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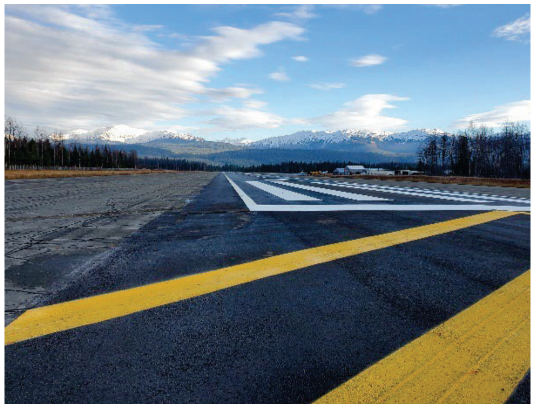

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REV 2

SUMMARY REPORT

Gustavus Airport 2021 PFAS Site Characterization

GUSTAVUS, ALASKA

SHANNON & WILSON

May 2022
Shannon & Wilson No: 102599-018

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Submitted To: Alaska Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, Alaska 99709
Attn: Mr. Marcus Zimmerman and Ms. Sammy Cummings

Subject: REV 2 SUMMARY REPORT, GUSTAVUS AIRPORT 2021 PFAS SITE CHARACTERIZATION, GUSTAVUS, ALASKA

Shannon & Wilson, Inc. (S&W) prepared this revised report and participated in this project as a consultant to Alaska Department of Transportation and Public Facilities (DOT&PF). S&W's services were authorized by Professional Services Agreement Number 25 19 1-013, issued by the DOT&PF on December 19, 2018, via Amendment 40, NTP 5-7d and NTP 5-13 dated October 4, 2021. This revised report supersedes the previous version.

This report presents a summary of S&W's 2021 per- and polyfluoroalkyl substance (PFAS) site characterization effort at and near the Gustavus Airport (GST). Ongoing water-supply and monitoring well sampling activities are reported separately.

S&W appreciates the opportunity to be of service to you on this project. If you have questions concerning this report, or S&W may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

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ACRONYMS

AAC	Alaska Administrative Code
Addendum	GWP Addendum 006-GST-02 Revision 1
ADONA	4,8-dioxa-3H-perfluorononanoic acid
AFFF	aqueous film forming foam
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and xylene
°C	degrees Celsius
COC	chain of custody
CSM	conceptual site model
DEC	Alaska Department of Environmental Conservation
Discovery	Discovery Drilling Inc.
DO	dissolved oxygen
DOT&PF	Alaska Department of Transportation & Public Facilities
DQO	data quality objective
DRO	diesel range organics
DRM	Alaska Department of Administration Division of Risk Management
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GAC	granular activated carbon
GRO	gasoline range organics
GST	Gustavus Airport
GWP	General Work Plan
HFDO-PA	hexafluoropropylene oxide dimer acid
IDA	isotope dilution analysis
LCS/LCSD	laboratory control sample/laboratory control sample duplicate
LDRC	laboratory data review checklist
LHA	Lifetime Health Advisory
LOD	limits of detection
LOQ	limits of quantification
MB	method blank
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µS	microSiemens
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mV	millivolts
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
ng/L	nanograms per liter
N-EtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid
N-MeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid

ACRONYMS

NPS	National Park Service
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoA	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFTeA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
PID	photoionization detector
QA/QC	quality assurance/quality control
RL	reporting limit
RPD	relative percent difference
RRO	residual range organics
S&W	Shannon & Wilson, Inc.
TB	temperature blank
TWP	temporary well point
YSI	multiprobe water quality meter
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid

1 INTRODUCTION

This report documents the initial per- and polyfluoroalkyl substances (PFAS) site characterization activities at and near the Gustavus Airport (GST). These activities were conducted in late fall of 2021. The GST is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to the presence of PFAS in groundwater and surface water (File Number 1507.38.017, Hazard ID 26904). The geographic coordinates of the GST terminal are latitude 58.4216, longitude -135.7020.

Shannon & Wilson, Inc. (S&W) has prepared this report on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF) Southcoast Region in accordance with the terms and conditions of S&W's contract. The field effort described herein was conducted in general accordance with:

- *DOT&PF Statewide PFAS General Work Plan Revision 1* (GWP), submitted July 2020;
- *GWP Addendum 006-GST-02 Revision 1* (Addendum), submitted August 2021;
- DEC's Addendum approval letter, dated September 22, 2021;
- 18 Alaska Administrative Code (AAC) 75.335; and
- relevant regulatory guidance documents.

1.1 Purpose and Objectives

The purpose of the services described in this report was to evaluate the fate and transport of PFAS resulting from the use of aqueous film forming foam (AFFF). The project objectives also included evaluating changes to groundwater PFAS concentrations in the area of the GST, including surface water impacts to groundwater near the GST, and investigating transport of PFAS near areas where high-level detections were reported in samples collected from runway asphalt in March and April 2021.

The 2021 PFAS site characterization effort included:

- collecting analytical surface and subsurface soil samples from near the GST runways and potential AFFF releases areas;
- installing and sampling temporary well points (TWPs) to evaluate PFAS concentrations just below the surface of groundwater;
- constructing, developing, and sampling monitoring wells (MWs) at 14 locations at or near GST; and

- collecting analytical surface water and sediment samples from GST drainage ditches, ponds, and creeks.

1.2 Background

General background information relating to sites covered under the GWP is included in Section 1.1 of the GWP. Background information specific to the GST is detailed below.

The GST terminal is located at 1 Airport Way in Gustavus, Alaska. The property is owned by the DOT&PF, who also own multiple adjacent parcels.

The DOT&PF Crash and Fire Rescue program used AFFF for training, systems testing, and emergency response at the GST for many years. Areas of known and potential use are shown as AFFF sites on Figure 1. The precise timeline and locations of AFFF use at the GST are unknown. Please note, several additional AFFF use locations have been added to Figure 1 based on asphalt-sample PFAS results and information received in a document produced by the public (Howell, 2019).

1.2.1 Previous Investigations

On May 4, 2018, DEC informed DOT&PF the airport terminal well and the National Park Service (NPS) Water System well serving the school were at risk for PFAS contamination. On June 27, 2018, DOT&PF sampled both drinking-water supply wells for the presence of PFAS. The analytical results were received on July 30, 2018. The airport terminal well contained levels of PFAS exceeding the U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA). The NPS well sample contained detections of several PFAS, with concentrations of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) less than the EPA's LHA. DOT&PF and the Alaska Department of Administration Division of Risk Management (DRM) contacted S&W regarding the Gustavus results. S&W began water supply well search and sampling efforts in August 2018.

Water supply well sample concentrations for the sum of PFOS and PFOA range from not detected to 6,110 nanograms per liter (ng/L) in locations associated with the GST PFAS plume. Sampling areas were expanded until PFAS concentrations along the edges of the sampling areas were found to be below DEC regulatory levels. Water supply well depths are generally between 15 to 25 feet below ground surface (bgs), based on information provided by the residents and the former local driller. S&W was not able to obtain well-drilling or construction logs to confirm these depths.

S&W has been in regular communication with the public in response to resident concerns, participated in State of Alaska public-outreach meetings, and prepared communication materials for distribution to Gustavus residents. Since August 2018, S&W has collected samples from 121 water supply wells in Gustavus. As part of the initial site characterization efforts completed in October 2019, S&W collected samples from 15 MWs, 8 TWPs, 29 surface-soil locations, 13 sediment locations, and 10 surface water locations. S&W also calculated hydraulic gradient using groundwater elevation survey and field data. The results of the October 2019 site characterization are discussed in detail in our *Gustavus 2019 Summary Report, Revision 1*, dated April 8, 2020.

MW and TWP sample concentrations for the sum of PFOS and PFOA collected since October 2019 ranged from not detected offsite to 6,192 ng/L on GST property. The 2019 MWs were installed at 15, 20, 30 and 40 feet bgs; in some locations multiple monitoring wells were installed at varying depths. The 2019 TWPs were drilled to groundwater table; ranging from 0.33 feet to 13.80 feet bgs. Subsequent samples collected on a quarterly basis from MWs have shown similar PFOS and PFOA concentrations, with some exceptions following the December 2020 flooding.

Surface water PFOS and PFOA concentrations in samples collected in 2019 ranged from not detected at a location north of the GST to 379 ng/L downgradient of reported AFFF use areas. The surface water sample collected from the "duck pond" also showed concentrations of PFOS and PFOA over 100 ng/L. The "duck pond" may be a source area for PFAS detections in water supply wells southwest of the surface water body.

The 2019 surface soil and sediment sample concentrations of PFOS and PFOA ranged from not detected in upgradient locations at the north edges of the runways to 520 micrograms per kilogram (µg/kg) PFOS in sediment taken from an onsite culvert and 4.5 µg/kg PFOA in surface soil taken onsite near the DOT&PF facilities building. The 2019 soil boring concentrations ranged from not detected to 14 µg/kg PFOS and 1.9 µg/kg PFOA for samples collected during onsite MW installation.

1.3 Geology and Hydrology

The GST sampling area lies in a glacial outwash plain. The plain is bounded by the Chilkat Mountain Range to the northeast, Glacier Bay to the northwest and the Icy Strait to the south. Fluvial deposits are found with increasing frequency near the shoreline. Their high concentration of sand and gravel creates preferential pathways for the groundwater flow. Due to a high rate of glacial isostatic rebound, high silt concentrations are also observed closer to the shoreline.

Our knowledge of subsurface geology and hydrology in the investigation area is based on observations S&W made during drilling and information relayed to us by a local resident (Howell, 2019). Our 2019 and 2021 investigations noted the sampling area is mostly comprised of fluvial and marine sediments. The soil profile generally consists of water-bearing, interbedded sand and silt underlain by a silt or silty clay layer. The silt and clay layers were observed at varying depths from approximately 10 to 45 feet bgs. Three of the 50-foot-deep borings did not encounter silt or clay. Where clay was encountered during the 2021 event, it was described as "fat" or "wet" indicating the groundwater above and below the clay are communicating. Consequently, S&W does not consider the observed clay layer to be a confining layer.

The depth to the water table ranged from 0.62 feet bgs to 11.49 feet bgs. At the well cluster near the western end of Faraway Rd, the water table ranged from 6.33 feet bgs at the shallow well to 8.22 feet bgs at the deeper well where saltwater was encountered. Saltwater was also encountered in the deep well of the following monitoring well clusters: MW-13, MW-14, MW-15, MW-17, MW-21, and MW-23.

Table 1 presents the well-survey information, depth-to-water measurements, and calculated water-table elevations.

1.4 Contaminants of Concern and Action Levels

The primary contaminants of concern are PFAS compounds PFOS and PFOA. The DEC migration-to-groundwater soil cleanup levels for PFOS and PFOA are 3.0 µg/kg and 1.7 µg/kg, respectively. The DEC groundwater cleanup level for PFOS or PFOA is 400 ng/L for the individual compounds. The soil and groundwater cleanup levels were promulgated in 18 AAC 75.345 in 2016. There are no cleanup levels for other PFAS compounds.

The groundwater MWs installed for PFAS site characterization are located near residential and commercial water supply wells. Therefore, in this report S&W will also compare groundwater results to the current DEC action level for drinking water, which aligns with the EPA's LHA level of 70 ng/L for the sum of PFOS and PFOA. This action level was published in an April 2019 update to DEC's *Technical Memorandum: Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water*. From August 2018 to April 2019 the State of Alaska used a different action level for drinking water. The former 'sum of 5' action level for this period was 70 ng/L for the sum of PFOS, PFOA, perfluorohexanesulfonic acid (PFHxS), perfluoroheptanoic acid (PFHpA), and perfluorononanoic acid (PFNA).

DEC's *Field Sampling Guidance* also identifies benzene, toluene, ethylbenzene, and total xylenes (BTEX), gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), and polycyclic aromatic hydrocarbons (PAHs) as contaminants of potential concern at AFFF training areas.

To evaluate the analytical data, groundwater samples are compared to 18 AAC 75.341 *Table C, Groundwater Human Health Cleanup Level* and the EPA LHA (for PFAS). Soil samples are compared to AAC 75.341 Tables B1, *Method Two – Migration to Groundwater,* and B2, *Method Two – Over 40-Inch Zone – Migration to Groundwater.*

The current regulatory and action levels, as well as the analytical reporting limits (RLs) for these contaminants are summarized in Exhibit 1-1. The water limits are reported in ng/L for the PFAS analytes and in micrograms per liter (µg/L) for the remaining project analytes. The soil limits are reported in µg/kg for the PFAS analytes and in milligrams per kilogram (mg/kg) for the remaining project analytes.

Exhibit 1-1: COPCs, Regulatory and Laboratory Reporting Limits

Method	Analyte	Regulatory Soil Limit[a]	Regulatory Water Limit[b]	Laboratory LODs/RLs[c] Soil	Laboratory LODs/RLs[c] Water
PFAS Analytes		(µg/kg)	(ng/L)	(µg/kg)	(ng/L)
537.1 or 537.1M[d]	PFOS	3.0	400	0.5	2.0
	PFOA	1.7	400	0.2	2.0
	PFOS+PFOA (drinking)	-	70	-	-
Petroleum Analytes		(mg/kg)	(µg/L)	(mg/kg)	(µg/L)
AK101	GRO	260	2,200	1.25	50
AK102	DRO	230	1,500	10	300
AK103	RRO	9,700	1,100	50	250
EPA 8260 (BTEX)	Benzene	0.022	4.6	0.00625	0.2
	Toluene	6.7	1,100	0.0125	0.5
	Ethylbenzene	0.13	15	0.0125	0.5
	Xylenes Total	1.5	190	0.0375	1.5
PAH Analytes		(mg/kg)	(µg/L)	(mg/kg)	(µg/L)
EPA 8270D-SIM (PAH)	1-Methylnaphthalene	0.41	11	0.0125	0.025
	2-Methylnaphthalene	1.3	36	0.0125	0.025
	Acenaphthene	37	530	0.0125	0.025
	Acenaphthylene	18	260	0.0125	0.025
	Anthracene	390	43	0.0125	0.025
	Benzo(a)anthracene	0.70	0.30	0.0125	0.025
	Benzo[a]pyrene	1.9	0.25	0.0125	0.01
	Benzo[b]fluoranthene	20	2.5	0.0125	0.025
	Benzo[g,h,i]perylene	15,000	0.26	0.0125	0.025
	Benzo[k]fluoranthene	190	0.80	0.0125	0.025
	Chrysene	600	2.0	0.0125	0.025
	Dibenzo[a,h]anthracene	6.3	0.25	0.0125	0.01
	Fluoranthene	590	260	0.0125	0.025
	Fluorene	36	290	0.0125	0.025
	Indeno [1,2,3-c,d] pyrene	65	0.19	0.0125	0.025
	Naphthalene	0.38	1.7	0.0100	0.05
	Phenanthrene	39	170	0.0125	0.025
	Pyrene	87	120	0.0125	0.025

Notes:

a. 18 AAC 75 *Table B2. Method Two - Petroleum Hydrocarbon Soil Cleanup Levels – Over 40-Inch Zone - Migration to Groundwater* or *Table B1. Method Two - Soil Cleanup Levels Table - Migration to Groundwater*.

b. 18 AAC 75 *Table C. Groundwater Cleanup Levels*.

c. May 2021 LODs from SGS North America, Inc. for petroleum and PAH analyses. May 2021 RLs from Eurofins TestAmerica, Sacramento for PFAS analyses.

d. All available PFAS analytes with Alaska certification were requested for analytical reports. However, only PFOS and PFOA have a DEC drinking water action level or cleanup levels and are reported in this table.

BTEX = benzene, toluene, ethylbenzene, and total xylenes; DRO = diesel range organics; EPA = U.S. Environmental Protection Agency; GRO = gasoline range organics; LOD = limit of detection; mg/kg = milligram per kilogram; µg/L = microgram per liter; PAH = polynuclear aromatic hydrocarbons; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; RL = reporting limit; RRO = residual range organics; SIM = selective ion monitoring

1.5 Scope of Services

The scope of services summarized in this report includes site access and permitting; targeted soil field screening; analytical soil, groundwater, surface water, and sediment sampling; data analysis; and preparation of this summary report. Soil sampling included collection of surface soil and subsurface soil from borings.

This report was prepared for the exclusive use of the DOT&PF and its representatives. This work presents S&W's professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses field staff performed. This report should not be used for other purposes without S&W's approval or if any of the following occurs:

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, or cleanup levels change.
- If the site's regulatory status has changed.

If any of these occur, S&W should be retained to review the applicability of recommendations. This report should not be used for other purposes without S&W's review. If a service is not specifically indicated in this report, do not assume it was performed.

2 FIELD ACTIVITIES

This section summarizes the site characterization field activities performed during October 2021, to implement the GWP Addendum. S&W staff members Adam Wyborny, Justin Risley, Mason Craker, Kristen Freiburger, and Veselina Yakimova conducted the initial site characterization effort described in this report. These individuals are State of Alaska Qualified Environmental Professionals as defined in 18 AAC 75.333[b].

S&W is aware of the potential for cross-contamination of PFAS from numerous everyday items. S&W took appropriate precautions to prevent cross-contamination, including discontinuing the use of personal protective equipment and field supplies known to contain PFAS, using liner bags to contain samples before and after sample collection, hand washing, and donning a fresh pair of disposable nitrile gloves before sample collection. Additionally, samples were collected in laboratory-supplied, high-density polyethylene containers to prevent PFAS from adhering to the container.

2.1 Preparation and Permitting

S&W coordinated with the Federal Aviation Administration (FAA), The City of Gustavus, and multiple departments within DOT&PF to obtain the necessary permits and permissions to conduct the site characterization activities. Copies of these permits are included in Appendix A.

Due to the use of a drill rig to advance soil borings near the GST runway, an FAA 7460-1 airspace permit was required. S&W submitted the final 7460-1 permit application to the FAA on September 30, 2021. The 7460-1 determination letter was received October 25, 2021. Up to 25 soil boring locations were located within or near movement areas. S&W and the DOT&PF Airport Manager coordinated with the FAA to schedule an outage and brief runway closure to allow drilling near the intersection of the two runways. DOT&PF issued a Notice to Airmen for this time period.

S&W obtained a DOT&PF building permit for planned sampling activities conducted on airport property, and a City of Gustavus civil work permit for offsite MW installation occurring in road rights-of-way. DOT&PF building permit number ADA-50910 was issued October 8, 2021. The City of Gustavus civil work permit was issued on October 18, 2021. S&W subcontracted Northern Dame to produce the traffic control plan for drilling and sampling locations located on DOT&PF-maintained roads. The traffic control plan was submitted to and approved by DOT&PF prior to initiating work (Appendix A).

Utilities clearance was determined in coordination with the Alaska Digline, the GST Airport Manager, FAA, City of Gustavus, and other local applicable entities.

DOT&PF personnel escorted field staff within movement areas, and within all GST restricted areas. No badging was required.

2.2 Soil Sampling

Soil characterization activities for this project included sampling surface and subsurface soil. Surface soil sample locations are depicted in Figure 2, while soil borings are depicted in Figures 3 and 4. Soil boring logs are included in Appendix B. Copies of S&W 's field notes are included in Appendix C.

2.2.1 Surface Soil

S&W field staff collected surface soil from the following locations:

- seven surface-soil samples around the former fire training pit (SS-023 through SS-029);
- 14 surface soil samples near and around the DOT&PF shop building (SS-005 through SS-013 and SS-030 through SS-034);
- one surface soil sample from the north corner of the intersection of Runways 2-20 and 11-29 (SS-016);
- four surface soil samples surrounding MW-11-15 to investigate known PFAS source areas (SS-014, SS-015, SS-017, and SS-018);
- four surface soil from Runway 2-20 near the location of the highest asphalt sample result from April 2021 (SS-001 through SS-004); and
- four surface soil samples near a high-level asphalt result location near the Alaska Airlines terminal building (SS-019 through SS-022).

Copies of our *Soil Sample Collection Logs* are included in Appendix C. The surface soil samples were analyzed for PFAS only. These samples were collected from immediately below the vegetation or historic asphalt, where present, within the uppermost four inches bgs. Most of the samples consisted of sand fill with some organics. Sample *21GST-SS-002* contained paint chips. S&W collected four field-duplicate sample pairs.

2.2.2 Soil Borings

On behalf of DOT&PF, S&W retained the services of Discovery Drilling, Inc. (Discovery) to advance soil borings and install TWPs and long-term groundwater MWs. They installed 15 TWPs and 14 MWs collocated with soil borings and advanced 14 soil borings unassociated with the monitoring wells. The borings extended from ground surface to up to 50 feet bgs.

Exhibit 2-1: Drilling at Runway near the ARFF building

Discovery used a Geoprobe Model 6712 DT track-mounted drill rig. This drill is equipped with Macro-Core tooling, a solid barrel (2-inch outside diameter) direct-push device for collecting continuous core samples of unconsolidated material and to install the MWs. Discovery advanced direct push tooling to reach 50 feet bgs.

Discovery advanced soil borings without MWs in the following 14 locations:

- two soil borings at the southwestern end of Runway 2-20 (SB001 and SB002);
- four soil borings near the ARFF building (SB003, SB004, SB005 and SB007);
- two soil borings north of the taxiway between runways 2-20 and 11-29 (SB008 and SB006)
- one soil boring north of the intersection of Runways 2-20 and 11-29 (SB009);
- one soil boring south of the intersection of Runways 2-20 and 11-29 (SB010);
- one soil boring at the southeastern end of the taxiway near the Alaska Airlines terminal (SB011); and
- three soil borings at the former fire training, near the southeastern end of Runway 11-29 (SB012, SB013 and SB014).

A S&W engineer field-screened soil using a photoionization detector (PID), described recovered soil for the purpose of determining subsurface lithology, and collected analytical soil samples from each boring. Appendix B presents a descriptive log of soil conditions and an explanation of the symbols and terminology used. The highest PID reading for subsurface soil was 1.3 parts per million collected from 0 to 4.1 feet bgs in sample *21GST-SB007*. Field staff did not encounter a petroleum sheen, odor, or other indicators of petroleum contamination while drilling. Copies of our *Soil Sample Collection Logs* are included in Appendix C.

S&W collected two to seven analytical samples per boring for PFAS analysis. Onsite, these samples were collected from just below vegetation or asphalt, within six inches of the soil-groundwater interface and from every 5 to 10 feet (depending on changes in soil lithology) thereafter to a maximum extent of the well or boring scope. Preference was given to more organic-rich material (e.g. peat or organic silt layer) and changes in soil type. Offsite, PFAS samples were collected only from the groundwater interface and screened interval. Petroleum soil samples were collected from 10 of the onsite soil borings. Two samples per boring were collected per boring, one from the top three inches and one from the range where the PID reading was the highest. S&W collected 10 subsurface soil duplicate sample pairs for PFAS analysis and three duplicate sample pair for analysis of petroleum analytes. The discreet sample intervals are shown in the field notes (Appendix C) and the analytical data tables.

2.3 Water Sampling

Water characterization activities for this project included sampling surface water and groundwater at and near the GST. Groundwater characterization was completed by sampling both TWPs and MWs.

2.3.1 Monitoring Wells

Discovery installed 26 MWs consisting of 12 clusters of two wells each and two individual water table wells. Well locations are shown in Figures 5 and 6. For easy reference, the rounded depth of the MW is denoted in the well name (i.e. MW-15-15 was installed at approximately 15 feet bgs).

2.3.1.1 Well Installation

Discovery advanced soil borings and installed MWs in the following 14 locations:

- one water table MW in the eastern shoulder of Wilson Rd approximately 685 feet north of the intersection with Gustavus Rd (MW-9-10);
- one MW nest on Faraway Road (MW-21-15/45), one MW nest on White Drive (MW-22-15/40), and one MW nest on Parker Drive (MW-24-10/30);
- one MW nest at the southern end of Runway 2-20 (MW-18-15/50);
- one water table MW near the DOT&PF shop (MW-16-15);
- three additional MW nests, between onsite well MW-11-15 and the Gustavus School/NPS housing (MW-14-15/31, MW-15-15/46, and MW-17-20/40);

Exhibit 2-2: Well installation at MW-22

- one MW nest between the community well, known as the Alaska Terminal Well, and the area of known AFFF use behind the Alaska Airlines Terminal building (MW-13-20/45);
- one MW nest at the northeast corner of Gustavus Road and Wilson Road (MW-20-15/40);
- one MW nest along Wilson Road, near Icy Drive (MW-25-15/47);
- one MW nest east of the Salmon River (MW-23-20/50); and
- one MW nest along Gustavus Road east of Wilson Road, focusing in an area that experienced flooding in 2020 (MW-19-15/50).

The well depths and screened interval lengths vary with each MW due to subsurface conditions (see Appendix B). Discovery completed the wells using flush-mount monuments. The wells were constructed using two-inch inside-diameter schedule 40 PVC material. The screens are pre-pack 0.010-inch slotted screen with 20/40 sand and threaded end caps. The filter pack within the annular space at and around the screened interval is 20/40 silica sand. A bentonite chip seal followed by small sections of pea gravel or natural slough fills the remaining annul space, depending on the well. Well construction details can be found in the individual boring logs in Appendix B and *Monitoring Well Construction Details* field forms can be found in Appendix C.

2.3.1.2 Development and Sampling

The MWs were developed at least 24-hours after installation using an inertial pump and PFAS-free tubing with a foot value and surge block to agitate the water column and remove sediment. Development proceeded until there was a significant improvement in the clarity of the water. Copies of our *Well Development Logs* and *Monitoring Well Sampling Logs* are included in Appendix C.

Exhibit 2-3: Entrained silt in MW development water

Following development, a peristaltic pump was used to purge and sample the well. Samples were collected once water parameters stabilized or a total of three well volumes had been purged. Field staff measured parameters using a multiprobe water quality meter (YSI) and recorded pH, temperature in degrees Celsius (°C), conductivity in microSiemens (µS), dissolved oxygen (DO) in milligrams per liter (mg/L), and redox potential in millivolts (mV) approximately once every three minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings: ±0.1 pH, ±3 percent °C, ±10 percent DO, ±3 percent conductivity, and ±10 mV redox. Water clarity (visual) was also recorded.

The water samples were collected into laboratory-supplied containers immediately after each well was purged. Groundwater samples were submitted for PFAS analysis from each MW. Eleven field duplicate sample pairs were collected for PFAS analysis. Please note, a field-duplicate sample was not collected on days when the pump was only used to sample one MW, for budgetary reasons.

2.3.2 Temporary Well Points

Discovery installed 1-inch diameter PVC points (TWPs) at 15 locations listed below and shown on Figure 7.

- one TWP south of MW-12-10 (TWP-2);
- one TWP northeast of a major drainage ditch downgradient from the former fire training pit (TWP-1);
- one TWP north of MW-12-10 and upgradient of the former fire training pit (TWP-3);
- two TWPs north of MW-11-15 (TWP-7 and TWP-8);
- three TWPs along the northwest side of Runway 2-20 (TWP-9, TWP-11 and TWP-12);
- one TWPs south of Runway 2-20 (TWP-15);
- one TWP at the west end of Runway 2-20 (TWP-14);
- one TWP to the northwest of the "duck pond" (TWP-13); and
- four TWPs onsite in areas where PFAS was detected in asphalt samples collected in April 2021 (TWP-6, TWP-5, TWP-4, and TWP-10).

The TWPs were purged using new, PFAS-free peristaltic pump tubing. Following parameter stabilization, PFAS groundwater samples were collected from each of the TWPs. Copies of *Monitoring Well Sampling Logs* used for TWP sampling are included in Appendix C.

The TWPs were removed from the ground after sampling, drained, and materials taken to the Gustavus Landfill. The bore holes were backfilled with bentonite clay to within approximately two feet bgs and with pea gravel to the surface.

Please note sample *PW-016* was collected from the water supply well at Glacier Bay Construction, instead of installing a TWP as indicated in the GWP Addendum. This was due to the owner's request.

2.3.3 Surface Water and Sediment Sampling

S&W collected 30 surface-water analytical samples during the sampling event. Shannon & Wilson collected 27 sediment samples collocated with surface water samples. Samples were collected from drainage ditches and ponds around and near the airport. Surface water sample locations are listed below and shown in Figure 8. Sediment sample locations are listed below and shown in Figure 9.

Surface water samples were collected from the following locations:

- three samples from the gravel pits north of the airport, one from each of the southern gravel pits (*SW-001*, *SW-002*, and *SW-003*); and

- one sample near the MW-1 cluster, sample collected following discussion with local resident regarding groundwater flow in the area (*SW-031*).

Surface water and collocated sediment samples were collected from the following locations:

- two samples from the drainage ditch that runs adjacent to the north side of Gustavus Road, one between the airport and Moose Lane (*SW-014*) and one between the Gustavus School and Glen's Ditch Road (*SW-025*);
- one sample from the drainage ditch that runs adjacent to the south side of Gustavus Road near Glen's Ditch Road (*SW-027*);
- one location on Glen's ditch south of Same Old Road (*SW-030*);
- two samples from drainage ditches near MW-11-15 (*SW-008* and *SW-010*);
- one sample from the drainage ditch adjacent (north) to Moose Lane (*SW-015*);
- two samples at different locations from drainages surrounding the northwest portion of Runway 11-29 (*SW-005* and *SW-007*);
- one sample from the on-airport drainage south of the former fire training pit near the exit of the under-runway culvert (*SW-019*);
- one sample from a drainage pathway running along the northeast side of the airport fence (*SW-006*);
- one sample from the square pond east of the airport, collected from the northeastern edge near the stockpiles staged in this area from historic construction activities (*SW-012*);
- one sample from the drainage ditch on State Dock Road, south of Gustavus Road (*SW-029*);
- one sample from the drainage ditch adjacent to Wilson Road, north of Runway, between Harry Hall Drive and Parker Drive (*SW-022*);
- one sample from the drainage ditch behind NPS housing on Gustavus Road (*SW-026*);
- one sample from the drainage ditch that runs between the Alaska Airlines terminal and the southeast end of Runway 11-29 (*SW-016*);
- the drainage ditch adjacent to Airport Beach Road on south side of Runway 11-29 (*SW-018*); and
- a sample from the drainage ditch adjacent to the road to the DOT&PF Facilities Building from Gustavus Road (*SW-013*).

Surface water and collocated sediment samples in addition to "deep" sediment samples (2 to 3 feet below the sediment surface) were collected from the following locations:

- two samples from the drainage ditch running along the eastern side of the airport, outside of the fenced area (*SW-021* and *SW-020*);

- two samples from the east side of Runway 11-29 along the airport fence (*SW-011* and *SW-017*);
- two locations along Glen's ditch, one from where the "duck pond" and airport drainage meets Glen's ditch (*SW-024*), and one from Glen's ditch south of Gustavus road (*SW-028*); and
- two samples from the area known as the "duck pond" to the community (*SW-009* and *SW-023*).

The surface water samples were collected using a disposable plastic cup, or the laboratory-supplied sample container within an arm's reach from the edge of the water. No reusable equipment was employed to sample the surface water. The sediment samples were collected from the shore using a hand auger, collecting soil right beneath the vegetation layer. Copies of our *Surface Water Sample Logs* are included in Appendix C.

Surface water and sediment samples were submitted for PFAS analysis. S&W collected four collocated surface water and sediment field-duplicate pairs. S&W also collected two equipment blanks for PFAS analysis from reusable equipment used to collect the sediment samples.

2.4 Sample Custody, Storage, and Shipping

Field staff collected, handled, and stored samples in a manner consistent with the GWP and DEC *Field Sampling Guidance*. Immediately after collection, the samples were placed in a designated sample cooler maintained between 0 °C and 6 °C with ice substitute. The PFAS samples were stored in individual Ziploc bags. S&W maintained custody of the analytical samples until submitting them to the laboratory for analysis. The samples were stored in sample coolers at nighttime.

When shipping the analytical samples, chain-of-custody forms were placed in the hard-sided cooler with an adequate quantity of frozen ice substitute to maintain the proper temperature range. The samples were packaged as necessary to prevent bottle breakage and sealed with custody seals on the outside of each cooler. Samples submitted to SGS North America, Inc. (SGS) were shipped to the Ted Stevens Anchorage International Airport using Alaska Air Cargo's Goldstreak service and delivered to the laboratory by currier. Samples submitted to Eurofins TestAmerica Laboratories, Sacramento (Eurofins) were shipped to the Sacramento International Airport where they were collected by an Eurofins employee. Some of the samples arrived at the laboratory outside of the designated temperature range. Due to the chemical stability of PFAS, the data are considered unaffected by the minor temperature exceedance.

2.5 Hydraulic Gradient and Well Survey

Lounsbury and Associates, Inc. conducted a survey of the monitoring wells and TWPs from November 14 to November 15, 2021, measuring the well casing elevations and longitude/latitude of each location. S&W measured the depth to water from the well casing for each monitoring well and TWP on November 4, 2021. S&W calculated hydraulic gradient using the *U.S. Environmental Protection Agency Online Hydraulic Gradient Calculator* with well location coordinates, top-of-casing elevation, and depth-to-water values as inputs. The gradient for the TWPs and monitoring wells installed less than 20 feet bgs was calculated separately from the gradient for the monitoring wells installed deeper than 20 feet bgs. Results from the 2021 calculations indicate groundwater flow direction is generally south to southwest (Figures 10 and 11).

In the wells installed less than 20 feet bgs, the flow direction had a heading of 176 degrees from north and a slope of 0.002 vertical foot per horizontal foot (Figure 10). Data inputs for the survey are presented in Table 1.

2.6 Investigation-derived Waste

Exhibit 2-4: GAC system

Soil generated from borings were contained in seven labeled 55-gallon drums and temporarily stored behind the DOT&PF shop, adjacent to runway 2-20. Containerized soil with results below the regulatory level will be disposed of to the ground. Soil with results above the action level will be disposed of via shipment to a waste disposal facility, yet to be determined, or an equivalent alternative. DEC approval will be received prior to removing disposal materials from the site. This report does not address the final disposal of the drums.

Purge water generated during groundwater sampling activities was filtered through our portable granular activated carbon (GAC) system and disposed of to the ground surface. The GAC system consisted of a sediment filter and six, sealed 5-gallon buckets containing GAC. The buckets were placed in series and fitted with a valve capable of adjusting the water flow through the GAC bucket, providing additional resonance time, where needed. Water used to decontaminate the drill augers was also disposed of through the GAC system.

An effluent sample was collected following GAC disposal. Result presented in Section 3.7. This unit will continue to be used for purge water associated with the DOT&PF PFAS project and a sample collected following each event. Once breakthrough is shown in the effluent sample, the GAC will be containerized in a labeled 55-gallon drum awaiting DEC approval for offsite disposal.

Other investigation-derived waste included non-reusable equipment such as nitrile gloves and sample tubing and was disposed of in the Gustavus landfill.

2.7 Deviations from the Work Plan

In general, S&W conducted our services in accordance with the approved GWP Addendum. The following are the deviations from our agreed-upon scope of services. These modifications do not impact the overall data quality or project aims.

- Our GWP Addendum called for collection of surface-water samples using a peristaltic pump and disposable tubing. Due to access issues at some of the locations, surface-water samples were collected with a new PFAS-free plastic sample container provided by the analytical lab. This method was used at each surface-water location for consistency.
- Analytical samples for subsurface soils collected from offsite wells (groundwater interface and screened interval) are used to determine if the soils need to be disposed of as PFAS-contaminated waste. Due to the limited volume of soil from each location, these samples are representative, and a separate analytical sample was not collected from the drum. Please note the limited volume was bagged separately from soils from other locations. The bags were placed in the drums and labeled for potential disposal at a later date.
- Soil borings SB7, SB8 and SB9 were relocated off of the new asphalt placed during the recent runway resurfacing. MW-20 was relocated east of the planned location due to unsuitable site conditions at the original location.
- A well depth tape was used to measure the depth to water in MW-13-45, MW-14-31, MW-15-45, MW-17-40, MW-21-45, and MW-23-50, where saltwater was observed, and the water sounder meter may have malfunctioned. There is evidence the deep and shallow subsurface groundwater zones are communicating; therefore, groundwater elevations with readings greater than 1.0 foot difference between the shallow and deep well have been removed for the purpose of calculating groundwater gradient in the deep zone (Figure 11). Please see Section 5.2 for additional information.
- Permission to install TWP-16 was not granted by the property owner. Instead, a sample from the existing water supply well was collected and subsequently named *PW-016*.

3 ANALYTICAL RESULTS

The soil, sediment, and water samples submitted for this project were analyzed for determination of the 18 PFAS compounds listed in EPA Method 537.1 or 537M, using the DEC compliant method defined in quality systems manual (QSM) 5.3, Table B-15. This list is based on the 18 PFAS compounds that are approved by the DEC for EPA Method 537.1 or 537M for the given laboratory. The PFAS samples were analyzed by Eurofins TestAmerica in West Sacramento, California.

S&W also submitted a subset of the soil samples for analysis of GRO, DRO, RRO, BTEX, and PAHs by Methods AK101, AK102, AK103, EPA 8260, and EPA 8270D SIM, respectively. These samples were analyzed by SGS North America, Inc. in Anchorage, Alaska.

The GST analytical results are summarized in Tables 2 through 9. Analytical sample quality assurance/quality control (QA/QC) is summarized in Appendix D. The laboratory reports and DEC Laboratory Data Review Checklists for each work order are also included in Appendix D.

3.1 Surface Soil

Analytical sample results for the 51 surface soil samples are summarized in Table 2 (34 primary samples), Table 3 (14 shallow samples less than 1 foot bgs) and Table 4 (three shallow samples less than 1 foot bgs), and Figure 2. PFOS was detected at concentrations above the DEC migration-to-groundwater soil cleanup level of 3.0 µg/kg in 15 surface soil samples, listed below from highest to lowest concentration of PFOS:

- *21GST-SS-022*, collected from the taxiway behind the Alaska Airlines terminal – 310 µg/kg;
- *21GST-SB011-0.4-0.6*, collected from soil boring SB011 at the southeastern end of the taxiway near the Alaska Airlines terminal - 79 µg/kg;
- *21GST-SS-009*, collected outside of the DOT&PF facilities building – 64 µg/kg;
- 21GST-SS-008, collected near the DOT&PF facilities building – 33 µg/kg;
- 21GST-SS-006, collected along runway 02-20, near the DOT&PF facilities building – 33 J* µg/kg (estimated);
- *21GST-SS-021*, collected at the southeastern end of the taxiway near the Alaska Airlines terminal - 32 µg/kg;
- *21GST-SS-020*, collected at the southeastern end of the taxiway near the Alaska Airlines terminal - 27 µg/kg;

- *21GST-SS-019*, collected at the southeastern end of the taxiway near the Alaska Airlines terminal - 13 μg/kg;
- *21GST-SS-004*, collected at the south end of runway 02-20 - 11 μg/kg;
- *21GST-SB003*, collected from soil boring SB003 near the DOT&PF facilities building - 10 μg/kg;
- *21GST-SS-003*, collected at the south end of runway 02-20 – 9.9 μg/kg;
- *21GST-SS-005*, collected along runway 02-20, near the DOT&PF facilities building – 6.5 μg/kg;
- *21GST-MW16*, collected from the MW16 soil boring along runway 02-20, near the DOT&PF facilities building – 6.5 μg/kg;
- *21GST-SS-002*, collected at the south end of runway 02-20 – 6.4 μg/kg; and
- *21GST-SS-007*, collected near the DOT&PF facilities building – 5.8 μg/kg.

PFOA was also detected at a concentration above the DEC migration-to-groundwater soil cleanup level of 1.7 μg/kg surface soil sample *21GST-SS-022* with a concentration of 1.8 μg/kg.

PFOS and PFOA were detected below their respective cleanup levels in several other surface soil samples. PFHxS, perfluorohexanoic acid (PFHxA), PFHpA, PFNA, perfluorobutanesulfonic acid (PFBS), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnA), perfluorododecanoic acid (PFDoA), perfluorotridecanoic acid (PFTrDA), perfluorotetradecanoic acid (PFTeA), and N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA) were also detected in concentrations above and below the laboratory RL in some of the surface soil samples. Cleanup levels do not exist for these analytes.

3.2 Soil Borings

Soil boring results for 72 samples collected greater than 1 foot bgs are summarized in Table 3 (31 samples) and Table 4 (41 samples), and Figures 2 and 3. Please note, surface samples collected from the soil borings are discussed in the section above.

The highest detections of PFAS analytes were in soil boring sample *21GST-SB011-7.4-7.6*. PFOS was detected at an estimated 25 μg/kg, over eight times the DEC migration-to-groundwater cleanup level. PFOA exceeded the soil cleanup level at a concentration of 4.9 μg/kg. PFHxS was also reported at 20 μg/kg.

PFOS was also present below the cleanup level and above the RL in the soil boring samples listed below from highest to lowest concentrations:

- *21GST-SB003-3.7-3.9*, located near the DOT&PF facilities building – 2.6 μg/kg;
- *21GST-MW16-9.4-9.6*, located near the DOT&PF facilities building – 1.8 μg/kg;

- *21GST-SB008-9.9-10.1*, located north of the taxiway between runways 2-20 and 11-29 – 0.69 µg/kg;
- *21GST-SB005-8.9-9.1*, located near the DOT&PF facilities building – 0.66 µg/kg;
- *21GST-MW15-38.9-39.1*, located at the north end of Moose Lane – 0.60 J* µg/kg (estimated);
- *21GST-SB001-7.9-8.1*, located at the southwestern end of runway 2-20 – 0.31 µg/kg;
- *21GST-SB006-9.9-10.1*, located near the DOT&PF facilities building– 0.31 µg/kg; and
- *21GST-SB004-8.9-9.1*, located near the DOT&PF facilities building – 0.25 µg/kg.

Soil samples from borings SB007, SB009, SB010, SB012, SB013, SB014, MW13, MW15, MW17, MW18, MW19, MW20, MW21, and MW24 had one or more PFAS analytes detected at an estimated concentration.

Samples collected from the surface and from the groundwater smear zone in soil borings SB001, SB002, SB003, SB004, SB005, SB007, SB009, SB011, SB012, and SB013 were also submitted for petroleum analysis (Figure 4). DRO and RRO were detected in the surface soil of borings SB003, SB005, SB007 and SB011. The highest concentrations of DRO (146 mg/kg) and RRO (2,380 mg/kg) were reported in sample *21GST-SB011-0.4-0.6*, at the southeastern end of the taxiway near the Alaska Airlines terminal. DRO were also detected in the smear zone sample for soil borings SB004 and SB007, and RRO were detected in the smear zone sample of soil boring SB011. GRO, BTEX, and PAHs were not detected above the laboratory limits of quantification (LOQ) in any of the other soil boring samples (Table 5).

3.3 Monitoring Wells

The analytical results from a total of 41 MW samples are shown in Figures 5 and 6, as well as summarized in Table 6. Results for MWs installed shallower than 20 feet bgs are shown in Figure 5. Results for wells installed deeper than 20 feet bgs are shown in Figure 6. Here S&W also briefly discusses the Q4 2021 results from the monitoring well network installed during the initial site characterization in 2019 (MW-1 through MW-12).

PFOS exceeded the EPA LHA level of 70 ng/L in four MWs installed shallower than 20 feet bgs, listed below from highest to lowest concentration:

- MW-11-15, located near the intersection of Runway 2-20 and the apron - 820 ng/L;
- MW-2-20, located on the west side of the Salmon River near City Hall - 360 ng/L (please note this area is being investigated by DEC and is likely the result of another source unrelated to the DOT&PF onsite use of AFFF);
- MW-17-20, located on Gustavus Rd, near the Alaska Power & Telephone office - 130 ng/L;

- MW-10-20, located on Wilson Rd, near the south end of Runway 2-20 - 81 ng/L;

The highest PFOS detection below the LHA was in MW-18-15, which also had elevated concentrations of PFHxS. PFOA, PFHxS, PFHxA, and PFNA were present in MW-2-20, MW-7-20, MW-9-10, MW-11-5, MW-12-10, MW-16-15, MW-17-20, and MW-23-20.

The monitoring wells installed above the clay layer but below 20 feet bgs had reported detections of PFOS, listed below from highest to lowest concentration:

- MW-9-30, located along the south end of Wilson Road -37 ng/L;
- MW-3-40, located near the Community Center on Gustavus Road– 12 ng/L; and
- MW-18-50, located at the southern end of Runway 2-20 – 2.1 ng/L.

The monitoring wells installed below the observed clay layer with detections of PFOS are listed below from highest to lowest concentration:

- MW-22-40, located on White Drive – 7.2 ng/L; and
- MW-19-50, located on Gustavus Road in an area that experienced flooding in 2020 – 1.3 J ng/L (estimated).

Wells installed below the clay layer are denoted on Table 1 with a "*" next to the well name. Wells where brackish water was encountered are listed below:

- MW-13-45 – PFAS not detected in the sample from this well
- MW-14-31- PFOS and PFOA detected at a combined estimated concentration of 39 J ng/L
- MW-15-45 – PFAS not detected in the sample from this well
- MW-17-40 – PFAS not detected in the sample from this well
- MW-21-45 – PFAS not detected in the sample from this well
- MW-23-50 – PFAS not detected in the sample from this well

3.4 Temporary Well Points

The results from 15 TWP samples and one water supply well sample are summarized in Figure 7 and Table 7. PFOS exceeded the EPA LHA level in five TWPs, listed below from the highest to lowest concentration:

- TWP-4, located on the taxiway behind the Alaska Airlines terminal - 340 ng/L;
- TWP-5, located on the taxiway behind the Alaska Airlines terminal - 170 ng/L;
- TWP-8, located at the north end of Runway 2-20 - 150 ng/L.
- TWP-15, located close to the south end of Runway 2-20 – 84 ng/L; and
- TWP-9, located at the north end of Runway 2-20 across from TWP-8 - 74 ng/L.

PFOA concentrations were below the LHA cleanup levels, with the highest one at 17 ng/L in TWP-4. This location also had elevated concentrations of PFHxS, PFHxA, and PFHpA. All TWPs had one or more PFAS analytes detected, except for TWP-1, TWP-3, and TWP-12, which had no detections.

3.5 Surface Water

The results from 30 PFAS surface water samples are shown in Table 8 and Figure 8. PFOS exceeded the EPA LHA in five surface water samples, listed below from highest to lowest concentration:

- *21GST-SW-010*, from a drainage ditch near MW-11-15 - 270 ng/L
- *21GST-SW-013,* from a drainage ditch on the northwestern portion of Moose Lane - 260 ng/L;
- *21GST-SW-015,* from a drainage ditch adjacent to the southeastern portion of Moose Lane – 220 ng/L;
- *21GST-SW-016,* from a drainage ditch that runs between the Alaska Airlines terminal and the southeast end of Runway 11-29 – 160 ng/L; and
- *21GST-SW-025,* from a drainage ditch that runs adjacent to the north side of Gustavus Road – 130 ng/L.

The sum of PFOS and PFOA exceeded LHA in the drainage ditch running along the eastern side of the airport (sample *21GST-SW-011*). PFOA, PFHxS, PFHxA, PFHpA, and PFBS were also detected at concentrations above and below the laboratory RL in some of the surface water samples.

3.6 Sediment

The results from a total of 35 sediment analytical samples are summarized in Table 9 and Figure 9. PFOS was detected at 1.6 µg/kg in the shallow sediment and at 2.5 µg/kg in the deeper sediment of a drainage ditch near the former training pit and MW-12-10 (*21GST-SED-017*). PFOS was present at lower estimated concentrations in six other sediment samples.

PFOA was not detected in the analyzed sediment. PFHxS and N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA) were detected below the laboratory RL in some samples.

3.7 GAC Confirmation Samples

The GAC confirmation water sample was collected following the filtering of water from the development of the MWs and TWPs and drill rig decontamination. PFAS were not detected in the post-filtration water sample. GAC treatment of purge water and decontamination water is considered successful.

Analytical sample result for the GAC confirmation sample is presented in Table 6.

4 UPDATED CONCEPTUAL SITE MODEL

A draft conceptual site model (CSM) was included in the GWP Addendum describing planned site characterization activities. The enclosed CSM has been updated based on observed site conditions and the analytical results discussed in Section 3. This CSM should be reevaluated if regulatory standards change. The updated Human Health CSM Scoping Form and Graphic Form are presented in Appendix E.

4.1 Description of Potential Receptors

This sampling effort identified PFOS and PFOA above cleanup levels in analytical samples both inside and outside the GST fence. S&W considers residents, commercial/industrial workers, site visitors or trespassers, construction workers, subsistent harvesters, and farmers in the impacted areas to be current or future receptors for one or more exposure pathway. Previous water supply well sampling identified residential and commercial receptors on and off airport property. Additional potential receptors include DOT&PF personnel, airline and cargo employees, emergency responders, and private pilots.

4.2 Potential Exposure Pathways

Potential exposure pathways include:

- incidental ingestion of soil or groundwater, or groundwater under the influence of surface water;
- dermal adsorption of contaminants in soil, groundwater, or surface water;
- inhalation of fugitive dust;
- direct contact with sediment; and
- ingestion of wild or farmed foods.

4.2.1 Soil Exposure

Surface soil and fill at the GST has a high sand content that is not likely to be wind-blown. PFOS and/or PFOA exceeds the soil-cleanup level in several onsite areas. Direct contact with PFOS- and PFOA-contaminated soil is possible for residents and visitors travelling by air, DOT&PF employees, commercial or industrial workers, site visitors, and construction workers. Members of the public could potentially come in contact with PFOS-contaminated soil near the Alaska Airlines terminal (soil boring SB-011 and SS-022; Exhibit 4-1). The other soil-sample exceedances are not accessible by the public. Future runway repair or other construction projects could expose DOT&PF employees, construction workers, and other visitors to surface or subsurface soil contamination.

Exhibit 4-1: Drilling near the Alaska Airlines terminal

4.2.2 Groundwater

Ingestion of groundwater is an exposure pathway, as several private wells near the GST have been found to have PFAS contamination that exceeds state regulatory levels. Private-wells near the GST are generally shallow, at about 15 – 25 feet bgs. S&W understands setting wells in a deeper, uncontaminated aquifer is not an option in Gustavus due to brackish water at depth.

Based on our current understanding of contaminant concentrations in private wells, residents may continue to use their well water for domestic purposes, including bathing and gardening. Commercial or industrial workers may use their water for vehicle washing or other activities resulting in dermal contact. Additionally, construction workers and DOT&PF staff members could be exposed to shallow contaminated groundwater during future excavation and construction projects.

DRM is working with each affected property (locations where results exceeded the LHA). They plan to construct rain catchment cisterns as a long-term alternate water source for these properties.

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. S&W therefore considers dermal exposure to these compounds to be insignificant for the purposes of this CSM.

4.2.3 Surface Water and Sediment

Dermal contact with surface water, like dermal contact with groundwater, is considered an insignificant contaminant exposure pathway. However, residents, site visitors, commercial workers, and subsistence harvesters could come in contact with PFOS-impacted surface water bodies outside the GST fence. DOT&PF staff and construction workers could also be exposed to contaminated surface water during airport operations, or future excavation and construction projects.

Direct contact with sediment is unlikely at present. Future drainage repair or other construction activities could result in direct contact to DOT&PF employees and construction workers.

4.2.4 Biota

Due to the bioaccumulative risk of PFAS, biota is considered a potential pathway for exposure. Our site assessment activities are not designed to assess the biota exposure pathway. However, S&W understands the State of Alaska is conducting sampling at various PFAS sites to investigate this pathway.

5 DISCUSSION AND RECOMMENDATIONS

This section presents our discussion of the 2021 PFAS site characterization results and observations.

5.1 Distribution of PFAS Contamination

PFOS and PFOA were found above cleanup levels at multiple locations on airport property. The site characterization data suggests there are two primary PFAS sources at the GST.

1. AFFF spills and/or releases near the DOT&PF Facilities building.
2. The former training and/or emergency response areas (Figure 1).

PFOS and/or PFOA exceeded the migration-to-groundwater soil-cleanup levels in surface soil at the edge of the paved taxiway near the Alaska Airlines terminal (Figure 2; samples *21GST-SS-019* through *21GST-SS-022*), around the DOT&PF Facilities building (Figure 1), and along the asphalt edge of the approach area for Runway 02/20 (Figure 2). PFAS concentrations in the subsurface soil at Alaska Airlines terminal were also reported above the DEC cleanup levels (Figure 3; sample *21GST-SB011-7.4-7.6*). Subsurface soils had PFAS detections below the DEC cleanup levels for the other two areas. These results indicate PFAS compounds are migrating to the groundwater from these contamination source areas.

PFOS and PFOA exceeded cleanup levels in surface water sample *21GST-SW-010* collected from a drainage ditch south of the "New" AFFF Training Area (Figure 1 and Figure 8). PFAS concentrations were also observed above cleanup levels in the surface water samples collected from airport drainage ditches southeast of Runway 11-29, along the northern side of Gustavus Rd, and near the airport terminals and the ARFF building (Figure 8; samples *21GST-SW-013*, *21GST-SW-015*, *21GST-SW-016*, and *21GST-SW-025*). These results indicate the drainage ditches are a significant transport pathway for PFAS contamination leaving the DOT&PF property.

PFAS were not detected above DEC cleanup levels in the sediment samples collected during the 2021 site characterization activities. S&W understands DOT&PF is interested in dredging drainage ditches near the airport in order to handle high-water periods.

PFAS concentrations in the MWs varied widely, including between wells of the same well cluster screened within 10 to 20 vertical feet of one another. This is attributed to multiple confining layers or locally discontinuous portions of the aquifer that have impeded the movement of PFAS-contaminated groundwater.

The highest PFOS, PFOA, PFHxS, and PFHxA detections were observed in the MWs and TWPs installed above the clay layer (Figures 5 and 7). Onsite S&W observed the highest concentrations at MW-11-15, installed in the area of the most recent AFFF training. The groundwater sample collected from TWP-4 (*21GST-TWP-4*) installed near the Alaska Airlines terminal also had elevated PFAS concentrations above the DEC cleanup levels. These two areas also represent areas where significant surface soil contamination has been observed during the 2019 and 2021 site characterization activities.

Offsite, the highest concentrations of PFAS analytes were observed near City Hall, on the west side of the Salmon River. Previous investigations of the PFAS present in this well have indicated it is from a different source than the DOT&PF airport plume. This information has been presented to DEC who is investigating this area further.

Offsite MW concentrations in wells MW-10-20 and MW-17-20 also exceeded the DEC regulatory limits. The PFAS present in MW-10-20 is believed to be indicative of contaminated surface water in airport drainage ditches infiltrating to groundwater.

During the installation of MW-17-20, S&W spoke with a representative of R&M Consultants, Inc. (R&M) who was collecting concrete samples from the foundation pad of the former DOT&PF Maintenance building along Gustavus Road. DOT&PF provided S&W with a copy of the report titled *Phase 1 Environmental Site Assessment – Tract B, Lot 11*, dated December 17, 2021. The report indicated PFOS was detected in one of the concrete samples at 1.3 µg/kg. PFAS compounds were not detected in two of the three samples. Further investigation of this area is needed to determine if PFAS contamination observed in MW-17-20 and the nearby NPS Well serving the school is related to activities at the former DOT&PF building, from airport operations, or a combination of the two.

PFOS and PFOA were not detected in monitoring wells installed below the clay layer, with the exception of well MW-14-31 where PFOS and PFOA were reported at a combined estimated concentration of 39 J ng/L. During drilling at this location, S&W observed the presence of fat clay, which is highly saturated with water and could allow for the mixing of contaminants into the deeper groundwater zone.

The biggest contributor to private-well contamination west of the airport, is likely the extensive drainage ditch network around the airport, creating the path of least resistance for contaminated surface water to infiltrate into the groundwater. Results for private wells sampled for the overall project are presented in a separate report.

5.2 Groundwater Flow Direction

The water table elevations below the GST study area were measured in November 2021 and are shown in Figures 10 and 11. These figures were prepared using water level elevations above mean sea level calculated from depth-to-water measurements collected over a 12-hour period. Groundwater elevation was generally similar between wells installed in the shallow zone (less than 20 feet bgs) and deep zone (deeper than 20 feet bgs) in the same well cluster. Based on this, S&W believes the deep and shallow aquifers are interacting. Significant static water level differences were observed in the MW-18 well cluster. While the measurement from MW-18-15 matches the general groundwater gradient, the measurement from MW-18-50 had a headspace difference greater than 4 feet. This datum was not used to generate Figure 11, as S&W suspects field measurement uncertainty. Additionally, salt water interfered with the depth to water readings for wells MW-21-45 and MW-23-50; these values were not used to generate Figure 11.

The water table figures (Figures 10 and 11) were created in ArcGIS using a natural neighbor interpolation of the water table elevations recorded at each MW, with the exceptions noted above. The solid lines and the color changes represent half-foot contours. Groundwater flow is from areas of high (red and orange) to low (blue) elevations and is relatively consistent with the slope of the land surface. Groundwater flow directions across most of the GST in early November 2021 were to the south, towards the Salmon River and the coastline. Our groundwater calculations indicate the gradient is generally shallow, at up to 17 feet per mile. This was observed in both the monitoring wells in the shallow and deep monitoring wells, showing that the aquifers are mutually influenced by topography.

Although groundwater flow in the study area is primarily towards the south, groundwater flows southwest between Wilson Road and the Salmon River. The gradient in this area is more than 22 feet per mile. This groundwater gradient regime appears to be influenced by the flow direction of the Salmon River (due south) and its basin morphology.

Ground surface elevations at the GST range between 19 and 33 feet above sea level, meaning the deepest MWs are screened below sea level. This is likely related to the presence of saltwater in a few of the monitoring wells installed below this depth. Tidal range can be up to 25 feet. Given the site's proximity to the coast and the large tidal range, S&W would expect the tidal influence on groundwater gradient to increase with proximity to the coast and the Salmon River. Under these conditions, the PFAS plume will likely be drawn downgradient towards the south and southwest. The subsurface hydraulic conditions are subject to change and our data represents conditions at the site at the time of sampling only.

5.3 Recommendations

Based on the results of this initial PFAS site characterization effort, S&W recommends the DOT&PF:

- begin quarterly monitoring of the newly installed MWs;
- develop environmental AFFF response procedures in the event of a future emergency incident where AFFF is required for safety reasons;
- implement a plan for proper waste handling for dredging ditches known to contain PFAS above cleanup levels; and
- conduct additional PFAS site characterization in localized areas prior to construction projects at and near the GST.

These recommendations are described as follows.

S&W recommends the DOT&PF monitor PFAS concentrations quarterly in the newly installed MWs where PFAS were detected, beginning in spring or summer 2022 (pending funding). S&W further recommends annual monitoring for the MWs where saltwater was observed and PFAS was not detected. S&W also recommends continuing the quarterly sampling regime for the MWs installed in 2019 based upon the proposed schedule presented in the fiscal year 2021 water supply and monitoring well report.

S&W recommends GST personnel continue to reserve AFFF for emergency response use only and to implement procedures to containerize response-related fluids to the extent practicable. This would include AFFF-water runoff from the response site, nearby surface water or snow, and water drained from the engine following the release. Spill response supplies such as sorbent pads and booms, sump pumps, hose, 55-gallon drums, and/or plastic tanks are likely already onsite. In the case of an emergency use of AFFF, discharge locations and runoff areas should be documented by the emergency response team as soon as practicable after the event. S&W recommends sampling containerized AFFF-water for characterization and disposal. Environmental response following an emergency will reduce the likelihood of future drinking water impacts, thereby saving DOT&PF money over the long term. S&W also recommends local DOT&PF staff members document the locations and volume where water is sprayed during annual and weekly ARFF operation readiness checks.

S&W further recommends DOT&PF continue the site characterization effort with an emphasis on the following actions:

- Coordinate with DEC to determine where petroleum analytes may be required for future samples collected from onsite wells MW-11, MW-12, MW-13, MW-14, MW-15, and MW-16. This is based on the recent changes to the required analytes documented on DEC *Field Sampling Guidance* Appendix F table.
- Prior to future runway and apron resurfacing, expose and sample soil underneath the asphalt to determine appropriate soil handling requirements.
- Further investigation on the tidal influence on the groundwater gradient and the PFAS plume.
- Develop a contaminated materials management plan for construction activities in contaminated areas of the GST.

These recommendations are based on:

- Groundwater conditions inferred through monitoring-well, temporary-well-point and surface-water samples collected from October 14, 2021, through November 6, 2021.
- Soil conditions observed on, near and downgradient of the GST.
- The results of testing performed on soil and water samples S&W collected from the monitoring wells, temporary well points and surface water on, near, and downgradient from the GST.
- S&W's previous experience at the GST.
- Information provided by DOT&PF staff related to site history.
- Publicly available literature and data reviewed for this project.

- S&W's understanding of the project and information provided by DOT&PF, DRM, and other members of the project team.
- The limitations of S&W's approved Professional Services Agreement Number 25-19-1-013.

The information included in this report is based on limited sampling and should be considered representative of the times and locations at which the sampling occurred. Regulatory agencies may reach different conclusions than S&W. S&W has prepared and included in, “Important Information about your Geotechnical/Environmental Report,” to assist you and others in understanding the use and limitations of this report.

6 REFERENCES

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TABLE 1: GROUNDWATER ELEVATIONS

Well Name	Elevation of Ground Surface (ft)	Elevation of Casing (ft)	Elevation of Water (ft)	Depth to Water (ft)	Northing	Easting
MW-1-15	19.141	19.057	12.607	6.45	2407620.160	2289623.182
MW-1-40	19.074	19.010	12.59	6.42	2407622.156	2289617.490
MW-2-20	23.754	23.297	12.27	11.03	2409261.678	2288614.672
MW-2-30	23.779	23.573	12.54	11.03	2409258.116	2288614.601
MW-3-15	23.278	22.846	16.22	6.63	2408922.542	2289839.170
MW-3-40	23.200	22.822	16.18	6.64	2408922.122	2289835.513
MW-4-20	25.376	25.024	23.39	1.63	2410099.367	2294867.175
MW-5-20	23.558	23.077	16.54	6.54	2410646.483	2289471.700
MW-6-20	29.513	29.137	22.20	6.94	2409731.412	2293028.121
MW-7-20	29.643	29.150	22.57	6.58	2411453.499	2295289.403
MW-8-20	27.661	27.379	24.16	3.22	2411196.762	2290886.853
MW-9-10	25.423	25.019	22.12	2.90	2409610.625	2290908.322
MW-9-30	25.125	24.836	22.09	2.75	2409604.196	2290908.202
MW-10-20	25.844	25.679	23.37	2.31	2410131.750	2290923.268
MW-11-15	29.136	28.917	25.26	3.66	2413101.437	2294641.144
MW-12-10	19.359	19.260	18.74	0.52	2411546.773	2298074.265
MW-13-20	28.969	28.548	22.47	6.08	2411838.715	2295825.369
MW-13-45*	29.209	28.610	22.58	6.03	2411817.875	2295841.984
MW-14-15	29.668	29.404	24.59	4.81	2412584.139	2295080.322
MW-14-31*	29.717	29.300	25.30	4.00	2412584.909	2295070.566
MW-15-15	31.474	31.338	24.07	7.27	2411928.497	2294559.468
MW-15-45*	31.591	31.250	23.81	7.44	2411932.853	2294559.847
MW-16-15	29.601	29.105	25.07	4.04	2412284.282	2293541.642
MW-17-20	30.596	29.977	23.31	6.67	2411253.993	2294597.755
MW-17-40*	30.522	30.037	22.47	7.57	2411249.064	2294594.436
MW-18-15	28.276	27.988	23.69	4.30	2410390.267	2291600.412
MW-18-50	28.287	27.949	19.00	8.95	2410393.497	2291597.496
MW-19-15	25.912	25.704	22.37	3.33	2408894.968	2291561.515
MW-19-50	25.760	25.440	22.12	3.32	2408895.467	2291557.190
MW-20-15	26.097	25.780	20.08	5.70	2408933.514	2290582.397
MW-20-40	25.993	25.599	19.95	5.65	2408934.380	2290577.681
MW-21-15	25.186	24.623	18.29	6.33	2410150.065	2289970.590
MW-21-45*	25.104	24.664	16.44	8.22	2410145.262	2289963.251
MW-22-15	26.200	25.704	22.60	3.10	2410585.274	2290487.754
MW-22-40	25.812	25.368	22.94	2.43	2410584.678	2290498.900
MW-23-20	21.660	21.318	13.46	7.86	2409481.390	2289692.228
MW-23-50*	21.713	21.409	12.45	8.96	2409497.735	2289694.015

TABLE 1: GROUNDWATER ELEVATIONS

Well Name	Elevation of Ground Surface (ft)	Elevation of Casing (ft)	Elevation of Water (ft)	Depth to Water (ft)	Northing	Easting
MW-24-10	25.817	25.750	22.20	3.55	2411258.574	2290130.579
MW-24-30	26.449	26.005	22.23	3.78	2411258.259	2290135.911
MW-25-15	28.918	28.645	26.64	2.01	2413214.173	2290964.710
MW-25-47	29.473	28.263	26.59	1.67	2413218.361	2290965.381
TWP-1	25.773	28.287	19.25	9.04	2411390.790	2298581.684
TWP-2	20.719	24.169	19.45	4.72	2412010.564	2297559.032
TWP-3	20.735	23.679	18.67	5.01	2411408.562	2298219.646
TWP-4	29.579	32.885	22.08	10.81	2411846.847	2296049.088
TWP-5	28.603	31.303	23.37	7.93	2412313.641	2295978.587
TWP-6	26.861	30.280	24.74	5.54	2414350.005	2295072.118
TWP-7	29.438	32.889	25.25	7.64	2413700.340	2294927.545
TWP-8	29.396	32.464	25.23	7.23	2413239.366	2294827.168
TWP-9	29.561	33.737	24.96	8.78	2413348.252	2294049.541
TWP-10	30.676	33.397	25.08	8.32	2412682.428	2294500.459
TWP-11	29.197	32.924	24.63	8.29	2412285.535	2292867.820
TWP-12	27.724	30.868	24.32	6.55	2411174.729	2292083.381
TWP-13	27.130	30.230	24.02	6.21	2410888.893	2290895.117
TWP-14	27.010	29.379	24.03	5.35	2410388.240	2290938.986
TWP-15	25.455	29.024	23.95	5.07	2410172.529	2291425.933

NOTES: The coordinate system is NAD 83, Alaska State Plane, Zone 1
Depth to water is measured from top of well casing.
Elevation is relative to mean sea level.
* Result for corresponding well is considered estimated due to salt water causing reading errors with the equipment.
ft feet

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 2: SURFACE SOIL PFAS RESULTS

Analyte	Regulatory Limit	Sample:	21GST-SS-001	21GST-SS-002	21GST-SS-003		21GST-SS-004	21GST-SS-005	21GST-SS-006		21GST-SS-007	21GST-SS-008	21GST-SS-009	21GST-SS-010
		Date:	11/1/2021	11/1/2021	11/1/2021	Duplicate	11/1/2021	10/29/2021	10/29/2021	Duplicate	10/29/2021	10/29/2021	10/31/2021	10/31/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.20	0.64	0.97	1.1	1.3	0.74	1.6 J*	2.9 J*	0.17 J*	0.59	8.4	0.034 J*
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.19	<0.22	0.094 J	0.094 J	<0.21	0.083 J	0.37 J*	0.92 J*	<0.29	<0.23	0.74	<0.21
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.19	<0.22	<0.22	0.056 J	<0.21	<0.20	0.12 J*	0.36 J*	<0.29	<0.23	0.25	<0.21
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.19	0.039 J	0.027 J	<0.21	0.026 J	<0.20	0.087 J	0.13 J	<0.29	<0.23	<0.22	<0.21
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.19	0.050 J	0.099 J	0.13 J	0.17 J	<0.20	0.24 J*	0.45 J*	<0.29	<0.23	1.3	<0.21
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	0.066 J	<0.20	0.22 J	0.34	<0.29	<0.23	<0.22	<0.21
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	0.065 J	<0.20	0.27	0.35	<0.29	<0.23	<0.22	<0.21
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	0.40	0.60	<0.29	<0.23	0.048 J	<0.21
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	0.25 J*	0.47 J*	<0.29	<0.23	<0.22	<0.21
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	0.34 J*	0.63 J*	<0.29	<0.23	<0.22	<0.21
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	0.11 J*	0.38 J*	<0.29	<0.23	0.038 J*	<0.21
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	<0.27	<0.26	<0.29	<0.23	<0.22	<0.21
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	<0.27	<0.26	<0.29	<0.23	<0.22	<0.21
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	<0.27	<0.26	<0.29	<0.23	<0.22	<0.21
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	<0.27	<0.26	<0.29	<0.23	<0.22	<0.21
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.19	<0.22	<0.22	<0.21	<0.21	<0.20	<0.27	<0.26	<0.29	<0.23	<0.22	<0.21
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	2.4	**6.4**	**9.8**	**9.9**	**11**	**6.5**	**17 J***	**33 J***	**5.8**	**33**	**64**	0.69
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.19	0.086 J	0.076 J	0.12 J	0.16 J	<0.20	0.21 J*	0.45 J*	<0.29	<0.23	0.69	<0.21

NOTES: Results reported from Test America work order 320-81254-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 2: SURFACE SOIL PFAS RESULTS

Analyte	Regulatory Limit	Sample: / Date: / Units	21GST-SS-011	21GST-SS-012	21GST-SS-013	21GST-SS-014	21GST-SS-015	21GST-SS-016	21GST-SS-017	21GST-SS-018	21GST-SS-019	21GST-SS-020	21GST-SS-021	21GST-SS-022	21GST-SS-023
		Date:	10/31/2021	10/31/2021	10/31/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	0.036 J	<0.20	0.84	2.4	2.6	20 J	<0.21
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.10 J	0.25	0.65	2.1	<0.21
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	0.079 J	0.32	0.64	<0.21
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.047 J	0.10 J	0.45	0.38	0.033 J
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.044 J	0.36	0.35	4.0	<0.21
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.17 J	0.37	2.6	2.1	<0.21
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.96	1.0	15	7.6	<0.21
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.18 J	0.37	2.3	2.0	<0.21
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.046 J	0.052 J	0.30	0.53	<0.21
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	0.092 J	0.41	0.74	<0.21
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.034 J	<0.21	0.77	0.37	<0.21
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	<0.21	<0.22	<0.22	<0.21
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	<0.21	<0.22	<0.22	<0.21
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	<0.21	<0.22	<0.22	<0.21
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	<0.21	<0.22	<0.22	<0.21
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	<0.21	<0.21	<0.22	<0.22	<0.21
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.15 J	0.23	1.2	0.23 J*	0.27 J*	0.14 J*	0.24 J*	<0.20	**13**	**27**	**32**	**310**	0.091 J*
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.21	<0.19	<0.21	<0.27	<0.20	<0.22	<0.21	<0.20	0.14 J	0.28	0.75	**1.8**	<0.21

NOTES: Results reported from Test America work order 320-81254-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 2: SURFACE SOIL PFAS RESULTS

Analyte	Regulatory Limit	Sample:	21GST-SS-024	21GST-SS-025	21GST-SS-026		21GST-SS-027	21GST-SS-028	21GST-SS-029	21GST-SS-030	21GST-SS-031		21GST-SS-032	21GST-SS-033	21GST-SS-034
		Date:	10/29/2021	10/29/2021	10/29/2021	Duplicate	10/29/2021	10/29/2021	10/29/2021	10/31/2021	10/31/2021	Duplicate	11/1/2021	11/1/2021	11/1/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	0.040 J	0.049 J	<0.20
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	0.083 J	0.051 J	<0.25	<0.21	<0.20	<0.20
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	0.20 J	0.093 J	0.066 J	<0.21	<0.20	<0.20
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.22	<0.20	<0.26	0.033 J	<0.20	<0.21	0.063 J	0.18 J	0.12 J	0.11 J	<0.21	<0.20	<0.20
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluorododecanoic acid (PFDoA)	—	µg/kg	0.050 J	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.22	<0.20	0.085 J*	0.26 J*	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.22	<0.20	0.086 J	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	<0.22	<0.25	<0.21	<0.20	<0.20
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.12 J*	0.087 J	0.13 J*	0.23 J*	0.11 J*	<0.21	0.78 J*	0.27 J*	0.56 J*	0.60 J*	0.64	0.71	0.063 J
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.22	<0.20	<0.26	<0.25	<0.20	<0.21	<0.21	<0.29	0.088 J	0.070 J	<0.21	<0.20	<0.20

NOTES: Results reported from Test America work order 320-81254-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 3: SOIL BORING PFAS RESULTS

		Location:	21GST-SB001				21GST-SB002				21GST-SB003			21GST-SB004		
		Sample:	Sample 1	Sample 2	Sample 3	Sample 4	Sample 1	Sample 2	Sample 3	Sample 4	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3
		Depth:	0.00'-0.25'	3.9'-4.1'	7.9'-8.1'	13.9'-14.1'	0.00'-0.25'	4.4'-4.6'	8.9'-9.1'	13.4'-13.6'	0.00'-0.25'	3.7'-3.9'	9.4'-9.6'	0.00'-0.25'	3.7'-3.9'	8.9'-9.1'
	Regulatory	Date:	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/31/2021	10/31/2021	10/31/2021	10/31/2021	10/31/2021	10/31/2021
Analyte	Limit	Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	0.27 J*	0.072 J	0.033 J	0.055 J	<0.23	<0.24
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	0.26 J	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	0.21 J	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	0.061 J*	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.21	0.075 J	0.31	0.15 J	0.40	0.20 J	<0.23	0.079 J	**10**	2.6	0.44	1.0	0.24	0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.20	<0.22	<0.23	<0.23	<0.20	<0.22	<0.23	<0.24	<0.28	<0.21	<0.22	<0.22	<0.23	<0.24

NOTES: Results reported from Test America work order 320-81254-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 3: SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location:	21GST-SB005			21GST-SB006				21GST-SB007				21GST-SB008		
		Sample:	Sample 1	Sample 2	Sample 3	Sample 1		Sample 2	Sample 3	Sample 1		Sample 2	Sample 3	Sample 1	Sample 2	Sample 3
		Depth:	0.00'-0.25'	3.9'-4.1'	8.9'-9.1'	0.00'-0.25'	0.00'-0.25'	5.9'-6.1'	9.9'-10.1'	0.00'-0.25'	0.00'-0.25'	3.9'-4.1'	9.4'-9.6'	0.4'-0.6'	5.4'-5.6'	9.9'-10.1'
		Date:	10/30/2021	10/30/2021	10/30/2021	10/31/2021	Duplicate	10/31/2021	10/31/2021	10/30/2021	Duplicate	10/30/2021	10/30/2021	10/31/2021	10/31/2021	10/31/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.20	0.038 J	0.30	<0.20	<0.22	<0.21	<0.22	0.038 J*	0.038 J*	<0.22	<0.23	0.047 J	<0.21	<0.22
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	0.059 J	0.051 J	<0.22	<0.23	0.074 J	<0.21	<0.22
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	0.11 J*	0.056 J*	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	<0.21	<0.22	<0.23	<0.23	<0.21	<0.22
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	1.4	0.60	0.66	0.15 J*	0.76 J*	0.078 J*	0.31	0.10 J*	0.27 J*	<0.22	<0.23	0.36 J*	<0.21	0.69
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.20	<0.22	<0.23	<0.20	<0.22	<0.21	<0.22	<0.21	0.11 J	<0.22	<0.23	<0.23	<0.21	<0.22

NOTES: Results reported from Test America work order 320-81254-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).
— No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 3: SOIL BORING PFAS RESULTS

		Location:	*21GST-SB009*					*21GST-SB010*				*21GST-SB011*			
		Sample:	Sample 1		Sample 2	Sample 3	Sample 4	Sample 1		Sample 2	Sample 3	Sample 1	Sample 2		Sample 3
		Depth:	0.00'-0.25'	0.00'-0.25'	8.9'-9.1'	12.9'-13.1'	4.4'-4.6'	0.00'-0.25'	3.9'-4.1'	3.9'-4.1'	9.9'-10.1'	0.4'-0.6'	7.4'-7.6'	7.4'-7.6'	9.9'-10.1'
	Regulatory	Date:	10/30/2021	Duplicate	10/30/2021	10/30/2021	10/30/2021	10/30/2021	Duplicate	10/30/2021	10/30/2021	10/31/2021	10/31/2021	Duplicate	10/31/2021
Analyte	**Limit**	**Units**	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	7.3	15	20	0.40
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.68	0.36	0.24	0.085 J
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.21	0.18 J	0.26	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.16 J	<0.21	<0.20	<0.23
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	1.2	<0.21	<0.20	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	1.0	<0.21	<0.20	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	1.3	<0.21	<0.20	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.63	<0.21	<0.20	<0.23
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.10 J	<0.21	<0.20	<0.23
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.16 J	<0.21	<0.20	<0.23
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.046 J	<0.21	<0.20	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	<0.21	<0.21	<0.20	<0.23
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	<0.21	<0.21	<0.20	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	<0.21	<0.21	<0.20	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	<0.21	<0.21	<0.20	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	<0.21	<0.21	<0.20	<0.23
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.17 J*	0.068 J*	<0.21	<0.23	<0.23	0.15 J	0.14 J	0.051 J	0.12 J	**79**	**25 J***	0.67 J*	2.4
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.20	<0.20	<0.21	<0.23	<0.23	<0.22	<0.21	<0.22	<0.21	0.63	**4.0**	**4.9**	0.10 J

NOTES: Results reported from Test America work order 320-81254-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).
— No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 3: SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location: / Sample: / Depth: / Date: / Units	21GST-SB012 Sample 1 0.00'-0.25' 10/30/2021 Soil	21GST-SB012 Sample 2 2.9'-3.1' 10/30/2021 Soil	21GST-SB012 Sample 3 8.4'-8.6' 10/30/2021 Soil	21GST-SB013 Sample 1 0.00'-0.25' 10/30/2021 Soil	21GST-SB013 Sample 2 3.4'-3.6' 10/30/2021 Soil	21GST-SB013 Sample 3 9.9'-10.1' 10/30/2021 Soil	21GST-SB014 Sample 1 0.00'-0.25' 10/31/2021 Soil	21GST-SB014 Sample 2 3.4'-3.6' 10/31/2021 Soil	21GST-SB014 Sample 3 9.4'-9.6' 10/31/2021 Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	0.071 J	<0.21	<0.23
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	0.038 J	0.12 J	<0.23
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.22	<0.21	<0.23	0.046 J	<0.23	<0.24	0.058 J	<0.21	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.22	<0.21	<0.23	0.028 J	<0.23	<0.24	0.29	<0.21	<0.23
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.22	<0.21	<0.23	0.082 J	<0.23	<0.24	0.14 J	<0.21	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	0.095 J	<0.21	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.22	<0.21	<0.23	0.034 J	<0.23	<0.24	<0.21	<0.21	<0.23
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	0.051 J	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	<0.21	<0.21	<0.23
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.14 J	<0.21	<0.23	0.14 J	0.090 J	<0.24	1.2	0.053 J	0.13 J
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.22	<0.21	<0.23	<0.22	<0.23	<0.24	0.12 J	<0.21	<0.23

NOTES: Results reported from Test America work order 320-81254-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).
— No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 4: MONITORING WELL SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location:	21GST-MW13							21GST-MW14						
		Sample:	Sample 1	Sample 2		Sample 3	Sample 4	Sample 5	Sample 7	Sample 1		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
		Depth:	1.9'-2.1'	8.9'-9.1'	8.9'-9.1'	19.9'-20.1'	24.9'-25.1'	29.9'-30.1'	42.9'-43.1'	0.9'-1.1'	0.9'-1.1'	6.9'-7.1'	16.9'-17.1'	24.9'-25.1'	33.9'-34.1'	43.9'-44.1'
		Date:	10/19/2021	10/19/2021	Duplicate	10/19/2021	10/19/2021	10/19/2021	10/19/2021	10/27/2021	Duplicate	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	0.047 J	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.20	<0.24	<0.23	<0.21	0.093 J	0.10 J	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.20	<0.24	<0.23	<0.21	<0.26	<0.20	<0.25	<0.20	<0.20	<0.25	<0.24	<0.27	<0.24	<0.25

NOTES: Results reported from Test America work orders 320-81254-1, 320-81504-1, and 320-80903-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).
— No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
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Bold The detected concentration exceeds the regulatory limit for the associated analyte.
µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 4: MONITORING WELL SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location:	21GST-MW15							21GST-MW16				21GST-MW17	
		Sample:	Sample 1	Sample 2	Sample 3	Sample 4		Sample 5	Sample 6	Sample 1	Sample 2	Sample 3	Sample 4	Sample 1	Sample 2
		Depth:	0.00'-0.25	8.4'-8.6'	17.9'-18.1'	27.9'-28.1'	27.9'-28.1'	38.9'-39.1'	47.9'-48.1'	0.00'-0.25'	3.7'-3.9'	9.4'-9.6'	13.4'-13.6'	11.9'-12.1'	36.9'-37.1'
		Date:	10/29/2021	10/29/2021	10/29/2021	10/29/2021	Duplicate	10/29/2021	10/29/2021	10/31/2021	10/31/2021	10/31/2021	10/31/2021	10/22/2021	10/22/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.047 J	0.038 J	<0.22	<0.24	<0.23	<0.23	<0.24	0.33	0.033 J	0.066 J	0.054 J	<0.24	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.27	<0.21	0.053 J	<0.25	<0.24	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.094 J	<0.21	<0.25	<0.25	<0.24	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.042 J	0.22	<0.25	<0.25	<0.24	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.24	0.16 J	<0.25	<0.25	<0.24	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.20 J	0.20 J	<0.25	<0.25	<0.24	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.28	<0.21	<0.25	<0.25	<0.24	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.044 J	<0.21	<0.25	<0.25	<0.24	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.091 J	<0.21	<0.25	<0.25	<0.24	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.21	<0.23	<0.22	<0.24 J*	<0.23	<0.23	<0.24	<0.21	<0.21	<0.25	<0.25	<0.24	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.39	0.18 J	<0.22	0.60 J*	0.26 J*	<0.23	<0.24	**3.7**	0.39	1.8	1.5	0.094 J	<0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.21	<0.23	<0.22	<0.24	<0.23	<0.23	<0.24	0.094 J	<0.21	<0.25	<0.25	<0.24	<0.25

NOTES: Results reported from Test America work orders 320-81254-1, 320-81504-1, and 320-80903-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 4: MONITORING WELL SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location:	21GST-MW18							21GST-MW19		21GST-MW20		
		Sample:	Sample 1	Sample 2		Sample 3	Sample 4	Sample 5	Sample 6	Sample 1	Sample 2	Sample 1		Sample 2
		Depth:	0.4'-0.6'	4.9'-5.1'	4.9'-5.1'	16.9'-17.1'	24.9'-25.1'	34.9'-35.1'	44.9'-45.1'	2.9'-3.1'	47.9'-48.1'	4.9'-5.1'	4.9'-5.1'	36.9'-37.1
		Date:	10/28/2021	10/28/2021	Duplicate	10/28/2021	10/28/2021	10/28/2021	10/28/2021	10/31/2021	11/1/2021	11/1/2021	Duplicate	11/1/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	0.039 J	<0.22	<0.20	<0.21	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	0.035 J	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.13 J	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	0.24 J	<0.22	<0.20	<0.21	<0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.20	<0.23	<0.23	<0.26	<0.24	<0.25	<0.23	<0.26	<0.22	<0.20	<0.21	<0.25

NOTES: Results reported from Test America work orders 320-81254-1, 320-81504-1, and 320-80903-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

Bold The detected concentration exceeds the regulatory limit for the associated analyte.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 4: MONITORING WELL SOIL BORING PFAS RESULTS

Analyte	Regulatory Limit	Location:	21GST-MW21		21GST-MW22		21GST-MW23		21GST-MW24		21GST-MW25	
		Sample:	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
		Depth:	7.4'-7.6'	41.9'-42.1'	4.4'-4.6'	39.9'-40.1'	12.9'-13.1'	41.9'-42.1'	3.9'-4.1'	27.9'-28.1'	3.9'-4.1'	46.9'-47.1
		Date:	10/25/2021	10/25/2021	10/25/2021	10/25/2021	10/20/2021	10/20/2021	10/24/2021	10/24/2021	10/23/2021	10/23/2021
		Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	0.046 J	<0.26	<0.23	<0.23	<0.24	<0.25	0.042 J	<0.23	<0.23	<0.23
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.24	<0.26	<0.23	<0.23	<0.24	<0.25	<0.21	<0.23	<0.23	<0.23

NOTES: Results reported from Test America work orders 320-81254-1, 320-81504-1, and 320-80903-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).
— No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 5: SOIL BORING PETROLEUM RESULTS

			Boring:	21GST-SB001		21GST-SB002		21GST-SB003		21GST-SB004		21GST-SB005		21GST-SB007		
			Sample:	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1		Sample 2
			Depth:	0.00'-0.25'	3.9'-4.1'	0.00'-0.25'	4.4'-4.6'	0.00'-0.25'	3.7'-3.9'	0.00'-0.25'	3.7'-3.9'	0.00'-0.25'	3.9'-4.1'	0.00'-0.25'	0.00'-0.25'	3.9'-4.1'
			Date:	10/30/2021	10/30/2021	10/30/2021	10/30/2021	10/31/2021	10/31/2021	10/31/2021	10/31/2021	10/30/2021	10/30/2021	10/30/2021	Duplicate	10/30/2021
Analytical Method	Analyte	Regulatory Limit	Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
AK101	Gasoline Range Organics	260	mg/kg	<1.78	<4.72 B*	<6.34 B*	<4.61 B*	<3.17	<2.42	<2.63	<2.48	<5.42 B*	<2.38	<6.05 B*	<5.07 B*	<5.20 B*
AK102	Diesel Range Organics	230	mg/kg	<10.6	<11.5	<10.9	<11.5	13.2 J	<11.8	<12.2	21.2 J	15.7 J	<11.9	26.3 J*	10.4 J*	13.0 J
AK103	Residual Range Organics	9,700	mg/kg	<53.0	<57.5	<54.0	<57.5	81.7 J	<59.0	<61.0	<58.0	201	<59.5	281 J*	<55.0 J*	<57.5
8270D SIM (PAH)	1-Methylnaphthalene	0.41	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	2-Methylnaphthalene	1.3	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Acenaphthene	37	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Acenaphthylene	18	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Anthracene	390	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Benzo(a)anthracene	0.7	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Benzo(a)pyrene	1.9	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Benzo(b)fluoranthene	20	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Benzo(g,h,i)perylene	15,000	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Benzo(k)fluoranthene	190	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Chrysene	600	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Dibenzo(a,h)anthracene	6.3	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Fluoranthene	590	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Fluorene	36	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Indeno(1,2,3-cd)pyrene	65	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Naphthalene	0.038	mg/kg	<0.0104	<0.0114	<0.0108	<0.0115	<0.0122	<0.0118	<0.0121	<0.0117	**<0.108**	<0.0118	<0.0113	<0.0111	<0.0116
	Phenanthrene	39	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
	Pyrene	87	mg/kg	<0.0130	<0.0143	<0.0136	<0.0144	<0.0153	<0.0147	<0.0152	<0.0146	<0.135	<0.0147	<0.0141	<0.0138	<0.0144
SW8260D (BTEX)	Benzene	0.022	mg/kg	<0.00890	<0.0118	<0.0159	<0.0115	<0.0159	<0.0121	<0.0131	<0.0124	<0.0136	<0.0119	<0.0152	<0.0127	<0.0130
	Ethylbenzene	0.13	mg/kg	<0.0178	<0.0236	<0.0317	<0.0231	<0.0318	<0.0242	<0.0262	<0.0249	<0.0271	<0.0238	<0.0302	<0.0254	<0.0260
	m,p-xylenes	1.5	mg/kg	<0.0356	<0.0471	<0.0635	<0.0461	<0.0635	<0.0483	<0.0525	<0.0497	<0.0540	<0.0476	<0.0605	<0.0505	<0.0520
	o-Xylene	1.5	mg/kg	<0.0178	<0.0236	<0.0317	<0.0231	<0.0318	<0.0242	<0.0262	<0.0249	<0.0271	<0.0238	<0.0302	<0.0254	<0.0260
	Toluene	6.7	mg/kg	<0.0178	<0.0236	<0.0317	<0.0231	<0.0318	<0.0242	<0.0262	<0.0249	<0.0271	<0.0238	<0.0302	<0.0254	<0.0260
	Total Xylenes	1.5	mg/kg	<0.0535	<0.0710	<0.0950	<0.0690	<0.0950	<0.0725	<0.0785	<0.0745	<0.0810	<0.0715	<0.0910	<0.0760	<0.0780

NOTES: Results reported from SGS work order 1217257.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte was not detected; reported as <LOD.

J Estimated concentration, detected greater than the detection limit (LOD) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (*)

<Bold The laboratory's limit of detection (LOD) is greater than the regulatory limit.

BTEX = benzene, toluene, ethylbenzene, and xylenes;

mg/kg = milligrams per kilogram; PAH = polynuclear aromatic hydrocarbons

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 5: SOIL BORING PETROLEUM RESULTS

Analytical Method	Analyte	Regulatory Limit	Boring: / Sample: / Depth: / Date: / Units	21GST-SB009 Sample 1	21GST-SB009 Sample 1	21GST-SB009 Sample 2	21GST-SB011 Sample 1	21GST-SB011 Sample 2	21GST-SB011 Sample 2	21GST-SB012 Sample 1	21GST-SB012 Sample 2	21GST-SB013 Sample 1	21GST-SB013 Sample 2
			Depth:	0.00'-0.25'	0.00'-0.25'	4.4'-4.6'	0.4'-0.6'	7.4'-7.6'	7.4'-7.6'	0.00'-0.25'	2.9'-3.1'	0.00'-0.25'	3.4'-3.6'
			Date:	10/30/2021	Duplicate	10/30/2021	10/31/2021	10/31/2021	Duplicate	10/30/2021	10/30/2021	10/30/2021	10/30/2021
			Units	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
AK101	Gasoline Range Organics	260	mg/kg	<5.01 B*	<4.06 B*	<3.28 B*	<3.07	<2.72	<3.20	<4.41 B*	<2.43	<2.35	<4.36 B*
AK102	Diesel Range Organics	230	mg/kg	<10.7	<10.7	<10.7	146	<10.6	<11.1	<11.1	<11.8	<11.2	<11.4
AK103	Residual Range Organics	9,700	mg/kg	<53.5	<53.5	<53.0	2,380	53.3 J	<55.0	<55.5	<59.0	<55.5	<57.0
8270D SIM (PAH)	1-Methylnaphthalene	0.41	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	2-Methylnaphthalene	1.3	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Acenaphthene	37	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Acenaphthylene	18	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Anthracene	390	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Benzo(a)anthracene	0.7	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Benzo(a)pyrene	1.9	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Benzo(b)fluoranthene	20	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Benzo(g,h,i)perylene	15,000	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Benzo(k)fluoranthene	190	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Chrysene	600	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Dibenzo(a,h)anthracene	6.3	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Fluoranthene	590	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Fluorene	36	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Indeno(1,2,3-cd)pyrene	65	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Naphthalene	0.038	mg/kg	<0.0107	<0.0106	<0.0106	**<0.109**	<0.0106	<0.0111	<0.0111	<0.0117	<0.0111	<0.0114
	Phenanthrene	39	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
	Pyrene	87	mg/kg	<0.0134	<0.0133	<0.0132	<0.136	<0.0133	<0.0138	<0.0138	<0.0147	<0.0138	<0.0142
SW8260D (BTEX)	Benzene	0.022	mg/kg	<0.0125	<0.0101	<0.00820	<0.0154	<0.0136	<0.0160	<0.0110	<0.0121	<0.0117	<0.0109
	Ethylbenzene	0.13	mg/kg	<0.0250	<0.0203	<0.0164	<0.0307	<0.0272	<0.0320	<0.0221	<0.0243	<0.0234	<0.0218
	m,p-xylenes	1.5	mg/kg	<0.0500	<0.0406	<0.0328	<0.0615	<0.0545	<0.0640	<0.0441	<0.0486	<0.0469	<0.0435
	o-Xylene	1.5	mg/kg	<0.0250	<0.0203	<0.0164	<0.0307	<0.0272	<0.0320	<0.0221	<0.0243	<0.0234	<0.0218
	Toluene	6.7	mg/kg	<0.0250	<0.0203	<0.0164	<0.0307	<0.0272	<0.0320	<0.0221	<0.0243	<0.0234	<0.0218
	Total Xylenes	1.5	mg/kg	<0.0750	<0.0610	<0.0491	<0.0920	<0.0815	<0.0960	<0.0660	<0.0730	<0.0705	<0.0655

NOTES: Results reported from SGS work order 1217257.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte was not detected; reported as <LOD.

J Estimated concentration, detected greater than the detection limit (LOD) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (*)

<Bold The laboratory's limit of detection (LOD) is greater than the regulatory limit.

BTEX = benzene, toluene, ethylbenzene, and xylenes;

mg/kg = milligrams per kilogram; PAH = polynuclear aromatic hydrocarbons

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 6: MONITORING WELL PFAS RESULTS

Analyte	EPA LHA	Sample: / Date: / Units	MW-1-15 10/26/2021 Water	MW-1-40 10/26/2021 Water	MW-2-20 10/26/2021 Water	MW-2-20 Duplicate Water	MW-2-30 10/26/2021 Water	MW-3-15 10/26/2021 Water	MW-3-40 10/26/2021 Water	MW-4-20 10/25/2021 Water	MW-5-20 10/25/2021 Water	MW-6-20 10/26/2021 Water	MW-7-20 10/25/2021 Water	MW-8-20 10/25/2021 Water	MW-9-30 10/25/2021 Water	MW-9-30 Duplicate Water	MW-10-20 10/25/2021 Water	MW-11-15 10/31/2021 Water	MW-12-10 10/31/2021 Water	MW-12-10 Duplicate Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	0.76 J	<1.8	39	40	<1.8	5.8	12	0.55 J	0.88 J	1.1 J	0.67 J	<1.8	9.9	10	8.4	60	11	10
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.8	<1.8	90	93	0.54 J*	0.61 J	1.8 J	<1.8	<1.8	<1.8	1.8 J	<1.8	7.5	7.7	6.4	16	2.9	2.4
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.8	<1.8	44	49	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	0.61 J	<1.8	2.9	2.9	2.9	10	4.3	4.4
Perfluorononanoic acid (PFNA)	-	ng/L	<1.8	<1.8	6.5	7.0	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	1.3 J	0.91 J*	0.58 J*
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.8	<1.8	2.7	2.6	1.1 J	0.45 J*	1.0 J	<1.8	0.41 J	<1.8	0.21 J	<1.8	0.78 J	0.65 J	0.38 J	4.7	0.23 J	0.35 J*
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.8	<1.8	<1.8	0.72 J	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	0.72 J	<1.7	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.5	<4.5	<4.6	<4.7	<4.5	<4.6	<4.6	<4.6	<4.6	<4.7	<4.6	<4.5	<4.5	<4.4	<4.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.5	<4.5	<4.5	<4.5	<4.6	<4.7	<4.5	<4.6	<4.6	<4.6	<4.6	<4.7	<4.6	<4.5	<4.5	<4.4	<4.3
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.7	<3.6	<3.6	<3.6	<3.6	<3.7	<3.7	<3.6	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.6	<3.6	<3.5	<3.4
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.8	**330**	**360**	0.51 J	2.7	12	<1.8	3.6	<1.8	14	2.3	37	37	**81**	**820**	30	27
Perfluorooctanoic acid (PFOA)		ng/L	<1.8	<1.8	24	24	<1.8	<1.9	1.1 J	<1.8	0.81 J	<1.8	2.6	<1.8	0.87 J	0.78 J	1.1 J	9.8	2.5	2.6
LHA Combined (PFOS + PFOA)	70†	ng/L	n/a	n/a	**354**	**384**	0.51 J‡	2.7 ‡	13 J	n/a	4.4 J	n/a	17	2.3 ‡	38 J	38 J	**82 J**	**830**	33	30

NOTES: Results reported from TestAmerica work orders 320-81258-1, 320-81504-1, and 320-81055-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
ng/L = nanograms per liter, equivalent to parts per trillion

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 6: MONITORING WELL PFAS RESULTS

		Sample:	MW-9-10	MW-13-20	MW-13-45		MW-14-15	MW-14-31	MW-15-15	MW-15-45		MW-16-15	MW-17-20	MW-17-40		MW-18-15	MW-18-50		MW-19-15
		Date:	10/25/2021	10/27/2021	10/27/2021	Duplicate	11/1/2021	11/1/2021	11/3/2021	11/3/2021	Duplicate	11/2/2021	10/26/2021	10/26/2021	Duplicate	11/4/2021	11/4/2021	Duplicate	11/5/2021
Analyte	EPA LHA	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<2.0	7.6	<1.7	<1.8	1.8	6.2	10	<1.7	<1.7	14	16	<1.9	<1.9	21	1.3 J	1.2 J	0.84 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	<2.0	4.2	<1.7	<1.8	1.0 J	8.6	2.6	<1.7	<1.7	56	11	<1.9 J*	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<2.0	1.4 J	<1.7	<1.8	1.1 J	2.3	<1.7	<1.7	<1.7	25	1.8 J	<1.9 J*	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorononanoic acid (PFNA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	0.25 J	<1.7	<1.7	<1.7	4.0	<2.0	<1.9 J*	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<2.0	0.70 J	<1.7	<1.8	0.24 J	0.74 J	<1.7	<1.7	<1.7	<1.7	0.98 J	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorodecanoic acid (PFDA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	13	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.9	<4.3	<4.4	<4.4	<4.5	<4.3	<4.3	<4.3	<4.3	<4.3	<4.9	<4.8 J*	<4.7	<4.5	<4.6	<4.6	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.9	<4.3	<4.4	<4.4	<4.5	<4.3	<4.3	<4.3	<4.3	<4.3	<4.9	<4.8	<4.7	<4.5	<4.6	<4.6	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<2.0	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<2.0	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.9	<3.4	<3.5	<3.5	<3.6	<3.5	<3.4	<3.5	<3.4	<3.5	<3.9	<3.9 J*	<3.7	<3.6	<3.7	<3.7	<3.6
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<2.0	6.2	<1.7	<1.8	5.3	38	22	<1.7	<1.7	49	**130**	<1.9	<1.9	51	1.9	2.1	1.4 J
Perfluorooctanoic acid (PFOA)		ng/L	<2.0	1.4 J	<1.7	<1.8	<1.8	1.3 J	1.3 J	<1.7	<1.7	8.6	1.6 J	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
LHA Combined (PFOS + PFOA)	70†	ng/L	n/a	7.6 J	n/a	n/a	5.3 ‡	39 J	23 J	n/a	n/a	58	**132 J**	n/a	n/a	51 ‡	1.9 ‡	2.1 ‡	1.4 J‡

NOTES: Results reported from TestAmerica work orders 320-81258-1, 320-81504-1, and 320-81055-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
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GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 6: MONITORING WELL PFAS RESULTS

		Sample:	MW-19-50		MW-20-15	MW-20-40	MW-21-15	MW-21-45		MW-22-15	MW-22-40	MW-23-20	MW-23-50		MW-24-10	MW-24-30	MW-25-15	MW-25-47		GAC 2021
		Date:	11/5/2021	Duplicate	11/4/2021	11/4/2021	11/1/2021	11/1/2021	Duplicate	10/30/2021	10/30/2021	10/24/2021	10/25/2021	Duplicate	10/29/2021	10/29/2021	10/28/2021	10/29/2021	Duplicate	11/5/2021
Analyte	EPA LHA	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	1.8	1.8	5.5	<1.7	6.1	<1.8	<1.8	4.5	27	1.0 J	<1.9 J*	<1.9 J*	0.54 J	<1.7	0.56 J	<1.8	<1.8	<1.7
Perfluorohexanoic acid (PFHxA)	-	ng/L	1.5 J	1.8	1.5 J	<1.7	3.9	<1.8	<1.8	3.0	6.8	1.4 J	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	1.9	<1.8	<1.8	1.1 J	1.2 J	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorononanoic acid (PFNA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	0.65 J	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.8	<1.8	<1.7	<1.7	0.72 J	<1.8	<1.8	0.39 J*	4.0	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	1.2 J	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.5	<4.5	<4.2	<4.3	<4.4	<4.5	<4.4	<4.6	<4.5	<4.7	<4.8 J*	<4.8 J*	<4.2	<4.2	<4.4	<4.5	<4.6	<4.1
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.5	<4.5	<4.2	<4.3	<4.4	<4.5	<4.4	<4.6	<4.5	<4.7	<4.8 J*	<4.8 J*	<4.2	<4.2	<4.4	<4.5	<4.6	<4.1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.8	<1.8	<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.9 J*	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.6	<3.6	<3.4	<3.5	<3.5	<3.6	<3.5	<3.7	<3.6	<3.8	<3.8 J*	<3.9 J*	<3.4	<3.4	<3.5	<3.6	<3.6	<3.3
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	1.2 J	1.3 J	2.6	<1.7	49	<1.8	<1.8	22	7.2	11	<1.9 J*	<1.9 J*	1.4 J	<1.7	<1.8	<1.8	<1.8	<1.7
Perfluorooctanoic acid (PFOA)		ng/L	<1.8	<1.8	<1.7	<1.7	1.2 J	<1.8	<1.8	1.0 J	3.2	2.5	<1.9	<1.9 J*	<1.7	<1.7	<1.8	<1.8	<1.8	<1.7
LHA Combined (PFOS + PFOA)	70†	ng/L	1.2 J‡	1.3 J‡	2.6 ‡	n/a	50 J	n/a	n/a	23 J	10	14	n/a	n/a	1.4 J‡	n/a	n/a	n/a	n/a	n/a

NOTES: Results reported from TestAmerica work orders 320-81258-1, 320-81504-1, and 320-81055-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
ng/L = nanograms per liter, equivalent to parts per trillion

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 7: TEMPORARY WELL POINTS PFAS RESULTS

		Sample:	*21GST-TWP-1*	*21GST-TWP-2*	*21GST-TWP-3*		*21GST-TWP-4*	*21GST-TWP-5*	*21GST-TWP-6*	*21GST-TWP-7*	*21GST-TWP-8*	*21GST-TWP-9*	*21GST-TWP-10*
		Date:	10/27/2021	10/27/2021	10/28/2021	Duplicate	10/28/2021	10/28/2021	10/30/2021	10/30/2021	10/28/2021	10/30/2021	10/27/2021
Analyte	EPA LHA	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<1.8	12	<1.8	<1.8	100	53	8.4	1.0 J	6.9	22	54
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.8	7.7	<1.8	<1.8	45	26	1.0 J	1.1 J	8.6	9.9	12
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.8	1.8	<1.8	<1.8	17	16	0.61 J	1.2 J	8.4	2.2	4.3
Perfluorononanoic acid (PFNA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	1.5 J	2.4	<1.7	0.52 J	<1.8	<1.7	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.8	2.7	<1.8	<1.8	10	1.6 J	0.50 J	<1.7	<1.8	0.98 J	2.6
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	2.9	<1.7	<1.7	<1.8	<1.7	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.3	<4.4	<4.5	<4.4	<4.2	<4.3	<4.3	<4.4	<4.3	<4.4
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.3	<4.4	<4.5	<4.4	<4.2	<4.3	<4.3	<4.4	<4.3	<4.4
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.8	<1.7	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.6	<3.4	<3.5	<3.6	<3.5	<3.4	<3.4	<3.5	<3.5	<3.5	<3.5
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	44	<1.8	<1.8	**340**	**170**	8.0	19	**150**	**74**	63
Perfluorooctanoic acid (PFOA)		ng/L	<1.8	1.4 J	<1.8	<1.8	17	11	<1.7	2.7	2.9	2.7	3.0
LHA Combined (PFOS + PFOA)	70†	ng/L	n/a	45 J	n/a	n/a	**357**	**181**	8.0 ‡	22	**153**	**77**	66

NOTES: Results reported from TestAmerica work orders 320-81258-1 and 320-81055-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
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GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 7: TEMPORARY WELL POINTS PFAS RESULTS

		Sample:	21GST-TWP-11		21GST-TWP-12	21GST-TWP-13	21GST-TWP-14		21GST-TWP-15		PW-016
		Date:	10/30/2021	Duplicate	10/30/2021	10/24/2021	10/24/2021	Duplicate	10/27/2021	Duplicate	10/26/2021
Analyte	EPA LHA	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	6.4	5.9	0.57 J	14	3.9	3.8	11	11	1.5 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	1.1 J	1.4 J	<1.7	11	3.1	2.9	6.3	6.8	3.8
Perfluoroheptanoic acid (PFHpA)	-	ng/L	1.1 J	1.1 J	<1.7	5.0	1.1 J	<2.0	3.0	3.1	1.9 J*
Perfluorononanoic acid (PFNA)	-	ng/L	<1.7	0.29 J	<1.7	<1.9	<2.0	<2.0 J*	<1.7	0.30 J	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	0.26 J	0.21 J	<1.7	0.61 J	<2.0	<2.0	0.53 J	0.51 J	<1.9
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.3	<4.5	<4.3	<4.8	<5.0	<5.0	<4.2	<4.6	<4.8 J*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.3	<4.5	<4.3	<4.8	<5.0	<5.0	<4.2	<4.6	<4.8 J*
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.7	<1.8	<1.7	<1.9	<2.0	<2.0	<1.7	<1.8	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.5	<3.6	<3.5	<3.8	<4.0	<4.0 J*	<3.4	<3.7	<3.9
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	29	28	<1.7	41	23	26	**80**	**84**	<1.9
Perfluorooctanoic acid (PFOA)		ng/L	1.3 J	1.0 J	<1.7	1.3 J	<2.0	<2.0	1.4 J	1.3 J	4.2
LHA Combined (PFOS + PFOA)	70†	ng/L	30 J	29 J	n/a	42 J	23 ‡	26 ‡	**81 J**	**85 J**	4.2 ‡

NOTES: Results reported from TestAmerica work orders 320-81258-1 and 320-81055-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
ng/L = nanograms per liter, equivalent to parts per trillion

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 8: SURFACE WATER PFAS RESULTS

Analyte	EPA LHA	Sample: / Date: / Units	21GST-SW-001	21GST-SW-002	21GST-SW-003	21GST-SW-005	21GST-SW-006	21GST-SW-007	21GST-SW-008	21GST-SW-009	21GST-SW-010	21GST-SW-011	21GST-SW-012
		Date:	10/18/2021	10/18/2021	10/18/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/18/2021	10/17/2021	10/17/2021	10/17/2021
		Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<1.9	<1.9	<2.0	1.4 J	6.3	<1.9 J*	0.67 J*	7.7	40	48	<1.9
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	1.7 J	28	5.9	<1.9
Perfluoroheptanoic acid (PFHpA)	-	ng/L	0.31 J	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	1.1 J	9.8	0.59 J	<1.9
Perfluorononanoic acid (PFNA)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	0.31 J	1.4 J	1.2 J	<1.9
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.9	<1.9	<2.0	<1.9 J*	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.9	<1.9	<2.0	<1.9 J*	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.9	<1.9	<2.0	<1.9 J*	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.9 J*	<1.9	<2.0	<1.9 J*	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.8	<4.8	<4.9	<4.8	<4.7	<4.8 J*	<4.8 J*	<4.8	<4.9	<4.8	<4.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.8	<4.8	<4.9	<4.8	<4.7	<4.8 J*	<4.8 J*	<4.8	<4.9	<4.8	<4.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	<1.9	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.9	<3.9	<3.9	<3.8 J*	<3.8	<3.8 J*	<3.8 J*	<3.9	<3.9	<3.9	<3.8
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	<1.9	<2.0	<1.9	8.6	<1.9 J*	<1.9 J*	6.7	**270**	67	<1.9
Perfluorooctanoic acid (PFOA)		ng/L	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9 J*	<1.9 J*	1.1 J	5.2	3.7	<1.9
LHA Combined (PFOS + PFOA)	70†	ng/L	n/a	n/a	n/a	n/a	8.6 ‡	n/a	n/a	7.8 J	**275**	**71**	n/a

NOTES: Results reported from TestAmerica work orders 320-81258-1 and 320-80911-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
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GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 8: SURFACE WATER PFAS RESULTS

Analyte	EPA LHA	Units	21GST-SW-013	21GST-SW-014	21GST-SW-015	21GST-SW-016	21GST-SW-017	21GST-SW-018	21GST-SW-018	21GST-SW-019	21GST-SW-020	21GST-SW-021	21GST-SW-022	21GST-SW-023
		Date:	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	Duplicate	10/17/2021	10/17/2021	10/17/2021	10/18/2021	10/18/2021
			Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	79	5.2	25	31	47	<1.9	<2.0	1.2 J	5.8	5.2	<1.9	7.0
Perfluorohexanoic acid (PFHxA)	-	ng/L	30	2.5	11	15	32	<1.9	<2.0	<1.9	2.4	2.3	<1.9	7.9
Perfluoroheptanoic acid (PFHpA)	-	ng/L	9.0	1.3 J	2.8	4.7	44	<1.9	<2.0	<1.9	1.0 J	0.79 J	<1.9	1.8 J
Perfluorononanoic acid (PFNA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	9.2	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	4.5	0.39 J	2.4	2.5	2.1	<1.9	<2.0	<1.9	<2.0	0.37 J	<1.9	0.41 J
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	2.4	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.9	<2.0	<1.9 J*	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.8	<4.9	<4.9	<5.0	<5.0	<4.8	<4.9	<4.8	<4.9	<4.9	<4.8	<5.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.8	<4.9	<4.9	<5.0	<5.0	<4.8	<4.9	<4.8	<4.9	<4.9	<4.8	<5.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.9	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<1.9	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.8	<3.9	<3.9	<4.0	<4.0	<3.9	<3.9	<3.8	<3.9	<3.9	<3.8	<4.0
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	**260**	42	**220**	**160**	14	<1.9	<2.0	4.2	27	24	<1.9	16
Perfluorooctanoic acid (PFOA)		ng/L	8.5	0.96 J	3.3	3.8	27	<1.9	<2.0	<1.9	<2.0	0.85 J	<1.9	0.90 J
LHA Combined (PFOS + PFOA)	70†	ng/L	**269**	43 J	**223**	**164**	41	n/a	n/a	4.2 ‡	27 ‡	25 J	n/a	17 J

NOTES: Results reported from TestAmerica work orders 320-81258-1 and 320-80911-1.
- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
ng/L = nanograms per liter, equivalent to parts per trillion

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 8: SURFACE WATER PFAS RESULTS

		Sample:	21GST-SW-024		21GST-SW-025	21GST-SW-026	21GST-SW-027		21GST-SW-028	21GST-SW-029	21GST-SW-030	21GST-SW-031	
		Date:	10/17/2021	Duplicate	10/18/2021	10/18/2021	10/18/2021	Duplicate	10/18/2021	10/18/2021	10/18/2021	10/31/2021	Duplicate
Analyte	EPA LHA	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	9.2	9.5	33	7.0	3.8	4.1	11	<1.9	<1.9	0.63 J	0.64 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	7.4	7.3	37	4.0	2.1 J*	3.5 J*	8.8	<1.9	<1.9	<1.9	<1.9
Perfluoroheptanoic acid (PFHpA)	-	ng/L	2.1	2.1	8.2	1.3 J	1.3 J*	2.1 J*	2.5	0.41 J	0.48 J	0.25 J	<1.9
Perfluorononanoic acid (PFNA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	0.52 J	0.57 J	2.5	0.85 J	0.28 J	0.30 J	0.69 J	<1.9	<1.9	<1.9	<1.9
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.8	<4.9	<4.7	<4.8	<4.8	<4.8	<5.0	<4.8	<4.8	<4.7	<4.7
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.8	<4.9	<4.7	<4.8	<4.8	<4.8	<5.0	<4.8	<4.8	<4.7	<4.7
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.8	<3.9	<3.8	<3.8	<3.8	<3.8	<4.0	<3.8	<3.8	<3.8	<3.7
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	43 J*	30 J*	**130**	15	41 J*	57 J*	33	0.55 J	<1.9	<1.9	<1.9
Perfluorooctanoic acid (PFOA)		ng/L	0.98 J	1.1 J	3.8	1.3 J	<1.9	<1.9	1.3 J	<1.9	<1.9	<1.9	<1.9
LHA Combined (PFOS + PFOA)	70†	ng/L	44 J*	31 J*	**134**	16 J	41 J*‡	57 J*‡	34 J	0.55 J‡	n/a	n/a	n/a

NOTES: Results reported from TestAmerica work orders 320-81258-1 and 320-80911-1.

- \- No applicable regulatory limit exists for the associated analyte.
- † EPA LHA level is 70 ppt for PFOS and PFOA combined.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- **Bold** Concentration exceeds LHA level.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- ‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.
- n/a detected in the project sample.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory;
ng/L = nanograms per liter, equivalent to parts per trillion

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 9: SEDIMENT SAMPLE PFAS RESULTS

Analyte	Regulatory Limit	Sample:	21GST-SED-004	21GST-SED-005	21GST-SED-006	21GST-SED-007	21GST-SED-008	21GST-SED-009		21GST-SED-010	21GST-SED-011		21GST-SED-012
		Depth:	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'
		Date:	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/18/2021	10/18/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021
		Units	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.21	<0.23	0.052 J	<0.23	<0.24	<0.25	<0.25	<0.26	0.12 J	<0.22	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.21	<0.23	0.62 J*	<0.23	<0.24	<0.25	<0.25	0.82 J*	<0.25	<0.22	<0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.21	<0.23	<0.21	<0.23	<0.24	<0.25	<0.25	<0.26	<0.25	<0.22	<0.25

NOTES: Results reported from Test America work order 320-80903-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 9: SEDIMENT SAMPLE PFAS RESULTS

Analyte	Regulatory Limit	Sample: / Depth: / Date: / Units	21GST-SED-013	21GST-SED-014	21GST-SED-015	21GST-SED-016	21GST-SED-017		21GST-SED-018		21GST-SED-019	21GST-SED-020	
		Depth:	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'
		Date:	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	10/17/2021	Duplicate	10/17/2021	10/17/2021	10/17/2021
		Units	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	0.31	0.18 J	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	0.093 J	0.090 J	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.46	<0.26	0.059 J	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.46	<0.26	0.92 J*	<0.26	2.5	1.6	<0.27	<0.26	<0.24	<0.22	<0.25
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.46	<0.26	<0.35	<0.26	<0.26	<0.23	<0.27	<0.26	<0.24	<0.22	<0.25

NOTES: Results reported from Test America work order 320-80903-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 9: SEDIMENT SAMPLE PFAS RESULTS

		Sample:	21GST-SED-021		21GST-SED-022	21GST-SED-023		21GST-SED-024				21GST-SED-025	21GST-SED-026
		Depth:	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'
	Regulatory	Date:	10/17/2021	10/17/2021	10/18/2021	10/18/2021	10/18/2021	10/17/2021	Duplicate	10/17/2021	Duplicate	10/18/2021	10/18/2021
Analyte	Limit	Units	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	0.15 J*	1.0 J*	0.47 J*	<0.25	<0.25	0.14 J*
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.25	<0.24	<0.24	<0.30	<0.25	<0.25	<0.23	<0.23	<0.25	<0.25	<0.25

NOTES: Results reported from Test America work order 320-80903-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;

GUSTAVUS AIRPORT 2021 SITE CHARACTERIZATION
TABLE 9: SEDIMENT SAMPLE PFAS RESULTS

Analyte	Regulatory Limit	Sample: / Depth: / Date: / Units	21GST-SED-027		21GST-SED-028		21GST-SED-029	21GST-SED-030
		Depth:	0.0'-0.5'	0.0'-0.5'	0.0'-0.5'	2.0'-2.5'	0.0'-0.5'	0.0'-0.5'
		Date:	10/18/2021	Duplicate	10/18/2021	10/18/2021	10/18/2021	10/18/2021
		Units	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.26 J*	0.76 J*	<0.90	<0.31	<0.28	<0.26
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.27	<0.28	<0.90	<0.31	<0.28	<0.26

NOTES: Results reported from Test America work order 320-80903-1.

Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).

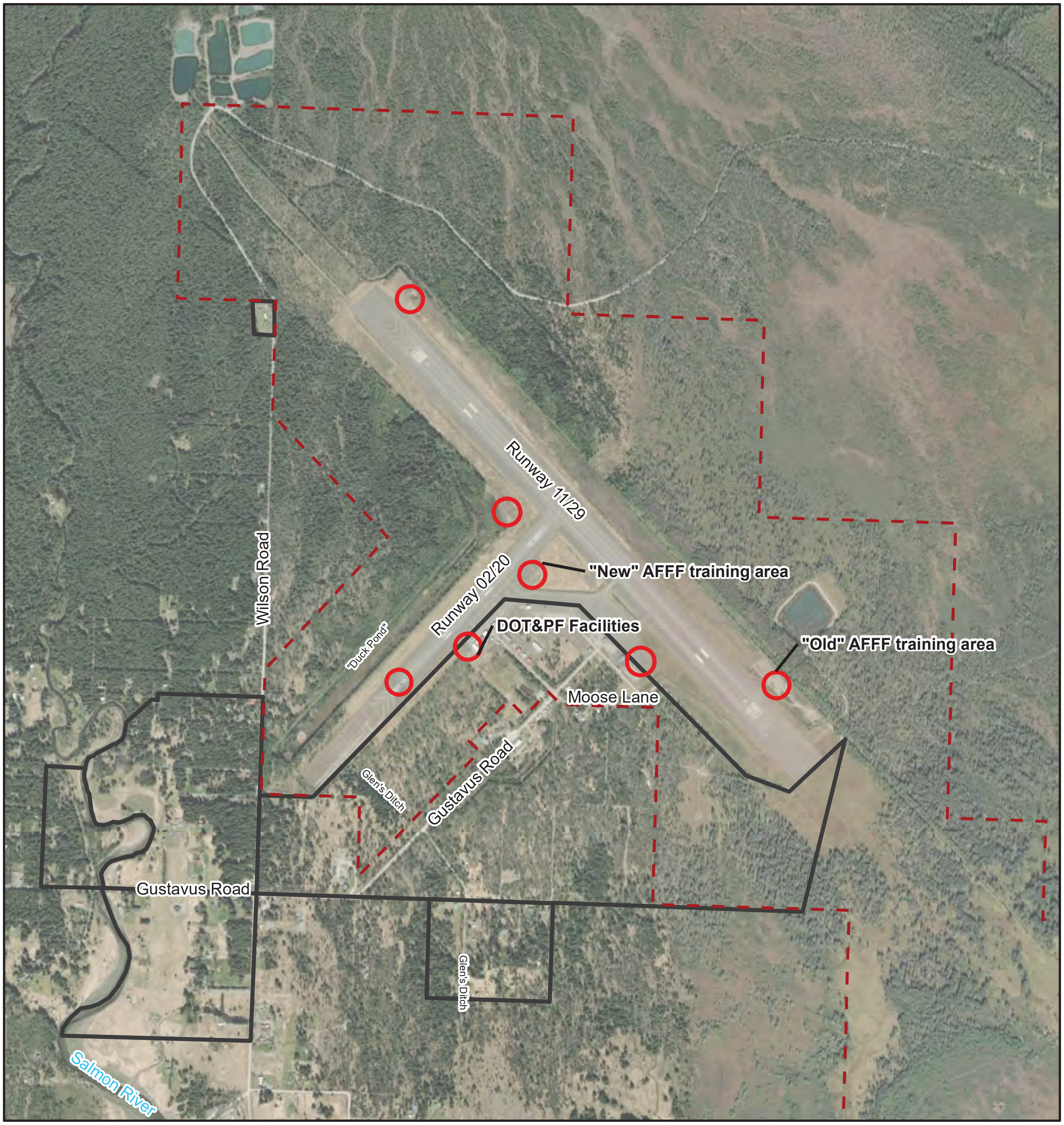
— No applicable regulatory limit exists for the associated analyte.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

µg/kg = micrograms per kilogram;



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1
Miles

LEGEND

Airport Property Boundary
Sampling Boundaries
Potential AFFF Use Areas

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SITE MAP

May 2022 102599-018

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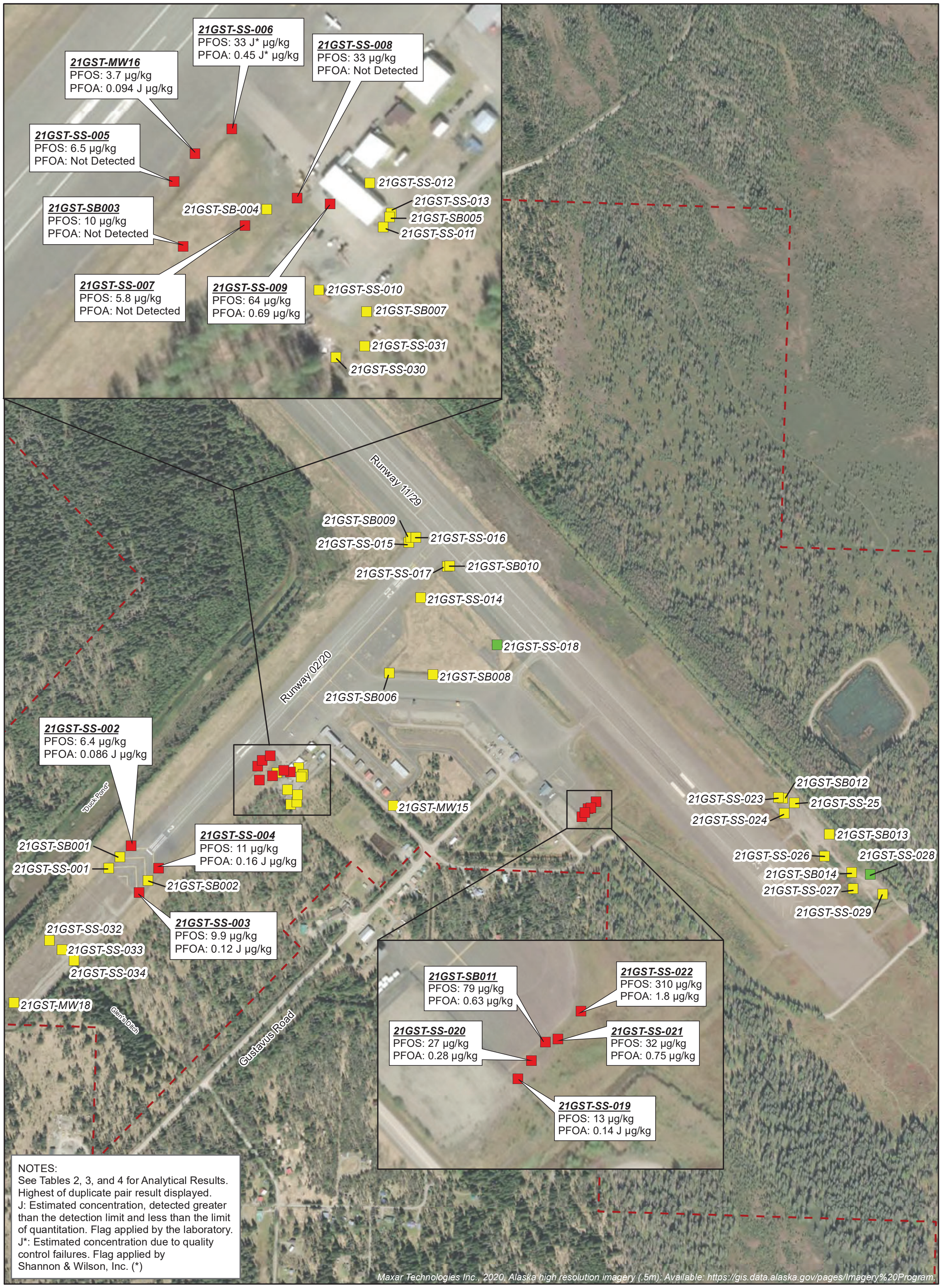
Figure 1



LEGEND

Analytical Result for Any PFAS Compound

- PFAS Analytes Not Detected
- PFAS Concentration Does Not Exceed Regulatory Levels
- PFAS Concentrations Exceed Regulatory Levels
- Airport Property Boundary

0 500 1,000

Feet

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SURFACE SOIL PFAS RESULTS

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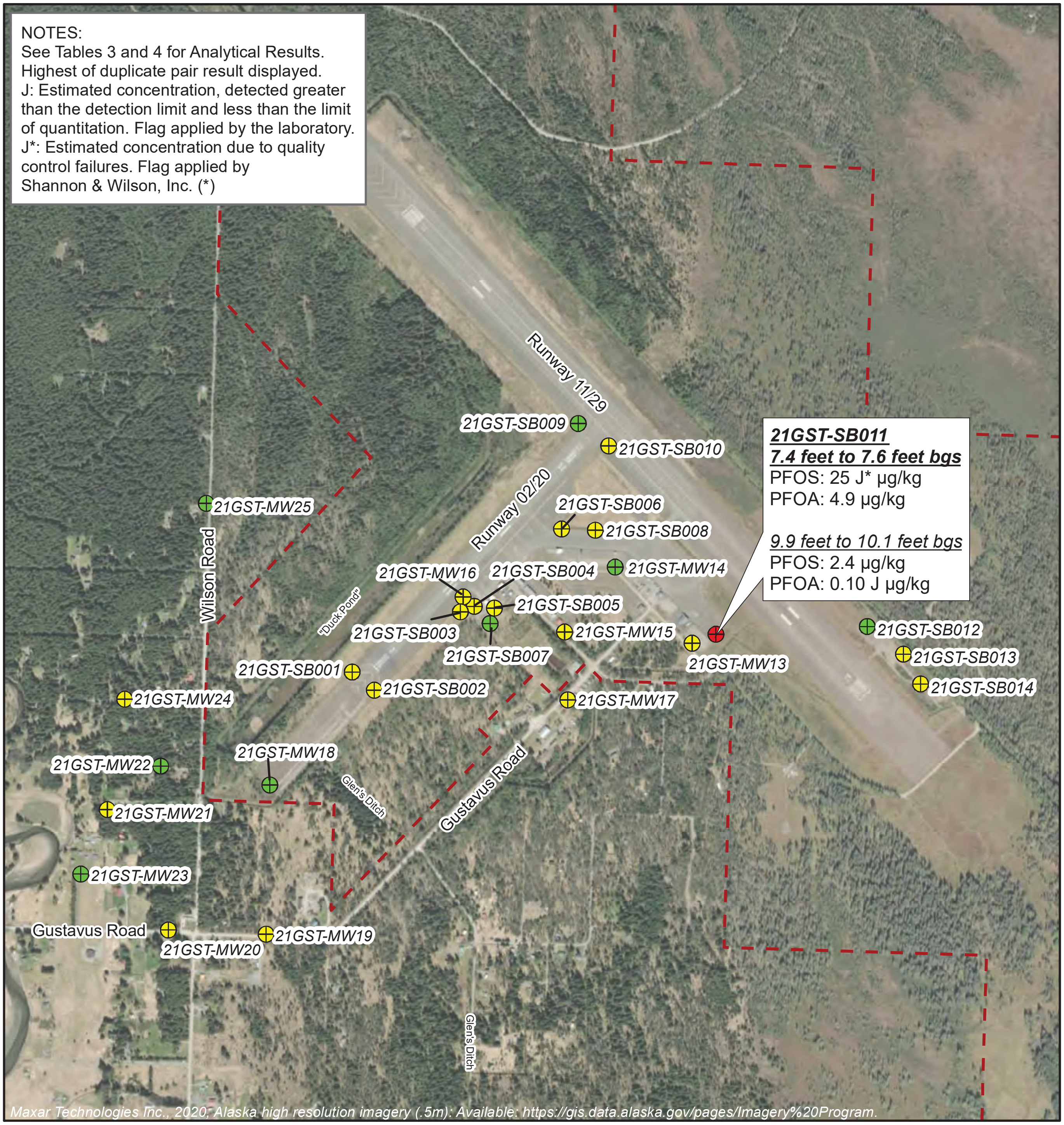
Figure 2



LEGEND

Analytical Result for Any PFAS Compound

- PFAS Analytes Not Detected
- PFAS Concentrations Do Not Exceed Regulatory Levels
- PFAS Concentrations Exceed Regulatory Levels
- Airport Property Boundary

0 0.25 0.5
Miles

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SUBSURFACE SOIL BORING PFAS RESULTS

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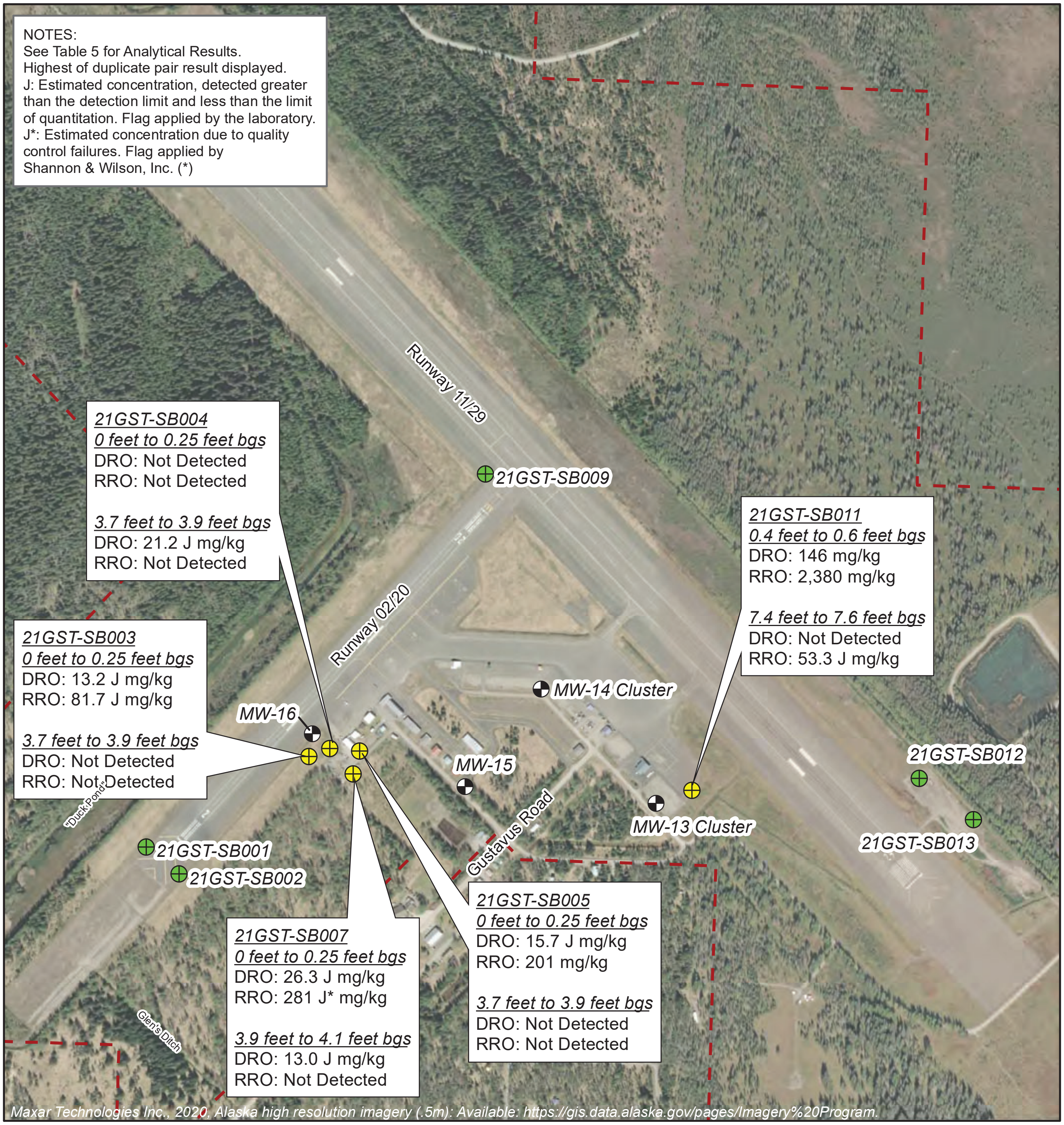
Figure 3



LEGEND

Analytical Result for Petroleum Analytes

- Petroleum Analytes Not Detected
- Petroleum Analytes Detected at Concentrations Not Exceeding Regulatory Levels
- Monitoring Well
- Airport Property Boundary

0 1,000 2,000
Feet

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SURFACE AND SUBSURFACE SOIL BORING PETROLEUM RESULTS

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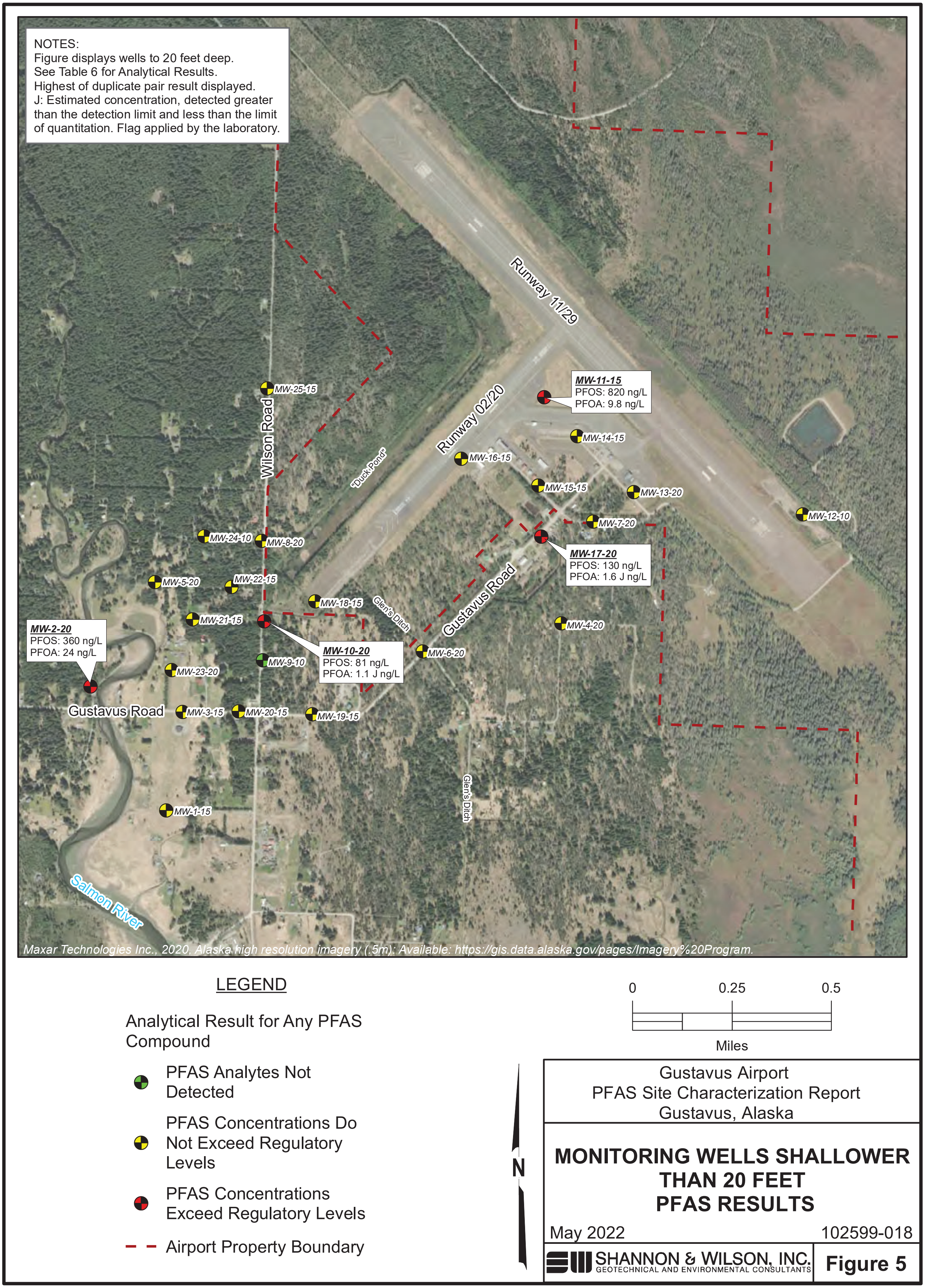
Figure 4



Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

MONITORING WELLS SHALLOWER THAN 20 FEET PFAS RESULTS

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Figure 5

LEGEND

Analytical Result for Any PFAS Compound

PFAS Analytes Not Detected

PFAS Concentrations Do Not Exceed Regulatory Levels

Airport Property Boundary

0 0.25 0.5

Miles

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

MONITORING WELLS DEEPER THAN 20 FEET PFAS RESULTS

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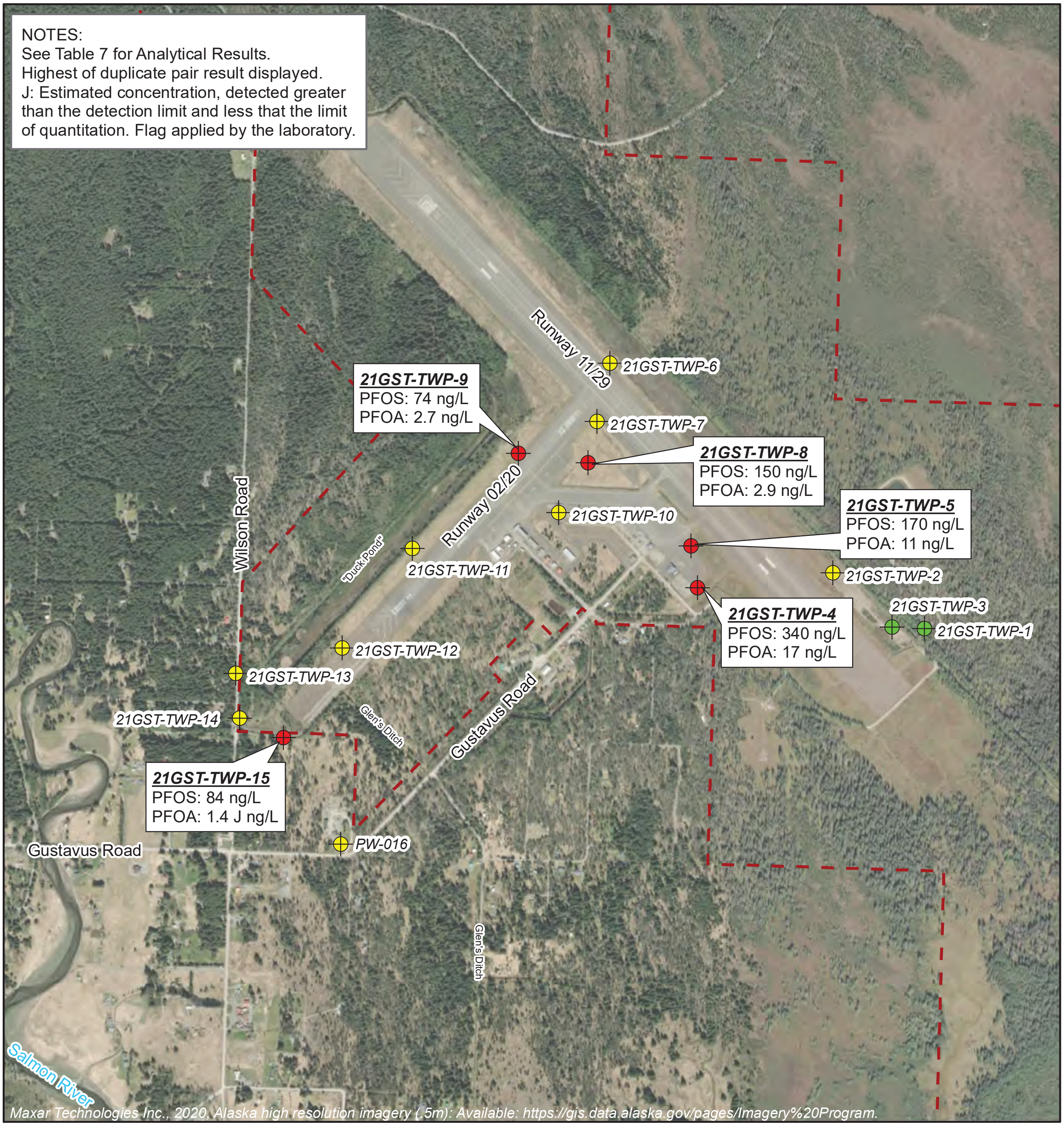
Figure 6



LEGEND

Analytical Result for Any PFAS Compound

- PFAS Analytes Not Detected
- PFAS Concentrations Do Not Exceed Regulatory Levels
- PFAS Concentrations Exceed Regulatory Levels
- Airport Property Boundary

0 0.25 0.5

Miles

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

TEMPORARY WELL POINT PFAS RESULTS

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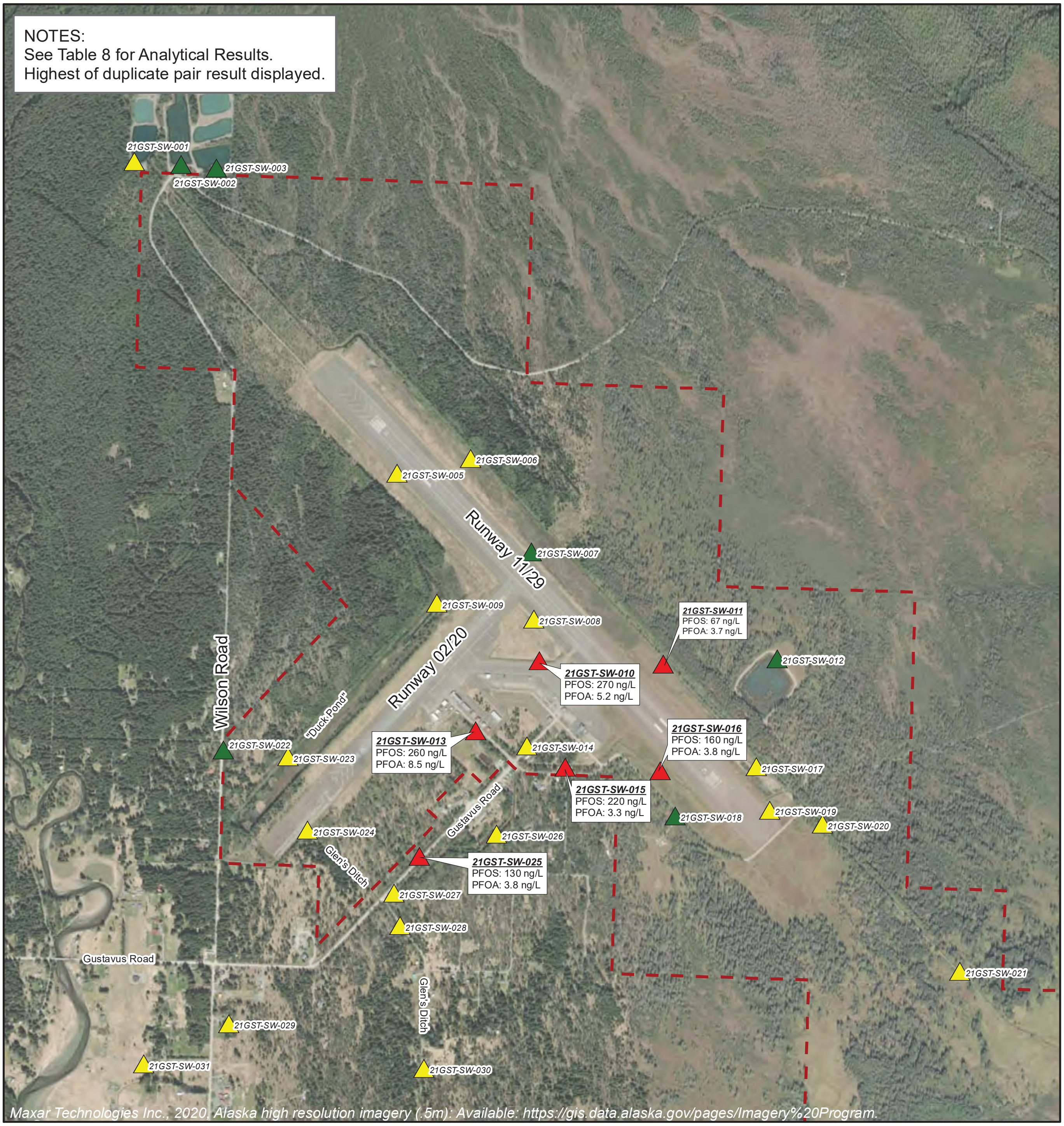
Figure 7



LEGEND

Analyte Result for Any PFAS Compound

- PFAS Analytes Not Detected
- PFAS Concentrations Do Not Exceed Regulatory Levels
- PFAS Concentrations Exceed Regulatory Levels
- Airport Property Boundary

0 0.25 0.5

Miles

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SURFACE WATER PFAS SAMPLE RESULTS

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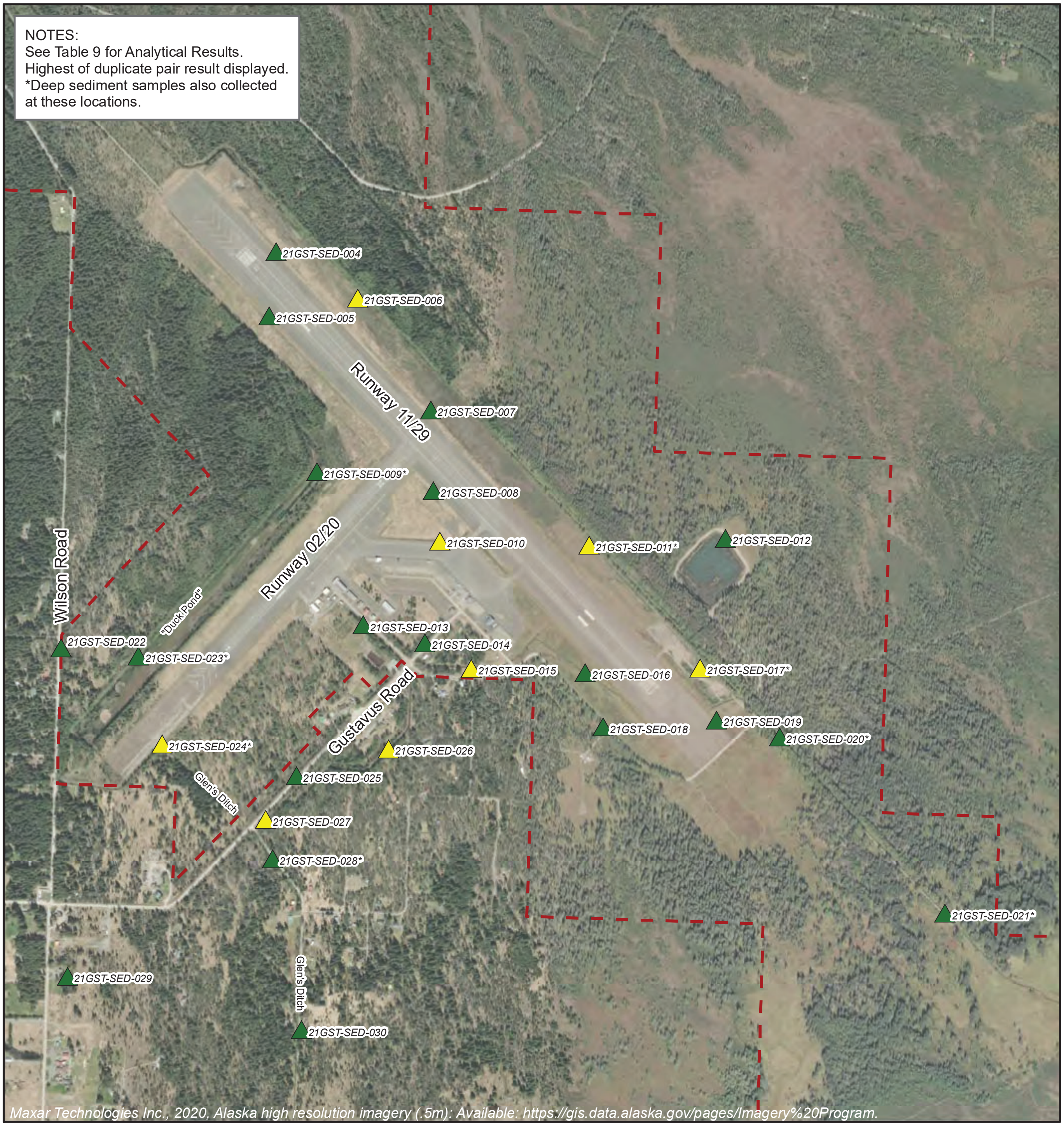
Figure 8



LEGEND

Analyte Result for Any PFAS Compound

▲ PFAS Analytes Not Detected

△ PFAS Concentrations Do Not Exceed Regulatory Levels

– – Airport Property Boundary

0 0.25 0.5

Miles

N

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SEDIMENT
PFAS SAMPLE RESULTS

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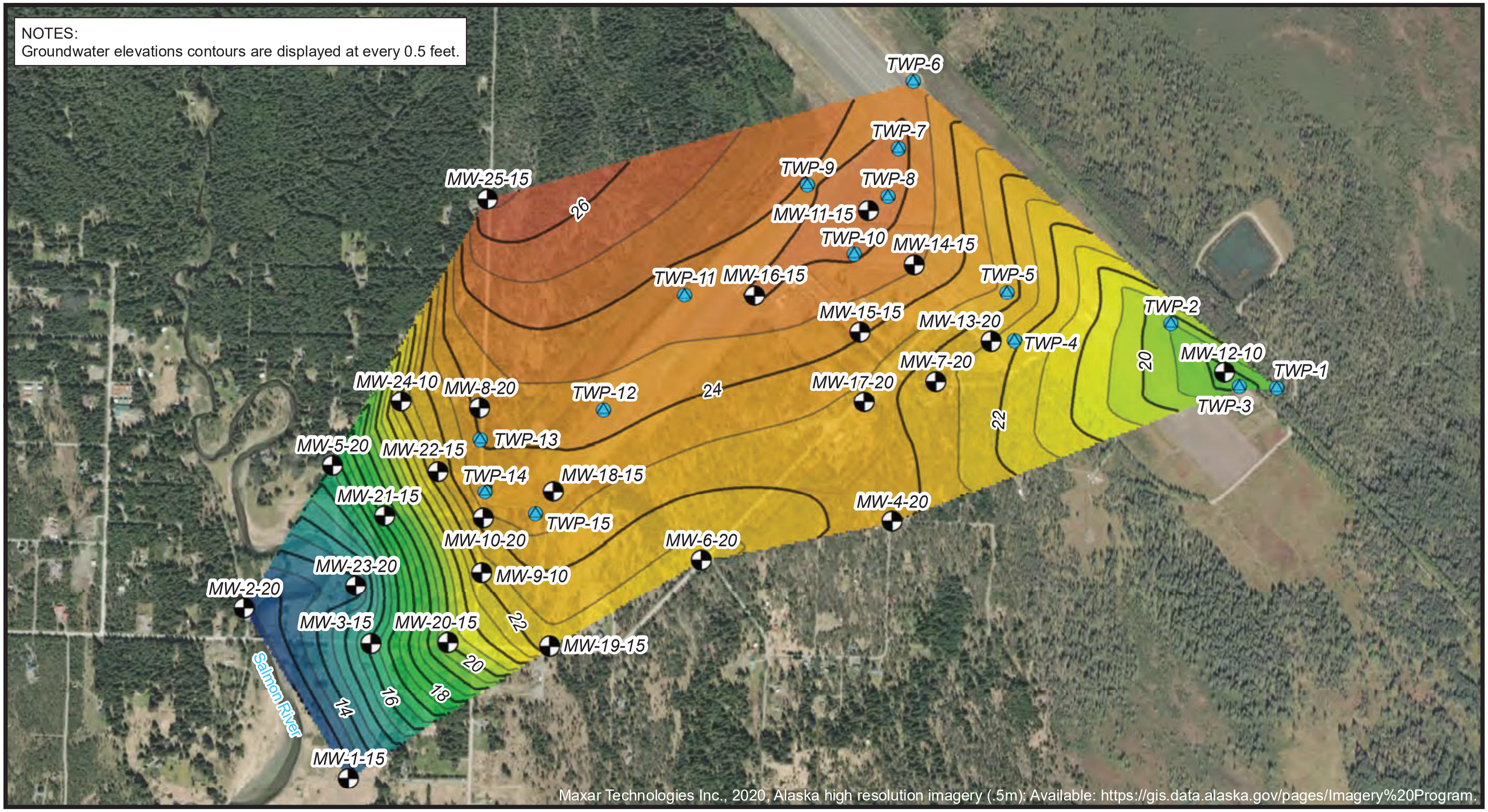
Figure 9



LEGEND

Groundwater Elevation (ft)

12.3 - 12.5	15.1 - 15.5	19.1 - 19.5	23.1 - 23.5
12.6 - 13.0	15.6 - 16.0	19.6 - 20.0	23.6 - 24.0
13.1 - 13.5	16.1 - 16.5	20.1 - 20.5	24.1 - 24.5
13.6 - 14.0	16.6 - 17.0	20.6 - 21.0	24.6 - 25.0
14.1 - 14.5	17.1 - 17.5	21.1 - 21.5	25.1 - 25.5
14.6 - 15.0	17.6 - 18.0	21.6 - 22.0	25.6 - 26.0
	18.1 - 18.5	22.1 - 22.5	26.1 - 26.5
	18.6 - 19.0	22.6 - 23.0	26.6 - 27.0

Monitoring Well

Temporary Well Point

Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

HYDRAULIC GRADIENT WELLS SHALLOWER THAN 20 FEET

May 2022

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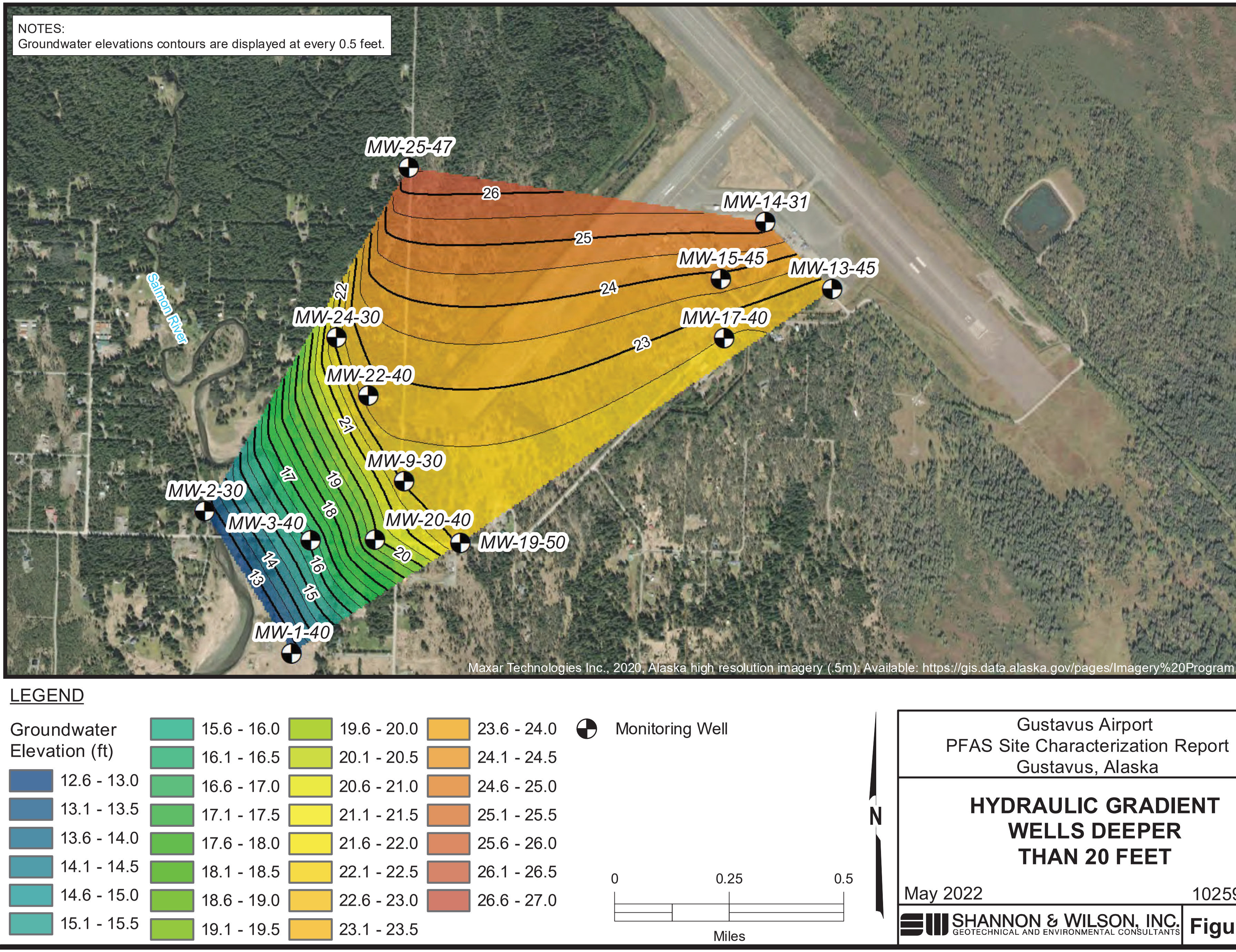
Figure 10



Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

HYDRAULIC GRADIENT WELLS DEEPER THAN 20 FEET

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Figure 11