample SWM 06-03
 Location
 AWL ID/ Fraction AWL-22-02771-004-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.05	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	12.58	mg/L	17.4953	7.86		J, Q	1.57	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	39.87	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-004-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 8:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 07-03
 Location
 AWL ID/ Fraction AWL-22-02771-005-4 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.85	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	48.67	mg/L	37.09	16.6667		Q	3.33	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	20.37	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-005-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 8:55
 PWS# None

AWL # AWL-22-02771
 Sample SWM 08-03
 Location
 AWL ID/ Matrix SW
 Fraction AWL-22-02771-006-1

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.87	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	7.87	mg/L	17.1713	7.72		J, Q	1.54	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	77.89	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-006-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 9:30
 PWS# None

AWL # AWL-22-02771
 Sample SWM 09A-03
 Location
 AWL ID/ Fraction AWL-22-02771-008-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.72	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	29.17	mg/L	18.545	8.33		Q	1.67	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	133.51	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-008-4										

Analyst Batching initials/date JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 9:45
 PWS# None

AWL # AWL-22-02771
 Sample SWM 10-03
 Location
 AWL ID/ Fraction AWL-22-02771-009-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.55	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	<MDL	mg/L	16.1027	7.24		Q, U	1.45	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	Final results for TSS recovered under the MDL at 5.64 mg/L. The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	132.64	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-009-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22(TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 10:40
 PWS# None

AWL # AWL-22-02771
 Sample SWM 11-03
 Location
 AWL ID/ Fraction AWL-22-02771-010-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	5.24	mg/L	1.5	0.45			1.5	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	32.50	mg/L	27.8175	12.50		Q	2.50	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	35.34	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:00	102422-03-Hardness
Comments	AWL-22-02771-010-4										

Analyst Batching initials/date JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 12-03
 Location
 AWL ID/ Fraction AWL-22-02771-011-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	12.96	mg/L	3	0.9			3	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	98.00	mg/L	55.635	25		Q	5	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	191.66	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:01	102422-04-Hardness
Comments	AWL-22-02771-011-4										

Analyst Batching initials/date JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 Analyst reviewer initials/date AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/22 11:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 12-03 DUP
 Location
 AWL ID/ Fraction AWL-22-02771-013-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	13.30	mg/L	3	0.9			3	SM5210B	AKS	8/26/2022 15:35	082622-01-BOD
Comments											
TSS	88.00	mg/L	55.635	25		Q	5	SM2540D	JTR	8/31/22 15:04	083122-01-TSS
Comments	The LCS for Batch 083122-01-TSS recovered lower than the methods acceptable range; All other QC Criteria were within the Methods acceptable recovery ranges; sample results may be considered bias low - JTR 9-2-22										
Hardness	200.96	mg/L	1	1			1	SM2340B	MCC	10/24/22 15:01	102422-04-Hardness
Comments	AWL-22-02771-013-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

JTR 9-2-22 (TSS), AKS 9-6-22(BOD), MCC 10-24-22 (Hardness)
 AKS 9-6-22(TSS), JTR 9-7-22 (BOD), MJG 11-2-22(Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 11:05
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 03-03
 AWL ID/ Fraction AWL-22-02771-001-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.99	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:26	MMS116 77
Comments	Sample 1225387 001										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 03-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-001-4 Matrix SW Date / time 8/26/2022 11:05

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	29700	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 12:44	777260
Magnesium	8220	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 12:44	777260
Comments	Sample K2210195-001										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 11:15
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 04-03
 AWL ID/ Fraction AWL-22-02771-002-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.00	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 22:30	MMS116 77
Comments	Sample 1225387 002										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 04-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-002-4 Matrix SW Date / time 8/26/2022 11:15

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	39700	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 12:47	777260
Magnesium	8890	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 12:47	777260
Comments	Sample K2210195-002										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 12:10
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 05-03
 AWL ID/ Fraction AWL-22-02771-003-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/2/2022 4:58	VMS21958
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 4:58	VMS21958
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/2/2022 4:58	VMS21958
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 4:58	VMS21958
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 4:58	VMS21958
Comments	Sample 1225226 001										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 05-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-003-5 Matrix SW Date / time 8/26/2022 12:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Acenaphthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Benzo(a)anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Benzo(a)pyrene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Benzo(b)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Benzo(g,h,i)perylene	0.0142	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Benzo(k)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Chrysene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Dibenzo(a,h)anthracene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328

Fluoranthene	0.0250	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Fluorene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Indeno(1,2,3-cd)pyrene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Naphthalene	<0.0471	ug/L	0.0943	0.0292		U	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Phenanthrene	0.0421	ug/L	0.0943	0.0292		J	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Pyrene	0.0235	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 1:56	XMS13328
Comments	Sample 1225226 002										

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Aromatic HydroCarbons (TAqH)	0.1048	ug/L		0.0292			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 12:10
 PWS# None

AWL # AWL-22-02771
 Sample SWM 05-03
 Location
 AWL ID/ Fraction AWL-22-02771-003-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.85	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 22:33	MMS116 77
Comments	Sample 1225387 003										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 05-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-003-4 Matrix SW Date / time 8/26/2022 12:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	28100	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 12:49	777260
Magnesium	5370	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 12:49	777260
Comments	Sample K2210195-003										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 10:10
 PWS# None

AWL # AWL-22-02771
 Sample SWM 06-03
 Location
 AWL ID/ Fraction AWL-22-02771-004-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.58	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:36	MMS116 77
Comments	Sample 1225387 004										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 06-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-004-4 Matrix SW Date / time 8/26/2022 10:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	11200	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 12:52	777260
Magnesium	2890	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 12:52	777260
Comments	Sample K2210195-004										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 3 2022 **Collection**
 DW Y/N N Date / time 8/26/2022 8:35
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 07-03
 AWL ID/ Fraction AWL-22-02771-005-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/2/2022 5:13	VMS21958
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:13	VMS21958
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/2/2022 5:13	VMS21958
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:13	VMS21958
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:13	VMS21958
Comments	Sample 1225226 003										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 07-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-005-5 Matrix SW Date / time 8/26/2022 8:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.0057		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Benzo(g,h,i)perylene	0.0316	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Chrysene	0.0164	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328

Fluoranthene	0.0339	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Fluorene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Naphthalene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Phenanthrene	0.0549	ug/L	0.0926	0.0287		J	1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Pyrene	0.0464	ug/L	0.0463	0.0139			1	625 SIM	SGS ANCH	9/3/2022 2:17	XMS13328
Comments	Sample 1225226 004										

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Aromatic HydroCarbons (TAqH)	0.1832	ug/L		0.0287			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 8:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 07-03
 Location
 AWL ID/ Fraction AWL-22-02771-005-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.93	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 22:39	MMS116 77
Comments	Sample 1225387 005										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 07-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-005-4 Matrix SW Date / time 8/26/2022 8:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	5420	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 12:55	777260
Magnesium	1660	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 12:55	777260
Comments	Sample K2210195-005										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 8:55
 PWS# None

AWL # AWL-22-02771
 Sample SWM 08-03
 Location
 AWL ID/ Fraction AWL-22-02771-006-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.51	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:42	MMS116 77
Comments	Sample 1225387 006										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 08-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-006-4 Matrix SW Date / time 8/26/2022 8:55

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	22700	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:05	777260
Magnesium	5150	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:05	777260
Comments	Sample K2210195-006										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 8:55
 PWS# None

AWL # AWL-22-02771
 Sample SWM 08-03 DUP
 Location
 AWL ID/ Fraction AWL-22-02771-007-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.48	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:45	MMS116 77
Comments	Sample 1225387 007										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 08-03 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-007-4 Matrix SW Date / time 8/26/2022 8:55

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	23600	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:08	777260
Magnesium	5360	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:08	777260
Comments	Sample K2210195-007										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 9:30
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 09A-03
 AWL ID/ Fraction AWL-22-02771-008-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/2/2022 5:28	VMS21958
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:28	VMS21958
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/2/2022 5:28	VMS21958
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:28	VMS21958
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/2/2022 5:28	VMS21958
Comments	Sample 1225226 005										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 09A-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-008-5 Matrix SW Date / time 8/26/2022 9:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Acenaphthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Benzo(a)anthracene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Benzo(a)pyrene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Benzo(b)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Benzo(g,h,i)perylene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Benzo(k)fluoranthene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Chrysene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Dibenzo(a,h)anthracene	<0.00945	ug/L	0.0189	0.00585		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328

Fluoranthene	0.0194	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Fluorene	0.0434	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Indeno(1,2,3-cd)pyrene	<0.0236	ug/L	0.0472	0.0142		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Naphthalene	<0.0471	ug/L	0.0943	0.0292		U	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Phenanthrene	0.0639	ug/L	0.0943	0.0292		J	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Pyrene	0.0252	ug/L	0.0472	0.0142		J	1	625 SIM	SGS ANCH	9/3/2022 2:38	XMS13328
Comments	Sample 1225226 006										

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620			1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Aromatic HydroCarbons (TAqH)	0.1519	ug/L		0.0292			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date MCC 10-24-22
Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 9:30
 PWS# None

AWL # AWL-22-02771
 Sample SWM 09A-03
 Location
 AWL ID/ Fraction AWL-22-02771-008-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.72	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:48	MMS116 77
Comments	Sample 1225387 008										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 09A-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-008-4 Matrix SW Date / time 8/26/2022 9:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	39500	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:11	777260
Magnesium	8470	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:11	777260
Comments	Sample K2210195-008										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 9:45
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 10-03
 AWL ID/ Fraction AWL-22-02771-009-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.67	ug/L	3.00	1.00		J	1	200.8 DISS	SGS ANC	9/15/2022 22:51	MMS11677
Comments	Sample 1225387 009										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 10-03 **Collection**
 AWL ID/ Fraction AWL-22-02771-009-4 Matrix SW Date / time 8/26/2022 9:45

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	37800	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:13	777260
Magnesium	9290	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:13	777260
Comments	Sample K2210195-009										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 10:40
 PWS# None

AWL # AWL-22-02771
 Sample SWM 11-03
 Location
 AWL ID/ Fraction AWL-22-02771-010-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.34	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 23:00	MMS11677
Comments	Sample 1225387 010										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 11-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-010-4 Matrix SW Date / time 8/26/2022 10:40

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	11400	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:16	777260
Magnesium	1670	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:16	777260
Comments	Sample K2210195-010										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Fluoranthene	0.0165	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Fluorene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Naphthalene	0.0634	ug/L	0.0926	0.0287		J	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Phenanthrene	0.0386	ug/L	0.0926	0.0287		J	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Pyrene	0.0195	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/6/2022 19:16	XMS1332 9
Comments	Sample 1225226 008										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 10-24-22
MJG 11-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620			1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Aromatic HydroCarbons (TAqH)	0.1521	ug/L		0.0287			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 10-24-22
MJG 11-2-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 11:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 12-03
 Location
 AWL ID/ Fraction AWL-22-02771-011-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	5.53	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 21:56	MMS116 77
Comments	Sample 1225387 011										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 12-03 **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-011-4 Matrix SW Date / time 8/26/2022 11:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	56800	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:18	777260
Magnesium	12100	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:18	777260
Comments	Sample K2210195-011										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 11:35
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM 12-03 DUP
 AWL ID/ Fraction AWL-22-02771-013-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/3/2022 3:51	VMS2196 3
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 3:51	VMS2196 3
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/3/2022 3:51	VMS2196 3
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 3:51	VMS2196 3
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 3:51	VMS2196 3
Comments	Sample 1225226 013										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample Location SWM 12-03 DUP **Collection**
 AWL ID/ Fraction AWL-22-02771-013-5 Matrix SW Date / time 8/26/2022 11:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS1332 8

Fluoranthene	0.0153	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Fluorene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Naphthalene	0.0654	ug/L	0.0926	0.0287		J	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Phenanthrene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Pyrene	0.0188	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	9/3/2022 2:58	XMS13328
Comments	Sample 1225226 014										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 10-24-22
MJG 11-2-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	10/24/2022	Calc
Total Aqueous Aromatic HydroCarbons (TAqH)	0.0995	ug/L		0.0287			1	Calculation	MCC	10/24/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 10-24-22
MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 11:35
 PWS# None

AWL # AWL-22-02771
 Sample SWM 12-03 DUP
 Location
 AWL ID/ Fraction AWL-22-02771-013-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	5.17	ug/L	3.00	1.00			1	200.8 DISS	SGS ANC	9/15/2022 23:03	MMS11677
Comments	Sample 1225387 014										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Sample SWM 12-03 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-02771-013-4 Matrix SW Date / time 8/26/2022 11:35

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	59700	ug/L	21	3			1	200.7	ALS KELSO	9/13/2022 13:29	777260
Magnesium	12600	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/13/2022 13:29	777260
Comments	Sample K2210195-012										

Analyst Batching initials/date MCC 10-24-22
 Analyst Reviewer initials/date MJG 11-2-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 3 2022
 DW Y/N N Date / time 8/26/2022 8:35
 PWS# None

AWL # AWL-22-02771
 Sample Location SWM TripBlank-03
 AWL ID/ Fraction AWL-22-02771-012-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/3/2022 2:07	VMS2196 3
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 2:07	VMS2196 3
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/3/2022 2:07	VMS2196 3
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 2:07	VMS2196 3
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/3/2022 2:07	VMS2196 3
Comments	Sample 1225226 015										

Analyst Batching initials/date
 Analyst Reviewer initials/date

MCC 10-24-22
MJG 11-2-22

Alaska Laboratory# AK01000

Analysis QC Results

BOD SM 5210B

Batch ID 082622-01-BOD

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
BOD	0.15		0.3	0.9		AKS	8/26/22 15:35

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
BOD	200.85		223	90.07	85-115	AKS	8/26/22 15:35

Sample Duplicate Parent ID AWL-22-02771-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
BOD	2.54		2.24	12.55	≤20	AKS	8/26/22 15:35

Total Suspended Solids SM2540D

Batch ID 083122-01-TSS

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
TSS	0.00		5	11.1		JTR	8/31/2022 15:04

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
TSS	86.00	Q	96.2	89.39709	90-110	JTR	8/31/2022 15:04

Sample Duplicate Parent ID AWL-22-02771-005

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	47.33		48.67	2.79	≤20	JTR	8/31/2022 15:04

Sample Duplicate 2 Parent ID AWL-22-02796-004

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	450.00		452.00	0.44	≤20	JTR	8/31/2022 15:04

AWL Chain of Custody

Custody form MUST be signed
Please provide as much information as possible



AWL-22-02771



Client/Company Name & Address: HDR Inc. 582 E. 36th Ave. Suite 500 Anchorage, AK 99503-4169		Public Water System (PWS) ID: Project Name/ID :		Quote Number AWL #		AWL Staff	
Contact Person: Cindy Helmericks Phone No: 907.644.2017 (o) 907.231.9305 (c) Fax No: --- E-mail: cindy.helmericks@hdrinc.com		Turnaround Time (TAT) for Results <input checked="" type="checkbox"/> Standard Expedited (prior authorization required) *Specify Requested Due Date if not standard		Account #: Check Invoice Contact Name & Address & Phone: HDR Inc. ATTN: Calley Hall 582 E. 36th Ave. Suite 500, Anchorage, AK 99503-4169 Calley.Hall@hdrinc.com, 907.644.2048		Requested Analysis/Method PO/Contract No.: 10343108, Task 1.0	
Requested Date for Results: Results to STATE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Routine Non-Routine Specify if REPEAT sample		2540D - Total Suspended Solids		EPA 200.8/2340B - Total Hardness HNO3	
Special Instructions/Requirements:		5210B - BOD		200.8 - Dissolved Cu (Lab Filter)		EPA 625 SIM - TAqH	
Kit Preparation/Shipping Charge:		9222D - Fecal Coliform Preserv.: Na2SO4		EPA 624 - TAH Preservative: HCl		Comments	
Client Sample Identification (Name, Designation, Location, etc.)		Date Sampled		Time Sampled		Matrix (DW, WW, SO)	
1 SWM 03-03		8/26/22		11:05		WS 4	
2 SWM 04-03		[Blank]		11:15		WS 4	
3 SWM 05-03		[Blank]		12:10		WS 9	
4 SWM 06-03		[Blank]		10:10		WS 4	
5 SWM 07-03		[Blank]		8:35		WS 9	
6 SWM 08-03		[Blank]		8:55		WS 4	
7 SWM 08-03 Dup		[Blank]		8:55		WS 4	
8 SWM 09A-03		[Blank]		9:30		WS 9	
9 SWM 10-03		[Blank]		9:45		WS 4	
10 SWM 11-03		[Blank]		10:40		WS 4	
Relinquished by:		Date		Time		Received by:	
Ky Shickman		8/26/22		13:58		[Signature]	
Relinquished by:		Date		Time		Received by:	
[Blank]		[Blank]		[Blank]		[Blank]	
Relinquished by:		Date		Time		Received by:	
KI		[Blank]		[Blank]		[Blank]	
Name of Sampler: (printed)		Temp		Ice		Delivery Method (Circle)	
[Blank]		[Blank]		[Blank]		Hand	
Section To Be Completed by AWL		Custody Seal (circle): Intact <input checked="" type="checkbox"/> Broken <input type="checkbox"/>		Thermo ID		Receiv Notes:	
[Blank]		[Blank]		[Blank]		Blue 5.89c, Blue #2 4.69c Red 3.19c Blue 2 - 8 Days 8, 9, 10, 11 - 4.69c	
Temp		Ice		Temp		Receiv Notes:	
[Blank]		[Blank]		[Blank]		Blue 5.89c, Blue #2 4.69c Red 3.19c	
Temp		Ice		Temp		Receiv Notes:	
[Blank]		[Blank]		[Blank]		Blue 5.89c, Blue #2 4.69c Red 3.19c	

• Hardness pH 2 ✓

AWL-22-02771



Alaska Water Laboratories
281 N Main st, Suite # 101
Wasilla, AK 99654
907-373-6130

AWL Chain of Custody

Custody form **MUST** be signed
Please provide as much information as possible

Client/Company Name & Address: HDR Inc. 582 E. 36th Ave. Suite 500 Anchorage, AK 99503-4169 Contact Person: Cindy Helmericks Phone No: 907.644.2017 (o) 907.231.9305 (c) Fax No: --- E-mail: cindy.helmericks@hdrinc.com		Public Water System (PWS) ID: Project Name/ID:		AWL Staff Quote Number Account #: Check Invoice Contact Name & Address & Phone: HDR Inc. ATTN: Calley Hall 582 E. 36th Ave. Suite 500, Anchorage, AK 99503-4169 Calley.Hall@hdrinc.com, 907.644.2048 PO/Contract No.: 10343108, Task 1.0	
Turnaround Time (TAT) for Results X Standard Expedited (prior authorization required) *Specify Requested Due Date if not standard		Requested Date for Results: Routine Non-Routine Results to STATE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Requested Analysis/Method	
Special Instructions/Requirements:		Specify if REPEAT sample		Section To Be Completed by AWL	
Kit Preparation/Shipping Charge:		Date Sampled Time Sampled Matrix (DW, WW, SO) No. of Containers		Custody Seal (circle): Intact Broken Temperature on arrival: °C Blue 8.34 Blue #1 4.61 Red 3.19	
Client Sample Identification (Name, Designation, Location, etc.)		Date Time Date Time Date Time		Thermo ID Delivery Method (Circle) Courier USPS/Mail Hand	
55 11 SWM 12-03 12 SWM TripBlank-03 13 SWM 12-03 Dup 14 15 16 17 18 19 20		2540D - Total Suspended Solids 9222D - Fecal Coliform Preserv.: Na2SO4 200.8 - Dissolved Cu (Lab Filter) EPA 200.8/2340B - Total Hardness HNO3 Preservative: HCl EPA 625 SIM - TAqH EPA 624 - TAH Preservative: HCl Comments Prim, MS/MSD Trip Blanks (P) Z		Receiv Notes: Blue #1 - 03, 04, 05, 06, 07 Blue #2 - 8, 9, 10, 11 Red - 12, MS/MSD, 12-Rep	
Relinquished by:		Received by:		Section To Be Completed by AWL	
Relinquished by:		Received by:		Section To Be Completed by AWL	
Relinquished by:		Received by:		Section To Be Completed by AWL	
Name of Sampler: (printed)		Received by:		Section To Be Completed by AWL	



September 14, 2022

Service Request No:K2210195

Mary Curry
Alaska Water Laboratories
281 N. Main Street, Suite #101
Wasilla, AK 99654

Laboratory Results for: AWL-22-02771

Dear Mary,

Enclosed are the results of the sample(s) submitted to our laboratory September 06, 2022
For your reference, these analyses have been assigned our service request number **K2210195**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater

Service Request: K2210195
Date Received: 09/06/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Twelve wastewater samples were received for analysis at ALS Environmental on 09/06/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy

Date 09/14/2022



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-02771-001-4		Lab ID: K2210195-001				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	29700		3	21	ug/L	200.7
Magnesium	8220		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-002-4		Lab ID: K2210195-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	39700		3	21	ug/L	200.7
Magnesium	8890		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-003-4		Lab ID: K2210195-003				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	28100		3	21	ug/L	200.7
Magnesium	5370		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-004-4		Lab ID: K2210195-004				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	11200		3	21	ug/L	200.7
Magnesium	2890		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-005-4		Lab ID: K2210195-005				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	5420		3	21	ug/L	200.7
Magnesium	1660		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-006-4		Lab ID: K2210195-006				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	22700		3	21	ug/L	200.7
Magnesium	5150		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-007-4		Lab ID: K2210195-007				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	23600		3	21	ug/L	200.7
Magnesium	5360		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-008-4		Lab ID: K2210195-008				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	39500		3	21	ug/L	200.7
Magnesium	8470		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-009-4		Lab ID: K2210195-009				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	37800		3	21	ug/L	200.7
Magnesium	9290		0.4	5.3	ug/L	200.7



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-02771-010-4	Lab ID: K2210195-010
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	11400		3	21	ug/L	200.7
Magnesium	1670		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-011-4	Lab ID: K2210195-011
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	56800		3	21	ug/L	200.7
Magnesium	12100		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-02771-013-4	Lab ID: K2210195-012
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	59700		3	21	ug/L	200.7
Magnesium	12600		0.4	5.3	ug/L	200.7



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Alaska Water Laboratories
Project: AWL-22-02771

Service Request:K2210195



SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2210195-001	AWL-22-02771-001-4	8/26/2022	1105
K2210195-002	AWL-22-02771-002-4	8/26/2022	1115
K2210195-003	AWL-22-02771-003-4	8/26/2022	1210
K2210195-004	AWL-22-02771-004-4	8/26/2022	1010
K2210195-005	AWL-22-02771-005-4	8/26/2022	0835
K2210195-006	AWL-22-02771-006-4	8/26/2022	0855
K2210195-007	AWL-22-02771-007-4	8/26/2022	0855
K2210195-008	AWL-22-02771-008-4	8/26/2022	0930
K2210195-009	AWL-22-02771-009-4	8/26/2022	0945
K2210195-010	AWL-22-02771-010-4	8/26/2022	1040
K2210195-011	AWL-22-02771-011-4	8/26/2022	1135
K2210195-012	AWL-22-02771-013-4	8/26/2022	1135

K2210195



281 N Main St., STE # 101
Wasilla AK, 99654
907-373-6130

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	ALS Kelso	
Client Project Name:	AWL-22-02771	Certification Required:	Alaska WW	
Requested Due Date (if not standard TAT):	Standard	Notes : Level 2 report	Report to MDL	Provide EDD - SW
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-02771-001-4	8/26/2022 11:05	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-002-4	8/26/2022 11:15	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-003-4	8/26/2022 12:10	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-004-4	8/26/2022 10:10	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-005-4	8/26/2022 8:35	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-006-4	8/26/2022 8:55	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-007-4	8/26/2022 8:55	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-008-4	8/26/2022 9:30	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-009-4	8/26/2022 9:45	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-010-4	8/26/2022 10:40	200.7	Ca, Mg, pH<2	SW
AWL-22-02771-011-4	8/26/2022 11:35	200.7	Ca, Mg, pH<2 - PARENT/MS/MSD	SW
AWL-22-02771-013-4	8/26/2022 11:35	200.7	Ca, Mg, pH<2 - DUP - Report as additional sample Result	SW
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
	9-1-22 12:07		9/1/22 1100	
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
				CoC Seal? Y / N
				pH:
				Ice: Frozen
				Melted / None
				Temp:
				CoC Seal? Y / N
				pH:
				Ice: Frozen
				Melted / None

Cooler Receipt and Preservation Form

Client Alaska Water Lab Service Request K22 10/95
 Received: 9/16/22 Opened: 9/16/22 By: MP Unloaded: 9/16/22 By: MP

1. Samples were received via? **USPS** Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler **Box** Envelope Other _____ NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID/ NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
						<u>9405508699301336</u> <u>5020 48</u>	

4. Was a Temperature Blank present in cooler? NA Y N If yes, note the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: **Frozen Partially Thawed Thawed**

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** Gel Packs Wet Ice Dry Ice Sleeves _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
14. Was C12/Res negative? NA Y N
15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
 - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
 - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02771/

Service Request: K2210195

Sample Name: AWL-22-02771-001-4
Lab Code: K2210195-001
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-002-4
Lab Code: K2210195-002
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-003-4
Lab Code: K2210195-003
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-004-4
Lab Code: K2210195-004
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-005-4
Lab Code: K2210195-005
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02771/

Service Request: K2210195

Sample Name: AWL-22-02771-006-4
Lab Code: K2210195-006
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-007-4
Lab Code: K2210195-007
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-008-4
Lab Code: K2210195-008
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-009-4
Lab Code: K2210195-009
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-010-4
Lab Code: K2210195-010
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-02771/

Service Request: K2210195

Sample Name: AWL-22-02771-011-4
Lab Code: K2210195-011
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-02771-013-4
Lab Code: K2210195-012
Sample Matrix: Wastewater

Date Collected: 08/26/22
Date Received: 09/6/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY



Sample Results

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Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-001-4
Lab Code: K2210195-001

Service Request: K2210195
Date Collected: 08/26/22 11:05
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	29700	ug/L	21	3	1	09/13/22 12:44	09/12/22	
Magnesium	200.7	8220	ug/L	5.3	0.4	1	09/13/22 12:44	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-002-4
Lab Code: K2210195-002

Service Request: K2210195
Date Collected: 08/26/22 11:15
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	39700	ug/L	21	3	1	09/13/22 12:47	09/12/22	
Magnesium	200.7	8890	ug/L	5.3	0.4	1	09/13/22 12:47	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-003-4
Lab Code: K2210195-003

Service Request: K2210195
Date Collected: 08/26/22 12:10
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	28100	ug/L	21	3	1	09/13/22 12:49	09/12/22	
Magnesium	200.7	5370	ug/L	5.3	0.4	1	09/13/22 12:49	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-004-4
Lab Code: K2210195-004

Service Request: K2210195
Date Collected: 08/26/22 10:10
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	11200	ug/L	21	3	1	09/13/22 12:52	09/12/22	
Magnesium	200.7	2890	ug/L	5.3	0.4	1	09/13/22 12:52	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-005-4
Lab Code: K2210195-005

Service Request: K2210195
Date Collected: 08/26/22 08:35
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	5420	ug/L	21	3	1	09/13/22 12:55	09/12/22	
Magnesium	200.7	1660	ug/L	5.3	0.4	1	09/13/22 12:55	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-006-4
Lab Code: K2210195-006

Service Request: K2210195
Date Collected: 08/26/22 08:55
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	22700	ug/L	21	3	1	09/13/22 13:05	09/12/22	
Magnesium	200.7	5150	ug/L	5.3	0.4	1	09/13/22 13:05	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-007-4
Lab Code: K2210195-007

Service Request: K2210195
Date Collected: 08/26/22 08:55
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	23600	ug/L	21	3	1	09/13/22 13:08	09/12/22	
Magnesium	200.7	5360	ug/L	5.3	0.4	1	09/13/22 13:08	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-008-4
Lab Code: K2210195-008

Service Request: K2210195
Date Collected: 08/26/22 09:30
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	39500	ug/L	21	3	1	09/13/22 13:11	09/12/22	
Magnesium	200.7	8470	ug/L	5.3	0.4	1	09/13/22 13:11	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-009-4
Lab Code: K2210195-009

Service Request: K2210195
Date Collected: 08/26/22 09:45
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	37800	ug/L	21	3	1	09/13/22 13:13	09/12/22	
Magnesium	200.7	9290	ug/L	5.3	0.4	1	09/13/22 13:13	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-010-4
Lab Code: K2210195-010

Service Request: K2210195
Date Collected: 08/26/22 10:40
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	11400	ug/L	21	3	1	09/13/22 13:16	09/12/22	
Magnesium	200.7	1670	ug/L	5.3	0.4	1	09/13/22 13:16	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-011-4
Lab Code: K2210195-011

Service Request: K2210195
Date Collected: 08/26/22 11:35
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	56800	ug/L	21	3	1	09/13/22 13:18	09/12/22	
Magnesium	200.7	12100	ug/L	5.3	0.4	1	09/13/22 13:18	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: AWL-22-02771-013-4
Lab Code: K2210195-012

Service Request: K2210195
Date Collected: 08/26/22 11:35
Date Received: 09/06/22 11:00
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	59700	ug/L	21	3	1	09/13/22 13:29	09/12/22	
Magnesium	200.7	12600	ug/L	5.3	0.4	1	09/13/22 13:29	09/12/22	



QC Summary Forms

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater
Sample Name: Method Blank
Lab Code: KQ2215200-01

Service Request: K2210195
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	9 J	ug/L	21	3	1	09/13/22 12:17	09/12/22	
Magnesium	200.7	5.6	ug/L	5.3	0.4	1	09/13/22 12:17	09/12/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater

Service Request: K2210195
Date Collected: 08/26/22
Date Received: 09/06/22
Date Analyzed: 09/13/22
Date Extracted: 09/12/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-02771-011-4
Lab Code: K2210195-011
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2215200-06

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	56800	67800	10000	109 #	70-130
Magnesium	12100	21400	10000	93	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater

Service Request: K2210195
Date Collected: 08/26/22
Date Received: 09/06/22
Date Analyzed: 09/13/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-02771-011-4
Lab Code: K2210195-011

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2215200-05 Result			
Calcium	200.7	21	3	56800	56900	56900	<1	20
Magnesium	200.7	5.3	0.4	12100	12200	12200	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-02771
Sample Matrix: Wastewater

Service Request: K2210195
Date Analyzed: 09/13/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2215200-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Calcium	200.7	13500	12500	108	85-115
Magnesium	200.7	12200	12500	98	85-115



Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1225226**

Client Project: **AWL-22-02771**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Danika at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Danika Buzby-Rynders
Project Manager
Danika.Buzby-Rynders@sgs.com

Date

Print Date: 09/15/2022 1:16:41PM

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1225226**

Project Name/Site: **AWL-22-02771**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/15/2022 1:16:42PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
EPA 625M SIM (PAH) LV				
1225226006	AWL-22-02771-008-5	XMS13328	Fluoranthene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 09/15/2022 1:16:43PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02771-003-6	1225226001	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-003-5	1225226002	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-005-6	1225226003	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-005-5	1225226004	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-008-6	1225226005	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-008-5	1225226006	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-011-6	1225226007	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-011-5	1225226008	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771...(1225226007BM	1225226009	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-0277...(1225226007BMS	1225226010	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771...(1225226008BM	1225226011	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-0277...(1225226008BMS	1225226012	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-013-6	1225226013	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-013-5	1225226014	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)
AWL-22-02771-012-1	1225226015	08/26/2022	08/30/2022	Water (Surface, Eff., Ground)

Method

EPA 602/624
EPA 625M SIM (PAH) LV

Method Description

602 Aromatics by 624 (W)
625 PAH SIM GC/MS Low Volume

Detectable Results Summary

Client Sample ID: **AWL-22-02771-003-5**

Lab Sample ID: 1225226002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[g,h,i]perylene	0.0142J	ug/L
Fluoranthene	0.0250J	ug/L
Phenanthrene	0.0421J	ug/L
Pyrene	0.0235J	ug/L

Client Sample ID: **AWL-22-02771-005-5**

Lab Sample ID: 1225226004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[g,h,i]perylene	0.0316J	ug/L
Chrysene	0.0164J	ug/L
Fluoranthene	0.0339J	ug/L
Phenanthrene	0.0549J	ug/L
Pyrene	0.0464	ug/L

Client Sample ID: **AWL-22-02771-008-5**

Lab Sample ID: 1225226006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0194J	ug/L
Fluorene	0.0434J	ug/L
Phenanthrene	0.0639J	ug/L
Pyrene	0.0252J	ug/L

Client Sample ID: **AWL-22-02771-011-5**

Lab Sample ID: 1225226008

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[g,h,i]perylene	0.0141J	ug/L
Fluoranthene	0.0165J	ug/L
Naphthalene	0.0634J	ug/L
Phenanthrene	0.0386J	ug/L
Pyrene	0.0195J	ug/L

Client Sample ID: **AWL-22-02771-013-5**

Lab Sample ID: 1225226014

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0153J	ug/L
Naphthalene	0.0654J	ug/L
Pyrene	0.0188J	ug/L

Results of AWL-22-02771-003-6

Client Sample ID: **AWL-22-02771-003-6**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226001
 Lab Project ID: 1225226

Collection Date: 08/26/22 12:10
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/02/22 04:58
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/02/22 04:58
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/02/22 04:58
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/02/22 04:58
Toluene	0.500 U	1.00	0.310	ug/L	1		09/02/22 04:58
Surrogates							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		09/02/22 04:58
4-Bromofluorobenzene (surr)	103	85-114		%	1		09/02/22 04:58
Toluene-d8 (surr)	99	89-112		%	1		09/02/22 04:58

Batch Information

Analytical Batch: VMS21958
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/02/22 04:58
 Container ID: 1225226001-A

Prep Batch: VXX39157
 Prep Method: SW5030B
 Prep Date/Time: 09/01/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of AWL-22-02771-003-5

Client Sample ID: **AWL-22-02771-003-5**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226002
 Lab Project ID: 1225226

Collection Date: 08/26/22 12:10
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Acenaphthylene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Benzo(a)Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Benzo[a]pyrene	0.00945 U	0.0189	0.00585	ug/L	1		09/03/22 01:56
Benzo[b]Fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Benzo[g,h,i]perylene	0.0142 J	0.0472	0.0142	ug/L	1		09/03/22 01:56
Benzo[k]fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Chrysene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Dibenzo[a,h]anthracene	0.00945 U	0.0189	0.00585	ug/L	1		09/03/22 01:56
Fluoranthene	0.0250 J	0.0472	0.0142	ug/L	1		09/03/22 01:56
Fluorene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Indeno[1,2,3-c,d] pyrene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 01:56
Naphthalene	0.0471 U	0.0943	0.0292	ug/L	1		09/03/22 01:56
Phenanthrene	0.0421 J	0.0943	0.0292	ug/L	1		09/03/22 01:56
Pyrene	0.0235 J	0.0472	0.0142	ug/L	1		09/03/22 01:56
Surrogates							
2-Methylnaphthalene-d10 (surr)	56.6	42-86		%	1		09/03/22 01:56
Fluoranthene-d10 (surr)	62.6	50-97		%	1		09/03/22 01:56

Batch Information

Analytical Batch: XMS13328
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 09/03/22 01:56
 Container ID: 1225226002-A

Prep Batch: XXX46913
 Prep Method: SW3535A
 Prep Date/Time: 09/01/22 10:04
 Prep Initial Wt./Vol.: 265 mL
 Prep Extract Vol: 1 mL

Results of AWL-22-02771-005-6

Client Sample ID: **AWL-22-02771-005-6**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226003
 Lab Project ID: 1225226

Collection Date: 08/26/22 08:35
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/02/22 05:13
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:13
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:13
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/02/22 05:13
Toluene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:13
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		09/02/22 05:13
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/02/22 05:13
Toluene-d8 (surr)	98.2	89-112		%	1		09/02/22 05:13

Batch Information

Analytical Batch: VMS21958
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/02/22 05:13
 Container ID: 1225226003-A

Prep Batch: VXX39157
 Prep Method: SW5030B
 Prep Date/Time: 09/01/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02771-005-5**

Client Sample ID: **AWL-22-02771-005-5**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225226004
Lab Project ID: 1225226

Collection Date: 08/26/22 08:35
Received Date: 08/30/22 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		09/03/22 02:17
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Benzo[g,h,i]perylene	0.0316 J	0.0463	0.0139	ug/L	1		09/03/22 02:17
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Chrysene	0.0164 J	0.0463	0.0139	ug/L	1		09/03/22 02:17
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		09/03/22 02:17
Fluoranthene	0.0339 J	0.0463	0.0139	ug/L	1		09/03/22 02:17
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:17
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		09/03/22 02:17
Phenanthrene	0.0549 J	0.0926	0.0287	ug/L	1		09/03/22 02:17
Pyrene	0.0464	0.0463	0.0139	ug/L	1		09/03/22 02:17
Surrogates							
2-Methylnaphthalene-d10 (surr)	54.5	42-86		%	1		09/03/22 02:17
Fluoranthene-d10 (surr)	50.8	50-97		%	1		09/03/22 02:17

Batch Information

Analytical Batch: XMS13328
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 09/03/22 02:17
Container ID: 1225226004-A

Prep Batch: XXX46913
Prep Method: SW3535A
Prep Date/Time: 09/01/22 10:04
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02771-008-6

Client Sample ID: **AWL-22-02771-008-6**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226005
 Lab Project ID: 1225226

Collection Date: 08/26/22 09:30
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/02/22 05:28
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:28
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:28
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/02/22 05:28
Toluene	0.500 U	1.00	0.310	ug/L	1		09/02/22 05:28
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		09/02/22 05:28
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/02/22 05:28
Toluene-d8 (surr)	98.7	89-112		%	1		09/02/22 05:28

Batch Information

Analytical Batch: VMS21958
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/02/22 05:28
 Container ID: 1225226005-A

Prep Batch: VXX39157
 Prep Method: SW5030B
 Prep Date/Time: 09/01/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02771-008-5**

Client Sample ID: **AWL-22-02771-008-5**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225226006
Lab Project ID: 1225226

Collection Date: 08/26/22 09:30
Received Date: 08/30/22 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Acenaphthylene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Benzo(a)Anthracene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Benzo[a]pyrene	0.00945 U	0.0189	0.00585	ug/L	1		09/03/22 02:38
Benzo[b]Fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Benzo[g,h,i]perylene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Benzo[k]fluoranthene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Chrysene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Dibenzo[a,h]anthracene	0.00945 U	0.0189	0.00585	ug/L	1		09/03/22 02:38
Fluoranthene	0.0194 J	0.0472	0.0142	ug/L	1		09/03/22 02:38
Fluorene	0.0434 J	0.0472	0.0142	ug/L	1		09/03/22 02:38
Indeno[1,2,3-c,d] pyrene	0.0236 U	0.0472	0.0142	ug/L	1		09/03/22 02:38
Naphthalene	0.0471 U	0.0943	0.0292	ug/L	1		09/03/22 02:38
Phenanthrene	0.0639 J	0.0943	0.0292	ug/L	1		09/03/22 02:38
Pyrene	0.0252 J	0.0472	0.0142	ug/L	1		09/03/22 02:38
Surrogates							
2-Methylnaphthalene-d10 (surr)	53.1	42-86		%	1		09/03/22 02:38
Fluoranthene-d10 (surr)	59.6	50-97		%	1		09/03/22 02:38

Batch Information

Analytical Batch: XMS13328
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 09/03/22 02:38
Container ID: 1225226006-A

Prep Batch: XXX46913
Prep Method: SW3535A
Prep Date/Time: 09/01/22 10:04
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02771-011-6

Client Sample ID: **AWL-22-02771-011-6**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226007
 Lab Project ID: 1225226

Collection Date: 08/26/22 11:35
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/03/22 02:22
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:22
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:22
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/03/22 02:22
Toluene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:22
Surrogates							
1,2-Dichloroethane-D4 (surr)	99.2	81-118		%	1		09/03/22 02:22
4-Bromofluorobenzene (surr)	107	85-114		%	1		09/03/22 02:22
Toluene-d8 (surr)	101	89-112		%	1		09/03/22 02:22

Batch Information

Analytical Batch: VMS21963
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/03/22 02:22
 Container ID: 1225226007-A

Prep Batch: VXX39162
 Prep Method: SW5030B
 Prep Date/Time: 09/02/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02771-011-5**

Client Sample ID: **AWL-22-02771-011-5**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225226008
Lab Project ID: 1225226

Collection Date: 08/26/22 11:35
Received Date: 08/30/22 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		09/06/22 19:16
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Benzo[g,h,i]perylene	0.0141 J	0.0463	0.0139	ug/L	1		09/06/22 19:16
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		09/06/22 19:16
Fluoranthene	0.0165 J	0.0463	0.0139	ug/L	1		09/06/22 19:16
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		09/06/22 19:16
Naphthalene	0.0634 J	0.0926	0.0287	ug/L	1		09/06/22 19:16
Phenanthrene	0.0386 J	0.0926	0.0287	ug/L	1		09/06/22 19:16
Pyrene	0.0195 J	0.0463	0.0139	ug/L	1		09/06/22 19:16
Surrogates							
2-Methylnaphthalene-d10 (surr)	55.3	42-86		%	1		09/06/22 19:16
Fluoranthene-d10 (surr)	55.9	50-97		%	1		09/06/22 19:16

Batch Information

Analytical Batch: XMS13329
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 09/06/22 19:16
Container ID: 1225226008-A

Prep Batch: XXX46922
Prep Method: SW3535A
Prep Date/Time: 09/01/22 16:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02771-013-6

Client Sample ID: **AWL-22-02771-013-6**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226013
 Lab Project ID: 1225226

Collection Date: 08/26/22 11:35
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/03/22 03:51
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/03/22 03:51
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/03/22 03:51
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/03/22 03:51
Toluene	0.500 U	1.00	0.310	ug/L	1		09/03/22 03:51
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	81-118		%	1		09/03/22 03:51
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/03/22 03:51
Toluene-d8 (surr)	99.4	89-112		%	1		09/03/22 03:51

Batch Information

Analytical Batch: VMS21963
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/03/22 03:51
 Container ID: 1225226013-A

Prep Batch: VXX39162
 Prep Method: SW5030B
 Prep Date/Time: 09/02/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-02771-013-5**

Client Sample ID: **AWL-22-02771-013-5**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225226014
Lab Project ID: 1225226

Collection Date: 08/26/22 11:35
Received Date: 08/30/22 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		09/03/22 02:58
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		09/03/22 02:58
Fluoranthene	0.0153 J	0.0463	0.0139	ug/L	1		09/03/22 02:58
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		09/03/22 02:58
Naphthalene	0.0654 J	0.0926	0.0287	ug/L	1		09/03/22 02:58
Phenanthrene	0.0463 U	0.0926	0.0287	ug/L	1		09/03/22 02:58
Pyrene	0.0188 J	0.0463	0.0139	ug/L	1		09/03/22 02:58
Surrogates							
2-Methylnaphthalene-d10 (surr)	50.6	42-86		%	1		09/03/22 02:58
Fluoranthene-d10 (surr)	52.4	50-97		%	1		09/03/22 02:58

Batch Information

Analytical Batch: XMS13328
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 09/03/22 02:58
Container ID: 1225226014-A

Prep Batch: XXX46913
Prep Method: SW3535A
Prep Date/Time: 09/01/22 10:04
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of AWL-22-02771-012-1

Client Sample ID: **AWL-22-02771-012-1**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225226015
 Lab Project ID: 1225226

Collection Date: 08/26/22 08:35
 Received Date: 08/30/22 14:30
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/03/22 02:07
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:07
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:07
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/03/22 02:07
Toluene	0.500 U	1.00	0.310	ug/L	1		09/03/22 02:07
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	81-118		%	1		09/03/22 02:07
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/03/22 02:07
Toluene-d8 (surr)	101	89-112		%	1		09/03/22 02:07

Batch Information

Analytical Batch: VMS21963
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/03/22 02:07
 Container ID: 1225226015-A

Prep Batch: VXX39162
 Prep Method: SW5030B
 Prep Date/Time: 09/02/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1843164 [VXX/39157]
 Blank Lab ID: 1685320

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225226001, 1225226003, 1225226005

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	100	89-112		%

Batch Information

Analytical Batch: VMS21958
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/2/2022 12:45:00AM

Prep Batch: VXX39157
 Prep Method: SW5030B
 Prep Date/Time: 9/1/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/15/2022 1:16:51PM

Leaching Blank

Blank ID: LB for HBN 1842386 [TCLP/11939]
 Blank Lab ID: 1682500

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225226001, 1225226003, 1225226005

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	10.0U	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	98.7	89-112		%

Batch Information

Analytical Batch: VMS21958
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/2/2022 5:43:00AM

Prep Batch: VXX39157
 Prep Method: SW5030B
 Prep Date/Time: 9/1/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/15/2022 1:16:51PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225226 [VXX39157]
 Blank Spike Lab ID: 1685321
 Date Analyzed: 09/02/2022 01:00

Spike Duplicate ID: LCSD for HBN 1225226 [VXX39157]
 Spike Duplicate Lab ID: 1685322
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225226001, 1225226003, 1225226005

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.9	103	30	29.1	97	(79-120)	6.00	(< 20)
Ethylbenzene	30	31.1	104	30	29.6	99	(79-121)	4.80	(< 20)
o-Xylene	30	31.3	104	30	29.7	99	(78-122)	5.10	(< 20)
P & M -Xylene	60	62.9	105	60	60.2	100	(80-121)	4.50	(< 20)
Toluene	30	29.7	99	30	29.1	97	(80-121)	2.30	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		97	30		96	(81-118)	1.10	
4-Bromofluorobenzene (surr)	30		101	30		99	(85-114)	1.90	
Toluene-d8 (surr)	30		98	30		101	(89-112)	2.50	

Batch Information

Analytical Batch: **VMS21958**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **AZL**

Prep Batch: **VXX39157**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/01/2022 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/15/2022 1:16:52PM

Method Blank

Blank ID: MB for HBN 1843229 [VXX/39162]
 Blank Lab ID: 1685606

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225226007, 1225226013, 1225226015

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	100	89-112		%

Batch Information

Analytical Batch: VMS21963
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/2/2022 11:52:00PM

Prep Batch: VXX39162
 Prep Method: SW5030B
 Prep Date/Time: 9/2/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/15/2022 1:16:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225226 [VXX39162]
 Blank Spike Lab ID: 1685607
 Date Analyzed: 09/03/2022 00:07

Spike Duplicate ID: LCSD for HBN 1225226 [VXX39162]
 Spike Duplicate Lab ID: 1685608
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225226007, 1225226013, 1225226015

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	31.1	104	30	31.7	106	(79-120)	1.90	(< 20)
Ethylbenzene	30	31.6	105	30	32.3	108	(79-121)	2.20	(< 20)
o-Xylene	30	31.5	105	30	32.1	107	(78-122)	1.70	(< 20)
P & M -Xylene	60	63.7	106	60	64.8	108	(80-121)	1.80	(< 20)
Toluene	30	30.0	100	30	30.8	103	(80-121)	2.90	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		102	30		99	(81-118)	2.70	
4-Bromofluorobenzene (surr)	30		100	30		100	(85-114)	0.23	
Toluene-d8 (surr)	30		98	30		99	(89-112)	0.88	

Batch Information

Analytical Batch: **VMS21963**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **AZL**

Prep Batch: **VXX39162**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/02/2022 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/15/2022 1:16:57PM

Billable Matrix Spike Summary

Original Sample ID: 1225226007
 MS Sample ID: 1225226009 BMS
 MSD Sample ID: 1225226010 BMSD

Analysis Date: 09/03/2022 2:22
 Analysis Date: 09/03/2022 0:37
 Analysis Date: 09/03/2022 0:52
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.200U	30.0	32.5	108	30.0	31.6	105	79-120	2.80	(< 20)
Ethylbenzene	0.500U	30.0	32.7	109	30.0	31.4	105	79-121	4.00	(< 20)
o-Xylene	0.500U	30.0	32.9	110	30.0	31.6	105	78-122	3.90	(< 20)
P & M -Xylene	1.00U	60.0	65.9	110	60.0	63.4	106	80-121	3.90	(< 20)
Toluene	0.500U	30.0	31.9	106	30.0	30.6	102	80-121	3.90	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	28.9	96	30.0	28.9	96	81-118	0.10	
4-Bromofluorobenzene (surr)		30.0	30	100	30.0	29.9	100	85-114	0.53	
Toluene-d8 (surr)		30.0	29.8	99	30.0	30.0	100	89-112	0.67	

Batch Information

Analytical Batch: VMS21963
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/3/2022 12:37:00AM

Prep Batch: VXX39162
 Prep Method: Volatiles Extraction 8240/8260 FULL
 Prep Date/Time: 9/2/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 09/15/2022 1:16:58PM

Method Blank

Blank ID: MB for HBN 1842574 [XXX/46913]
 Blank Lab ID: 1682978

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225226002, 1225226004, 1225226006, 1225226014

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	65.4	42-86		%
Fluoranthene-d10 (surr)	70.6	50-97		%

Batch Information

Analytical Batch: XMS13328
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 9/2/2022 7:25:00PM

Prep Batch: XXX46913
 Prep Method: SW3535A
 Prep Date/Time: 9/1/2022 10:04:14AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225226 [XXX46913]
 Blank Spike Lab ID: 1682979
 Date Analyzed: 09/02/2022 19:45

Spike Duplicate ID: LCSD for HBN 1225226 [XXX46913]
 Spike Duplicate Lab ID: 1682980
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225226002, 1225226004, 1225226006, 1225226014

Results by EPA 625M SIM (PAH) LV

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	2	1.55	78	2	1.44	72	(48-114)	7.30	(< 20)
Acenaphthylene	2	1.61	81	2	1.50	75	(35-121)	7.10	(< 20)
Anthracene	2	1.67	83	2	1.53	77	(53-119)	8.40	(< 20)
Benzo(a)Anthracene	2	1.54	77	2	1.47	73	(59-120)	4.90	(< 20)
Benzo[a]pyrene	2	1.64	82	2	1.56	78	(53-120)	5.30	(< 20)
Benzo[b]Fluoranthene	2	1.67	84	2	1.50	75	(53-126)	10.60	(< 20)
Benzo[g,h,i]perylene	2	1.83	92	2	1.74	87	(44-128)	5.00	(< 20)
Benzo[k]fluoranthene	2	1.66	83	2	1.66	83	(54-125)	0.06	(< 20)
Chrysene	2	1.61	81	2	1.56	78	(57-120)	3.20	(< 20)
Dibenzo[a,h]anthracene	2	1.81	90	2	1.73	87	(44-131)	4.30	(< 20)
Fluoranthene	2	1.53	77	2	1.47	73	(58-120)	4.20	(< 20)
Fluorene	2	1.64	82	2	1.56	78	(50-118)	5.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.80	90	2	1.71	86	(48-130)	5.10	(< 20)
Naphthalene	2	1.45	73	2	1.34	67	(43-114)	7.70	(< 20)
Phenanthrene	2	1.74	87	2	1.66	83	(53-115)	4.90	(< 20)
Pyrene	2	1.54	77	2	1.49	74	(53-121)	3.80	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		67	2		61	(42-86)	9.60	
Fluoranthene-d10 (surr)	2		70	2		68	(50-97)	2.80	

Batch Information

Analytical Batch: XMS13328
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG

Prep Batch: XXX46913
 Prep Method: SW3535A
 Prep Date/Time: 09/01/2022 10:04
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1842635 [XXX/46922]
 Blank Lab ID: 1683221

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225226008

Results by EPA 625M SIM (PAH) LV

Parameter	Results	LOQ/CL	DL	Units
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	71.7	42-86		%
Fluoranthene-d10 (surr)	70.6	50-97		%

Batch Information

Analytical Batch: XMS13330
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 9/7/2022 7:43:00PM

Prep Batch: XXX46922
 Prep Method: SW3535A
 Prep Date/Time: 9/1/2022 4:00:40PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS13331
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 9/8/2022 4:45:00PM

Prep Batch: XXX46922
 Prep Method: SW3535A
 Prep Date/Time: 9/1/2022 4:00:40PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 09/15/2022 1:17:03PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225226 [XXX46922]

Blank Spike Lab ID: 1683222

Date Analyzed: 09/06/2022 16:52

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225226008

Results by EPA 625M SIM (PAH) LV

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.54	77	(48-114)
Acenaphthylene	2	1.70	85	(35-121)
Anthracene	2	1.82	91	(53-119)
Benzo(a)Anthracene	2	1.58	79	(59-120)
Benzo[a]pyrene	2	1.68	84	(53-120)
Benzo[b]Fluoranthene	2	1.67	83	(53-126)
Benzo[g,h,i]perylene	2	1.85	93	(44-128)
Benzo[k]fluoranthene	2	1.72	86	(54-125)
Chrysene	2	1.66	83	(57-120)
Dibenzo[a,h]anthracene	2	1.84	92	(44-131)
Fluoranthene	2	1.58	79	(58-120)
Fluorene	2	1.70	85	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.82	91	(48-130)
Naphthalene	2	1.47	74	(43-114)
Phenanthrene	2	1.82	91	(53-115)
Pyrene	2	1.57	78	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2		68	(42-86)
Fluoranthene-d10 (surr)	2		70	(50-97)

Batch Information

Analytical Batch: XMS13329

Analytical Method: EPA 625M SIM (PAH) LV

Instrument: Agilent GC 7890B/5977A SWA

Analyst: NGG

Prep Batch: XXX46922

Prep Method: SW3535A

Prep Date/Time: 09/01/2022 16:00

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/15/2022 1:17:06PM

Billable Matrix Spike Summary

Original Sample ID: 1225226008
 MS Sample ID: 1225226011 BMS
 MSD Sample ID: 1225226012 BMSD

Analysis Date: 09/06/2022 19:16
 Analysis Date: 09/06/2022 19:36
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0232U	1.89	1.33	71				48-114		
Acenaphthylene	0.0232U	1.89	1.42	75				35-121		
Anthracene	0.0232U	1.89	1.35	72				53-119		
Benzo(a)Anthracene	0.0232U	1.89	1.21	64				59-120		
Benzo[a]pyrene	0.00925U	1.89	1.23	65				53-120		
Benzo[b]Fluoranthene	0.0232U	1.89	1.24	66				53-126		
Benzo[g,h,i]perylene	0.0141J	1.89	1.28	67				44-128		
Benzo[k]fluoranthene	0.0232U	1.89	1.24	66				54-125		
Chrysene	0.0232U	1.89	1.27	68				57-120		
Dibenzo[a,h]anthracene	0.00925U	1.89	1.26	67				44-131		
Fluoranthene	0.0165J	1.89	1.25	65				58-120		
Fluorene	0.0232U	1.89	1.41	75				50-118		
Indeno[1,2,3-c,d] pyrene	0.0232U	1.89	1.23	65				48-130		
Naphthalene	0.0634J	1.89	1.35	68				43-114		
Phenanthrene	0.0386J	1.89	1.42	73				53-115		
Pyrene	0.0195J	1.89	1.25	65				53-121		
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.89	1.17	62	1.89	1.18	63	42-86	1.30	
Fluoranthene-d10 (surr)		1.89	1.09	58	1.89	1.09	58	50-97	0.07	

Batch Information

Analytical Batch: XMS13329
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 9/6/2022 7:36:00PM

Prep Batch: XXX46922
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/1/2022 4:00:40PM
 Prep Initial Wt./Vol.: 265.00mL
 Prep Extract Vol: 1.00mL

Print Date: 09/15/2022 1:17:07PM

1225226



FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:
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Client Project Name:	AWL-22-02771	Certification Required:	WW
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Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report * DO NOT REPORT 1-Methylnaphthalene and 2-Methylnaphthalene for any client sample results. QC on client samples - Report to MDL Please provide SW LINKO edd
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Samples

AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-02771-003-6	8/26/2022 12:10	624	TAH	SW
AWL-22-02771-003-5	8/26/2022 12:10	625 SIM	PAH	SW
AWL-22-02771-005-6	8/26/2022 8:35	624	TAH	SW
AWL-22-02771-005-5	8/26/2022 8:35	625 SIM	PAH	SW
AWL-22-02771-008-6	8/26/2022 9:30	624	TAH	SW
AWL-22-02771-008-5	8/26/2022 9:30	625 SIM	PAH	SW
AWL-22-02771-011-6	8/26/2022 11:35	624	TAH; Parent and MS Volume	SW
AWL-22-02771-011-5	8/26/2022 11:35	625 SIM	PAH; Parent and MS Volume	SW
AWL-22-02771-013-6	8/26/2022 11:35	624	TAH; DUP Vol - Report as separate sample ID	SW
AWL-22-02771-013-5	8/26/2022 11:35	625 SIM	PAH; DUP Vol - Report as separate sample ID	SW
AWL-22-02771-012-1	8/26/2022 8:35	624	TAH: TRIP BLANK	SW

JAC
ZAB
SAC
YAB
SAC
OAB
FAC
SAB
JAC
YAB
OAB
SAB
DF

Profile # 386968 DBR

Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
MCC	8/30/22 10:42			CoC Seal? Y / N pH: Ice: Frozen Melted / None
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
		DLF	8/30/22 14:30	3.5 D 20 CoC Seal? Y / N pH: Ice: Frozen Melted / None



SGS Workorder #:

1225226

1225226

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
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Chain of Custody / Temperature Requirements

Note: Temperature and COC seal information is found on the chain of custody form

DOD only: Did all sample coolers have a corresponding COC? N/A

If <0°C, were sample containers ice free? N/A

Note containers received with ice:

Identify any containers received at non-compliant temperature:

(Use form FS-0029 if more space is needed)

Holding Time / Documentation / Sample Condition Requirement

Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.

Were samples received within analytical holding time? Yes

Do sample labels match COC? Record discrepancies. Yes

Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear? Yes

(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Were proper containers (type/mass/volume/preservative)used? Yes

Note: Exemption for metals analysis by 200.8/6020 in water.

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)

Were all soil VOAs received with a corresponding % solids container? N/A

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples? Yes

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)? Yes

Were all soil VOAs field extracted with Methanol+BFB? N/A

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1225226001-A	HCL to pH < 2	OK			
1225226001-B	HCL to pH < 2	OK			
1225226001-C	HCL to pH < 2	OK			
1225226002-A	No Preservative Required	OK			
1225226002-B	No Preservative Required	OK			
1225226003-A	HCL to pH < 2	OK			
1225226003-B	HCL to pH < 2	OK			
1225226003-C	HCL to pH < 2	OK			
1225226004-A	No Preservative Required	OK			
1225226004-B	No Preservative Required	OK			
1225226005-A	HCL to pH < 2	OK			
1225226005-B	HCL to pH < 2	OK			
1225226005-C	HCL to pH < 2	OK			
1225226006-A	No Preservative Required	OK			
1225226006-B	No Preservative Required	OK			
1225226007-A	HCL to pH < 2	OK			
1225226007-B	HCL to pH < 2	OK			
1225226007-C	HCL to pH < 2	OK			
1225226008-A	No Preservative Required	OK			
1225226008-B	No Preservative Required	OK			
1225226009-A	HCL to pH < 2	OK			
1225226009-B	HCL to pH < 2	OK			
1225226010-A	HCL to pH < 2	OK			
1225226010-B	HCL to pH < 2	OK			
1225226011-A	No Preservative Required	OK			
1225226011-B	No Preservative Required	OK			
1225226012-A	No Preservative Required	OK			
1225226012-B	No Preservative Required	OK			
1225226013-A	HCL to pH < 2	OK			
1225226013-B	HCL to pH < 2	OK			
1225226013-C	HCL to pH < 2	OK			
1225226014-A	No Preservative Required	OK			
1225226014-B	No Preservative Required	OK			
1225226015-A	HCL to pH < 2	OK			
1225226015-B	HCL to pH < 2	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1225387**

Client Project: **AWL-22-02771**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Danika at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Danika Buzby-Rynders
Project Manager
Danika.Buzby-Rynders@sgs.com

Date

Print Date: 09/21/2022 11:27:30AM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1225387**

Project Name/Site: **AWL-22-02771**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/21/2022 11:27:31AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-02771-001-3	1225387001	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-002-3	1225387002	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-003-3	1225387003	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-004-3	1225387004	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-005-3	1225387005	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-006-3	1225387006	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-007-3	1225387007	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-008-3	1225387008	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-009-3	1225387009	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-010-3	1225387010	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-011-3	1225387011	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771...(1225387011BM	1225387012	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-0277...(1225387011BMS	1225387013	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)
AWL-22-02771-013-3	1225387014	08/26/2022	09/07/2022	Water (Surface, Eff., Ground)

Method
EP200.8

Method Description
Metals in Drinking Water by ICP-MS DISSO

Detectable Results Summary

Client Sample ID: AWL-22-02771-001-3 Lab Sample ID: 1225387001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.99J	ug/L
Client Sample ID: AWL-22-02771-002-3 Lab Sample ID: 1225387002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.00	ug/L
Client Sample ID: AWL-22-02771-003-3 Lab Sample ID: 1225387003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.85	ug/L
Client Sample ID: AWL-22-02771-004-3 Lab Sample ID: 1225387004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.58J	ug/L
Client Sample ID: AWL-22-02771-005-3 Lab Sample ID: 1225387005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.93	ug/L
Client Sample ID: AWL-22-02771-006-3 Lab Sample ID: 1225387006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.51J	ug/L
Client Sample ID: AWL-22-02771-007-3 Lab Sample ID: 1225387007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.48J	ug/L
Client Sample ID: AWL-22-02771-008-3 Lab Sample ID: 1225387008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.72J	ug/L
Client Sample ID: AWL-22-02771-009-3 Lab Sample ID: 1225387009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.67J	ug/L
Client Sample ID: AWL-22-02771-010-3 Lab Sample ID: 1225387010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.34	ug/L
Client Sample ID: AWL-22-02771-011-3 Lab Sample ID: 1225387011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	5.53	ug/L
Client Sample ID: AWL-22-02771-013-3 Lab Sample ID: 1225387014	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	5.17	ug/L

Print Date: 09/21/2022 11:27:36AM



Results of **AWL-22-02771-001-3**

Client Sample ID: **AWL-22-02771-001-3**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225387001
Lab Project ID: 1225387

Collection Date: 08/26/22 11:05
Received Date: 09/07/22 14:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.99 J	3.00	1.00	ug/L	1		09/15/22 22:26

Batch Information

Analytical Batch: MMS11677
Analytical Method: EP200.8
Analyst: DSD
Analytical Date/Time: 09/15/22 22:26
Container ID: 1225387001-A

Prep Batch: MXX35441
Prep Method: E200.2
Prep Date/Time: 09/08/22 08:41
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02771-002-3**

Client Sample ID: **AWL-22-02771-002-3**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225387002
Lab Project ID: 1225387

Collection Date: 08/26/22 11:15
Received Date: 09/07/22 14:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.00	3.00	1.00	ug/L	1		09/15/22 22:30

Batch Information

Analytical Batch: MMS11677
Analytical Method: EP200.8
Analyst: DSD
Analytical Date/Time: 09/15/22 22:30
Container ID: 1225387002-A

Prep Batch: MXX35441
Prep Method: E200.2
Prep Date/Time: 09/08/22 08:41
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-02771-003-3**

Client Sample ID: **AWL-22-02771-003-3**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225387003
Lab Project ID: 1225387

Collection Date: 08/26/22 12:10
Received Date: 09/07/22 14:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.85	3.00	1.00	ug/L	1		09/15/22 22:33

Batch Information

Analytical Batch: MMS11677
Analytical Method: EP200.8
Analyst: DSD
Analytical Date/Time: 09/15/22 22:33
Container ID: 1225387003-A

Prep Batch: MXX35441
Prep Method: E200.2
Prep Date/Time: 09/08/22 08:41
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02771-004-3

Client Sample ID: **AWL-22-02771-004-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387004
 Lab Project ID: 1225387

Collection Date: 08/26/22 10:10
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.58 J	3.00	1.00	ug/L	1		09/15/22 22:36

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 22:36
 Container ID: 1225387004-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-02771-005-3**

Client Sample ID: **AWL-22-02771-005-3**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225387005
Lab Project ID: 1225387

Collection Date: 08/26/22 08:35
Received Date: 09/07/22 14:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.93	3.00	1.00	ug/L	1		09/15/22 22:39

Batch Information

Analytical Batch: MMS11677
Analytical Method: EP200.8
Analyst: DSD
Analytical Date/Time: 09/15/22 22:39
Container ID: 1225387005-A

Prep Batch: MXX35441
Prep Method: E200.2
Prep Date/Time: 09/08/22 08:41
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-02771-006-3

Client Sample ID: **AWL-22-02771-006-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387006
 Lab Project ID: 1225387

Collection Date: 08/26/22 08:55
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.51 J	3.00	1.00	ug/L	1		09/15/22 22:42

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 22:42
 Container ID: 1225387006-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02771-007-3

Client Sample ID: **AWL-22-02771-007-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387007
 Lab Project ID: 1225387

Collection Date: 08/26/22 08:55
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.48 J	3.00	1.00	ug/L	1		09/15/22 22:45

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 22:45
 Container ID: 1225387007-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02771-008-3

Client Sample ID: **AWL-22-02771-008-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387008
 Lab Project ID: 1225387

Collection Date: 08/26/22 09:30
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.72 J	3.00	1.00	ug/L	1		09/15/22 22:48

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 22:48
 Container ID: 1225387008-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02771-009-3

Client Sample ID: **AWL-22-02771-009-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387009
 Lab Project ID: 1225387

Collection Date: 08/26/22 09:45
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.67 J	3.00	1.00	ug/L	1		09/15/22 22:51

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 22:51
 Container ID: 1225387009-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02771-010-3

Client Sample ID: **AWL-22-02771-010-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387010
 Lab Project ID: 1225387

Collection Date: 08/26/22 10:40
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.34	3.00	1.00	ug/L	1		09/15/22 23:00

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 23:00
 Container ID: 1225387010-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-02771-011-3

Client Sample ID: **AWL-22-02771-011-3**
 Client Project ID: **AWL-22-02771**
 Lab Sample ID: 1225387011
 Lab Project ID: 1225387

Collection Date: 08/26/22 11:35
 Received Date: 09/07/22 14:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.53	3.00	1.00	ug/L	1		09/15/22 21:56

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Analyst: DSD
 Analytical Date/Time: 09/15/22 21:56
 Container ID: 1225387011-A

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 09/08/22 08:41
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of AWL-22-02771-013-3

Client Sample ID: **AWL-22-02771-013-3**
Client Project ID: **AWL-22-02771**
Lab Sample ID: 1225387014
Lab Project ID: 1225387

Collection Date: 08/26/22 11:35
Received Date: 09/07/22 14:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.17	3.00	1.00	ug/L	1		09/15/22 23:03

Batch Information

Analytical Batch: MMS11677
Analytical Method: EP200.8
Analyst: DSD
Analytical Date/Time: 09/15/22 23:03
Container ID: 1225387014-A

Prep Batch: MXX35441
Prep Method: E200.2
Prep Date/Time: 09/08/22 08:41
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Method Blank

Blank ID: MB for HBN 1842864 [MXX/35441]
 Blank Lab ID: 1684230

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1225387001, 1225387002, 1225387003, 1225387004, 1225387005, 1225387006, 1225387007, 1225387008, 1225387009, 1225387010, 1225387011, 1225387014

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	1.50U	3.00	1.00	ug/L

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Instrument: Perkin Elmer NexIon P5
 Analyst: DSD
 Analytical Date/Time: 9/15/2022 9:35:32PM

Prep Batch: MXX35441
 Prep Method: E200.2
 Prep Date/Time: 9/8/2022 8:41:22AM
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Print Date: 09/21/2022 11:27:39AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225387 [MXX35441]
 Blank Spike Lab ID: 1684231
 Date Analyzed: 09/15/2022 21:38

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225387001, 1225387002, 1225387003, 1225387004, 1225387005, 1225387006, 1225387007,
 1225387008, 1225387009, 1225387010, 1225387011, 1225387014

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	947	95	(85-115)

Batch Information

Analytical Batch: **MMS11677**
 Analytical Method: **EP200.8**
 Instrument: **Perkin Elmer Nexlon P5**
 Analyst: **DSD**

Prep Batch: **MXX35441**
 Prep Method: **E200.2**
 Prep Date/Time: **09/08/2022 08:41**
 Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/21/2022 11:27:41AM

Matrix Spike Summary

Original Sample ID: 1684228
 MS Sample ID: 1684233 MS
 MSD Sample ID:

Analysis Date: 09/15/2022 21:50
 Analysis Date: 09/15/2022 21:53
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225387011

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	30.5	1000	982	95				70-130		

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DSD
 Analytical Date/Time: 9/15/2022 9:53:00PM

Prep Batch: MXX35441
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/8/2022 8:41:22AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/21/2022 11:27:42AM

Matrix Spike Summary

Original Sample ID: 1684229
 MS Sample ID: 1685922 MS
 MSD Sample ID: 1685923 MSD

Analysis Date: 09/15/2022 21:56
 Analysis Date: 09/15/2022 21:59
 Analysis Date: 09/15/2022 22:02
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225387001, 1225387002, 1225387003, 1225387004, 1225387005, 1225387006, 1225387007, 1225387008, 1225387009, 1225387010, 1225387011, 1225387014

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	5.53	1000	940	94	1000	924	92	70-130	1.70	(< 20)

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DSD
 Analytical Date/Time: 9/15/2022 9:59:44PM

Prep Batch: MXX35441
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/8/2022 8:41:00AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/21/2022 11:27:42AM

Billable Matrix Spike Summary

Original Sample ID: 1225387011
 MS Sample ID: 1225387012 BMS
 MSD Sample ID: 1225387013 BMSD

Analysis Date: 09/15/2022 21:56
 Analysis Date: 09/15/2022 21:59
 Analysis Date: 09/15/2022 22:02
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	5.53	1000	940	94	1000	924	92	70-130	1.70	(< 20)

Batch Information

Analytical Batch: MMS11677
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DSD
 Analytical Date/Time: 9/15/2022 9:59:44PM

Prep Batch: MXX35441
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/8/2022 8:41:22AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 09/21/2022 11:27:42AM



FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	SGS ENV	
Client Project Name:	AWL-22-02771	Certification Required:	Alaska WW	
Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report; all samples Filtered and Preserved at AWL	Report to MDL Provide EDD - SW	
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
1A 2A 3A 4A 5A 6A 7A 8A 9A 10A 11A 12A 13A 14A AWL-22-02771-001-3	8/26/2022 11:05	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-002-3	8/26/2022 11:15	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-003-3	8/26/2022 12:10	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-004-3	8/26/2022 10:10	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-005-3	8/26/2022 8:35	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-006-3	8/26/2022 8:55	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-007-3	8/26/2022 8:55	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-008-3	8/26/2022 9:30	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-009-3	8/26/2022 9:45	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-010-3	8/26/2022 10:40	200.7	Diss Cu - FF at AWL	SW
AWL-22-02771-011-3	8/26/2022 11:35	200.7	Diss Cu - PARENT/MS/MSD	SW
AWL-22-02771-013-3	8/26/2022 11:35	200.7	Diss Cu - DUP - Report as additional sample Result	SW
profile #386968				
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
MCC	9-6-22 9-7-22 10:29			
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:
		DLF	14:00 9/7/2022	1.6 DGZ
				CoC Seal? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N pH: Ice: <input checked="" type="checkbox"/> Frozen Melted / None



SGS Workorder #:

1225387

1225387

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
-----------------	--------------------------	------------------------

Chain of Custody / Temperature Requirements

Note: Temperature and COC seal information is found on the chain of custody form

DOD only: Did all sample coolers have a corresponding COC?

If <0°C, were sample containers ice free?

Note containers received with ice:

Identify any containers received at non-compliant temperature:

(Use form FS-0029 if more space is needed)

Holding Time / Documentation / Sample Condition Requirement

Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.

Were samples received within analytical holding time?

Do sample labels match COC? Record discrepancies.

Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear?

(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Were proper containers (type/mass/volume/preservative)used?

Note: Exemption for metals analysis by 200.8/6020 in water.

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)

Were all soil VOAs received with a corresponding % solids container?

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?

Were all soil VOAs field extracted with Methanol+BFB?

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1225387001-A	HNO3 to pH < 2	OK			
1225387002-A	HNO3 to pH < 2	OK			
1225387003-A	HNO3 to pH < 2	OK			
1225387004-A	HNO3 to pH < 2	OK			
1225387005-A	HNO3 to pH < 2	OK			
1225387006-A	HNO3 to pH < 2	OK			
1225387007-A	HNO3 to pH < 2	OK			
1225387008-A	HNO3 to pH < 2	OK			
1225387009-A	HNO3 to pH < 2	OK			
1225387010-A	HNO3 to pH < 2	OK			
1225387011-A	HNO3 to pH < 2	OK			
1225387011-B	HNO3 to pH < 2	OK			
1225387012-A	HNO3 to pH < 2	OK			
1225387012-B	HNO3 to pH < 2	OK			
1225387013-A	HNO3 to pH < 2	OK			
1225387013-B	HNO3 to pH < 2	OK			
1225387014-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Appendix C4
Laboratory Data Package
Storm Event #4



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281 N Main St., STE # 101
Wasilla AK, 99654
907-373-6130

Alaska Laboratory# AK01000

Client HDR Inc
Contact Cindy Helmericks

Project Name MOA Stormwater Monitoring - Sampling 4 2022
AWL # AWL-22-03001
PWS # None

Please direct any questions regarding the final report to Mary@AKWaterLabs.com or Matt@AKWaterLabs.com, or call 907-373-6130.

The results presented in this report meet the requirement of the laboratory's certifications and internal QC processes. Any exceptions will be noted in the case narratives attached. Reports with subcontracted laboratory data will be attached in full, with their quality control recoveries and case narrations.

The attached should contain analytical results for the analyses submitted on the client chain of custody. The information includes no opinions of the analysts or labs, data is represented after meeting certified testing requirements, and quality control measures.

Reproduction of the report in full requires the written approval of the laboratory.

Signature of Laboratory Management Date

Alaska Laboratory# AK01000

Client Project Name MOA Stormwater Monitoring - Sampling 4 AWL # AWL-22-03001
2022
Receipt Date and Time 9/19/22 13:54 Due Date 10/10/2022
Cooler/Sample Temp (C) 4.09, 3.59, 4.39 Sampler Initials WN, KG
Sample Receipt Comments Samples received by MJG on 9/19/2022 at 4.09, 3.59, 4.39C (RT#1), on frozen ice. pH<2 for all Ca, Mg metals. No bubbles in client VOA, Trip Blank vial 1/2 bubble<6mm, 1/2 Bubble >6mm.

Samples Received

Microbiological					
Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-04	AWL-22-03001-001-2	9/19/2022 11:00	9/19/2022 14:31	Fecal Coliform	
SWM 04-04	AWL-22-03001-002-2	9/19/2022 11:10	9/19/2022 14:31	Fecal Coliform	
SWM 05-04	AWL-22-03001-003-2	9/19/2022 12:10	9/19/2022 14:31	Fecal Coliform	
SWM 06-04	AWL-22-03001-004-2	9/19/2022 10:00	9/19/2022 14:31	Fecal Coliform	
SWM 07-04	AWL-22-03001-005-2	9/19/2022 8:40	9/19/2022 14:31	Fecal Coliform	
SWM 08-04	AWL-22-03001-006-2	9/19/2022 8:50	9/19/2022 14:31	Fecal Coliform	
SWM 08-04 DUP	AWL-22-03001-007-2	9/19/2022 8:55	9/19/2022 14:31	Fecal Coliform	
SWM 09A-04	AWL-22-03001-008-2	9/19/2022 9:20	9/19/2022 14:49	Fecal Coliform	
SWM 10-04	AWL-22-03001-009-2	9/19/2022 9:30	9/19/2022 14:49	Fecal Coliform	
SWM 11-04	AWL-22-03001-010-2	9/19/2022 10:30	9/19/2022 14:49	Fecal Coliform	
SWM 12-04	AWL-22-03001-011-2	9/19/2022 11:30	9/19/2022 14:49	Fecal Coliform	
SWM 12-04 DUP	AWL-22-03001-013-2	9/19/2022 11:40	9/19/2022 14:49	Fecal Coliform	

Chemical					
Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-04	AWL-22-03001-001-1	9/19/2022 11:00	9/21/2022 7:59	BOD	
SWM 03-04	AWL-22-03001-001-1	9/19/2022 11:00	9/21/2022 15:45	TSS	
SWM 03-04	AWL-22-03001-001-4	9/19/2022 11:00	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 04-04	AWL-22-03001-002-1	9/19/2022 11:10	9/21/2022 7:59	BOD	
SWM 04-04	AWL-22-03001-002-1	9/19/2022 11:10	9/21/2022 15:45	TSS	
SWM 04-04	AWL-22-03001-002-4	9/19/2022 11:10	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 05-04	AWL-22-03001-003-1	9/19/2022 12:10	9/21/2022 7:59	BOD	
SWM 05-04	AWL-22-03001-003-1	9/19/2022 12:10	9/21/2022 15:45	TSS	
SWM 05-04	AWL-22-03001-003-4	9/19/2022 12:10	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 06-04	AWL-22-03001-004-1	9/19/2022 10:00	9/21/2022 7:59	BOD	
SWM 06-04	AWL-22-03001-004-1	9/19/2022 10:00	9/21/2022 15:45	TSS	
SWM 06-04	AWL-22-03001-004-4	9/19/2022 10:00	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 07-04	AWL-22-03001-005-1	9/19/2022 8:40	9/21/2022 7:59	BOD	
SWM 07-04	AWL-22-03001-005-1	9/19/2022 8:40	9/21/2022 15:45	TSS	
SWM 07-04	AWL-22-03001-005-4	9/19/2022 8:40	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 08-04	AWL-22-03001-006-1	9/19/2022 8:50	9/21/2022 7:59	BOD	
SWM 08-04	AWL-22-03001-006-1	9/19/2022 8:50	9/21/2022 15:45	TSS	
SWM 08-04	AWL-22-03001-006-4	9/19/2022 8:50	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 08-04 DUP	AWL-22-03001-007-1	9/19/2022 8:55	9/21/2022 7:59	BOD	
SWM 08-04 DUP	AWL-22-03001-007-1	9/19/2022 8:55	9/21/2022 15:45	TSS	
SWM 08-04 DUP	AWL-22-03001-007-4	9/19/2022 8:55	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 09A-04	AWL-22-03001-008-1	9/19/2022 9:20	9/21/2022 7:59	BOD	
SWM 09A-04	AWL-22-03001-008-1	9/19/2022 9:20	9/21/2022 15:45	TSS	
SWM 09A-04	AWL-22-03001-008-4	9/19/2022 9:20	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 10-04	AWL-22-03001-009-1	9/19/2022 9:30	9/21/2022 7:59	BOD	
SWM 10-04	AWL-22-03001-009-1	9/19/2022 9:30	9/21/2022 15:45	TSS	
SWM 10-04	AWL-22-03001-009-4	9/19/2022 9:30	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 11-04	AWL-22-03001-010-1	9/19/2022 10:30	9/21/2022 7:59	BOD	
SWM 11-04	AWL-22-03001-010-1	9/19/2022 10:30	9/21/2022 15:45	TSS	
SWM 11-04	AWL-22-03001-010-4	9/19/2022 10:30	11/11/22 9:42	Hardness	Calc from Ca and Mg
SWM 12-04	AWL-22-03001-011-1	9/19/2022 11:30	9/21/2022 7:59	BOD	
SWM 12-04	AWL-22-03001-011-1	9/19/2022 11:30	9/21/2022 15:45	TSS	

SWM 12-04	AWL-22-03001-011-4	9/19/2022 11:30	11/11/22 9:59	Hardness	Calc from Ca and Mg
SWM 12-04 DUP	AWL-22-03001-013-1	9/19/2022 11:40	9/21/2022 7:59	BOD	
SWM 12-04 DUP	AWL-22-03001-013-1	9/19/2022 11:40	9/21/2022 15:45	TSS	
SWM 12-04 DUP	AWL-22-03001-013-4	9/19/2022 11:40	11/11/22 9:59	Hardness	Calc from Ca and Mg

Subcontracted

Sample Location	AWL ID	Collection Date/ Time	Analysis Date/Time	Analysis	Notes
SWM 03-04	AWL-22-03001-001-3	9/19/2022 11:00	10/4/2022 19:53	200.8 DISS	
SWM 03-04	AWL-22-03001-001-4	9/19/2022 11:00	9/28/2022 9:35	200.7	
SWM 04-04	AWL-22-03001-002-3	9/19/2022 11:10	10/4/2022 20:09	200.8 DISS	
SWM 04-04	AWL-22-03001-002-4	9/19/2022 11:10	9/28/2022 9:05	200.7	
SWM 05-04	AWL-22-03001-003-6	9/19/2022 12:10	9/29/2022 19:24	624	
SWM 05-04	AWL-22-03001-003-5	9/19/2022 12:10	10/3/2022 18:04	625 SIM	
SWM 05-04	AWL-22-03001-003-3	9/19/2022 12:10	10/4/2022 20:17	200.8 DISS	
SWM 05-04	AWL-22-03001-003-4	9/19/2022 12:10	9/28/2022 9:38	200.7	
SWM 06-04	AWL-22-03001-004-3	9/19/2022 10:00	10/4/2022 20:20	200.8 DISS	
SWM 06-04	AWL-22-03001-004-4	9/19/2022 10:00	9/28/2022 9:41	200.7	
SWM 07-04	AWL-22-03001-005-6	9/19/2022 8:40	9/29/2022 19:39	624	
SWM 07-04	AWL-22-03001-005-5	9/19/2022 8:40	10/3/2022 18:24	625 SIM	
SWM 07-04	AWL-22-03001-005-3	9/19/2022 8:40	10/4/2022 20:23	200.8 DISS	
SWM 07-04	AWL-22-03001-005-4	9/19/2022 8:40	9/28/2022 9:44	200.7	
SWM 08-04	AWL-22-03001-006-3	9/19/2022 8:50	10/4/2022 20:25	200.8 DISS	
SWM 08-04	AWL-22-03001-006-4	9/19/2022 8:50	9/28/2022 9:47	200.7	
SWM 08-04 DUP	AWL-22-03001-007-3	9/19/2022 8:55	10/4/2022 20:28	200.8 DISS	
SWM 08-04 DUP	AWL-22-03001-007-4	9/19/2022 8:55	9/28/2022 9:49	200.7	
SWM 09A-04	AWL-22-03001-008-6	9/19/2022 9:20	9/29/2022 19:54	624	
SWM 09A-04	AWL-22-03001-008-5	9/19/2022 9:20	10/3/2022 18:45	625 SIM	
SWM 09A-04	AWL-22-03001-008-3	9/19/2022 9:20	10/4/2022 20:31	200.8 DISS	
SWM 09A-04	AWL-22-03001-008-4	9/19/2022 9:20	9/28/2022 10:00	200.7	
SWM 10-04	AWL-22-03001-009-3	9/19/2022 9:30	10/4/2022 20:33	200.8 DISS	
SWM 10-04	AWL-22-03001-009-4	9/19/2022 9:30	9/28/2022 10:03	200.7	
SWM 11-04	AWL-22-03001-010-3	9/19/2022 10:30	10/4/2022 20:36	200.8 DISS	
SWM 11-04	AWL-22-03001-010-4	9/19/2022 10:30	9/28/2022 10:06	200.7	
SWM 12-04	AWL-22-03001-011-6	9/19/2022 11:30	9/29/2022 19:09	624	
SWM 12-04	AWL-22-03001-011-5	9/19/2022 11:30	10/3/2022 19:05	625 SIM	
SWM 12-04	AWL-22-03001-011-3	9/19/2022 11:30	10/4/2022 19:59	200.8 DISS	
SWM 12-04	AWL-22-03001-011-4	9/19/2022 11:30	9/28/2022 9:24	200.7	
SWM 12-04 DUP	AWL-22-03001-013-6	9/19/2022 11:40	9/29/2022 20:08	624	
SWM 12-04 DUP	AWL-22-03001-013-5	9/19/2022 11:40	10/3/2022 20:07	625 SIM	
SWM 12-04 DUP	AWL-22-03001-013-3	9/19/2022 11:40	10/4/2022 20:39	200.8 DISS	
SWM 12-04 DUP	AWL-22-03001-013-4	9/19/2022 11:40	9/28/2022 10:09	200.7	
SWM TripBlank-04	AWL-22-03001-012-1	9/19/2022 8:40	9/29/2022 18:24	624	

Analytical Methods

Analyte	Method	Comments
Fecal Coliform	SM9222D MF	
BOD	SM5210B	The sample Dup criteria for batch 092122-01 was above the
TSS	SM2540D	
Hardness	SM2340B	
200.7	200.7	Subcontracted to ALS Kelso: Ca, Mg for Hardness Calculation; Batch 779126 : All QC met method criteria.
200.8	200.8	Dissolved, Cu; Subcontracted to SGS ANC; Batch MMS11707 : Zinc exceedance in the Method Blank associated with this batch narrated, however analyte not requested or analyzed for this project. All QC pertaining to requested analyte met method criteria.
TAH	624	TAqH Calc; Subcontracted to SGS ANC; Batch VMS22036 : All QC met method criteria.
PAH	625 SIM	TAqH Calc; Subcontracted to SGS ANC; Batch XMS13385 : All QC met method criteria. Requesting report revision to include MS Duplicate data in physical report. Data included in EDD provided by subcontract lab.

Cert Required WW
CMDP #

Log In Initials: MCC 9-20-22
DQO Initials: MJG 9-26-22

Comments: Duplicate results reported as separate sample - amended sample time to parent sample for QC purposes. Listed Trip Blank as first time on COC to ensure coupled to all samples. Sample AWL-22-03001-013-4 was reported and ran as sample id AWL-22-03001-012-4 for the 200.7 analysis. This was a mislabeling of the sample, the correct sample bottle was sent and ran with the correct analysis.

Definitions:

DUP	Sample Duplicate
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MRL	Method Reporting Limit
MB	Method Blank
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
TNTC	Count is Too Numerous To Count
<MDL	Result recovery is below the detectable laboratory limit, listed as the MDL

Data Qualifiers:

B	The result of both the method blank and the target sample are above the MDL.
D	Sample analysis accomplished through dilution.
J	The reported result is an estimated value above the LOD but below the LOQ, or above the MDL but below the PQL.
U	Result is below the MDL, PQL, LOD, or LOQ
*	LCS/LCSD or Sample DUP fails all Duplicate criteria.
H	Holding time exceeded
E	Exceeds MCL

General Comments:

- 1.0) Basis: "As Received" = analyzed as received from client; "Dry" = dried prior to being analyzed; "Dry Weight Corrected" = analyzed as received; result corrected for percent moisture.

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:00
 PWS# None
 AWL Batch ID: 091922-01-FC
 AWL # AWL-22-03001
 Sample SWM 03-04
 Location
 AWL ID/ Fraction AWL-22-03001-001-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	127.27	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:10
 PWS# None
 AWL Batch ID: 091922-01-FC
 AWL # AWL-22-03001
 Sample Location SWM 04-04
 AWL ID/ Fraction AWL-22-03001-002-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	90.91	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 4 2022 **Collection**
 DW Y/N N Date / time 9/19/22 12:10
 PWS# None
 AWL # AWL-22-03001
 Sample SWM 05-04
 Location
 AWL ID/ Fraction AWL-22-03001-003-2 Matrix SW
 AWL Batch ID: 091922-01-FC

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	200.00	CFU/100mL	10			10.00	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 10:00
 PWS# None
 AWL Batch ID: 091922-01-FC
 AWL # AWL-22-03001
 Sample Location SWM 06-04
 AWL ID/ Fraction AWL-22-03001-004-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	172.73	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 8:40
 PWS# None
 AWL Batch ID: 091922-01-FC
 AWL # AWL-22-03001
 Sample Location SWM 07-04
 AWL ID/ Fraction AWL-22-03001-005-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	636.36	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 8:50
 PWS# None
 AWL Batch ID: 091922-01-FC
 AWL # AWL-22-03001
 Sample Location SWM 08-04
 AWL ID/ Fraction AWL-22-03001-006-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	330	CFU/100mL	10			10	SM9222D MF	AKS	9/19/22 14:31	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 9:20
 PWS# None
 AWL Batch ID: 091922-02-FC
 AWL # AWL-22-03001
 Sample Location SWM 09A-04
 AWL ID/ Fraction AWL-22-03001-008-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	163.64	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:49	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 9:30
 PWS# None
 AWL Batch ID: 091922-02-FC
 AWL # AWL-22-03001
 Sample Location SWM 10-04
 AWL ID/ Fraction AWL-22-03001-009-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	27.27	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:49	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 10:30
 PWS# None
 AWL Batch ID: 091922-02-FC
 AWL # AWL-22-03001
 Sample Location SWM 11-04
 AWL ID/ Fraction AWL-22-03001-010-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	127.27	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:49	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 4 2022 **Collection**
 DW Y/N N Date / time 9/19/22 11:30
 PWS# None AWL Batch ID: 091922-02-FC
 AWL # AWL-22-03001
 Sample SWM 12-04
 Location
 AWL ID/ Fraction AWL-22-03001-011-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	209.09	CFU/100mL	9.091			9	SM9222D MF	AKS	9/19/22 14:49	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:40
 PWS# None
 AWL Batch ID: 091922-02-FC
 AWL # AWL-22-03001
 Sample Location SWM 12-04 DUP
 AWL ID/ Fraction AWL-22-03001-013-2 Matrix SW

Analyte	Result	Units	MDL	MCL	Flags	DF	Method	Analyst	Date/Time	Notes
Fecal Coliform	200	CFU/100mL	9.091			9.09	SM9222D MF	AKS	9/19/22 14:49	

Analyst Batching initials/date AKS 9-26-22
 Analyst reviewer initials/date JTR 9-26-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:00
 PWS# None

AWL # AWL-22-03001
 Sample SWM 03-04
 Location
 AWL ID/ Fraction AWL-22-03001-001-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.03	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	<MDL	mg/L	28.9766	13.0208		U	2.60	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments	Final results for TSS recovered under the MDL at 2.08 mg/L. JTR 9-26-22										
Hardness	78.39	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-001-4										

Analyst Batching initials/date AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
 Analyst reviewer initials/date AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:10
 PWS# None
 AWL # AWL-22-03001
 Sample SWM 04-04
 Location
 AWL ID/ Fraction AWL-22-03001-002-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	0.83	mg/L	1.5	0.45		J*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	21.98	mg/L	15.2843	6.87			1.37	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments											
Hardness	179.28	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-002-4										

Analyst Batching initials/date AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
 Analyst reviewer initials/date AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 10:00
 PWS# None

AWL # AWL-22-03001
 Sample SWM 06-04
 Location
 AWL ID/ Fraction AWL-22-03001-004-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	5.12	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	<MDL	mg/L	16.1261	7.25		U	1.45	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments	Final results for TSS recovered under the MDL at 3.04 mg/L. JTR 9-26-22										
Hardness	47.33	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-004-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(hardness)
 AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 8:40
 PWS# None

AWL # AWL-22-03001
 Sample SWM 07-04
 Location
 AWL ID/ Fraction AWL-22-03001-005-4 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.82	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	26.40	mg/L	22.254	10			2	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments											
Hardness	11.70	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-005-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 8:55
 PWS# None

AWL # AWL-22-03001
 Sample SWM 08-04 DUP
 Location
 AWL ID/ Fraction AWL-22-03001-007-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	2.84	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	<MDL	mg/L	17.1448	7.70		U	1.54	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments	Final results for TSS recovered under the MDL at 7.09 mg/L. JTR 9-26-22										
Hardness	70.88	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-007-4										

Analyst Batching initials/date
 Analyst Reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 9:20
 PWS# None

AWL # AWL-22-03001
 Sample SWM 09A-04
 Location
 AWL ID/ Fraction AWL-22-03001-008-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.79	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homogenous; All other QC criteria was within range and results have been reported - AKS										
TSS	11.38	mg/L	15.6278	7.02		J	1.40	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments											
Hardness	112.42	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-008-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 9:30
 PWS# None

AWL # AWL-22-03001
 Sample SWM 10-04
 Location
 AWL ID/ Fraction AWL-22-03001-009-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.45	mg/L	1.5	0.45		J*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homogenous; All other QC criteria was within range and results have been reported - AKS										
TSS	<MDL	mg/L	15.4972	6.96		U	1.39	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments	Final results for TSS recovered under the MDL at 1.53 mg/L. JTR 9-26-22										
Hardness	132.13	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-009-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 10:30
 PWS# None

AWL # AWL-22-03001
 Sample SWM 11-04
 Location
 AWL ID/ Fraction AWL-22-03001-010-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	1.46	mg/L	1.5	0.45		J*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	<MDL	mg/L	16.6075	7.46		U	1.49	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments	Final results for TSS recovered under the MDL at 5.22 mg/L. JTR 9-26-22										
Hardness	108.36	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:42	111122-01-Hardness
Comments	AWL-22-03001-010-4										

Analyst Batching initials/date AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
 Analyst reviewer initials/date AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:30
 PWS# None
 AWL # AWL-22-03001
 Sample SWM 12-04
 Location
 AWL ID/ Fraction AWL-22-03001-011-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.11	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	81.33	mg/L	37.09	16.6667			3.33	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments											
Hardness	179.34	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:59	111122-02-Hardness
Comments	AWL-22-03001-011-4										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/22 11:40
 PWS# None

AWL # AWL-22-03001
 Sample SWM 12-04 DUP
 Location
 AWL ID/ Fraction AWL-22-03001-013-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
BOD	3.41	mg/L	1.5	0.45		*	1.5	SM5210B	AKS	9/21/22 7:59	092122-01-BOD
Comments	The sample Dup criteria for batch 092122-01 was above the acceptable range, Sample AWL-22-03001-001-1 may be considered non homegenous; All other QC criteria was within range and results have been reported - AKS										
TSS	81.33	mg/L	37.09	16.6667			3.33	SM2540D	JTR	9/21/2022 15:45	092122-01-TSS
Comments											
Hardness	181.33	mg/L	1	1			1	SM2340B	MJG	11/11/22 9:59	111122-02-Hardness
Comments	AWL-22-03001-013-4 (Metals Ca and Mg reported udner AWL-22-03001-012-4).										

Analyst Batching initials/date
 Analyst reviewer initials/date

AKS 9-26-22(BOD), JTR 9-26-22 (TSS), MJG 11-11-22(Hardness)
 AKS 9-26-22(TSS), JTR 9-27-22 (BOD), MCC 11-14-22 (Hardness)

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 11:00
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 03-04
 AWL ID/ Fraction AWL-22-03001-001-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.56	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 19:53	MMS11707
Comments	Lab Sample ID: 1225842001										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample Location SWM 03-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-001-4 Matrix SW Date / time 9/19/2022 11:00

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	21400	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:35	779126
Magnesium	6060	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:35	779126
Comments	Lab Sample ID: K2211022-001										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 11:10
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 03-04
 AWL ID/ Fraction AWL-22-03001-002-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	6.04	ug/L	3.00	1.00			1	200.8	SGS ANC	10/4/2022 20:09	MMS11707
Comments	Lab Sample ID: 1225842002										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample Location SWM 03-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-002-4 Matrix SW Date / time 9/19/2022 11:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	49700	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:05	779126
Magnesium	13400	ug/L	5	0.4			1	200.7	ALS KELSO	9/28/2022 9:05	779126
Comments	Lab Sample ID: K2211022-002										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 12:10
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 05-04
 AWL ID/ Fraction AWL-22-03001-003-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 19:24	VMS2203 6
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:24	VMS2203 6
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 19:24	VMS2203 6
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:24	VMS2203 6
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:24	VMS2203 6
Comments	Sample 1225711 001										

Analyst Batching initials/date MCC 11-10-22
 Analyst Reviewer initials/date MJG 11-11-22

Sample Location SWM 05-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-003-5 Matrix SW Date / time 9/19/2022 12:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 18:04	XMS1338 5

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 12:10
 PWS# None

AWL # AWL-22-03001
 Sample SWM 05-04
 Location
 AWL ID/ Fraction AWL-22-03001-003-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	3.83	ug/L	3.00	1.00			1	200.8	SGS ANC	10/4/2022 20:17	MMS11707
Comments	Lab Sample ID: 1225842003										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 05-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-003-4 Matrix SW Date / time 9/19/2022 12:10

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	42900	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:38	779126
Magnesium	8620	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:38	779126
Comments	K2211022-003										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 10:00
 PWS# None

AWL # AWL-22-03001
 Sample SWM 06-04
 Location
 AWL ID/ Fraction AWL-22-03001-004-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.81	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 20:20	MMS11707
Comments	Lab Sample ID: 1225842004										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 06-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-004-4 Matrix SW Date / time 9/19/2022 10:00

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	13200	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:41	779126
Magnesium	3490	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:41	779126
Comments	Lab Sample ID: K2211022-004										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

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 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 8:40
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 07-04
 AWL ID/ Fraction AWL-22-03001-005-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 19:39	VMS2203 6
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:39	VMS2203 6
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 19:39	VMS2203 6
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:39	VMS2203 6
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:39	VMS2203 6
Comments	Sample 1225711 003										

Analyst Batching initials/date MCC 11-10-22
 Analyst Reviewer initials/date MJG 11-11-22

Sample Location SWM 07-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-005-5 Matrix SW Date / time 9/19/2022 8:40

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Acenaphthene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Anthracene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Benzo(a)anthracene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Benzo(a)pyrene	<0.00910	ug/L	0.0182	0.00564		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Benzo(b)fluoranthene	0.0153	ug/L	0.0455	0.0136		J	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Benzo(g,h,i)perylene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Benzo(k)fluoranthene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Chrysene	<0.0227	ug/L	0.0455	0.0136		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5
Dibenzo(a,h)anthracene	<0.00910	ug/L	0.0182	0.00564		U	1	625 SIM	SGS ANCH	10/3/2022 18:24	XMS1338 5

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 8:40
 PWS# None

AWL # AWL-22-03001
 Sample SWM 07-04
 Location
 AWL ID/ Fraction AWL-22-03001-005-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.03	ug/L	3	1			1	200.8	SGS ANC	44838.84931	MMS11707
Comments	Lab Sample ID: 1225842005										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 07-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-005-4 Matrix SW Date / time 44823.36111

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	3400	ug/L	21	3			1	200.7	ALS KELSO	44832.40556	779126
Magnesium	780	ug/L	5.3	0.4			1	200.7	ALS KELSO	44832.40556	779126
Comments	Lab Sample ID: K2211022-005										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 8:50
 PWS# None

AWL # AWL-22-03001
 Sample SWM 08-04
 Location
 AWL ID/ Fraction AWL-22-03001-006-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.22	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 20:25	MMS11707
Comments	Lab Sample ID: 1225842006										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 08-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-006-4 Matrix SW Date / time 9/19/2022 8:50

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	20000	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:47	779126
Magnesium	4590	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:47	779126
Comments	Lab Sample ID: K2211022-006										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 8:55
 PWS# None

AWL # AWL-22-03001
 Sample SWM 08-04 DUP
 Location
 AWL ID/ Fraction AWL-22-03001-007-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.31	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 20:28	MMS11707
Comments	Lab Sample ID: 1225842007										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 08-04 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-007-4 Matrix SW Date / time 9/19/2022 8:55

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	20600	ug/L	21.0	3			1	200.7	ALS KELSO	9/28/2022 9:49	779126
Magnesium	4720	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:49	779126
Comments	K2211022-007										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

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 Project MOA Stormwater Monitoring - Sampling 4 2022 **Collection**
 DW Y/N N Date / time 9/19/2022 9:20
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 09A-04
 AWL ID/ Fraction AWL-22-03001-008-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 19:54	VMS2203 6
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:54	VMS2203 6
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 19:54	VMS2203 6
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:54	VMS2203 6
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:54	VMS2203 6
Comments	Sample 1225711 005										

Analyst Batching initials/date MCC 11-10-22
 Analyst Reviewer initials/date MJG 11-11-22

Sample Location SWM 09A-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-008-5 Matrix SW Date / time 9/19/2022 9:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5

Fluoranthene	0.0148	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Fluorene	0.0430	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Naphthalene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Phenanthrene	0.0332	ug/L	0.0926	0.0287		J	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Pyrene	0.0148	ug/L	0.0463	0.0139		J	1	625 SIM	SGS ANCH	10/3/2022 18:45	XMS1338 5
Comments	Sample 1225711 006										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aqueous Aromatic HydroCarbons (TAqH)	0.1058	ug/L		0.0287			1	Calculation	MCC	11/10/2022	Calc
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	11/10/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 9:20
 PWS# None

AWL # AWL-22-03001
 Sample SWM 09A-04
 Location
 AWL ID/ Fraction AWL-22-03001-008-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	1.94	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 20:31	MMS11707
Comments	Lab Sample ID: 1225842008										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 09A-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-008-4 Matrix SW Date / time 9/19/2022 9:20

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	33000	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 10:00	779126
Magnesium	7290	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 10:00	779126
Comments	Lab Sample ID: K2211022-008										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 9:30
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 10-04
 AWL ID/ Fraction AWL-22-03001-009-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	2.00	ug/L	3.00	1.00		J	1	200.8	SGS ANC	10/4/2022 20:33	MMS11707
Comments	Lab Sample ID: 1225842009										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample Location SWM 10-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-009-4 Matrix SW Date / time 9/19/2022 9:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	35600	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 10:03	779126
Magnesium	10500	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 10:03	779126
Comments	Lab Sample ID: K2211022-009										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
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 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 10:30
 PWS# None

AWL # AWL-22-03001
 Sample SWM 11-04
 Location
 AWL ID/ Fraction AWL-22-03001-010-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	6.40	ug/L	3.00	1.00			1	200.8	SGS ANC	10/4/2022 20:36	MMS11707
Comments	Lab Sample ID: 1225842010										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 11-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-010-4 Matrix SW Date / time 9/19/2022 10:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	35300	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 10:06	779126
Magnesium	4910	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 10:06	779126
Comments	Lab Sample ID: K2211022-010										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - Sampling 4 2022 **Collection**
 DW Y/N N Date / time 9/19/2022 11:30
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 12-04
 AWL ID/ Fraction AWL-22-03001-011-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 19:09	VMS22036
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:09	VMS22036
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 19:09	VMS22036
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:09	VMS22036
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 19:09	VMS22036
Comments	Sample 1225711 007										

Analyst Batching initials/date MCC 11-10-22
 Analyst Reviewer initials/date MJG 11-11-22

Sample Location SWM 12-04 **Collection**
 AWL ID/ Fraction AWL-22-03001-011-5 Matrix SW Date / time 9/19/2022 11:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS13385

Fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Fluorene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Naphthalene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Phenanthrene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 19:05	XMS1338 5
Comments	Sample 1225711 010										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aqueous Aromatic HydroCarbons (TAqH)	<0.0287	ug/L		0.0287		U	1	Calculation	MCC	11/10/2022	Calc
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	11/10/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 11:30
 PWS# None

AWL # AWL-22-03001
 Sample SWM 12-04
 Location
 AWL ID/ Fraction AWL-22-03001-011-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.76	ug/L	3.00	1.00			1	200.8	SGS ANC	10/4/2022 19:59	MMS11707
Comments	Lab Sample ID: 1225842011										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 12-04 **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-011-4 Matrix SW Date / time 9/19/2022 11:30

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	48900	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 9:24	779126
Magnesium	13900	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 9:24	779126
Comments	Lab Sample ID: K2211022-011										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 11:40
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM 12-04 DUP
 AWL ID/ Fraction AWL-22-03001-013-6 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 20:08	VMS22036
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 20:08	VMS22036
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 20:08	VMS22036
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 20:08	VMS22036
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 20:08	VMS22036
Comments	Sample 1225711 013										

Analyst Batching initials/date MCC 11-10-22
 Analyst Reviewer initials/date MJG 11-11-22

Sample Location SWM 12-04 DUP **Collection**
 AWL ID/ Fraction AWL-22-03001-013-5 Matrix SW Date / time 9/19/2022 11:40

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Acenaphthylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Acenaphthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Benzo(a)anthracene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Benzo(a)pyrene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Benzo(b)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Benzo(g,h,i)perylene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Benzo(k)fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Chrysene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385
Dibenzo(a,h)anthracene	<0.00925	ug/L	0.0185	0.00574		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS13385

Fluoranthene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Fluorene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Indeno(1,2,3-cd)pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Naphthalene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Phenanthrene	<0.0463	ug/L	0.0926	0.0287		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Pyrene	<0.0232	ug/L	0.0463	0.0139		U	1	625 SIM	SGS ANCH	10/3/2022 20:07	XMS1338 5
Comments	Sample 1225711 014										

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Total Aqueous Aromatic HydroCarbons (TAqH)	<0.0287	ug/L		0.0287		U	1	Calculation	MCC	11/10/2022	Calc
Total Aromatic HydroCarbons (TAH)	<0.620	ug/L		0.620		U	1	Calculation	MCC	11/10/2022	Calc

Analyst Batching initials/date
Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 11:40
 PWS# None

AWL # AWL-22-03001
 Sample SWM 12-04 DUP
 Location
 AWL ID/ Fraction AWL-22-03001-013-3 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Dissolved Copper	4.23	ug/L	3.00	1.00			1	200.8	SGS ANC	10/4/2022 20:39	MMS11707
Comments	Lab Sample ID: 1225842014										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Sample SWM 12-04 DUP **Collection**
 Location
 AWL ID/ Fraction AWL-22-03001-013-4 Matrix SW Date / time 9/19/2022 11:40

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Calcium	49200	ug/L	21	3			1	200.7	ALS KELSO	9/28/2022 10:09	779126
Magnesium	14200	ug/L	5.3	0.4			1	200.7	ALS KELSO	9/28/2022 10:09	779126
Comments	Lab Sample ID: K2211022-012, Sample listed as AWL-22-03001-012-4 on AWL subcoc, sample mislabeled but is correct AWL-22-03001-013-4 sample container.										

Analyst Batching initials/date MJG 11-10-22
 Analyst Reviewer initials/date MCC 11-10-22

Alaska Laboratory# AK01000

Client HDR Inc
 Contact Cindy Helmericks
 Project MOA Stormwater Monitoring - **Collection**
 Sampling 4 2022
 DW Y/N N Date / time 9/19/2022 8:40
 PWS# None

AWL # AWL-22-03001
 Sample Location SWM TripBlank-04
 AWL ID/ Fraction AWL-22-03001-012-1 Matrix SW

Analysis	Results	Units	MRL	MDL	MCL	Flags	DF	Method	Analyst	Date/ Time	Batch ID
Benzene	<0.200	ug/L	0.400	0.120		U	1	624	SGS ANC	9/29/2022 18:24	VMS2203 6
Ethylbenzene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 18:24	VMS2203 6
m,p Xylene	<1.00	ug/L	2.00	0.620		U	1	624	SGS ANC	9/29/2022 18:24	VMS2203 6
o-Xylene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 18:24	VMS2203 6
Toluene	<0.500	ug/L	1.00	0.310		U	1	624	SGS ANC	9/29/2022 18:24	VMS2203 6
Comments	Sample 1225711 015										

Analyst Batching initials/date
 Analyst Reviewer initials/date

MCC 11-10-22
MJG 11-11-22

Alaska Laboratory# AK01000

Analysis QC Results

BOD SM 5210B

Batch ID 092122-01-BOD

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
BOD	0.08		0.3	0.9		AKS	9/21/22 7:59

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
BOD	246.80		222.7	110.82	85-115	AKS	9/21/22 7:59

Sample Duplicate Parent ID AWL-22-03001-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
BOD	1.36	*	2.03	39.53	≤30	AKS	9/21/22 7:59

Total Suspended Solids SM2540D

Batch ID 092122-01-TSS

Method Blank

Analyte	MB	Flags	MDL	MRL	CRDL	Analyst	Date/Time
TSS	-0.10		5	11.1		JTR	9/21/2022 15:45

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
TSS	97.00		101	96.0396	90-110	JTR	9/21/2022 15:45

Sample Duplicate Parent ID AWL-22-03040-004

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	14050.00		14050.00	0	≤20	JTR	9/21/2022 15:45

Sample Duplicate 2 Parent ID AWL-22-03040-001

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
TSS	71.00		69.00	2.86	≤20	JTR	9/21/2022 15:45



Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1225842**

Client Project: **AWL-22-03001**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Danika at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Danika Buzby-Rynders
Project Manager
Danika.Buzby-Rynders@sgs.com

Date

Print Date: 10/10/2022 8:07:05AM

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Member of SGS Group

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1225842**

Project Name/Site: **AWL-22-03001**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

MB for HBN 1844438 [MXX/35513] (1688470) MB

200.8 - Metals analyte Zinc is detected in the MB above the LOQ. The associated sample concentrations are 10 times greater than the concentration in the MB.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 10/10/2022 8:07:07AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-03001-001-3	1225842001	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-002-3	1225842002	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-003-3	1225842003	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-004-3	1225842004	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-005-3	1225842005	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-006-3	1225842006	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-007-3	1225842007	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-008-3	1225842008	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-009-3	1225842009	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-010-3	1225842010	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-011-3	1225842011	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001...(1225842011BM	1225842012	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-0300...(1225842011BMS	1225842013	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)
AWL-22-03001-013-3	1225842014	09/19/2022	09/26/2022	Water (Surface, Eff., Ground)

Method
EP200.8

Method Description
Metals in Drinking Water by ICP-MS DISSO

Detectable Results Summary

Client Sample ID: AWL-22-03001-001-3			
Lab Sample ID: 1225842001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.56J	ug/L
Client Sample ID: AWL-22-03001-002-3			
Lab Sample ID: 1225842002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	6.04	ug/L
Client Sample ID: AWL-22-03001-003-3			
Lab Sample ID: 1225842003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	3.83	ug/L
Client Sample ID: AWL-22-03001-004-3			
Lab Sample ID: 1225842004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.81J	ug/L
Client Sample ID: AWL-22-03001-005-3			
Lab Sample ID: 1225842005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.03	ug/L
Client Sample ID: AWL-22-03001-006-3			
Lab Sample ID: 1225842006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.22J	ug/L
Client Sample ID: AWL-22-03001-007-3			
Lab Sample ID: 1225842007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.31J	ug/L
Client Sample ID: AWL-22-03001-008-3			
Lab Sample ID: 1225842008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	1.94J	ug/L
Client Sample ID: AWL-22-03001-009-3			
Lab Sample ID: 1225842009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	2.00J	ug/L
Client Sample ID: AWL-22-03001-010-3			
Lab Sample ID: 1225842010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	6.40	ug/L
Client Sample ID: AWL-22-03001-011-3			
Lab Sample ID: 1225842011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.76	ug/L
Client Sample ID: AWL-22-03001-013-3			
Lab Sample ID: 1225842014	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Dissolved Metals by ICP/MS	Copper	4.23	ug/L

Print Date: 10/10/2022 8:07:13AM



Results of **AWL-22-03001-001-3**

Client Sample ID: **AWL-22-03001-001-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842001
Lab Project ID: 1225842

Collection Date: 09/19/22 11:00
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.56 J	3.00	1.00	ug/L	1		10/04/22 19:53

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 19:53
Container ID: 1225842001-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-03001-002-3**

Client Sample ID: **AWL-22-03001-002-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842002
Lab Project ID: 1225842

Collection Date: 09/19/22 11:10
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	6.04	3.00	1.00	ug/L	1		10/04/22 20:09

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 20:09
Container ID: 1225842002-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-03001-003-3

Client Sample ID: **AWL-22-03001-003-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842003
 Lab Project ID: 1225842

Collection Date: 09/19/22 12:10
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.83	3.00	1.00	ug/L	1		10/04/22 20:17

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 20:17
 Container ID: 1225842003-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-03001-004-3

Client Sample ID: **AWL-22-03001-004-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842004
 Lab Project ID: 1225842

Collection Date: 09/19/22 10:00
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.81 J	3.00	1.00	ug/L	1		10/04/22 20:20

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 20:20
 Container ID: 1225842004-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-03001-005-3**

Client Sample ID: **AWL-22-03001-005-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842005
Lab Project ID: 1225842

Collection Date: 09/19/22 08:40
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.03	3.00	1.00	ug/L	1		10/04/22 20:23

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 20:23
Container ID: 1225842005-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **AWL-22-03001-006-3**

Client Sample ID: **AWL-22-03001-006-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842006
Lab Project ID: 1225842

Collection Date: 09/19/22 08:50
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.22 J	3.00	1.00	ug/L	1		10/04/22 20:25

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 20:25
Container ID: 1225842006-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-03001-007-3

Client Sample ID: **AWL-22-03001-007-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842007
 Lab Project ID: 1225842

Collection Date: 09/19/22 08:55
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.31 J	3.00	1.00	ug/L	1		10/04/22 20:28

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 20:28
 Container ID: 1225842007-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-03001-008-3**

Client Sample ID: **AWL-22-03001-008-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842008
Lab Project ID: 1225842

Collection Date: 09/19/22 09:20
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.94 J	3.00	1.00	ug/L	1		10/04/22 20:31

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 20:31
Container ID: 1225842008-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Results of AWL-22-03001-009-3

Client Sample ID: **AWL-22-03001-009-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842009
 Lab Project ID: 1225842

Collection Date: 09/19/22 09:30
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.00 J	3.00	1.00	ug/L	1		10/04/22 20:33

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 20:33
 Container ID: 1225842009-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-03001-010-3

Client Sample ID: **AWL-22-03001-010-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842010
 Lab Project ID: 1225842

Collection Date: 09/19/22 10:30
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	6.40	3.00	1.00	ug/L	1		10/04/22 20:36

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 20:36
 Container ID: 1225842010-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of AWL-22-03001-011-3

Client Sample ID: **AWL-22-03001-011-3**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225842011
 Lab Project ID: 1225842

Collection Date: 09/19/22 11:30
 Received Date: 09/26/22 13:43
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.76	3.00	1.00	ug/L	1		10/04/22 19:59

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Analyst: HGS
 Analytical Date/Time: 10/04/22 19:59
 Container ID: 1225842011-A

Prep Batch: MX35513
 Prep Method: E200.2
 Prep Date/Time: 09/28/22 10:01
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of **AWL-22-03001-013-3**

Client Sample ID: **AWL-22-03001-013-3**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225842014
Lab Project ID: 1225842

Collection Date: 09/19/22 11:40
Received Date: 09/26/22 13:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.23	3.00	1.00	ug/L	1		10/04/22 20:39

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Analyst: HGS
Analytical Date/Time: 10/04/22 20:39
Container ID: 1225842014-A

Prep Batch: MX35513
Prep Method: E200.2
Prep Date/Time: 09/28/22 10:01
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Method Blank

Blank ID: MB for HBN 1844438 [MXX/35513]
Blank Lab ID: 1688470

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1225842001, 1225842002, 1225842003, 1225842004, 1225842005, 1225842006, 1225842007, 1225842008, 1225842009, 1225842010, 1225842011, 1225842014

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	1.50U	3.00	1.00	ug/L

Batch Information

Analytical Batch: MMS11707
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: HGS
Analytical Date/Time: 10/4/2022 7:45:00PM

Prep Batch: MXX35513
Prep Method: E200.2
Prep Date/Time: 9/28/2022 10:01:33AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 10/10/2022 8:07:17AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1225842 [MXX35513]
Blank Spike Lab ID: 1688471
Date Analyzed: 10/04/2022 19:48

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225842001, 1225842002, 1225842003, 1225842004, 1225842005, 1225842006, 1225842007, 1225842008, 1225842009, 1225842010, 1225842011, 1225842014

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	970	97	(85-115)

Batch Information

Analytical Batch: **MMS11707**
Analytical Method: **EP200.8**
Instrument: **P7 Agilent 7800**
Analyst: **HGS**

Prep Batch: **MXX35513**
Prep Method: **E200.2**
Prep Date/Time: **09/28/2022 10:01**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/10/2022 8:07:20AM

Matrix Spike Summary

Original Sample ID: 1688473
 MS Sample ID: 1688475 MS
 MSD Sample ID:

Analysis Date: 10/04/2022 19:53
 Analysis Date: 10/04/2022 19:56
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225842001, 1225842011

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	2.56J	1000	975	97				70-130		

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 10/4/2022 7:56:28PM

Prep Batch: MXX35513
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/28/2022 10:01:33AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 10/10/2022 8:07:22AM

Matrix Spike Summary

Original Sample ID: 1688474
 MS Sample ID: 1688477 MS
 MSD Sample ID: 1688478 MSD

Analysis Date: 10/04/2022 19:59
 Analysis Date: 10/04/2022 20:01
 Analysis Date: 10/04/2022 20:04
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225842002, 1225842003, 1225842004, 1225842005, 1225842006, 1225842007, 1225842008, 1225842009, 1225842010, 1225842011, 1225842014

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	4.76	1000	930	93	1000	944	94	70-130	1.50	(< 20)

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 10/4/2022 8:01:00PM

Prep Batch: MXX35513
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/28/2022 10:01:33AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 10/10/2022 8:07:22AM

Billable Matrix Spike Summary

Original Sample ID: 1225842011
 MS Sample ID: 1225842012 BMS
 MSD Sample ID: 1225842013 BMSD

Analysis Date: 10/04/2022 19:59
 Analysis Date: 10/04/2022 20:01
 Analysis Date: 10/04/2022 20:04
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	4.76	1000	930	93	1000	944	94	70-130	1.50	(< 20)

Batch Information

Analytical Batch: MMS11707
 Analytical Method: EP200.8
 Instrument: P7 Agilent 7800
 Analyst: HGS
 Analytical Date/Time: 10/4/2022 8:01:00PM

Prep Batch: MX35513
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/28/2022 10:01:33AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 10/10/2022 8:07:22AM



FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	SGS - Anchorage, AK	
Client Project Name:	AWL-22-03001	Certification Required:	Alaska WW	
Requested Due Date (if not standard TAT):	Standard	Notes : Level 2 report	Report to MDL	Provide EDD
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
1A AWL-22-03001-001-3	9/19/2022 11:00	200.8	Dissolved Copper	WW
2A AWL-22-03001-002-3	9/19/2022 11:10	200.8	Dissolved Copper	WW
3A AWL-22-03001-003-3	9/19/2022 12:10	200.8	Dissolved Copper	WW
4A AWL-22-03001-004-3	9/19/2022 10:00	200.8	Dissolved Copper	WW
5A AWL-22-03001-005-3	9/19/2022 8:40	200.8	Dissolved Copper	WW
6A AWL-22-03001-006-3	9/19/2022 8:50	200.8	Dissolved Copper	WW
7A AWL-22-03001-007-3	9/19/2022 8:55	200.8	Dissolved Copper	WW
8A AWL-22-03001-008-3	9/19/2022 9:20	200.8	Dissolved Coppe	WW
9A AWL-22-03001-009-3	9/19/2022 9:30	200.8	Dissolved Copper	WW
10A AWL-22-03001-010-3	9/19/2022 10:30	200.8	Dissolved Copper	WW
11A 12A AWL-22-03001-011-3 13A	9/19/2022 11:30	200.8	Dissolved Copper; Parent, MS, MSD Volume	WW
14A AWL-22-03001-013-3	9/19/2022 11:40	200.8	Dissolved Copper; DUP volume -report as additional sample	WW
Samples filtered and preserved at AWL, pH<2 w/HNO3				
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
<i>[Signature]</i>	9-16-22 9:41			
				CoC Seal? Y / N pH: Ice: Frozen Melted / None
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
		<i>[Signature]</i> DLF	13:43 9/26/22	
				CoC Seal? Y / N pH: Ice: Frozen Melted / None



SGS Workorder #:

1225842

1225842

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
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Chain of Custody / Temperature Requirements

Note: Temperature and COC seal information is found on the chain of custody form

DOD only: Did all sample coolers have a corresponding COC? N/A

If <0°C, were sample containers ice free? N/A

Note containers received with ice:

Identify any containers received at non-compliant temperature:

(Use form FS-0029 if more space is needed)

Holding Time / Documentation / Sample Condition Requirement

Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.

Were samples received within analytical holding time? Yes

Do sample labels match COC? Record discrepancies. Yes

Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear? Yes

(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)

Were proper containers (type/mass/volume/preservative)used? Yes

Note: Exemption for metals analysis by 200.8/6020 in water.

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)

Were all soil VOAs received with a corresponding % solids container? N/A

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples? N/A

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)? N/A

Were all soil VOAs field extracted with Methanol+BFB? N/A

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1225842001-A	HNO3 to pH < 2	OK			
1225842002-A	HNO3 to pH < 2	OK			
1225842003-A	HNO3 to pH < 2	OK			
1225842004-A	HNO3 to pH < 2	OK			
1225842005-A	HNO3 to pH < 2	OK			
1225842006-A	HNO3 to pH < 2	OK			
1225842007-A	HNO3 to pH < 2	OK			
1225842008-A	HNO3 to pH < 2	OK			
1225842009-A	HNO3 to pH < 2	OK			
1225842010-A	HNO3 to pH < 2	OK			
1225842014-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



September 28, 2022

Service Request No:K2211022

Mary Curry
Alaska Water Laboratories
281 N. Main Street, Suite #101
Wasilla, AK 99654

Laboratory Results for: AWL-22-03001

Dear Mary,

Enclosed are the results of the sample(s) submitted to our laboratory September 23, 2022
For your reference, these analyses have been assigned our service request number **K2211022**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Received: 09/23/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Twelve wastewater samples were received for analysis at ALS Environmental on 09/23/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy

Date 09/28/2022



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-03001-001-4		Lab ID: K2211022-001				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	21400		3	21	ug/L	200.7
Magnesium	6060		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-002-4		Lab ID: K2211022-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	49700		3	21	ug/L	200.7
Magnesium	13400		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-003-4		Lab ID: K2211022-003				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	42900		3	21	ug/L	200.7
Magnesium	8620		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-004-4		Lab ID: K2211022-004				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	13200		3	21	ug/L	200.7
Magnesium	3490		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-005-4		Lab ID: K2211022-005				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	3400		3	21	ug/L	200.7
Magnesium	780		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-006-4		Lab ID: K2211022-006				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	20000		3	21	ug/L	200.7
Magnesium	4590		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-007-4		Lab ID: K2211022-007				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	20600		3	21	ug/L	200.7
Magnesium	4720		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-008-4		Lab ID: K2211022-008				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	33000		3	21	ug/L	200.7
Magnesium	7290		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-009-4		Lab ID: K2211022-009				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	35600		3	21	ug/L	200.7
Magnesium	10500		0.4	5.3	ug/L	200.7



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: AWL-22-03001-010-4	Lab ID: K2211022-010
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	35300		3	21	ug/L	200.7
Magnesium	4910		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-011-4	Lab ID: K2211022-011
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	48900		3	21	ug/L	200.7
Magnesium	13900		0.4	5.3	ug/L	200.7

CLIENT ID: AWL-22-03001-012-4	Lab ID: K2211022-012
--------------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium	49200		3	21	ug/L	200.7
Magnesium	14200		0.4	5.3	ug/L	200.7



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Alaska Water Laboratories
Project: AWL-22-03001

Service Request:K2211022

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2211022-001	AWL-22-03001-001-4	9/19/2022	1100
K2211022-002	AWL-22-03001-002-4	9/19/2022	1110
K2211022-003	AWL-22-03001-003-4	9/19/2022	1210
K2211022-004	AWL-22-03001-004-4	9/19/2022	1000
K2211022-005	AWL-22-03001-005-4	9/19/2022	0840
K2211022-006	AWL-22-03001-006-4	9/19/2022	0850
K2211022-007	AWL-22-03001-007-4	9/19/2022	0855
K2211022-008	AWL-22-03001-008-4	9/19/2022	0920
K2211022-009	AWL-22-03001-009-4	9/19/2022	0930
K2211022-010	AWL-22-03001-010-4	9/19/2022	1030
K2211022-011	AWL-22-03001-011-4	9/19/2022	1130
K2211022-012	AWL-22-03001-012-4	9/19/2022	1140

PM Kelly

Cooler Receipt and Preservation Form

Client Alaska Water Labs Service Request K22 11022
Received: 9/23/22 Opened: 9/23/22 By: [Signature] Unloaded: 9/23/22 By: [Signature]

- 1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 on top
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID/NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
						940550819430035H 815307	

- 4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
- 5. Were samples received within the method specified temperature ranges? NA Y N
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

- 6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
- 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 8. Were samples received in good condition (unbroken) NA Y N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
- 10. Did all sample labels and tags agree with custody papers? NA Y N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
- 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
- 14. Was C12/Res negative? NA Y N
- 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:
AWL-22-03001-013-4	AWL-22-03001-012-4	collected time

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

KJZ 11022

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:		ALS - Kelso, WA	
Client Project Name:		AWL-22-03001		Certification Required: Alaska WW	
Requested Due Date (if not standard TAT):		Standard		Notes : Level 2 report Report to MDL Provide EDD	
Samples					
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix	
AWL-22-03001-001-4	9/19/2022 11:00	200.7	Ca, Mg	AQ	
AWL-22-03001-002-4	9/19/2022 11:10	200.7	Ca, Mg	AQ	
AWL-22-03001-003-4	9/19/2022 12:10	200.7	Ca, Mg	AQ	
AWL-22-03001-004-4	9/19/2022 10:00	200.7	Ca, Mg	AQ	
AWL-22-03001-005-4	9/19/2022 8:40	200.7	Ca, Mg	AQ	
AWL-22-03001-006-4	9/19/2022 8:50	200.7	Ca, Mg	AQ	
AWL-22-03001-007-4	9/19/2022 8:55	200.7	Ca, Mg	AQ	
AWL-22-03001-008-4	9/19/2022 9:20	200.7	Ca, Mg	AQ	
AWL-22-03001-009-4	9/19/2022 9:30	200.7	Ca, Mg	AQ	
AWL-22-03001-010-4	9/19/2022 10:30	200.7	Ca, Mg	AQ	
AWL-22-03001-011-4	9/19/2022 11:30	200.7	Ca, Mg	AQ	
AWL-22-03001-012-4	9/19/2022 11:40	200.7	Ca, Mg	AQ	
All samples pH<2, preserved with HNO3					
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:	
<i>M. J. ...</i>	9-21-22 10:18am	<i>[Signature]</i>	9/23/22 0940	CoC Seal? Y / N pH: Ice: Frozen Melted / None	
Relinquished By:	Date&Time:	Received By:	Date&Time:	Temp:	
				CoC Seal? Y / N pH: Ice: Frozen Melted / None	



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
 - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
 - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-03001/

Service Request: K2211022

Sample Name: AWL-22-03001-001-4
Lab Code: K2211022-001
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-002-4
Lab Code: K2211022-002
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-003-4
Lab Code: K2211022-003
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-004-4
Lab Code: K2211022-004
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-005-4
Lab Code: K2211022-005
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-03001/

Service Request: K2211022

Sample Name: AWL-22-03001-006-4
Lab Code: K2211022-006
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-007-4
Lab Code: K2211022-007
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-008-4
Lab Code: K2211022-008
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-009-4
Lab Code: K2211022-009
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-010-4
Lab Code: K2211022-010
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Alaska Water Laboratories
Project: AWL-22-03001/

Service Request: K2211022

Sample Name: AWL-22-03001-011-4
Lab Code: K2211022-011
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY

Sample Name: AWL-22-03001-012-4
Lab Code: K2211022-012
Sample Matrix: Wastewater

Date Collected: 09/19/22
Date Received: 09/23/22

Analysis Method
200.7

Extracted/Digested By
SSOLADEY

Analyzed By
AMCKORNEY



Sample Results

ALS Environmental—Kelso Laboratory
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Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-001-4
Lab Code: K2211022-001

Service Request: K2211022
Date Collected: 09/19/22 11:00
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	21400	ug/L	21	3	1	09/28/22 09:35	09/26/22	
Magnesium	200.7	6060	ug/L	5.3	0.4	1	09/28/22 09:35	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-002-4
Lab Code: K2211022-002

Service Request: K2211022
Date Collected: 09/19/22 11:10
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	49700	ug/L	21	3	1	09/28/22 09:05	09/26/22	
Magnesium	200.7	13400	ug/L	5.3	0.4	1	09/28/22 09:05	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-003-4
Lab Code: K2211022-003

Service Request: K2211022
Date Collected: 09/19/22 12:10
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	42900	ug/L	21	3	1	09/28/22 09:38	09/26/22	
Magnesium	200.7	8620	ug/L	5.3	0.4	1	09/28/22 09:38	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-004-4
Lab Code: K2211022-004

Service Request: K2211022
Date Collected: 09/19/22 10:00
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	13200	ug/L	21	3	1	09/28/22 09:41	09/26/22	
Magnesium	200.7	3490	ug/L	5.3	0.4	1	09/28/22 09:41	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-005-4
Lab Code: K2211022-005

Service Request: K2211022
Date Collected: 09/19/22 08:40
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	3400	ug/L	21	3	1	09/28/22 09:44	09/26/22	
Magnesium	200.7	780	ug/L	5.3	0.4	1	09/28/22 09:44	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-006-4
Lab Code: K2211022-006

Service Request: K2211022
Date Collected: 09/19/22 08:50
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	20000	ug/L	21	3	1	09/28/22 09:47	09/26/22	
Magnesium	200.7	4590	ug/L	5.3	0.4	1	09/28/22 09:47	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-007-4
Lab Code: K2211022-007

Service Request: K2211022
Date Collected: 09/19/22 08:55
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	20600	ug/L	21	3	1	09/28/22 09:49	09/26/22	
Magnesium	200.7	4720	ug/L	5.3	0.4	1	09/28/22 09:49	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-008-4
Lab Code: K2211022-008

Service Request: K2211022
Date Collected: 09/19/22 09:20
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	33000	ug/L	21	3	1	09/28/22 10:00	09/26/22	
Magnesium	200.7	7290	ug/L	5.3	0.4	1	09/28/22 10:00	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-009-4
Lab Code: K2211022-009

Service Request: K2211022
Date Collected: 09/19/22 09:30
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	35600	ug/L	21	3	1	09/28/22 10:03	09/26/22	
Magnesium	200.7	10500	ug/L	5.3	0.4	1	09/28/22 10:03	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-010-4
Lab Code: K2211022-010

Service Request: K2211022
Date Collected: 09/19/22 10:30
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	35300	ug/L	21	3	1	09/28/22 10:06	09/26/22	
Magnesium	200.7	4910	ug/L	5.3	0.4	1	09/28/22 10:06	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-011-4
Lab Code: K2211022-011

Service Request: K2211022
Date Collected: 09/19/22 11:30
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	48900	ug/L	21	3	1	09/28/22 09:24	09/26/22	
Magnesium	200.7	13900	ug/L	5.3	0.4	1	09/28/22 09:24	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: AWL-22-03001-012-4
Lab Code: K2211022-012

Service Request: K2211022
Date Collected: 09/19/22 11:40
Date Received: 09/23/22 09:40
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	49200	ug/L	21	3	1	09/28/22 10:09	09/26/22	
Magnesium	200.7	14200	ug/L	5.3	0.4	1	09/28/22 10:09	09/26/22	



QC Summary Forms

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ALS Group USA, Corp.
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Analytical Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater
Sample Name: Method Blank
Lab Code: KQ2216403-01

Service Request: K2211022
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	200.7	ND U	ug/L	21	3	1	09/28/22 08:57	09/26/22	
Magnesium	200.7	1.7 J	ug/L	5.3	0.4	1	09/28/22 08:57	09/26/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Collected: 09/19/22
Date Received: 09/23/22
Date Analyzed: 09/28/22
Date Extracted: 09/26/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-03001-002-4
Lab Code: K2211022-002
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2216403-03

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	49700	59500	10000	98 #	70-130
Magnesium	13400	23500	10000	101	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Collected: 09/19/22
Date Received: 09/23/22
Date Analyzed: 09/28/22
Date Extracted: 09/26/22

Matrix Spike Summary
Total Metals

Sample Name: AWL-22-03001-011-4
Lab Code: K2211022-011
Analysis Method: 200.7
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2216403-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Calcium	48900	59200	10000	103 #	70-130
Magnesium	13900	24300	10000	105	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Collected: 09/19/22
Date Received: 09/23/22
Date Analyzed: 09/28/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-03001-002-4
Lab Code: K2211022-002

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2216403-04 Result			
Calcium	200.7	21	3	49700	49500	49600	<1	20
Magnesium	200.7	5.3	0.4	13400	13300	13400	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Collected: 09/19/22
Date Received: 09/23/22
Date Analyzed: 09/28/22

Replicate Sample Summary

Total Metals

Sample Name: AWL-22-03001-011-4
Lab Code: K2211022-011

Units: ug/L
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2216403-06 Result			
Calcium	200.7	21	3	48900	48800	48900	<1	20
Magnesium	200.7	5.3	0.4	13900	14200	14100	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Alaska Water Laboratories
Project: AWL-22-03001
Sample Matrix: Wastewater

Service Request: K2211022
Date Analyzed: 09/28/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2216403-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Calcium	200.7	12400	12500	100	85-115
Magnesium	200.7	12900	12500	103	85-115



Laboratory Report of Analysis

To: Alaska Water Laboratories LLC
281 N. Main Street Ste 101
Wasilla, AK 99654
907-373-6130

Report Number: **1225711**

Client Project: **AWL-22-03001**

Dear Mary Curry,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Danika at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Danika Buzby-Rynders
Project Manager
Danika.Buzby-Rynders@sgs.com

Date

Print Date: 11/11/2022 9:41:28AM

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Member of SGS Group

Case Narrative

SGS Client: **Alaska Water Laboratories LLC**

SGS Project: **1225711**

Project Name/Site: **AWL-22-03001**

Project Contact: **Mary Curry**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/11/2022 9:41:29AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
AWL-22-03001-003-006	1225711001	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-003-005	1225711002	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-005-006	1225711003	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-005-005	1225711004	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-008-006	1225711005	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-008-005	1225711006	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-011-006	1225711007	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001...(1225711007BM	1225711008	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-0300...(1225711007BMS	1225711009	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-011-005	1225711010	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001...(1225711010BM	1225711011	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-0300...(1225711010BMS	1225711012	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-013-006	1225711013	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-013-005	1225711014	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)
AWL-22-03001-012-001	1225711015	09/19/2022	09/20/2022	Water (Surface, Eff., Ground)

Method

EPA 602/624
EPA 625M SIM (PAH) LV

Method Description

602 Aromatics by 624 (W)
625 PAH SIM GC/MS Low Volume

Detectable Results Summary

Client Sample ID: **AWL-22-03001-005-005**

Lab Sample ID: 1225711004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Benzo[b]Fluoranthene	0.0153J	ug/L
Fluoranthene	0.0284J	ug/L
Pyrene	0.0367J	ug/L

Client Sample ID: **AWL-22-03001-008-005**

Lab Sample ID: 1225711006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0148J	ug/L
Fluorene	0.0430J	ug/L
Phenanthrene	0.0332J	ug/L
Pyrene	0.0148J	ug/L

Print Date: 11/11/2022 9:41:34AM

Results of AWL-22-03001-003-006

Client Sample ID: **AWL-22-03001-003-006**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711001
 Lab Project ID: 1225711

Collection Date: 09/19/22 12:10
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 19:24
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:24
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:24
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 19:24
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:24
Surrogates							
1,2-Dichloroethane-D4 (surr)	110	81-118		%	1		09/29/22 19:24
4-Bromofluorobenzene (surr)	110	85-114		%	1		09/29/22 19:24
Toluene-d8 (surr)	102	89-112		%	1		09/29/22 19:24

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/29/22 19:24
 Container ID: 1225711001-A

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of AWL-22-03001-003-005

Client Sample ID: **AWL-22-03001-003-005**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711002
 Lab Project ID: 1225711

Collection Date: 09/19/22 12:10
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 18:04
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 18:04
Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 18:04
Phenanthrene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 18:04
Pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:04
Surrogates							
2-Methylnaphthalene-d10 (surr)	80.7	42-86		%	1		10/03/22 18:04
Fluoranthene-d10 (surr)	83	50-97		%	1		10/03/22 18:04

Batch Information

Analytical Batch: XMS13385
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 10/03/22 18:04
 Container ID: 1225711002-A

Prep Batch: XXX47029
 Prep Method: SW3535A
 Prep Date/Time: 09/22/22 09:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Results of AWL-22-03001-005-006

Client Sample ID: **AWL-22-03001-005-006**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711003
 Lab Project ID: 1225711

Collection Date: 09/19/22 08:40
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 19:39
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:39
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:39
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 19:39
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:39
Surrogates							
1,2-Dichloroethane-D4 (surr)	110	81-118		%	1		09/29/22 19:39
4-Bromofluorobenzene (surr)	109	85-114		%	1		09/29/22 19:39
Toluene-d8 (surr)	101	89-112		%	1		09/29/22 19:39

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/29/22 19:39
 Container ID: 1225711003-A

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-03001-005-005**

Client Sample ID: **AWL-22-03001-005-005**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225711004
Lab Project ID: 1225711

Collection Date: 09/19/22 08:40
Received Date: 09/20/22 13:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Acenaphthylene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Anthracene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Benzo(a)Anthracene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Benzo[a]pyrene	0.00910 U	0.0182	0.00564	ug/L	1		10/03/22 18:24
Benzo[b]Fluoranthene	0.0153 J	0.0455	0.0136	ug/L	1		10/03/22 18:24
Benzo[g,h,i]perylene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Benzo[k]fluoranthene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Chrysene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Dibenzo[a,h]anthracene	0.00910 U	0.0182	0.00564	ug/L	1		10/03/22 18:24
Fluoranthene	0.0284 J	0.0455	0.0136	ug/L	1		10/03/22 18:24
Fluorene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Indeno[1,2,3-c,d] pyrene	0.0227 U	0.0455	0.0136	ug/L	1		10/03/22 18:24
Naphthalene	0.0454 U	0.0909	0.0282	ug/L	1		10/03/22 18:24
Phenanthrene	0.0454 U	0.0909	0.0282	ug/L	1		10/03/22 18:24
Pyrene	0.0367 J	0.0455	0.0136	ug/L	1		10/03/22 18:24
Surrogates							
2-Methylnaphthalene-d10 (surr)	82.3	42-86		%	1		10/03/22 18:24
Fluoranthene-d10 (surr)	78.5	50-97		%	1		10/03/22 18:24

Batch Information

Analytical Batch: XMS13385
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 10/03/22 18:24
Container ID: 1225711004-A

Prep Batch: XXX47029
Prep Method: SW3535A
Prep Date/Time: 09/22/22 09:30
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL

Results of AWL-22-03001-008-006

Client Sample ID: **AWL-22-03001-008-006**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711005
 Lab Project ID: 1225711

Collection Date: 09/19/22 09:20
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 19:54
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:54
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:54
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 19:54
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:54
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	81-118		%	1		09/29/22 19:54
4-Bromofluorobenzene (surr)	109	85-114		%	1		09/29/22 19:54
Toluene-d8 (surr)	101	89-112		%	1		09/29/22 19:54

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/29/22 19:54
 Container ID: 1225711005-A

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of **AWL-22-03001-008-005**

Client Sample ID: **AWL-22-03001-008-005**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225711006
Lab Project ID: 1225711

Collection Date: 09/19/22 09:20
Received Date: 09/20/22 13:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 18:45
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 18:45
Fluoranthene	0.0148 J	0.0463	0.0139	ug/L	1		10/03/22 18:45
Fluorene	0.0430 J	0.0463	0.0139	ug/L	1		10/03/22 18:45
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 18:45
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 18:45
Phenanthrene	0.0332 J	0.0926	0.0287	ug/L	1		10/03/22 18:45
Pyrene	0.0148 J	0.0463	0.0139	ug/L	1		10/03/22 18:45
Surrogates							
2-Methylnaphthalene-d10 (surr)	76.6	42-86		%	1		10/03/22 18:45
Fluoranthene-d10 (surr)	75.2	50-97		%	1		10/03/22 18:45

Batch Information

Analytical Batch: XMS13385
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: NGG
Analytical Date/Time: 10/03/22 18:45
Container ID: 1225711006-A

Prep Batch: XXX47029
Prep Method: SW3535A
Prep Date/Time: 09/22/22 09:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of AWL-22-03001-011-006

Client Sample ID: **AWL-22-03001-011-006**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711007
 Lab Project ID: 1225711

Collection Date: 09/19/22 11:30
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 19:09
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:09
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:09
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 19:09
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 19:09
Surrogates							
1,2-Dichloroethane-D4 (surr)	109	81-118		%	1		09/29/22 19:09
4-Bromofluorobenzene (surr)	108	85-114		%	1		09/29/22 19:09
Toluene-d8 (surr)	101	89-112		%	1		09/29/22 19:09

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/29/22 19:09
 Container ID: 1225711007-A

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of AWL-22-03001-011-005

Client Sample ID: **AWL-22-03001-011-005**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711010
 Lab Project ID: 1225711

Collection Date: 09/19/22 11:30
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 19:05
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 19:05
Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 19:05
Phenanthrene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 19:05
Pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 19:05
Surrogates							
2-Methylnaphthalene-d10 (surr)	77.4	42-86		%	1		10/03/22 19:05
Fluoranthene-d10 (surr)	68	50-97		%	1		10/03/22 19:05

Batch Information

Analytical Batch: XMS13385
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 10/03/22 19:05
 Container ID: 1225711010-A

Prep Batch: XXX47029
 Prep Method: SW3535A
 Prep Date/Time: 09/22/22 09:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Results of AWL-22-03001-013-006

Client Sample ID: **AWL-22-03001-013-006**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711013
 Lab Project ID: 1225711

Collection Date: 09/19/22 11:30
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 20:08
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 20:08
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 20:08
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 20:08
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 20:08
Surrogates							
1,2-Dichloroethane-D4 (surr)	109	81-118		%	1		09/29/22 20:08
4-Bromofluorobenzene (surr)	109	85-114		%	1		09/29/22 20:08
Toluene-d8 (surr)	101	89-112		%	1		09/29/22 20:08

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Analyst: AZL
 Analytical Date/Time: 09/29/22 20:08
 Container ID: 1225711013-A

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/22 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of AWL-22-03001-013-005

Client Sample ID: **AWL-22-03001-013-005**
 Client Project ID: **AWL-22-03001**
 Lab Sample ID: 1225711014
 Lab Project ID: 1225711

Collection Date: 09/19/22 11:30
 Received Date: 09/20/22 13:42
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Acenaphthylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Benzo(a)Anthracene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Benzo[a]pyrene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 20:07
Benzo[b]Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Benzo[g,h,i]perylene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Benzo[k]fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Chrysene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Dibenzo[a,h]anthracene	0.00925 U	0.0185	0.00574	ug/L	1		10/03/22 20:07
Fluoranthene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Fluorene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Indeno[1,2,3-c,d] pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Naphthalene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 20:07
Phenanthrene	0.0463 U	0.0926	0.0287	ug/L	1		10/03/22 20:07
Pyrene	0.0232 U	0.0463	0.0139	ug/L	1		10/03/22 20:07
Surrogates							
2-Methylnaphthalene-d10 (surr)	77.1	42-86		%	1		10/03/22 20:07
Fluoranthene-d10 (surr)	73.2	50-97		%	1		10/03/22 20:07

Batch Information

Analytical Batch: XMS13385
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: NGG
 Analytical Date/Time: 10/03/22 20:07
 Container ID: 1225711014-A

Prep Batch: XXX47029
 Prep Method: SW3535A
 Prep Date/Time: 09/22/22 09:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL



Results of **AWL-22-03001-012-001**

Client Sample ID: **AWL-22-03001-012-001**
Client Project ID: **AWL-22-03001**
Lab Sample ID: 1225711015
Lab Project ID: 1225711

Collection Date: 09/19/22 08:40
Received Date: 09/20/22 13:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/29/22 18:24
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/29/22 18:24
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/29/22 18:24
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/29/22 18:24
Toluene	0.500 U	1.00	0.310	ug/L	1		09/29/22 18:24
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		09/29/22 18:24
4-Bromofluorobenzene (surr)	109	85-114		%	1		09/29/22 18:24
Toluene-d8 (surr)	101	89-112		%	1		09/29/22 18:24

Batch Information

Analytical Batch: VMS22036
Analytical Method: EPA 602/624
Analyst: AZL
Analytical Date/Time: 09/29/22 18:24
Container ID: 1225711015-A

Prep Batch: VXX39286
Prep Method: SW5030B
Prep Date/Time: 09/29/22 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1845249 [VXX/39286]
 Blank Lab ID: 1690085

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1225711001, 1225711003, 1225711005, 1225711007, 1225711013, 1225711015

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	81-118		%
4-Bromofluorobenzene (surr)	109	85-114		%
Toluene-d8 (surr)	100	89-112		%

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/29/2022 3:17:00PM

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 9/29/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 11/11/2022 9:41:37AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225711 [VXX39286]
 Blank Spike Lab ID: 1690086
 Date Analyzed: 09/29/2022 15:32

Spike Duplicate ID: LCSD for HBN 1225711 [VXX39286]
 Spike Duplicate Lab ID: 1690087
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225711001, 1225711003, 1225711005, 1225711007, 1225711013, 1225711015

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.5	102	30	30.6	102	(79-120)	0.56	(< 20)
Ethylbenzene	30	30.6	102	30	30.3	101	(79-121)	1.10	(< 20)
o-Xylene	30	30.6	102	30	30.1	100	(78-122)	1.70	(< 20)
P & M -Xylene	60	62.3	104	60	61.1	102	(80-121)	1.90	(< 20)
Toluene	30	30.2	101	30	29.7	99	(80-121)	1.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		100	30		101	(81-118)	0.70	
4-Bromofluorobenzene (surr)	30		103	30		101	(85-114)	1.20	
Toluene-d8 (surr)	30		101	30		99	(89-112)	1.40	

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL

Prep Batch: VXX39286
 Prep Method: SW5030B
 Prep Date/Time: 09/29/2022 06:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Billable Matrix Spike Summary

Original Sample ID: 1225711007
 MS Sample ID: 1225711008 BMS
 MSD Sample ID: 1225711009 BMSD

Analysis Date: 09/29/2022 19:09
 Analysis Date: 09/29/2022 17:10
 Analysis Date: 09/29/2022 17:25
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.200U	30.0	32.6	109	30.0	32.8	109	79-120	0.61	(< 20)
Ethylbenzene	0.500U	30.0	31.7	106	30.0	32.4	108	79-121	2.20	(< 20)
o-Xylene	0.500U	30.0	31.5	105	30.0	32.2	107	78-122	2.00	(< 20)
P & M -Xylene	1.00U	60.0	64.1	107	60.0	65.1	108	80-121	1.60	(< 20)
Toluene	0.500U	30.0	30.8	103	30.0	31.6	105	80-121	2.50	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	30.5	102	30.0	30.4	101	81-118	0.53	
4-Bromofluorobenzene (surr)		30.0	31.1	104	30.0	30.7	102	85-114	1.10	
Toluene-d8 (surr)		30.0	29.6	99	30.0	29.8	100	89-112	0.91	

Batch Information

Analytical Batch: VMS22036
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: AZL
 Analytical Date/Time: 9/29/2022 5:10:00PM

Prep Batch: VXX39286
 Prep Method: Volatiles Extraction 8240/8260 FULL
 Prep Date/Time: 9/29/2022 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 11/11/2022 9:41:41AM



Method Blank

Blank ID: MB for HBN 1844052 [XXX/47029]
Blank Lab ID: 1687060

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1225711002, 1225711004, 1225711006, 1225711010, 1225711014

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	75.4	42-86		%
Fluoranthene-d10 (surr)	83.7	50-97		%

Batch Information

Analytical Batch: XMS13385
Analytical Method: EPA 625M SIM (PAH) LV
Instrument: Agilent GC 7890B/5977A SWA
Analyst: NGG
Analytical Date/Time: 10/3/2022 5:22:00PM

Prep Batch: XXX47029
Prep Method: SW3535A
Prep Date/Time: 9/22/2022 9:30:56AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/11/2022 9:41:43AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1225711 [XXX47029]

Blank Spike Lab ID: 1687061

Date Analyzed: 10/03/2022 17:43

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1225711002, 1225711004, 1225711006, 1225711010, 1225711014

Results by EPA 625M SIM (PAH) LV

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.47	74	(48-114)
Acenaphthylene	2	1.36	68	(35-121)
Anthracene	2	1.60	80	(53-119)
Benzo(a)Anthracene	2	1.44	72	(59-120)
Benzo[a]pyrene	2	1.66	83	(53-120)
Benzo[b]Fluoranthene	2	1.56	78	(53-126)
Benzo[g,h,i]perylene	2	1.89	94	(44-128)
Benzo[k]fluoranthene	2	1.66	83	(54-125)
Chrysene	2	1.54	77	(57-120)
Dibenzo[a,h]anthracene	2	1.89	95	(44-131)
Fluoranthene	2	1.46	73	(58-120)
Fluorene	2	1.57	79	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.83	91	(48-130)
Naphthalene	2	1.17	59	(43-114)
Phenanthrene	2	1.60	80	(53-115)
Pyrene	2	1.45	72	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2		69	(42-86)
Fluoranthene-d10 (surr)	2		76	(50-97)

Batch Information

Analytical Batch: XMS13385

Analytical Method: EPA 625M SIM (PAH) LV

Instrument: Agilent GC 7890B/5977A SWA

Analyst: NGG

Prep Batch: XXX47029

Prep Method: SW3535A

Prep Date/Time: 09/22/2022 09:30

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Billable Matrix Spike Summary

Original Sample ID: 1225711010
 MS Sample ID: 1225711011 BMS
 MSD Sample ID: 1225711012 BMSD

Analysis Date: 10/03/2022 19:05
 Analysis Date: 10/03/2022 19:26
 Analysis Date: 10/03/2022 19:46
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0232U	1.85	1.36	73	1.89	1.46	78	48-114	7.40	(< 20)
Acenaphthylene	0.0232U	1.85	1.25	68	1.89	1.33	71	35-121	6.10	(< 20)
Anthracene	0.0232U	1.85	1.35	73	1.89	1.44	76	53-119	6.20	(< 20)
Benzo(a)Anthracene	0.0232U	1.85	1.13	61	1.89	1.27	67	59-120	11.80	(< 20)
Benzo[a]pyrene	0.00925U	1.85	1.2	65	1.89	1.37	73	53-120	13.10	(< 20)
Benzo[b]Fluoranthene	0.0232U	1.85	1.1	59	1.89	1.27	67	53-126	14.40	(< 20)
Benzo[g,h,i]perylene	0.0232U	1.85	1.2	65	1.89	1.37	73	44-128	13.20	(< 20)
Benzo[k]fluoranthene	0.0232U	1.85	1.24	67	1.89	1.40	74	54-125	12.20	(< 20)
Chrysene	0.0232U	1.85	1.24	67	1.89	1.40	74	57-120	11.90	(< 20)
Dibenzo[a,h]anthracene	0.00925U	1.85	1.29	70	1.89	1.47	78	44-131	13.40	(< 20)
Fluoranthene	0.0232U	1.85	1.17	63	1.89	1.28	68	58-120	9.30	(< 20)
Fluorene	0.0232U	1.85	1.41	76	1.89	1.48	78	50-118	4.70	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0232U	1.85	1.17	63	1.89	1.35	71	48-130	13.90	(< 20)
Naphthalene	0.0463U	1.85	1.17	63	1.89	1.25	66	43-114	7.10	(< 20)
Phenanthrene	0.0463U	1.85	1.37	74	1.89	1.44	77	53-115	5.00	(< 20)
Pyrene	0.0232U	1.85	1.14	62	1.89	1.27	67	53-121	10.60	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.85	1.45	78	1.89	1.47	78	42-86	1.90	
Fluoranthene-d10 (surr)		1.85	1.32	71	1.89	1.38	73	50-97	4.40	

Batch Information

Analytical Batch: XMS13385
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NGG
 Analytical Date/Time: 10/3/2022 7:26:00PM

Prep Batch: XXX47029
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/22/2022 9:30:56AM
 Prep Initial Wt./Vol.: 270.00mL
 Prep Extract Vol: 1.00mL

Print Date: 11/11/2022 9:41:46AM

1225711



907-373-6130

Profile # 386968 97

FROM: Alaska Water Laboratories LLC. 281 N. Main St, STE101 Wasilla AK 99654 Mary@AKWaterLabs.com		Sub-Contracted Lab:	EEA - South Bend Lab 110 S Hill Street South Bend, IN 46617	
Client Project Name:	AWL-22-03001	Certification Required:	WW	
Requested Due Date (if not standard TAT):	Standard - Log under SGS Quote # 386968 for Pricing purposes	Notes : Level 2 report * DO NOT REPORT 1-Methylnaphthalene and 2-Methylnaphthalene for any client sample results. QC on client samples - Report to MDL Please provide SW or DV edd, with QC included		
Samples				
AWL ID	Collection Date/ Time	Analysis	Comments	Matrix
AWL-22-03001-003-006	9/19/2022 12:10	624	TAH - 3 VOA	SW
AWL-22-03001-003-005	9/19/2022 12:10	625 SIM	PAH	SW
AWL-22-03001-005-006	9/19/2022 8:40	624	TAH - 3 VOA	SW
AWL-22-03001-005-005	9/19/2022 8:40	625 SIM	PAH	SW
AWL-22-03001-008-006	9/19/2022 9:20	624	TAH - 3 VOA	SW
AWL-22-03001-008-005	9/19/2022 9:20	625 SIM	PAH	SW
AWL-22-03001-011-006	9/19/2022 11:30	624	TAH - 3 VOA; Parent and MS Volume	SW
AWL-22-03001-011-005	9/19/2022 11:30	625 SIM	PAH; Parent and MS Volume	SW
AWL-22-03001-013-006	9/19/2022 11:30	624	TAH - 3 VOA; DUP Vol - Report as separate sample ID	SW
AWL-22-03001-013-005	9/19/2022 11:30	625 SIM	PAH; DUP Vol - Report as separate sample ID	SW
AWL-22-03001-012-001	9/19/2022 8:40	624	TAH - 1 VOA: TRIP BLANK	SW
*625 have 2 containers.				
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
MCC	9-20-22 10:26			
				CoC Seal? Y / N
				pH:
				Ice: <u>Frozen</u>
				Melted / None
Relinquished By:	Date&Time:	Reveived By:	Date&Time:	Temp:
		li CS	9/20/22 13:42	2.0 D62
				CoC Seal? Y / N
				pH:
				Ice: <u>Frozen</u>
				Melted / None

1AC
2AB
3AC
4AB
5AL
6AB
7AC 8AC 9AC
10AB 11AB 12AB
13AC
14AB
15A



SGS Workorder #:

1225711

1225711

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
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Chain of Custody / Temperature Requirements		<i>Note: Temperature and COC seal information is found on the chain of custody form</i>
--	--	---

DOD only: Did all sample coolers have a corresponding COC?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note containers received with ice:		
Identify any containers received at non-compliant temperature: (Use form FS-0029 if more space is needed)		

Holding Time / Documentation / Sample Condition Requirement		<i>Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.</i>
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Were samples received within analytical holding time?	Yes	
Do sample labels match COC? Record discrepancies.	Yes	
<i>Note: If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.</i>		
Were analytical requests clear? <i>(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)</i>	Yes	
Were proper containers (type/mass/volume/preservative) used? Note: Exemption for metals analysis by 200.8/6020 in water.	Yes	

Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)		
---	--	--

Were all soil VOAs received with a corresponding % solids container?	N/A	
Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with Methanol+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):		
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Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1225711001-A	HCL to pH < 2	OK			
1225711001-B	HCL to pH < 2	OK			
1225711001-C	HCL to pH < 2	OK			
1225711002-A	No Preservative Required	OK			
1225711002-B	No Preservative Required	OK			
1225711003-A	HCL to pH < 2	OK			
1225711003-B	HCL to pH < 2	OK			
1225711003-C	HCL to pH < 2	OK			
1225711004-A	No Preservative Required	OK			
1225711004-B	No Preservative Required	OK			
1225711005-A	HCL to pH < 2	OK			
1225711005-B	HCL to pH < 2	OK			
1225711005-C	HCL to pH < 2	OK			
1225711006-A	No Preservative Required	OK			
1225711006-B	No Preservative Required	OK			
1225711007-A	HCL to pH < 2	OK			
1225711007-B	HCL to pH < 2	OK			
1225711007-C	HCL to pH < 2	OK			
1225711008-A	HCL to pH < 2	OK			
1225711008-B	HCL to pH < 2	OK			
1225711008-C	HCL to pH < 2	OK			
1225711009-A	HCL to pH < 2	OK			
1225711009-B	HCL to pH < 2	OK			
1225711009-C	HCL to pH < 2	OK			
1225711010-A	No Preservative Required	OK			
1225711010-B	No Preservative Required	OK			
1225711011-A	No Preservative Required	OK			
1225711011-B	No Preservative Required	OK			
1225711012-A	No Preservative Required	OK			
1225711012-B	No Preservative Required	OK			
1225711013-A	HCL to pH < 2	OK			
1225711013-B	HCL to pH < 2	OK			
1225711013-C	HCL to pH < 2	OK			
1225711014-A	No Preservative Required	OK			
1225711014-B	No Preservative Required	OK			
1225711015-A	HCL to pH < 2	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



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Appendix D

Field & Laboratory Data Validation



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Data review focused on the following quality control (QC) parameters and their overall effects on the data:

- Physical parameter replicate comparisons
- Sample handling and holding time compliance
- Field replicate comparison for conventional and organic constituents
- Comparisons of laboratory controls (e.g., matrix spike/matrix spike duplicates).

1. Physical Parameter Comparisons

Precipitation

Precipitation was measured at four project locations within the Anchorage basin using tipping bucket rain gauges. Daily rainfall data from the PANC weather station at the AIA were used to supplement the four project rain gauges.

The study plan specifies that storm events must meet the following criteria: a storm event must be ≥ 0.1 inch of rain in 24 hours (hr) and be preceded by 24 hr of dry weather (< 0.1 inch of rain). These criteria were applied on a 24-hr storm basis rather than a calendar basis since storms often commence in late evening the day before sampling. All four storm events met the criteria of exhibiting ≥ 0.1 inch of rain in 24 hr. Total rainfall as measured at PANC and the four tipping bucket stations in the monitoring area during each monitored event ranged from a low of 0.13 inches at Spencer during the third event to 1.23 inches at Lynwood during the third event. In all storm events, sampling was completed within 24 hours from the start of a storm. In all sampling events, precipitation recorded at all four project gauges during the preceding 24-hr period was < 0.1 inches except for the second storm at Thomas. Storm events during the 2022 storm season were noted as being variable across the Anchorage Bowl. The sampling events were triggered based on the mesonet station KTUU-Midtown as it gives real time storm precipitation and is centrally located in the study corridor. During each event the precipitation requirements in the QAPP were met. Based on these data, all four storms that were sampled were considered to have met storm event criteria.

Flow Measurements

Flow velocities were measured using a geomagnetic flow meter at most stations. Although not required by the QAP, duplicative flow measurements were taken at SWM08 and SWM12 during three of the four sampling events. Relative percent differences (RPDs) between flow velocities ranged from 3.7 to 13.8 indicating good agreement between measurements (Table 1). This parameter was duplicated at a rate of 15% during 2022.



Table 1. Field Duplicate Relative Percent Difference for Doppler Flow Measurements

Storm Event Date	SWM08	SWM12
8/05/2022	--	--
8/08/2022	10.1	7.4
8/26/2022	6.2	13.8
9/19/2022	3.7	8.6

At station SWM07, the volumetric method was utilized to determine flow during the third and fourth sampling event due to low flow, where repeated bucket fill-time measurements were made, and the average measurement was used to calculate the flow velocity. No measurement quality objectives for this method were provided in the project QAP, as the parameter is essentially self-correcting as it includes repeated measurements. However, the coefficient of variation (CV), a percentage representing the standard deviation divided by the mean of a population, was calculated to determine variability of this measurement. Bucket measurements showed low CVs of $\leq 10\%$ (Table 2), indicating good consistency between measurements.

Table 2. Coefficients of Variation for Volume/Time Flow Measurements

Storm Event Date	SWM07
8/05/2022	---
8/18/2022	---
8/26/2022	8.2
9/19/2022	5.7

2. Sample Handling and Holding Time Compliance

For most analyses, samples were taken directly from the stormwater flow into laboratory-cleaned sample bottles; for TAH samples, small “VOA” vials containing preservative were typically filled from the PAH sample bottles. For every storm event, all samples were appropriately labeled, and the chains of custody completed as prescribed in the QAP. For all storm events, samples were maintained in the coolers at less than 6 °C or delivered to the laboratory at ambient temperatures within a few hours of sampling, which meets EPA’s sampling preservation and holding requirements for temperature. Sample custody was maintained; samples were hand delivered directly to the laboratory by the sampling crew within hours of sample collection.

The holding times specified in the QAP (MOA 2020) were met for all parameters.

3. Comparisons of Field Replicate Analyses

Conventional Parameters

Replicates of parameters analyzed in the field were taken as a measure of field variability/ precision, where precision was calculated as either an RPD (for dissolved oxygen {DO}) or the difference between



measurements (for pH, turbidity, temperature, and conductivity) as defined in the QAP. However, it should be noted that the precision values listed in the QAP for field instruments pertain to the precision of the instrument and are not realistic goals for natural variability of stormwater field measurements. In a high stormwater outflow situation, samples collected only a few minutes apart would be expected to show considerable variability considering that different water masses are being discharged, even though samples are being collected only minutes apart. As such, comparison of field duplicate results here, though compared to the QAP-provided precision standards, are more indicative of field variability than actual instrument precision.

Each sampling event included collection of field replicates at two stations. Field analyses included measurement of the conventional parameters of DO, pH, temperature, turbidity, and specific conductivity. Replicates were taken at a rate of 20% for these parameters, exceeding the 15% prescribed for all parameters in the QAP, and twice for all sampling days, exceeding the once/day requirement in the study plan. Table 3 provides the calculated field variability/precision for conventional parameters measured in the field.

Table 3. Precision and Variability of Field Parameters

Parameter	QAP Standard	8/05/2022		8/08/2022		8/26/2022		9/19/2022	
		SWM08	SWM12	SWM08	SWM12	SWM08	SWM12	SWM08	SWM12
DO	10% RPD	0.74	0.19	1.05	2.41	0.10	2.39	0.56	1.93
pH	±0.2 units	0.03	0.07	0.01	0.07	0.06	0.03	0.19	0.00
Turbidity	±1 NTU	0.0	5.0	1.4	8.0	0.2	19.0	5.4	1.0
Temperature	±0.4 °C	0.00	0.00	0.00	0.00	0.10	0.00	0.01	0.00
Conductivity	±1 µS/cm	0.3	0.1	0.7	5.9	14.8	12.8	0.2	3.5

Values in **bold** and **red** exceeded the measurement quality objective specified in the QAP.

DO, pH, and temperature met the precision goals during all sampling events. Turbidity and conductivity did not meet the precision limits frequently due to the variability of the discharge. Failure to meet the precision sensitivities prescribed in the QAP likely reflect the heterogeneous nature of stormwater flow rather than sampling anomalies. Although not specified in the outfall monitoring plan, conductivity was monitored to provide additional information to the field crew.

Replicate samples for the conventional parameters (TSS, BOD, and fecal coliform) were taken as field duplicates at SWM08 and SWM12 and analyzed by the laboratory as a measure of field variability/precision. Replicates were taken at a rate of 20%, exceeding the 15% prescribed for all parameters in the QAP and the once/day requirement in the study plan. Field variability was less than the QAP RPD limits in all but one case (Table 4). The RPD for field replicates of TSS for SWM12 during the first storm event was 46%, with a QAP limit of 25%. Again, failure to meet the precision sensitivities prescribed in the QAP likely reflect the heterogeneous nature of stormwater flow rather than sampling anomalies. Calculated RPDs for fecal coliform met the standards prescribed in the QAP. RPDs for BOD were also calculated, but no limits were provided in the project QAP for this parameter, although all RPDs were ≤25%.



Table 4. Field Duplicate Results for Conventional Parameters

Parameter	QAP Precision (RPD)	8/05/2022		8/08/2022		8/26/2022		9/19/2022	
		SWM08	SWM12	SWM08	SWM12	SWM08	SWM12	SWM08	SWM12
TSS	25	5	46	7	2	2	11	*	0
BOD	NA	12	5	5	13	11	3	4	9
Fecal Coliform	60	18	12	38	3	3	13	6	4

Values in **bold** and **red** exceeded the precision measurement quality objective specified in the QAP. * denotes both values were not detected.

Dissolved Copper and Hardness

Field replicates of dissolved copper and hardness were taken at SWM08 and SWM12. Replicates were taken at a rate of 20%, exceeding the 15% prescribed for all parameters in the QAP and the once/day requirement in the study plan. RPD results are presented in Table 5 and show variability below 20% for both parameters except for dissolved copper at SWM12 during the first storm event.

Table 5. Field Duplicate Results for Dissolved Copper and Hardness as CaCO₃

Parameter	QAP Precision (RPD)	8/5/2022		8/08/2022		8/26/2022		9/19/2022	
		SWM08	SWM12	SWM08	SWM12	SWM08	SWM12	SWM08	SWM12
Dissolved Copper	20	3	153	2	0	1	7	4	12
Hardness	20	3	3	5	3	4	5	3	1

Values in **bold** and **red** exceeded the precision measurement quality objective specified in the QAP.

Organic Parameters

Field replicates for the TAH (BETX) and PAH constituents were obtained at SWM12 during each of the four storm events. This represents a replication rate of 25%, which exceeds the 15% prescribed in the QAP and meets the once/day requirement of the study plan.

The field precision RPDs for TAH and PAH constituents are presented in Table 6. All TAH parameter concentrations were below detection limits (ND) and RPDs were not calculated. Most individual PAH analytes were below the detection limits. Those with values detected showed RPD precisions ranging from about 3–18% and below the QAP Precision of 30%.

4. Comparisons of Laboratory Controls

Verification analyses for laboratory parameters were conducted by Alaska Water Laboratories and the contracted labs ALS and SGS., the laboratory performing the analyses. All labs are certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with the QAP, standard methods, and EPA-approved protocols and guidelines.



Conventional Parameters

Laboratory method blanks were performed for the conventional parameters BOD, TSS, fecal coliform, and copper. BOD method blank during the first storm had a concentration of 0.17 mg/L, the second storm was 0.16 mg/L, the third storm was detected at 0.15 mg/L, the fourth storm showed detection of BOD at a concentration of 0.08 mg/L, but all detections were under the MDL. TSS method blank for the fourth storm had a concentration of -0.1 mg/L but was under the MDL. There were no detections for copper. The laboratory control sample and sample duplicate (LCS/LCSD) for the conventional parameters for all storm events were within the laboratory control limits.

Table 6. Field Duplicate Results for TAH and PAH

Parameter	QAP	8/05/2022	8/08/2022	8/26/2022	9/19/2022
	Precision (RPD)	SWM12	SWM12	SWM12	SWM12
TAH (BETX)					
Benzene	20	---	---	---	---
Ethylbenzene	20	---	---	---	---
Toluene	20	---	---	---	---
o-Xylene	20	---	---	---	---
p & m-Xylenes	20	---	---	---	---
PAH					
Acenaphthene	30	---	---	---	---
Acenaphthylene	30	---	---	---	---
Anthracene	30	---	---	---	---
Benzo(a)anthracene	30	---	---	---	---
Benzo(a)pyrene	30	---	---	---	---
Benzo(b)fluoranthene	30	---	---	---	---
Benzo(g,h,i)perylene	30	*	---	*	---
Benzo(k)fluoranthene	30	---	---	---	---
Chrysene	30	*	---	---	---
Dibenzo(a,h)anthracene	30	---	---	---	---
Fluoranthene	30	*	10	8	---
Fluorene	30	---	---	---	---
Indeno(1,2,3-cd)pyrene	30	---	---	---	---
Naphthalene	30	---	---	3	---
Phenanthrene	30	*	---	*	---
Pyrene	30	12	18	4	---

Values in **bold** and **red** exceeded the precision measurement quality objective specified in the QAP. “---”denotes non-detect values. * denotes RPDs could not be calculated.

Dissolved Copper and Hardness

Hardness is computed from magnesium and calcium so the QC for those compounds relate to the quality of the hardness results. All metals and hardness data were within QC limits this year.

Organic Parameters

Trip blanks were collected for the TAH analyses to determine whether the handling of the samples introduced contaminants. The trip blanks for all four storm events showed no evidence of contamination.

The Method Blanks for organics (both TAH and PAH) were all non-detect for the four storm events.

LCS/LCSDs were run, as were Matrix Spikes and Spike Duplicates (MS/MSD), to confirm the accuracy and precision of the analysis of the organic parameters. Spike recoveries confirm accuracy and the RPD confirms precision. Matrix Spikes confirm the ability to see the target analyte in the sample. The MS/MSD results are presented for the organic analysis in Table 7.

All spike recoveries and their RPDs were within acceptable range for the TAH.

For PAH, the analysis of the samples from all four storm events showed that many of the PAH analytes in the matrix spikes were recovered at levels that fell below both the QAP and laboratory control limits during the first and second storms. The LCS spike recoveries were out of range for those parameters, indicating a potential matrix interference with these results. These results were re-qualified with a “J-“ or a “UJ-“ (if not detected) to indicate that sample results may exhibit a low bias based on poor spike recoveries ascribed to probable matrix interference, although initial qualification of batch sample data was performed by the laboratory based on their best professional judgement.

The recovery of PAH compounds during the extraction and analysis process was represented by the surrogates 2-Methylnaphthalene-d10 and Fluoranthene-d10, which were recovered in range for all samples.

In qualifying the PAH data, it is important to note that the PAH constituents are hydrophobic and are likely to sorb or otherwise associate with particles in the stormwater. Thus, where the quality of the stormwater is highly variable with respect to particulates, PAH constituent exceedances of precision and accuracy limits may be expected. In addition, it should be noted that the MS/MSD analyses for PAH were based on separate field replicates that were obtained for this purpose. Therefore, RPD differences in the analyses may be the result of field variability and not necessarily due to any issues with the laboratory analysis.

Table 7. Laboratory Precision and Accuracy for TAH and PAH

Parameter	QAP Standard		8/05/2022		8/08/2022		8/26/2022		9/19/2022	
	Precision	Accuracy	Precision	Accuracy	Precision	Accuracy	Precision	Accuracy	Precision	Accuracy
	RPD	% Rec	RPD	% Rec	RPD	% Rec	RPD	% Rec	RPD	% Rec
TAH										
Benzene	20	79-120	4.3	104/100	2.3	102/99	2.8	108/105	0.61	109/109
Ethylbenzene	20	79-121	2.6	104/102	0.2	111/111	4.0	109/105	2.2	106/108
Toluene	20	80-121	2.2	101/99	1.4	106/105	3.9	106/102	2.5	103/105
o-Xylene	20	78-122	2.6	106/103	1.6	110/109	3.9	110/105	2.0	105/107
p & m-Xylenes	20	80-121	2.8	106/103	1.5	110/109	3.9	106/102	1.6	107/108
PAH										
Acenaphthene	30	48-114	3.7	51/50	4.8	67/69	1	71/70	7.4	73/78
Acenaphthylene	30	35-121	5.7	53/50	5.4	67/70	2	75/74	6.1	68/61
Anthracene	30	53-119	4.3	51/48	3.8	62/63	11	72/64	6.2	73/76
Benzo(a)anthracene	30	59-120	5.1	50/48	3.3	53/54	5	64/61	11.8	61/67
Benzo(a)pyrene	30	53-120	4.8	56/53	2.7	53/54	5	65/62	13.1	65/73
Benzo(b)fluoranthene	30	53-126	5.2	56/53	3.2	53/53	3	66/64	14.4	59/67
Benzo(g,h,i)perylene	30	44-128	5.6	61/58	0.1	52/51	7	67/63	13.2	65/73
Benzo(k)fluoranthene	30	54-128	5.0	57/55	4.1	56/57	4	66/64	12.2	67/74
Chrysene	30	57-120	4.6	52/50	2.2	57/58	6	68/63	11.9	67/74
Dibenzo(a,h)anthracene	30	44-131	5.7	60/57	0.6	55/54	3	67/65	13.4	70/78
Fluoranthene	30	58-120	4.9	49/47	5.2	55/57	3	65/63	9.3	63/68
Fluorene	30	50-118	4.9	53/50	5.7	66/69	3	75/73	4.7	76/78
Indeno(1,2,3-cd)pyrene	30	48-130	5.3	60/57	1.5	52/51	4	65/63	13.9	63/71
Naphthalene	30	43-114	5.4	50/47	5.6	64/66	1	68/69	7.1	63/66
Phenanthrene	30	53-115	3.4	53/51	6.4	64/67	4	73/70	5.0	74/77
Pyrene	30	53-121	5.8	48/45	5.1	54/56	3	65/63	10.6	62/67

Values in **bold** and **red** did not meet the measurement quality objectives in the QAP.

5. Completeness

Calculated completeness for field sample collection, field measurement, and laboratory results all well exceeded the project goal of 90%. All (100%) of the intended samples were collected for laboratory analysis. Valid field analytical measurements (DO, pH, temperature, turbidity, and conductivity) were recorded 100% of the time; no water quality data points were dismissed. Laboratory data were determined to be 100% complete, with no laboratory results deemed unacceptable or un-usable.

6. Conclusions

A careful review of the results confirmed that the dataset for this project is acceptable and can be used to meet project goals as defined in the study plan. Sampling process and completeness criteria were all met. Holding times were met for all samples for all four storms. Field duplication results for some parameters fell outside QAP-specified levels where expected, which is consistent with the fact that these “duplicates” are actually replicates that indicate field variability rather than a measurement of precision. Low percent recoveries were seen in some PAH analytes in both the MS and MSDs during the first and second storm events, resulting in these analytes being re-qualified as potentially biased low due to potential matrix interference inherent in the stormwater samples. Despite the minor QC issues identified in this report, overall evaluation of the analytical QA/QC data indicates that the project data are, for the most part, within established performance criteria and can be used for characterization of stormwater for this project.

7. References

MOA 2020. Monitoring, Evaluation, and Quality Assurance Plan, APDES Permit No. AKS-052558.
Prepared for Alaska Department of Environmental Conservation, Division of Water. Prepared by HDR Engineering, Inc. and Municipality of Anchorage.



Appendix E

Field Logs



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MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: <u>SWM 03</u>		DATE: <u>08 / 05 / 2022</u>		SAMPLE TIME: <u>11:05</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>old Seward/Sylvan W</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>Flow Meter</u>					
Flow Meter	Flow Speed (ft/s): <u>2.65</u>	Water Depth (in): <u>8.0</u>		Pipe Diam (in): <u>36</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #	YSI: <u>4005, TTT Rental</u>			Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (μ S/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>14.2</u>	<u>0.0531</u>	<u>10.65</u>	<u>104.0</u>	<u>7.41</u>	<u>93.0</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
<u>SWM 03 -01</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM _____ -01 Dup</u>							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:		<u>N/A</u>			Sampler's Initials: <u>CLMH</u>		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>None</u>						
COLOR	<u>None</u>						
CLARITY	<u>Cloudy</u>		<u>Darker dirt</u>				
FLOATABLES	<u>Yes, vegetative</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>04</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: <u>11:10</u>		
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward/Sylvan E</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>0.49</u>		Water Depth (in): <u>12.5</u>		Pipe Diam (in): <u>20</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI: <u>4005, TTT Rental</u>		Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	
MEASUREMENT	<u>14.6</u>	<u>0.0414</u>	<u>10.41</u>	<u>101.9</u>	<u>7.35</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>04</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM _____ -01 Dup						
MS/MSD or Lab Dup Samples						
FIELD QC (Trip/Equip)						
Description of QC Samples: <u>N/A</u>			Sampler's Initials: <u>CLMH</u>			
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>None</u>					
COLOR	<u>None</u>					
CLARITY	<u>Cloudy</u>					
FLOATABLES	<u>Yes, vegetative</u>					
DEPOSITS OR STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Channel outfall discharges to is overflowing</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>05</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: <u>10:08</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>SAVE High School</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>2.00</u>	Water Depth (in): <u>4.25</u>	Pipe Diam (in): <u>32</u>				
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>4005</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>14.6</u>	<u>0.0992</u>	<u>9.94</u>	<u>98.0</u>	<u>7.20</u>		
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>05</u> -01	X	X	X	X	X	X	X
SWM _____ -01 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:		<u>N/A</u>			Sampler's Initials: <u>CLMH</u>		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>None</u>						
COLOR	<u>None</u>						
CLARITY	<u>Cloudy</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>Plant Material</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

Reviewed By: _____

Date: _____

Page 1 of 1

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>06</u>		DATE: <u>08 105 /2022</u>		SAMPLE TIME: <u>08:30</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood 8</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>1.83</u>		Water Depth (in): <u>1.25</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>4005, TTI Rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>14.8</u>	<u>0.0306</u>	<u>11.19.65</u>	<u>109.5</u>	<u>6.70</u>		
FIELD REPLICATE			<u>CBH</u>	<u>CBH 95.2</u>			
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>06</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -01 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:		<u>N/A</u>			Sampler's Initials: <u>CLMH</u>		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>N/A</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>very clear</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>07</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: 08:58 <u>CBH 09:00</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Highway N</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>1.91</u>		Water Depth (in): <u>1.0</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>4005, III, Rental</u>			Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (μ S/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>14.7</u>	<u>0.0341</u>	<u>10.17</u>	<u>100.3</u>	<u>7.12</u>	<u>95.0</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>07</u> -01	X	X	X	X	X	X	X
SWM _____ -01 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:		<u>N/A</u>			Sampler's Initials: <u>CLMH</u>		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Slight petroleum odor</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>Cloudy</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>Some</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1
 Dup:

STATION ID: SWM <u>08</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: <u>09:05/09:10</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>Seward Highway S</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>7.04</u>		Water Depth (in): <u>6.50</u>		Pipe Diam (in): <u>42</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>4005, TIT Rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>14.4</u>	<u>0.0485</u>	<u>10.91</u>	<u>106.5</u>	<u>6.98</u>		
FIELD REPLICATE	<u>14.4</u>	<u>0.0488</u>	<u>10.83</u>	<u>105.7</u>	<u>7.01</u>		
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>08</u> -01	X	X	X			X	X
SWM <u>08</u> -01 Dup	X	X	X			X	X
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples: <u>Field Replicate</u>			Sampler's Initials: <u>CLMH</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Petroleum</u>						
COLOR	<u>None</u>						
CLARITY	<u>Cloudy</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <u>Yes</u> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>09 A</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: <u>09:30</u>				
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Ben Boeke N Side</u>						
OUTFALL FLOW MEASUREMENTS								
Flow Method (circle)		Bucket		Flow Meter				
Flow Meter		Flow Speed (ft/s): <u>0.33</u>		Water Depth (in): <u>7.0</u>				
Pipe Diam (in): <u>24</u>		Bucket Measurements		Time 1 (s)				
Time 2 (s)		Time 3 (s)		Time 4 (s)				
Total Time		Rate (gal/s)		Bucket: 1-gal 5-gal				
IN SITU WATER QUALITY MEASUREMENTS								
INSTRUMENT/SERIAL #		YSI: <u>4005, III Rental</u>		Turbidimeter: <u>#2</u>				
Temp (°C)		SpC (µS/cm)		DO (mg/L)				
DO (% sat)		pH		Turb (NTU)				
MEASUREMENT		<u>14.4</u>		<u>0.0674</u>				
FIELD REPLICATE		<u>9.96</u>		<u>97.5</u>				
<u>6.63</u>		<u>16.7</u>						
DISCRETE WATER QUALITY SAMPLES								
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)						
		FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>09 A</u> -01		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -01 Dup								
MS/MSD or Lab Dup Samples								
FIELD QC (Trip/Equip)								
Description of QC Samples:		<u>N/A</u>				Sampler's Initials: <u>CLMH</u>		
STANDARD OBSERVATIONS								
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS				
ODOR		<u>Chemical smell</u>						
COLOR		<u>None</u>						
CLARITY		<u>Cloudy</u>						
FLOATABLES		<u>None</u>						
DEPOSITS OR STAINS		<u>None</u>						
SHEEN		<u>None</u>						
SURFACE SCUM		<u>None</u>						
DEBRIS		<u>Some debris caught on grate</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:								
Photos <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>10</u>		DATE: <u>08/05/2022</u>		SAMPLE TIME: <u>09:40</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Ben Boeke S Side</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>0.99</u>		Water Depth (in): <u>5.5</u>			
Pipe Diam (in): <u>24</u>							
Bucket Measurements		Time 1 (s)		Time 2 (s)			
Time 3 (s)		Time 4 (s)		Total Time			
Rate (gal/s)							
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>4005, TTT Rental</u>		Turbidimeter: <u>#2</u>			
Temp (°C)		SpC (μ S/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>12.9</u>		<u>0.2226</u>			
FIELD REPLICATE		<u>11.00</u>		<u>104.0</u>			
		<u>6.82</u>		<u>10.2</u>			
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)					
		FECAL		BOD		TSS	
		TAqH		TAH		Dissolved Cu	
		Hardness					
SWM <u>10</u> -01		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
SWM _____ -01 Dup		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
MS/MSD or Lab Dup Samples		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
FIELD QC (Trip/Equip)		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Description of QC Samples:		<u>N/A</u>		Sampler's Initials: <u>CLMH</u>			
STANDARD OBSERVATIONS							
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS			
ODOR		<u>None</u>					
COLOR		<u>None</u>					
CLARITY		<u>Cloudy</u>					
FLOATABLES		<u>None</u>					
DEPOSITS OR STAINS		<u>Rust on rock</u>					
SHEEN		<u>None</u>					
SURFACE SCUM		<u>None</u>					
DEBRIS		<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM 11 DATE: 08/05/2022 SAMPLE TIME: 11:35

OUTFALL/NODE ID: 348-1 PHYSICAL LOCATION: John's Rd and Botanical Cir

OUTFALL FLOW MEASUREMENTS

Flow Method (circle)	Bucket	Flow Meter				
Flow Meter	Flow Speed (ft/s): 0.08	Water Depth (in): 12	Pipe Diam (in): 36			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS

INSTRUMENT/SERIAL #	YSI: 4005, TIT Rental			Turbidimeter: #2		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)
MEASUREMENT	14.2	0.0226	10.86	106.0	6.72	26.9
FIELD REPLICATE						

DISCRETE WATER QUALITY SAMPLES

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM 11-01	X	X	X			X	X
SWM _____ -01 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							

Description of QC Samples: N/A Sampler's Initials: CLMH

STANDARD OBSERVATIONS

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	None	
COLOR	None	
CLARITY	Cloudy	
FLOATABLES	Yes, vegetative	
DEPOSITS OR STAINS	None	
SHEEN	None	
SURFACE SCUM	None	
DEBRIS	Chunks sediment	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Downstream channel overflowing

Photos: (Yes) No

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 1

STATION ID: SWM <u>1 2</u>	DATE: <u>08 / 05 / 2022</u>	SAMPLE TIME: <u>10:30 / 10:35</u> ^{Dup!}
OUTFALL/NODE ID: <u>1454-1</u>	PHYSICAL LOCATION: <u>Lynwood Detention Pond</u>	

OUTFALL FLOW MEASUREMENTS

Flow Method (circle)	Bucket	<u>Flow Meter</u>				
Flow Meter	Flow Speed (ft/s): <u>4.12</u>	Water Depth (in): <u>6.0</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS

INSTRUMENT/SERIAL #	YSI: <u>4005, TTT Rental</u>			Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)
MEASUREMENT	<u>14.3</u>	<u>0.1130</u>	<u>10.43</u>	<u>101.9</u>	<u>7.25</u>	<u>152</u> ¹⁵²
FIELD REPLICATE	<u>14.3</u>	<u>0.1698</u>	<u>10.45</u>	<u>102.1</u>	<u>7.32</u>	<u>147</u> ¹⁴⁷

DISCRETE WATER QUALITY SAMPLES

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>1 2</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>1 2</u> -01 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD or Lab Dup Samples	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)							

Description of QC Samples: Field Replicate, MS/MSD Sampler's Initials: CLMH

STANDARD OBSERVATIONS

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>None</u>	
COLOR	<u>None</u>	
CLARITY	<u>Cloudy</u>	
FLOATABLES	<u>Yes, vegetative</u>	
DEPOSITS OR STAINS	<u>None</u>	
SHEEN	<u>None</u>	
SURFACE SCUM	<u>None</u>	
DEBRIS	<u>None</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Photos: Yes No

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: <u>SWM 0 3</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>12:10</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Old Seward / Sylvan W.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>2.65</u>		Water Depth (in): <u>4"</u>		Pipe Diam (in): <u>36</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal	—	—	—	—	—		
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>T11 Rental, FH950</u>		Turbidimeter: <u># 2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>12.4</u>	<u>130.5</u>	<u>10.88</u>	<u>101.5</u>	<u>7.35</u>	<u>13.0</u>	
FIELD REPLICATE	—	—	—	—	—	—	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>0 3</u> -02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	—	—	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -02 Dup	—	—	—	—	—	—	—
MS/MSD or Lab Dup Samples	—	—	—	—	—	—	—
FIELD QC (Trip/Equip)	—	—	—	—	—	—	—
Description of QC Samples:			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Slightly musty</u>						
COLOR	<u>None</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>04</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>12:20</u>			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward / Sylvan E</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>0.49</u>		Water Depth (in): <u>6.5</u>			
Pipe Diam (in): <u>20</u>							
Bucket Measurements		Time 1 (s)		Time 2 (s)			
Time 3 (s)		Time 4 (s)		Total Time			
Rate (gal/s)							
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT Rent-1, & FH950</u>		Turbidimeter: <u>#2</u>			
Temp (°C)		SpC (µS/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>13.8</u>		<u>183.8</u>			
FIELD REPLICATE		<u>98.1</u>		<u>10.20</u>			
				<u>7.29</u>			
				<u>11.3</u>			
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)					
		FECAL		BOD		TSS	
		TAqH		TAH		Dissolved Cu	
		Hardness					
SWM <u>04</u> -02		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
SWM _____ -02 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>MA</u>			
STANDARD OBSERVATIONS							
PARAMETER		TYPE/SOURCE			EXTENT - COMMENTS		
ODOR		<u>none</u>					
COLOR		<u>none</u>					
CLARITY		<u>clear</u>					
FLOATABLES		<u>some birch seeds</u>					
DEPOSITS OR STAINS		<u>none</u>					
SHEEN		<u>none</u>					
SURFACE SCUM		<u>none</u>					
DEBRIS		<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: <u>SWM 05</u>		DATE: <u>9 / 8 / 2022</u>		SAMPLE TIME: <u>13:20</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>SAVE High School</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>2.09</u>		Water Depth (in): <u>3</u>			
Pipe Diam (in): <u>32</u>		Bucket Measurements		Total Time			
Time 1 (s)		Time 2 (s)		Time 3 (s)			
Time 4 (s)		Rate (gal/s)		Bucket: 1-gal 5-gal			
—		—		—			
—		—		—			
—		—		—			
—		—		—			
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TI Rental, 8 FH950</u>		Turbidimeter: <u>#2</u>			
Temp (°C)		SpC (µS/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>13.5</u>		<u>124.3</u>			
FIELD REPLICATE		<u>10.37</u>		<u>99.2</u>			
—		—		—			
—		—		—			
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)					
		FECAL		BOD		TSS	
		TAqH		TAH		Dissolved Cu	
		Hardness					
<u>SWM 05-02</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
<u>SWM -02 Dup</u>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
MS/MSD or Lab Dup Samples		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
FIELD QC (Trip/Equip)		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Description of QC Samples:				Sampler's Initials: <u>MA</u>			
STANDARD OBSERVATIONS							
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS			
ODOR		<u>None</u>					
COLOR		<u>None</u>					
CLARITY		<u>Clear</u>					
FLOATABLES		<u>Few birch seeds</u>					
DEPOSITS OR STAINS		<u>None</u>					
SHEEN		<u>None</u>					
SURFACE SCUM		<u>None</u>					
DEBRIS		<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Raining, leaves ↓</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>06</u>		DATE: <u>8/8/2022</u>		SAMPLE TIME: <u>11:10</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood St.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>2.17</u>		Water Depth (in): <u>1.0</u>			
Pipe Diam (in): <u>24.0</u>							
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)		
Total Time		Rate (gal/s)					
Bucket: 1-gal 5-gal		-	-	-	-		
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TI Rental, FH950</u>		Turbidimeter: <u>#2</u>			
Temp (°C)		SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT		<u>13.0</u>	<u>33.2</u>	<u>11.80</u>	<u>112.5</u>		
FIELD REPLICATE		<u>6.77</u>	<u>11.0</u>				
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>06</u> -02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -02 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE			EXTENT - COMMENTS			
ODOR	<u>None</u>						
COLOR	<u>None</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Bottom of pipe is corroded, water coming out below bottom</u>							
<u>Leaves ↓</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>07</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>09:05</u>				
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Hwy N.</u>						
OUTFALL FLOW MEASUREMENTS								
Flow Method (circle)		Bucket		Flow Meter				
Flow Meter		Flow Speed (ft/s): <u>2.30</u>		Water Depth (in): <u>2.0</u>				
Pipe Diam (in): <u>24</u>								
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)			
Total Time		Rate (gal/s)						
Bucket: 1-gal 5-gal								
IN SITU WATER QUALITY MEASUREMENTS								
INSTRUMENT/SERIAL #		YSI: <u>TTT Rental, & FH95D</u>		Turbidimeter: <u>02</u>				
Temp (°C)		SpC (µS/cm)		DO (mg/L)				
DO (% sat)		pH		Turb (NTU) ⁹				
MEASUREMENT		<u>12.5</u>	<u>23.1</u>	<u>11.18</u>	<u>104.5</u>			
FIELD REPLICATE		<u>6.60</u>	<u>76.5</u>					
DISCRETE WATER QUALITY SAMPLES								
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)						
		FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>07</u> -02		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u> </u> -02 Dup								
MS/MSD or Lab Dup Samples								
FIELD QC (Trip/Equip)					<input checked="" type="checkbox"/>			
Description of QC Samples:			<u>Trip blank</u>			Sampler's Initials: <u>KG</u>		
STANDARD OBSERVATIONS								
PARAMETER		TYPE/SOURCE			EXTENT - COMMENTS			
ODOR		<u>Hydrocarbon</u>						
COLOR		<u>Slightly brown-grey</u>						
CLARITY		<u>Slightly cloudy</u>						
FLOATABLES		<u>None</u>						
DEPOSITS OR STAINS		<u>None</u>						
SHEEN		<u>None</u>						
SURFACE SCUM		<u>None</u>						
DEBRIS		<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:								
<u>Leaves ↓</u>								
Photos <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>0-8</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>9:20 Dup 9:25</u>			
OUTFALL/NODE ID:		PHYSICAL LOCATION:					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)	Bucket	Dup: 8.50 <u>Flow Meter</u> 8.30 ^{DUP} <u>7.5</u> Dup 8.50					
Flow Meter	Flow Speed (ft/s): <u>8.30</u>	Water Depth (in): <u>7.5</u>		Pipe Diam (in): <u>42</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #	YSI: <u>TT Rental, & FH950</u>			Turbidimeter: # <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>12.3</u>	<u>36.8</u>	<u>11.51</u>	<u>107.1</u>	<u>6.74</u>	<u>23.5</u>	
FIELD REPLICATE	<u>12.3</u>	<u>36.1</u>	<u>11.39</u>	<u>106.0</u>	<u>6.75</u>	<u>22.1</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>0-8</u> -02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>0-8</u> -02 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples: <u>Dup.</u>			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Hydro carbon</u>						
COLOR	<u>Green None</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Trash DS</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: <u>SWM 0 9A</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>10:10</u>				
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Ben Boeke N. Side</u>						
OUTFALL FLOW MEASUREMENTS								
Flow Method (circle)		Bucket		Flow Meter				
Flow Meter		Flow Speed (ft/s): <u>0.63</u>		Water Depth (in): <u>4.25</u>				
Pipe Diam (in): <u>24</u>		Time 1 (s)		Time 2 (s)				
Time 3 (s)		Time 4 (s)		Total Time				
Rate (gal/s)		Bucket: 1-gal		5-gal				
—		—		—				
—		—		—				
—		—		—				
—		—		—				
IN SITU WATER QUALITY MEASUREMENTS								
INSTRUMENT/SERIAL #		<u>YSI: TT Rental, & FH950</u>		Turbidimeter: <u>#2</u>				
Temp (°C)		SpC (µS/cm)		DO (mg/L)				
DO (% sat)		pH		Turb (NTU)				
MEASUREMENT		<u>12.4</u>		<u>56.2</u>				
FIELD REPLICATE		<u>10.96</u>		<u>102.2</u>				
—		—		—				
—		—		—				
—		—		—				
—		—		—				
DISCRETE WATER QUALITY SAMPLES								
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)						
		FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
<u>SWM 0 9A -02</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM _____ -02 Dup</u>								
MS/MSD or Lab Dup Samples								
FIELD QC (Trip/Equip)								
Description of QC Samples:				Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS								
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS				
ODOR		<u>Slight chemical/plastic odor</u>						
COLOR		<u>None</u>						
CLARITY		<u>Clear</u>						
FLOATABLES		<u>None</u>						
DEPOSITS OR STAINS		<u>None</u>						
SHEEN		<u>Slight sheen on top</u>						
SURFACE SCUM		<u>None</u>						
DEBRIS		<u>Trash behind grate</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:								
<u>Leaves ↓ R/r mp, algae</u>								
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: <u>SWM 1 D</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>10:30</u>				
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Ben Boeke S. Side</u>						
OUTFALL FLOW MEASUREMENTS								
Flow Method (circle)		Bucket		Flow Meter				
Flow Meter		Flow Speed (ft/s): <u>1.60</u>		Water Depth (in): <u>5.0</u>				
Pipe Diam (in): <u>24</u>		Bucket Measurements		Time 1 (s)				
Time 2 (s)		Time 3 (s)		Time 4 (s)				
Total Time		Rate (gal/s)		Bucket: 1-gal 5-gal				
—		—		—				
IN SITU WATER QUALITY MEASUREMENTS								
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental, & FH950</u>		Turbidimeter: <u>#2</u>				
Temp (°C)		SpC (µS/cm)		DO (mg/L)				
DO (% sat)		pH		Turb (NTU)				
MEASUREMENT		<u>12.1</u>		<u>122.2</u>				
FIELD REPLICATE		<u>11.28</u>		<u>104.4</u>				
				<u>6.44</u>				
				<u>14.2</u>				
DISCRETE WATER QUALITY SAMPLES								
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)						
		FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>1 D</u> -02		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -02 Dup								
MS/MSD or Lab Dup Samples								
FIELD QC (Trip/Equip)								
Description of QC Samples:				Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS								
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS				
ODOR		<u>metallic/iron smell</u>						
COLOR		<u>None</u>						
CLARITY		<u>Clear</u>						
FLOATABLES		<u>None</u>						
DEPOSITS OR STAINS		<u>Orange stain</u>						
SHEEN		<u>None</u>						
SURFACE SCUM		<u>None</u>						
DEBRIS		<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:								
<u>Raining</u>								
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>1</u> <u>1</u>		DATE: <u>8</u> / <u>8</u> /2022		SAMPLE TIME: <u>11:45</u>			
OUTFALL/NODE ID: <u>348-1</u>		PHYSICAL LOCATION: <u>John's Rd and Botanical Cir.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>0.98</u>		Water Depth (in): <u>13.0</u>		Pipe Diam (in): <u>36.0</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal	—	—	—	—	—		
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental, & FH950</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>12.5</u>	<u>42.3</u>	<u>11.56</u>	<u>108.3</u>	<u>6.64</u>		
FIELD REPLICATE	—	—	—	—	—		
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>1</u> <u>1</u> -02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	—	—	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -02 Dup	—	—	—	—	—	—	—
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>None</u>						
COLOR	<u>None</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>Birch seeds</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Black tree Raining, leaves ↓</u>							
<u>Grass in DS channel</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 2

STATION ID: SWM <u>1 2</u>		DATE: <u>8 / 8 / 2022</u>		SAMPLE TIME: <u>12:45 / Dup 12:55</u>			
OUTFALL/NODE ID: <u>1454-1</u>		PHYSICAL LOCATION: <u>Lynwood Detention Pond</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>Dup: 3.66</u> <u>Flow Meter</u> <u>1245"</u>					
Flow Meter	Flow Speed (ft/s): <u>3.94</u>	Water Depth (in): <u>5</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal	—	—	—	—	—	—	
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental, & FH950</u>			Turbidimeter: <u># 2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>12.7</u>	<u>238.4</u>	<u>10.93</u>	<u>102.5</u>	<u>7.30</u>	<u>333.</u>	
FIELD REPLICATE	<u>12.7</u>	<u>244.3</u>	<u>10.67</u>	<u>100.2</u>	<u>7.23</u>	<u>325</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>1 2</u> -02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>1 2</u> -02 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD or Lab Dup Samples	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)							
Description of QC Samples: <u>Dup. MS/MSD</u>			Sampler's Initials: <u>LG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE			EXTENT - COMMENTS			
ODOR	<u>None</u>						
COLOR	<u>Brown</u>						
CLARITY	<u>Cloudy</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Raining, leaves ↓</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
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STORM # 3

STATION ID: SWM <u>03</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>11:05</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Old Seward / Sylvan W</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>1.40</u>		Water Depth (in): <u>2</u>		Pipe Diam (in): <u>36</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>11.8</u>	<u>244.9</u>	<u>9.26</u>	<u>85.3</u>	<u>7.64</u>	<u>10.2</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>03</u> -03	<u>X</u>	<u>X</u>	<u>X</u>			<u>X</u>	<u>X</u>
SWM _____ -03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>musty odor</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>Yes, (small amount of seeds)</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Some suds downstream due to water falling off bottom of culvert collar</u>							
Photos: Yes No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>04</u>		DATE: <u>8/26</u> /2022		SAMPLE TIME: <u>11:15</u>			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seneca/Sylvan Es</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>0.83</u>		Water Depth (in): <u>2</u>			
Pipe Diam (in): <u>20</u>							
Bucket Measurements		Time 1 (s)		Time 2 (s)			
Time 3 (s)		Time 4 (s)		Total Time			
Rate (gal/s)							
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>111 Rental</u>		Turbidimeter: <u>#2</u>			
Temp (°C)		SpC (µS/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>13.6</u>		<u>349.9</u>			
FIELD REPLICATE		<u>9.40</u>		<u>91.0</u>			
		<u>7.50</u>		<u>13.9</u>			
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)					
		FECAL		BOD		TSS	
		TAqH		TAH		Dissolved Cu	
		Hardness					
SWM <u>04</u> -03		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
SWM _____ -03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>JC</u>			
STANDARD OBSERVATIONS							
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS			
ODOR		<u>none</u>					
COLOR		<u>none</u>					
CLARITY		<u>clear</u>					
FLOATABLES		<u>small amount of weeds</u>					
DEPOSITS OR STAINS		<u>none</u>					
SHEEN		<u>none</u>					
SURFACE SCUM		<u>none</u>					
DEBRIS		<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
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STORM # 3

STATION ID: SWM <u>05</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>12:10</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>SAVE High School</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>1.22</u>	Water Depth (in): <u>1</u>		Pipe Diam (in): <u>32</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)		
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TT Rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>13.4</u>	<u>221.4</u>	<u>9.76</u>	<u>93.5</u>	<u>7.27</u>		
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>05</u> -03	<u>X</u>	<u>X</u>	<u>X</u>	<u>XX</u>	<u>XXX</u>	<u>X</u>	<u>X</u>
SWM _____ -03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Musty</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos <input checked="" type="radio"/> Yes <input type="radio"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>06</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>10:10</u>		
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood St.</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>1.00</u>	Water Depth (in): <u>1.5</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI: <u>ITT rental</u>			Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	
MEASUREMENT	<u>12.4</u>	<u>93.4</u>	<u>10.55</u>	<u>97.9</u>	<u>6.95</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>06</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM _____ -03 Dup						
MS/MSD or Lab Dup Samples						
FIELD QC (Trip/Equip)						
Description of QC Samples:				Sampler's Initials: <u>KG</u>		
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>musty odor</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS OR STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>Trash (small) in outfall</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>bottom of outfall is corroding</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>07</u>		DATE: <u>08/26/2022</u>		SAMPLE TIME: <u>8:35</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Highway N</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle) <u>Bucket</u>		Flow Meter					
Flow Meter	Flow Speed (ft/s): <u>—</u>	Water Depth (in): <u>0.5</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: <u>1-gal</u> 5-gal	<u>3.93</u>	<u>3.52</u>	<u>3.93</u>	<u>3.38</u>	<u>14.76</u>	<u>0.271</u>	
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>13.1</u>	<u>52.0</u>	<u>8.70</u>	<u>82.1</u>	<u>6.40</u>	<u>117</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>07</u> -03	<u>X</u>	<u>X</u>	<u>X</u>	<u>XX</u>	<u>XXX</u>	<u>X</u>	<u>X</u>
SWM <u>07</u> -03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:		<u>TB for TAH</u>		Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>N/A</u>						
COLOR	<u>light Gray</u>						
CLARITY	<u>Slightly Cloudy</u>						
FLOATABLES	<u>No floatables</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <u>Yes</u> No							

Rate (cf) 0.0362

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>08</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>8:55</u> Dup <u>8:55</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>Seward Highway S.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>Flow Meter</u> <u>Dur: 2"</u>					
Flow Meter	Flow Speed (ft/s): <u>2.48</u>	Water Depth (in): <u>2</u>		Pipe Diam (in): <u>42</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT rental</u>			Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>12.0</u>	<u>247.2</u>	<u>10.42</u>	<u>96.6</u>	<u>6.88</u>	<u>19.9</u>	
FIELD REPLICATE	<u>11.9</u>	<u>262.0</u>	<u>10.43</u>	<u>96.7</u>	<u>6.94</u>	<u>20.1</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness	
SWM <u>08</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
SWM <u>08</u> -03 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Hydrocarbon</u>		<u>Diesel smell</u>				
COLOR	<u>No color / clear</u>						
CLARITY	<u>clear</u>						
FLOATABLES	<u>No floatables</u>						
DEPOSITS OR STAINS	<u>Orange stain on collar</u>						
SHEEN	<u>No sheen</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>Trash D.S.</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>0 9A</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>9:30</u>		
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Ben Boeke N. Side</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>0.40</u>		Water Depth (in): <u>3</u>	Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI: <u>TTT rental</u>		Turbidimeter: <u>#2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	
MEASUREMENT	<u>12.5</u>	<u>352.7</u>	<u>8.17</u>	<u>76.4</u>	<u>6.73</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu
SWM <u>0 9A</u> -03	X	X	X	X X	X X X	X
SWM <u>0 9A</u> -03 Dup						
MS/MSD or Lab Dup Samples						
FIELD QC (Trip/Equip)						
Description of QC Samples:			Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>Yes oil/Diesel/chemical/plastic</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>Slightly cloudy</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS OR STAINS	<u>N/A</u>					
SHEEN	<u>Yes light^{oil} sheen on top</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>Trash stuck behind grate</u>		<u>in outfall</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: <u>SWM 10</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>9:45</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Ben Bucke S. side</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>3.05</u>	Water Depth (in): <u>1.5</u>	Pipe Diam (in): <u>24</u>				
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time		
Bucket: 1-gal 5-gal					Rate (gal/s)		
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #	YSI: <u>TT rental</u>			Turbidimeter: <u>#7</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>16.4</u>	<u>402.5</u>	<u>10.71</u>	<u>98.0</u>	<u>6.84</u>		
FIELD REPLICATE					Turb (NTU)		
					<u>16.6</u>		
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>10</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>10</u> -03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>No odor</u>						
COLOR	<u>Clear</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>orange (rust) on culvert</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>LL</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>10:40</u>			
OUTFALL/NODE ID: <u>348-1</u>		PHYSICAL LOCATION: <u>Johns Rd and Botanical Circle</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>0.31</u>		Water Depth (in): <u>5.25</u>			
Pipe Diam (in): <u>36</u>							
Bucket Measurements		Time 1 (s)		Time 2 (s)			
Time 3 (s)		Time 4 (s)		Total Time			
Rate (gal/s)							
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT Rental</u>		Turbidimeter: <u># 2</u>			
Temp (°C)		SpC (µS/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>13.2</u>		<u>76.5</u>			
FIELD REPLICATE		<u>97.96</u>		<u>194.16</u>			
<u>6.87</u>		<u>38.5</u>					
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER		SAMPLES COLLECTED (CHECK BOX)					
		FECAL		BOD		TSS	
TAqH		TAH		Dissolved Cu		Hardness	
SWM <u>LL</u> -03		<u>X</u>		<u>X</u>		<u>X</u>	
SWM _____-03 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>JG</u>			
STANDARD OBSERVATIONS							
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS			
ODOR		<u>N/A</u>					
COLOR		<u>Clear</u>					
CLARITY		<u>Clear</u>					
FLOATABLES		<u>Yes, seeds</u>					
DEPOSITS OR STAINS		<u>N/A</u>					
SHEEN		<u>N/A</u>					
SURFACE SCUM		<u>N/A</u>					
DEBRIS		<u>N/A</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 3

STATION ID: SWM <u>12</u>		DATE: <u>8/26/2022</u>		SAMPLE TIME: <u>11:35</u> Dup & MS/MSD 11:35			
OUTFALL/NODE ID: <u>1454-1</u>		PHYSICAL LOCATION: <u>General Detection Pond</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket Dup: <u>2.42</u> <u>Flow Meter</u> Dup = <u>2.5"</u>					
Flow Meter	Flow Speed (ft/s): <u>2.78</u>	Water Depth (in): <u>2.5</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT rental</u>		Turbidimeter: <u>#2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>12.6</u>	<u>545.7</u>	<u>9.11</u>	<u>85.8</u>	<u>7.29</u>	<u>171</u>	
FIELD REPLICATE	<u>12.6</u>	<u>558.0</u>	<u>9.33</u>	<u>87.3</u>	<u>7.32</u>	<u>152</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>12</u> -03	X	X	X	X X	X X X	X	X
SWM <u>12</u> -03 Dup	X	X	X	X X	X X X	X	X
MS/MSD or Lab Dup Samples	X	X	X	X X	X X X	X	X
FIELD QC (Trip/Equip)					X		
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>musky</u>						
COLOR	<u>Brown / cloudy</u>						
CLARITY	<u>cloudy</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Actively raining</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: <u>SWM 03</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>11:00</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Old Seward/Sylvan W</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>1.65</u>	Water Depth (in): <u>25</u>	Pipe Diam (in): <u>36</u>				
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>9.9</u>	<u>188.8</u>	<u>10.77</u>	<u>94.5</u>	<u>7.57</u>	<u>4.28</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>03</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	N/A						
COLOR	N/A						
CLARITY	clear						
FLOATABLES	N/A Birch seeds						
DEPOSITS OR STAINS	N/A						
SHEEN	N/A						
SURFACE SCUM	N/A						
DEBRIS	N/A						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Partly cloudy skies</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM <u>04</u>		DATE: <u>9 / 19 / 2022</u>		SAMPLE TIME: <u>11:10</u>			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Off Seward/Sylvan E</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>0.43</u>	Water Depth (in): <u>2</u>	Pipe Diam (in): <u>20</u>				
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT Rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>11.8</u>	<u>446.9</u>	<u>11.23</u>	<u>103.9</u>	<u>7.49</u>	<u>5.82</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>04</u> -04	✓	✓	✓			✓	✓
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	N/A						
COLOR	<u>Yellow (slightly)</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	N/A						
DEPOSITS OR STAINS	N/A						
SHEEN	N/A						
SURFACE SCUM	N/A						
DEBRIS	N/A						
Partly WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Partly Cloudy</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM <u>05</u>		DATE: <u>9 / 19 / 2022</u>		SAMPLE TIME: <u>12:10</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>SAVE School</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>Flow Meter</u>					
Flow Meter	Flow Speed (ft/s): <u>1.20</u>	Water Depth (in): <u>1</u>		Pipe Diam (in): <u>32</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)		
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT	<u>11.2</u>	<u>344.1</u>	<u>11.42</u>	<u>103.8</u>	<u>7.30</u>		
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>05</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>N/A</u>						
COLOR	<u>Slight yellow</u>						
CLARITY	<u>N/A</u>						
FLOATABLES	<u>None</u>						
DEPOSITS OR STAINS	<u>None</u>						
SHEEN	<u>None</u>						
SURFACE SCUM	<u>None</u>						
DEBRIS	<u>None</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Over cast</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: <u>SWM 06</u>		DATE: <u>9 / 19 / 2022</u>		SAMPLE TIME: <u>10:00</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood St.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>Flow Meter</u>					
Flow Meter	Flow Speed (ft/s): <u>1.66</u>	Water Depth (in): <u>0.5</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TH Rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>10.3</u>	<u>126.0</u>	<u>11.23</u>	<u>100.0</u>	<u>6.72</u>	<u>7.55</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>06</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>RL</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	N/A						
COLOR	Clear						
CLARITY	N/A						
FLOATABLES	N/A						
DEPOSITS OR STAINS	Corroded		Flow measurement won't be exact				
SHEEN	N/A						
SURFACE SCUM	N/A						
DEBRIS	N/A						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Drizzling Rainy</u>							
<u>Pipe outlet made velocity and depth measurements difficult</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM <u>07</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>08:40</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Highway N.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle) <u>Bucket</u>		Flow Meter					
Flow Meter	Flow Speed (ft/s): <u>—</u>	Water Depth (in): <u>0.5</u>		Pipe Diam (in): <u>24"</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket <u>1-gal</u> 5-gal	<u>5.99</u>	<u>6.29</u>	<u>5.66</u>	<u>5.89</u>	<u>23.83</u>	<u>0.1679</u>	
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>10.9</u>	<u>35.7</u>	<u>11.1</u>	<u>100.2</u>	<u>5.48</u>	<u>58.3</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>07</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>KH</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Hydrocarbon</u>		<u>in area</u>				
COLOR	<u>N/A</u>						
CLARITY	<u>clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
<u>Sprink</u> WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>sprinkling, leaves ↓</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

Rate (cf)
0.0224

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: <u>SWM 08</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>08:50, 08:55-Dup</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>Seward Highway S.</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>2.93-Dup</u>		<u>Flow Meter</u>		3"-Dup	
Flow Meter	Flow Speed (ft/s): <u>3.04</u>		Water Depth (in): <u>3</u>		Pipe Diam (in): <u>42</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTI Rental</u>			Turbidimeter: <u>2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>10.4</u>	<u>243.1</u>	<u>12.57</u>	<u>112.5</u>	<u>6.36</u>	<u>18.3</u>	
FIELD REPLICATE	<u>10.4</u>	<u>243.3</u>	<u>12.64</u>	<u>113.0</u>	<u>6.55</u>	<u>12.9</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>08</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>08</u> -04 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>Hydrocarbon</u>		<u>in area</u>				
COLOR	<u>N/A</u>						
CLARITY	<u>clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>Rust stain</u>		<u>Usual</u>				
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Sprinkling</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM <u>09A</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>9:20</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Ben Boeke N. Side</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>0.25</u>		Water Depth (in): <u>4</u>			
Pipe Diam (in): <u>24</u>		Bucket Measurements		Time 1 (s)			
Time 2 (s)		Time 3 (s)		Time 4 (s)			
Total Time		Rate (gal/s)		Bucket: 1-gal 5-gal			
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TTT Rental</u>		Turbidimeter: <u>2</u>			
Temp (°C)		SpC (µS/cm)		DO (mg/L)			
DO (% sat)		pH		Turb (NTU)			
MEASUREMENT		<u>11.2</u>		<u>324.5</u>			
FIELD REPLICATE		<u>9.67</u>		<u>88.1</u>			
<u>6.69</u>		<u>8.74</u>					
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>09A</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE			EXTENT - COMMENTS			
ODOR	<u>Chemical / Plastic</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>Clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>cloudy scum</u>			<u>or top of water</u>			
SURFACE SCUM	<u>no sheen</u>						
DEBRIS	<u>trash + leaves in grate</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Sprinkling, leaves ↓</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: <u>SWM 10</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>09:30</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Ben Boeke S. Side</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Flow Meter			
Flow Meter		Flow Speed (ft/s): <u>2.5</u>		Water Depth (in): <u>1</u>			
Pipe Diam (in): <u>24</u>							
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)		
Total Time		Rate (gal/s)					
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>TT Rental</u>		Turbidimeter: <u>2</u>			
Temp (°C)		SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH		
MEASUREMENT		<u>10.5</u>	<u>435.4</u>	<u>12.99</u>	<u>116.5</u>		
FIELD REPLICATE		<u>6.72</u>	<u>7.69</u>				
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>10</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM _____ -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							
Description of QC Samples:				Sampler's Initials: <u>KG</u>			
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE			EXTENT - COMMENTS			
ODOR	<u>Iron</u>						
COLOR	<u>N/A</u>						
CLARITY	<u>clear</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>Iron stain</u>			<u>usual</u>			
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Overcast</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM 1 1 DATE: 9/19/2022 SAMPLE TIME: 10:30

OUTFALL/NODE ID: 348-1 PHYSICAL LOCATION: John's Rd. and Botanical Cir.

OUTFALL FLOW MEASUREMENTS

Flow Method (circle)	Bucket	Flow Meter				
Flow Meter	Flow Speed (ft/s): <u>0.12</u>	Water Depth (in): <u>4.5</u>	Pipe Diam (in): <u>36</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS

INSTRUMENT/SERIAL #	YSI: <u>TIT Rental</u>			Turbidimeter: <u>2</u>		
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)
MEASUREMENT	<u>11.4</u>	<u>246.2</u>	<u>10.17</u>	<u>93.8</u>	<u>6.75</u>	<u>4.52</u>
FIELD REPLICATE						

DISCRETE WATER QUALITY SAMPLES

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>1 1</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u> </u> -04 Dup							
MS/MSD or Lab Dup Samples							
FIELD QC (Trip/Equip)							

Description of QC Samples:

Sampler's Initials: KG

STANDARD OBSERVATIONS

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>N/A</u>	
COLOR	<u>Slight yellow</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>seeds</u>	
DEPOSITS OR STAINS	<u>N/A</u>	
SHEEN	<u>N/A</u>	
SURFACE SCUM	<u>N/A</u>	
DEBRIS	<u>N/A</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Sunny
Partly cloudy, partly sunny. No rain.
grass nearby indicates recent high flow event
 Photos: Yes No

MOA Stormwater Management Program
 WATER QUALITY STORM SAMPLING FIELD LOG

STORM # 4

STATION ID: SWM <u>12</u>		DATE: <u>9/19/2022</u>		SAMPLE TIME: <u>11:30 / Dup 11:40</u>			
OUTFALL/NODE ID: <u>1454-1</u>		PHYSICAL LOCATION: <u>Lynwood Detention Pond</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket <u>2.43 Dup</u>		Flow Meter <u>2" Dup</u>			
Flow Meter	Flow Speed (ft/s): <u>2.23</u>	Water Depth (in): <u>2</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)	
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI: <u>ITT Rental</u>		Turbidimeter: <u>2</u>			
	Temp (°C)	SpC (µS/cm)	DO (mg/L)	DO (% sat)	pH	Turb (NTU)	
MEASUREMENT	<u>10.4</u>	<u>4390</u>	<u>11.81</u>	<u>106.1</u>	<u>7.35</u>	<u>162</u>	
FIELD REPLICATE	<u>10.4</u>	<u>442.5</u>	<u>12.64</u>	<u>107.6</u>	<u>7.35</u>	<u>161</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)						
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu	Hardness
SWM <u>12</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>12</u> -04 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD or Lab Dup Samples	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)							
Description of QC Samples:			Sampler's Initials: <u>KG</u>				
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS				
ODOR	<u>N/A</u>						
COLOR	<u>Brown</u>						
CLARITY	<u>Cloudy</u>						
FLOATABLES	<u>N/A</u>						
DEPOSITS OR STAINS	<u>N/A</u>						
SHEEN	<u>N/A</u>						
SURFACE SCUM	<u>N/A</u>						
DEBRIS	<u>N/A</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>Overcast</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							