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Mr. Winston Crow  
NGB/A7OR  
Sheppard Hall  
3501 Fetchet Avenue  
Joint Base Andrews, Maryland 20762-5157

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Regional Site Inspections for Perfluorinated Compounds at Multiple  
Air National Guard Installations**

**SUBJECT:**            **Final Site Inspection Report for Kingsley Field ANGB**

Mr. Crow

Attached please find the above referenced document.

Should you have any questions, please contact me at 606.495.5149 or by email at [vestm@leidos.com](mailto:vestm@leidos.com).

LEIDOS



Matthew B. Vest, PMP, PG  
Project Manager

cc:     Ms. Susan Klypchak – NGB-AQ-E Contracting Specialist  
       Capt. Aubrey Higginbotham – NGB/A4OR Program Manager  
       Mr. Tom Barzyk – BB&E Surveillance and Oversight  
       Capt. Joseph Young – Kingsley Field ANGB Environmental Manager  
       Ms. Katie Robertson – Oregon DEQ Project Manager  
       Ms. Connie Samson – Leidos Program Manager  
       Mr. Selvam Arunachalam – Leidos Deputy Project Manager  
       Ms. Nancy Wahlquist – Leidos Project Controller  
       Leidos Project File

**FINAL**

**SITE INSPECTION REPORT  
FOR  
PERFLUOROCTANE SULFONATE AND  
PERFLUOROCTANOIC ACID  
AT  
KINGSLEY FIELD  
KLAMATH FALLS, OREGON**



**173<sup>rd</sup> Fighter Wing  
Oregon Air National Guard Kingsley Field  
Klamath Falls, Oregon**

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Contract Number W9133L-14-D-0007  
Task Order Number 0011

Prepared for

Air National Guard  
Restoration Branch  
NGB/A4OR  
3501 Fetchet Avenue  
Joint Base Andrews, Maryland 20762

Prepared by

Leidos  
11951 Freedom Drive  
Reston, Virginia 20190

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## ACRONYMS

µg/L	Micrograms per Liter
AFFF	Aqueous Film-Forming Foam
AMSL	Above Mean Sea Level
ANG	Air National Guard
ANGB	Air National Guard Base
BB&E	BB&E Inc.
BGS	Below Ground Surface
COC	Chemical of Concern
COPC	Chemical of Potential Concern
DoD	U.S. Department of Defense
DOI	U.S. Department of the Interior
DPT	Direct Push Technology
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
FD	Fire Department
FETA	Fire Department Testing Area
FSS	Fire Suppression System
FTA	Fire Training Area
FW	Fighter Wing
gpm	Gallons per Minute
HA	Health Advisory
HDPE	High-Density Polyethylene
HEF	High Expansion Foam
IDW	Investigation-Derived Waste
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NFA	No Further Action
ng/L	Nanograms per Liter
PA	Preliminary Assessment
PFAS	Per- and Polyfluoroalkyl Substances
PFBS	Perfluorobutane Sulfonate
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexane Sulfonate
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PRL	Potential Release Location
QA	Quality Assurance
QC	Quality Control
QSM	Quality Systems Manual
RI	Remedial Investigation
RPD	Relative Percent Difference
RSL	Regional Screening Level
SI	Site Inspection
TestAmerica	TestAmerica Analytical Laboratories, Inc.
UCMR3	Third Unregulated Contaminant Monitoring Rule
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
USAF	U.S. Air Force

USFWS      U.S. Fish and Wildlife Service  
USGS      U.S. Geological Survey  
VOC      Volatile Organic Compound  
WP      Work Plan

## EXECUTIVE SUMMARY

Leidos was contracted to conduct Phase III regional site inspections (SIs) for perfluorinated compounds at multiple Air National Guard Bases (ANGBs). This report documents SI activities conducted at eight potential release locations (PRLs) at the Kingsley Field ANGB, Klamath Falls, Oregon. The primary objective of the SI was to determine the presence or absence of perfluorinated compounds, more specifically per- and polyfluoroalkyl substances (PFAS) on the U.S. Environmental Protection Agency (EPA) Third Unregulated Contaminant Monitoring Rule (UCMR3), including perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorohexane sulfonate (PFHxS), herein collectively referred to as PFOS/PFOA at each PRL, and based on the findings:

- Determine if PFOS/PFOA-contaminated groundwater has reached the Installation boundary;
- Provide a defensible no further action (NFA) decision for qualifying PRLs; and
- Develop data quality objectives (DQOs) for additional investigation for PRLs not meeting the NFA criteria or an interim response action, if appropriate.

To meet the objectives, Leidos performed SIs at the following eight PRLs:

- PRL 1: Hangar 333,
- PRL 2: Fire Equipment Testing Area (FETA) – North,
- PRL 3: FETA – South,
- PRL 4: FETA – Compass Rose,
- PRL 5: Building 573,
- PRL 6: Current and Former Fire Station – Building 216,
- PRL 7: North Outfall, and
- PRL 8: South Outfall.

Based on recommendations from the preliminary assessment (PA) and site visit conducted by BB&E, Inc. (BB&E) in September 2015, soil, groundwater, and surface water and sediment (if available) samples were collected and analyzed from eight PRLs. Collected samples were analyzed for PFOS/PFOA compounds. Oregon has established initiation level for four of the six UCMR3 compounds (PFOS, PFOA, PFHpA, and PFNA) in surface water which are to be considered guidance only. Oregon does not have criteria for soil, sediment, or groundwater. The detected PFOS/PFOA concentrations were compared against the more conservative screening criteria for PFOS, PFOA, and PFBS, including the EPA lifetime drinking water Health Advisory (HA) for PFOS and PFOA, the EPA Regional Screening Level (RSL) for PFBS in tap water, the EPA RSL for PFBS in residential soil, and calculated screening levels using the EPA screening level calculator for PFOS and PFOA in soil, as shown in Table ES-1.

PFOS/PFOA compounds were detected above the laboratory detection limits in the soil, groundwater, sediment, and surface water samples collected during the SI. Samples from five monitoring wells (MW-KLA01-01, MW-KLA03-01, MW-KLA04-01, MW-KLA06-01, MW-572-02-PRL05) located near the Installation boundary indicates detection of all six PFOS/PFOA compounds in the groundwater samples. The screening results indicate the consistent presence of PFOS and PFOA at concentrations exceeding the 70-nanograms per liter (ng/L) EPA drinking water HA (EPA 2016a and 2016b) near the Installation boundary.

**Table ES-1. PFOS/PFOA SI Screening Criteria**

<b>Parameter</b>	<b>Chemical Abstract Service Number</b>	<b>EPA RSL for Tap Water<sup>a</sup> (ng/L)</b>	<b>EPA Health Advisory<sup>b</sup> (ng/L)</b>	<b>Residential Risk-based Soil Screening Level<sup>c</sup> (µg/kg)</b>
PFOS	1763-23-1	NA	70.0 <sup>d</sup>	1,260
PFOA	335-67-1	NA		1,260
PFBS	375-73-5	400,000 <sup>e</sup>	NA	1,260,000

<sup>a</sup> EPA RSL for tap water, May 2018; target HQ =1.

<sup>b</sup> *Drinking Water Health Advisory for Perfluorooctane Sulfonate* (EPA 2016a) and *Drinking Water Health Advisory for Perfluorooctanoic Acid* (EPA 2016b).

<sup>c</sup> Residential risk-based soil screening levels determined by using the EPA RSL calculator ([https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)) and the May 2018 EPA RSL tables (<https://epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2018>) for soil and sediment; target HQ = 1.

<sup>d</sup> When PFOA and PFOS are both present, the combined detected concentrations of the compounds are compared with the 70-ng/L health advisory value.

<sup>e</sup> PFBS analytical results for groundwater and surface water have been compared to the tap water screening levels; target HQ =1.

µg/kg = Micrograms per kilogram.

EPA = U.S. Environmental Protection Agency.

NA = Not available.

ng/L = Nanograms per liter.

PFBS = Perfluorobutane sulfonate.

PFOA = Perfluorooctanoic acid.

PFOS = Perfluorooctane sulfonate.

RSL = Regional screening level.

SI = Site inspection.

Based on comparison of analytical data to the screening criteria in Table ES-1, Leidos recommends further investigations at all PRLs. Additional investigations are recommended for soil and groundwater at PRLs 1, 2, 3, 4, 5, and 6 and for sediment and surface water at PRLs 7 and 8. The recommendations are summarized in Table ES-2 and described briefly below:

- Further investigation is necessary to determine the nature and extent of PFOS/PFOA contamination due to detectable levels at all PRLs.
- Develop an expanded conceptual site model that considers localized groundwater and surface water flow paths to select future sampling locations.
- Complete the delineation of nature and extent of PFAS as part of an Expanded SI or a remedial investigation (RI) that could consist of:
  - Additional soil and sediment sampling and analysis of an expanded list of PFAS constituents (in addition to the six UCMR3 constituents) to determine if significant source areas related to precursor substances are present. Precursor substances have been demonstrated to oxidize into PFOS and PFOA, and thus could provide a lingering source of these compounds to soil and groundwater.
  - Expanded groundwater sampling program (including analysis of an expanded list of PFAS constituents) to complete horizontal and vertical delineation of the PFOS/PFOA impacts. Further groundwater investigation at the Base boundary is recommended due to the presence of PFAS in groundwater above their screening criteria.

- The installation and sampling of upgradient monitoring wells and downgradient off-Base monitoring wells to better define the upgradient source of PFOS/PFOA as well as impacts of PFOS/PFOA that have migrated off Base.
- The sampling of upgradient and downgradient off-Base surface water and sediment (including analysis of an expanded list of PFAS constituents) to determine if an upgradient source of PFOS/PFOA exists and better define the nature and extent of PFOS/PFOA in surface water that have migrated off Base.
- Conduct preliminary site-specific risk assessment calculations in order to identify chemicals of potential concern (COPCs) in every media and establish preliminary remedial goals for screening purposes.

DQOs are proposed based on the results of the SI and are presented in Table ES-2. In general, additional samples are required at each PRL in order to establish the nature and extent of PFOA/PFOS constituents for each applicable medium and determine if a complete receptor pathway exists. For soil additional samples are proposed to delineate the nature and extent and to determine if a source area exists, and if so, the vertical and horizontal extent for both the vadose and saturated zones. Additional surface water and sediment samples should be collected at PRLs 7 and 8.

**Table ES-2. SI Recommendation Summary Table**

<b>PRL No.</b>	<b>PRL Description</b>	<b>Constituents Above Screening Criteria</b>	<b>Sampling Recommendations and Objectives</b>
1	Hangar 333	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 1, there were exceedances in groundwater at the downgradient well MW-KLA01-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
2	FETA – North	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 2, exceedances occurred in groundwater at downgradient well MW-KLA02-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
3	FETA – South	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 3, exceedances occurred in groundwater at downgradient well MW-KLA03-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
4	FETA – Compass Rose	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to further define the nature and extent of PFOS soil exceedances and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
5	Building 573	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to determine the extent of the one PFOS exceedance and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
6	Current and Former Fire Station – Building 216	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to determine the extent of the one PFOS exceedance and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.

**Table ES-2. SI Recommendation Summary Table (continued)**

PRL No.	PRL Description	Constituents Above Screening Criteria	Sampling Recommendations and Objectives
7	North Outfall	None	<b>Surface Water and Sediment:</b> PFOS/PFOA compounds were detected in sediment below screening criteria. Determine the PFOS/PFOA impact to surface water through additional upgradient sampling of surface water and sediment and evaluate potential downgradient impacts at the outfall located off Base.
8	South Outfall	None	<b>Surface Water and Sediment:</b> PFOS/PFOA compounds were detected in surface water below screening criteria. Determine the PFOS/PFOA impact to surface water through additional upgradient sampling of surface water and sediment and evaluate potential downgradient impacts at the outfall located off Base.
<b>General</b>			<p><b>Soil:</b> Collect additional surface and subsurface soil samples to determine the nature and extent both vertically and horizontally of the exceedances and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration.</p> <p><b>Groundwater:</b> (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources, and (2) collect additional groundwater samples off Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing.</p> <p><b>Surface Water/Sediment:</b> (1) Collect additional surface water and sediment samples in upgradient locations to quantify potential impacts from upgradient sources; (2) collect additional surface water and sediment samples from downgradient locations off Base to define the nature and extent of PFAS contamination beyond the Base boundary.</p>

FETA = Fire equipment testing area.  
PFOA = Perfluorooctanoic acid.  
PFOS = Perfluorooctane sulfonate.  
PRL = Potential release location.  
SI = Site inspection.

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# 1.0 INTRODUCTION

Leidos has prepared this Site Inspection (SI) Report to satisfy the requirements of Task Order 0011 of National Guard Bureau Contract Number W9133L-14-D-0007. Under this Task Order, Leidos was contracted to conduct Phase III regional SIs for perfluorinated compounds at multiple Air National Guard Bases (ANGBs). This report documents SI activities conducted at eight potential release locations (PRLs) at the Oregon Air National Guard (ANG) at Kingsley Field, Klamath Falls, Oregon, herein referred to as Kingsley Field ANGB, the Installation, or the Base (Figure 1). (Note that all figures and tables are presented at the end of the document.) All field activities were conducted in accordance with the *Work Plan for Fiscal Year 2017 Phase III Regional Site Inspections for Perfluorooctane Sulfonate and Perfluorooctanoic Acid at Kingsley Field Air National Guard Base, Klamath Falls, Oregon* (Leidos 2018).

## 1.1 PROJECT OBJECTIVES AND SCOPE

The primary objective of the SI was to determine the presence or absence of perfluorinated compounds, more specifically per- and polyfluoroalkyl substances (PFAS) on the U.S. Environmental Protection Agency (EPA) Third Unregulated Contaminant Monitoring Rule (UCMR3), including perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorohexane sulfonate (PFHxS), herein collectively referred to as PFOS/PFOA.

Surface and subsurface soil, groundwater (downgradient from the PRL and near the Installation boundary), and surface water and sediment (if available) were sampled and analyzed to determine the presence or absence of PFOS/PFOA in environmental media at the PRLs identified during the 2015 preliminary assessment (PA) (BB&E 2015) and to:

- Determine if PFOS/PFOA-contaminated groundwater has reached the Installation boundary;
- Provide a defensible no further action (NFA) decision for qualifying PRLs; and
- Develop data quality objectives (DQOs) for additional investigation for PRLs not meeting the NFA criteria or an interim response action if appropriate.

The scope of work consisted of three inter-related tasks: (1) prepare an SI Work Plan (WP), (2) conduct SI and data collection activities, and (3) evaluate data from the field effort and applicable historical information to present conclusions and recommendations in an SI Report.

Sampling of drinking water sources (other than the on-Base potable water supply that was used for decontamination activities) was not included, and determination of nature and extent of any identified contamination was not within the scope of this SI.

Eight PRLs, as listed in Table 1 and depicted in Figure 2, were selected for SI activities based upon the PA and site visit conducted by BB&E, Inc. (BB&E) in September 2015 and reported in the *Perfluorinated Compounds Preliminary Assessment Site Visit Report, 138<sup>th</sup> Fighter Wing, Oklahoma Air National Guard, Kingsley Field, Klamath Falls, Oregon* (BB&E 2015). This SI Report briefly summarizes the PA, describes SI field activities, presents analytical results of environmental sampling, and provides recommendations for each PRL.

## 1.2 REGULATORY OVERVIEW AND SCREENING CRITERIA

In 2012, EPA published the UCMR3, which required public water supplies across the country to sample for a list of 30 unregulated contaminants, including 6 chemicals of concern (COCs) relevant to this SI (PFOS, PFOA, PFBS, PFNA, PFHpA, and PFHxS; i.e., PFOS/PFOA). Results of UCMR3-required sampling indicated detections of PFOS/PFOA at numerous locations, including several near U.S. Department of Defense (DoD) facilities. PFOS/PFOA detections at DoD facilities are often linked to the use of aqueous film-forming foam (AFFF), which may contain one or more of these chemicals. AFFF is a firefighting agent used to suppress fires involving petroleum hydrocarbons.

Detected concentrations of PFOS/PFOA in environmental samples collected during the Kingsley Field ANGB SI were compared against soil and water screening criteria for PFOS, PFOA, and PFBS, as described below and listed in Table 2.

The May 2018 EPA generic regional screening level (RSL) table lists a residential risk-based screening level for tap water for PFBS of 400 micrograms per liter ( $\mu\text{g/L}$ ) (400,000 nanograms per liter ( $\text{ng/L}$ ); target hazard quotient = 1). Currently, no legally enforceable federal standards exist for PFOS/PFOA in water. However, under the Safe Drinking Water Act, EPA issued a series of health advisories (HAs) for PFOS/PFOA, including the most recent in May 2016. To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOS/PFOA in drinking water, EPA established an HA level for PFOS and PFOA (combined) of 70  $\text{ng/L}$ . The HA of 70  $\text{ng/L}$  applies to PFOS and PFOA individually as well as combined. If an individual compound is detected  $>70$   $\text{ng/L}$ , the screening criteria are exceeded. However, if individual compounds are  $<70$   $\text{ng/L}$  but the sum of the compounds is  $>70$   $\text{ng/L}$ , the screening criteria are exceeded. For example, if PFOS = 50  $\text{ng/L}$  and PFOA = 25  $\text{ng/L}$ , the screening criteria are exceeded. Therefore, screening levels for groundwater and surface water are as follows:

- PFOS and PFOA = 70  $\text{ng/L}$ ; and
- PFBS = 400,000  $\text{ng/L}$ .

There are also no legally enforceable federal standards for PFOS/PFOA in soil or sediment. The May 2018 EPA generic RSL table lists a residential risk-based screening level for soil for PFBS of 1,300,000  $\mu\text{g/kg}$ . Following the process utilized at other ANG Installations around the country, Leidos will use residential risk-based screening levels for soil determined using the EPA RSL calculator and the May 2018 RSL tables. The calculated screening value for PFBS is slightly less than the value listed in the generic RSL table. RSLs are only available for three of the six COCs listed above. The calculated screening levels for these three COCs are as follows:

- PFOS = 1,260  $\mu\text{g/kg}$ ;
- PFOA = 1,260  $\mu\text{g/kg}$ ; and
- PFBS = 1,260,000  $\mu\text{g/kg}$ .

No surface water or sediment screening criteria have been established by EPA at this time.

As of the preparation of this SI Report, no site-specific soil, sediment, or groundwater screening levels have been developed in Oregon. However, Oregon has established initiation levels for PFOS, PFOA, PFNA, and PFHpA in surface water. The initiation levels for surface water are as follows:

- PFOS = 24,000  $\text{ng/L}$ ;
- PFOA = 300,000  $\text{ng/L}$ ;

- PFNA = 1,000 ng/L; and
- PFHpA = 300,000 ng/L.

The initiation levels for surface water are provided for guidance only.

The SI results will be compared against the screening criteria provided in Table 2. Sediment results will be compared with the soil screening criteria and the surface water results will be compared with the groundwater screening criteria provided in this table.

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## 2.0 INSTALLATION DESCRIPTION

### 2.1 LOCATION

Kingsley Field ANGB is the home of the 173<sup>rd</sup> Fighter Wing (FW) in Klamath Falls, Klamath County, in southern Oregon. Kingsley Field ANGB is located on the western side of Crater Lake-Klamath Regional Airport, approximately 4 miles south of the city of Klamath Falls. The entire airport comprises approximately 1,200 acres, owned and operated by the city of Klamath Falls. The 173<sup>rd</sup> FW leases approximately 256 acres of Exclusive Use Area in the western portion of Kingsley Field. The Kingsley Field ANGB location is shown in Figure 1.

### 2.2 ORGANIZATION AND HISTORY

The airfield at Kingsley Field was established as Klamath Falls Municipal Airport (currently known as Crater Lake-Klamath Regional Airport) in 1928. In 1942, the U.S. Navy selected the Airport as a site for a naval air station, and construction of that station was completed in 1945. The airfield and building area consisted of 3,200-ft-wide runways of varying lengths, several buildings, and a variety of hangar facilities (NGB 2011).

After World War II, the air station was closed following less than 1 year of operation. A portion of the facility was returned to the city of Klamath Falls for use as a municipal airport, and the remainder was turned over to the U.S. Department of the Interior (DOI). In 1954, the DOI property was transferred to the U.S. Air Force (USAF) to establish an all-weather fighter interceptor complex. Part of the city-owned property was leased to the USAF to meet the requirements of the new mission. Existing buildings were rehabilitated, and new buildings were constructed beginning in 1955. The airport was dedicated as Kingsley Field in 1957 (NGB 2011).

In 1979, the USAF realignment removed active USAF units from Kingsley Field, and in 1981, the 142<sup>nd</sup> Fighter Interceptor Group of the Oregon ANG assumed alert detachment responsibility for air defense alert from USAF. In 1986, unit training assembly weekends began. The fighter training squadron was renamed the 173<sup>rd</sup> FW in 1996. Over the years, the unit has been assigned several different kinds of aircraft. The latest conversion to the F-15 aircraft occurred in 1998. As an F-15 Formal Training Unit, Air Education and Training Command, the mission of the 173<sup>rd</sup> FW is to train air-to-air combat pilots, train flight surgeons (Top Knife), and serve Oregon and the Nation in times of peace and war (NGB 2011).

DoD began investigations at military bases under the Installation Restoration Program with the goal of identifying, evaluating, and remediating areas of contamination (the program is now referred to as the Environmental Restoration Program). These investigations included PAs, site investigations, removal action investigations, and remedial investigations (RIs). Prior to the BB&E 2015 PA, potential releases of PFOS/PFOA from use and storage of AFFF had not been evaluated at Kingsley Field ANGB.

Base operations that could have contributed to PFOS/PFOA contamination of soil, groundwater, sediment, and surface water include fire training areas (FTAs) and non-FTAs. FTA PRLs are sites where AFFF was likely used for fire suppression during training activities. No FTAs are located on Kingsley Field ANGB property. Non-FTA PRLs identified at Kingsley Field ANGB are sites where AFFF was stored, released, and/or likely to have been released, and include the aircraft maintenance building/hangar (PRL 1), former vehicle maintenance building (PRL 5), fire station (PRL 6), Fire Equipment Testing Area (FETA) (PRLs 2, 3, and 4), and stormwater outfalls (PRLs 7 and 8) (BB&E 2015).

When AFFF is released to the environment, PFOS/PFOA can migrate into soil and groundwater. The amount of PFOS/PFOA that migrates to groundwater depends on the type and amount of AFFF used, where it was used, the type of soil, and other factors. PFOS/PFOA may migrate readily from soil to groundwater. The primary exposure pathway for PFOS/PFOA is the ingestion of contaminated drinking water.

## **3.0 ENVIRONMENTAL SETTING**

### **3.1 CLIMATE**

Kingsley Field ANGB is in Klamath County, Oregon, and is located in a semi-arid climate that experiences warm summers and cool winters with occasional periods of cold. The average annual temperature is 45.9°F, ranging from an average low of 20.8°F to an average high of 83.6°F. The mean annual precipitation at Klamath Falls is approximately 20.72 in., with about 70% of the total precipitation occurring from October through May. The average number of days with 0.1 in. or more of precipitation is 55.90. Klamath Falls gets significant snowfall, with an annual average of 65.33 in. of snow and an average of 65.18 days with 1 in. of snow or more (USA.com 2017).

### **3.2 TOPOGRAPHY**

Kingsley Field ANGB is generally flat, although regionally, the area slopes gently to the east. The local topography generally slopes to the north toward the Bird Creek drainage area. Tulsa International Airport is 667 ft above mean sea level (AMSL) with Kingsley Field ANGB averaging 610 ft AMSL. Kingsley Field ANGB is located at an elevation of approximately 4,089 ft AMSL.

### **3.3 GEOLOGY**

Klamath Falls is located on the dry lower Klamath Lake Bed in south-central Oregon, on a plain that slopes gently to the southeast. The geologic structure of the Klamath Falls area is dominated by a number of northwest/southeast-trending normal faults. Movement along these faults produces horst and graben features that are typical of Basin and Range geologic structure. The uplifted horst blocks commonly form the ridges typical in this area, while the down faulted graben features form the valleys. Kingsley Field is located in such a valley. Faulting that has occurred along the valley floors usually has no obvious surface expression. No faults are known to exist beneath Kingsley Field; however, the existence of a fault a short distance from the facility is suggested by the presence of shallow geothermal water (CH2M Hill 1981).

Klamath Falls is situated within an area that was covered by ancestral Lake Klamath during the Pleistocene Era. The facility is underlain by a thick sequence of Quaternary alluvial sediments. The actual thickness is unknown, but geothermal test wells near the Base have been drilled to depths greater than 1,500 ft below ground surface (BGS) without encountering bedrock (CH2M Hill 1981). The sediments underlying the facility are composed of sand, silt, and clay, primarily of lacustrine origin. The finer-grained sediments were deposited in areas of the lake relatively far from the shoreline. The coarser sands were deposited near the shoreline or in beds of streams feeding the lake. This depositional system resulted in alternating layers of fine silty sand, sandy silt, silt, and clayey silt that are laterally discontinuous (ANG 2014). Borings and well installations conducted during the Leidos SI did not encounter bedrock (Appendix A).

### **3.4 SOIL**

The soils that underlie the Base are primarily of the Henley, Poe, Laki, Malin, and Hosley series. These are generally poorly drained soils developed on low terraces of floodplains/lake bottoms from alluvial or lacustrine sediments, some from volcanic materials such as ash or tuff. Some of these soils have an indurated hardpan layer beginning at depths of 2 to 3 ft BGS (Science and Technology, Inc. 1993). Native, near-surface soil has been observed to be poorly graded, fine to coarse sand with varying amounts of silt. Soils identified during the Leidos SI typically consisted of sand, silty sand, and gravel.

### 3.5 SURFACE WATER HYDROLOGY

No natural or significant surface water bodies, navigable waterways, or wetlands are present at Kingsley Field ANGB. Klamath River is the major surface body of water located to the northwest of Kingsley Field ANGB.

Surface water flow at Kingsley Field ANGB is dictated by the Base's man-made surface drainage system. Precipitation will predominantly infiltrate the sandy and permeable shallow surface soils. Precipitation on paved surfaces will generally be collected by the Base's storm drain system and discharge to the drainage ditches and canals located to the east and west of the Base (ANG 2014). These ditches flow to the North and South Outfalls.

The North Outfall (PRL 7) is located outside the northern Base boundary at the northern boundary of the Klamath Falls Airport. The North Outfall appears to drain northward to the Number One C Drain then west to the Klamath River. The South Outfall (PRL 8) is located outside of the Base boundary in the western-central portion of the Klamath Falls Airport. The South Outfall discharges the majority of the stormwater from Kingsley Field ANGB, including five PRLs. The South Outfall appears to drain to the Lost River Diversion Channel and then discharges to the Klamath River.

The Base is located approximately 3 miles west-northwest of Lost River and approximately 3 miles east-southeast of the Klamath River. The Lost River Diversion Canal, which is an irrigation canal, connects the two basins. A series of drainage ditches and culverts control surface runoff throughout Kingsley Field. The surface runoff is eventually diverted to the Lost River Diversion Canal (URS 2010).

### 3.6 HYDROGEOLOGY

Regional groundwater movement in the Sedimentary Aquifer is generally southeasterly toward the Lost River and the Lost River Diversion Channel. The U.S. Geological Survey (USGS) reports that the regional groundwater flow gradient in the Kingsley Field area is toward the southeast (USGS 2007). In some areas, the Sedimentary Aquifer contains coarser sands of relatively high hydraulic conductivity that can yield moderate quantities of water. In the vicinity of Kingsley Field, only a small quantity of sand is present in the subsurface, and well yields are relatively low. An average specific capacity of 0.45 gal per minute (gpm) per foot of drawdown was indicated for wells completed into the Sedimentary Aquifer (Illian 1971). However, a 79-ft test well drilled in the vicinity yielded 200 gpm with a drawdown of only 25 ft (8 gpm per foot). This well and other nearby test borings indicate the presence of a permeable shallow aquifer in this area. The low yields of other nearby wells indicate that the sand encountered in these test wells is probably of limited areal extent and may be an ancient river channel (CH2M Hill 1981).

The groundwater information collected from the existing monitoring wells in the vicinity of PRL 5 and the five new monitoring wells installed in PRLs 1 through 4 and 6 during the Leidos SI field activities confirmed a southeasterly flow of shallow groundwater. The shallow water table occurs at varying depths within Kingsley ANGB. Soil boring logs indicate shallow groundwater was encountered at depths ranging from 5.5 ft BGS in KLA01-SB3 to 7.5 ft BGS in KLA01-SB2. Groundwater levels collected before purging and sampling monitoring wells installed during the SI indicate the depth to shallow groundwater ranged from 4.65 ft BGS in MW-572-02-PRL05 and MW-573-03-PRL05 to 8.24 ft BGS in MW-KLA06-01.

Groundwater in the vicinity of Kingsley Field is reported to be of moderate quality with high concentrations of methane or iron (CH2M Hill 1981). No drinking water wells are located on Kingsley ANGB, and water used at the Base is supplied by the city of Klamath Falls (ANG 2014). City water supplies are obtained from deep groundwater wells ranging in depth from 300 to more than 1,000 ft (City of Klamath Falls 2017).

### 3.7 CRITICAL HABITATS AND ENDANGERED/THREATENED SPECIES

According to the U.S. Fish and Wildlife Service (USFWS) and a review of the list of federally listed threatened and endangered species, the following federally listed threatened, endangered, or proposed species are known to or are believed to occur in Klamath County, Oregon (USFWS 2017). The potential for these species to occur in Klamath County does not mean they are present at Kingsley Field ANGB:

- Amphibians:
  - Oregon spotted frog (*Rana pretiosa*) – Threatened.
- Birds:
  - Yellow-billed cuckoo (*Coccyzus americanus*) – Threatened, and
  - Northern spotted owl (*Strix occidentalis caurina*) – Threatened.
- Conifers and cycads:
  - Whitebark pine (*Pinus albicaulis*) – Candidate.
- Fishes:
  - Lost River sucker (*Deltistes luxatus*) – Endangered,
  - Shortnose sucker (*Chasmistes brevirostris*) – Endangered, and
  - Bull trout (*Salvelinus confluentus*) – Threatened.
- Flowering plants:
  - Hoover’s spurge (*Chamaesyce hooveri*) – Threatened,
  - Gentner’s fritillary (*Fritillaria gentneri*) – Endangered,
  - Slender orcutt grass (*Orcuttia tenuis*) – Threatened,
  - Greene’s tuctoria (*Tuctoria greenei*) – Endangered, and
  - Applegate’s milk-vetch (*Astragalus applegatei*) – Endangered.
- Mammals:
  - Gray wolf (*Canis lupus*) – Endangered, and
  - Northern American wolverine (*Gulo gulo luscus*) – Proposed Threatened.

Kingsley Field has the presence of Applegate’s milk-vetch, and the stormwater outfalls lead to water containing the Lost River sucker.

Wetlands have not been formally delineated and mapped to date within the Kingsley Field ANGB Exclusive Use Area. According to USFWS National Wetlands Inventory Maps and the Klamath Falls Airport Wildlife Habitat Management Implementation Plan, however, several areas of wetlands totaling approximately 45 acres are located in the vicinity of Kingsley Field. Other sources, such as the Kingsley Field ANGB Master Plan, indicate as little as about 10 acres of wetlands on the facility (ANG Kingsley Field 2009). These areas fall under the jurisdiction of the U.S. Army Corps of Engineers or the Oregon Department of State Lands. None of the mapped wetland areas, however, are located on the developed sections of Kingsley Field ANGB (although they have seen significant disturbance). Approximately 23 acres of wetlands have been filled by implementing the airport’s Wildlife Habitat Management Implementation Plan (Klamath Falls Airport 2005). However, the noted wetlands were not present in the vicinity of the PRLs included in this SI.

### **3.8 WATER WELLS**

The PA Report (BB&E 2015) indicates there are no federal or public water wells within a 1-mile radius of the Base. A review of the EDR Radius Map™ Report with Geospatial® dated July 20, 2015 (EDR 2015) shows two water wells within a 1-mile radius of the Base. Based on the information provided for these two wells located southwest of the Base, they are either observational or test wells. According to Base personnel, no drinking water wells are located at the Base. Water is supplied from the city of Klamath Falls (ANG 2014). City water supplies are obtained from deep groundwater wells ranging in depth from 300 to more than 1,000 ft (City of Klamath Falls 2017).

## 4.0 PRELIMINARY ASSESSMENT

In September 2015, BB&E conducted a PA to identify potential sites of historical environmental releases of PFOS/PFOA related to AFFF usage and storage at Kingsley Field ANGB (BB&E 2015). The PA evaluated a total of eight PRLs and recommended six of these for further investigation under an SI (Table 2; see also Figure 1). At the time of the 2015 PA, no documentation was available showing that soil, groundwater, sediment, and surface water at Kingsley Field ANGB were previously tested for PFOS/PFOA; therefore, these compounds could be present in media at any of these PRLs. However, prior to this SI, ANG requested that all eight PRLs be further investigated (see Section 5.1.2).

BB&E researched the potential existence of any documented FTAs or any other use or release of AFFF. No evidence was found that a current or former FTA that utilized AFFF was located within the footprint of the Kingsley Field ANGB site boundary.

The PA site visit included onsite interviews with active and former personnel from the ANGB and other parties with relevant historical site knowledge. According to Base personnel, 3% AFFF was used at Kingsley Field ANGB from approximately 1987 to 2013, and the only exception is that AFFF is still stored and used at the fire station (PRL 6). One hangar (Hangar 333) was equipped with an AFFF fire suppression system (FSS); the FSS was converted to a high expansion foam (HEF) system.

The sections below briefly describe the operational history and waste characteristics of the PRLs included in this SI, as presented in the PA Report (BB&E 2015). PRL numbers correspond to the area of concern designation used in the PA Report, and all building descriptions, AFFF inventories, and release histories reflect conditions at the time of the 2015 BB&E site visit.

### 4.1 PRL 1: HANGAR 333 – FUEL CELL MAINTENANCE DOCK

Hangar 333's FSS with AFFF was installed in 1987. In 2007, approximately 200 gal of AFFF plus associated water were released at Hangar 333 (total volume unknown). As shown in Figure 1-1, PRL 1 has two distinct areas. Most of the AFFF and water mixture was contained inside the building where floor drains are connected to the sanitary sewer. The floor drains were reportedly plugged at the time of the release. This mixture of AFFF and water was removed by hand (e.g., temporary trash pumps) and discharged east of the hangar, across the taxiway, and into a grassy area adjacent to the taxiway. The FSS was converted from AFFF to HEF in 2012 to 2013.

### 4.2 PRL 2: FETA – NORTH

From approximately 1995 to 2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North FETA, the South FETA, or the Compass Rose FETA. Typically, the fire department (FD) utilized 3% AFFF. The estimated amount of AFFF released weekly was 3 to 4 gal per testing event; exact discharge quantities are unknown. The North FETA is a flat, grass- and dirt-covered area (an estimated 1- to 2-acre area) located southeast of the alert apron adjacent to the Pelican Aviation (Building 8) ramp. Fire trucks would typically pull up near the edge of the paved road area east of Pelican Aviation and conduct foam testing in a northerly direction, to the north of Pelican Aviation, south of Taxiway A, and west of the north-south access road located immediately east of Pelican Aviation (Building 8). AFFF released during testing would likely have infiltrated permeable surface soils in this area.

Because FETA – North was determined to be outside the Base boundary, it was not included in the SI WP. However, ANG requested soil and groundwater samples be collected from this PRL during the SI. The PRL 2 field investigation will be documented as a field change in the SI Report (Section 5.1.2).

#### **4.3 PRL 3: FETA – SOUTH**

From approximately 1995 to 2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North FETA, the South FETA, or the Compass Rose FETA. Typically, the FD utilized 3% AFFF. The estimated amount of AFFF released weekly was 3 to 4 gal per testing event; exact discharge quantities are unknown. The South FETA is a flat, grass- and dirt-covered area (an estimated approximately 1- to 2- acre area) located along the northern side of the far western end of Runway 725, west of Taxiway D. Fire trucks would typically pull up along the northern edge of Runway 725 at the far western end and conduct foam testing in a northerly direction. AFFF released during testing would likely have infiltrated permeable surface soils in this area.

The PA Report (BB&E 2015) identified the northern portion of this PRL to be within the Base boundary, and this PRL was included in the SI scope. More recent updates to the Base boundary show this PRL to be fully outside the Base boundary, and this information was confirmed during the Installation site visit. The SI focused on the northern portion of PRL 3 originally within the Base boundary.

#### **4.4 PRL 4: FETA – COMPASS ROSE**

From approximately 1995 to 2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North FETA, the South FETA, or the Compass Rose FETA. Typically, the FD utilized 3% AFFF. The estimated amount of AFFF released weekly was 3 to 4 gal per testing event; exact discharge quantities are unknown. The Compass Rose FETA is a flat, grass- and dirt-covered area located off the eastern edge of the Base's Compass Rose used for the calibration of aircraft directional control systems. Fire trucks would typically pull up near the eastern edge of the paved area surrounding the Compass Rose and discharge into the grassy area northeast, east, and southeast from the Compass Rose. Relative to the other FETAs, the Compass Rose FETA site was used much more frequently than the other two FETAs and would likely have the greatest amount of AFFF released to the ground surface. AFFF released during testing would likely have infiltrated permeable surface soils in this area.

#### **4.5 PRL 5: BUILDING 573 – FORMER VEHICLE MAINTENANCE BUILDING**

Small discharges of AFFF mixture have occurred at this building after repairs were completed on fire trucks and as they were tested on an as-needed basis approximately one to two times per year. These small amounts of AFFF would have been discharged into the grassy area on the northern side of Building 573, north of the vehicle bays, and also possibly to the west and south over the fence depending on wind or weather conditions at the time.

#### **4.6 PRL 6: BUILDING 216 – CURRENT AND FORMER FIRE STATION**

This new fire station was built in 1995 after the old fire station was demolished. At the time of the August 2015 PA site visit, AFFF storage at the fire station included the following:

- 1,014 gal (Chemguard) of AFFF are currently in inventory, including trucks and storage. The maximum capacity of trucks and storage is approximately 1,300 gal.
- Up to 500 gal of AFFF are stored on the 2<sup>nd</sup> floor in two 250-gal poly storage tanks.
- Five 5-gal totes are utilized to fill the 2<sup>nd</sup> floor AFFF poly storage tanks.
- Six firefighting trucks with foam-holding tanks (approximately 800 gal AFFF).
- One support vehicle with a 25-gal AFFF capacity (typically five 5-gal totes).

Firefighting trucks currently pull up alongside the southern end of the fire station building where AFFF from the 2<sup>nd</sup> floor storage totes is gravity-fed into their holding tanks. This method of filling the trucks has

been ongoing for approximately 1 year. Prior to that, the trucks were manually filled with AFFF from 5-gal totes inside the fire station.

Interviews with FD personnel indicate one release of AFFF at Building 216 in 2000. Approximately 5 gal of AFFF entered the sanitary sewer system via the building's floor drains and then into the city's wastewater treatment plant, where foaming was observed and reported.

Monthly AFFF foam testing of one fire truck is performed in the grassy area north of Building 216, in the location of the former Building 216.

The former fire station (Former Building 216) was in operation from approximately the mid-1940s to 1995, when it was demolished. The site is now a vacant grassy area located immediately north of the current fire station building. Per FD personnel, since the beginning of 2015, monthly foam testing is conducted with one truck within the grassy area; discharge quantities are unknown but reported to be small amounts. No additional releases were reported in this area of the former fire station.

#### **4.7 PRLs 7 AND 8: NORTH AND SOUTH OUTFALLS**

Although no records or Base personnel accounts of AFFF releases at the North and South Outfalls exist, documented use/storage of AFFF exists within the drainage basin (including PRLs 1, 3, 4, 5, and 6), which may have discharged to the South Outfall. During the Installation site visit, it was determined that none of the PRLs except FETA – North (located outside the Base boundary) would likely contribute surface water runoff to the North Outfall (PRL 7). The North Outfall is located at the northern end of the Klamath Falls Airport. The South Outfall is located in the west-central portion of the Klamath Falls Airport, south of the main portions of the Base boundary. These outfalls may have received any potential releases of AFFF that would have entered the drainage ditches and canals located to the east and west of the Base.

The North Outfall (PRL 7) was not included in the SI WP because the PRL is outside the Base boundary. However, ANG requested sediment and surface water samples (if available) be collected from this PRL during the SI. The field investigation at PRL 7 will be documented as a field change in the SI Report (Section 5.1.2).

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## 5.0 SITE INVESTIGATION FIELD PROGRAM

This section summarizes the SI field activities, including soil, groundwater, surface water, and sediment sampling, at Kingsley Field ANGB. Analytical results for each PRL are presented and identify the presence or absence of PFOS/PFOA and results for PFOS, PFOA, and PFBS that exceed the screening criteria shown in Table 2 and described in Section 1.2 of this SI Report.

SI field activities were conducted between April 30 and May 7, 2018. All sampling and analytical activities were conducted in accordance with the procedures specified in the SI WP (Leidos 2018), except as noted in Section 5.1.2. Boring logs and monitoring well construction logs are provided in Appendix A and groundwater sampling logs are provided in Appendix B. The groundwater monitoring well survey report is included in Appendix C. The data validation report is provided in Appendix D. The full data package is provided in Appendix E.

### 5.1 GENERAL APPROACH

#### 5.1.1 Field Sampling

SI field activities included the following:

- Surface and subsurface soil sampling;
- Water level measurements at two existing monitoring wells and five newly installed permanent monitoring wells to confirm local groundwater flow at Kingsley Field ANGB;
- Installation and sampling of groundwater from five new monitoring wells and two existing monitoring wells located downgradient from the PRLs and/or at the Installation boundary;
- Surface water and sediment sampling (if available); and
- Global positioning system survey of soil borings, sediment, and surface water locations (the horizontal location and elevation of all newly installed wells were surveyed by a professional licensed surveyor).

Sample locations were based on known historical or potential releases, and site conditions as observed during the PA. Table 3 summarizes the SI sampling activities at Kingsley Field ANGB. Figure 2 shows an overview of the Kingsley Field ANGB SI sample locations. Prior to intrusive activities, an underground utility locator marked and cleared all boring locations.

A total of 17 soil borings were advanced. Borings were advanced in grassy areas using direct push technology (DPT) drilling to first water or refusal, whichever was encountered first (maximum depth was 10 ft BGS). All soil borings were logged for soil lithology. Boring logs are included in Appendix A. Two grab soil samples were collected from each boring—one from within the 0- to 2-ft BGS interval and one from within the 2-ft interval immediately above the water table.

All soil samples were screened by a photoionization detector as a health and safety precaution due to the potential presence of volatile organic compounds (VOCs). Following collection of soil samples, boreholes not co-located with monitoring wells were abandoned by backfilling with hydrated bentonite chips up to approximately 4 to 6 in. from the surface and capped with surrounding soil.

In addition to the two existing wells on Kingsley Field ANGB, five permanent monitoring wells were installed and water levels measured to determine groundwater flow direction. The new wells were developed and seven monitoring wells sampled following ANG guidance, as prescribed in the SI WP (Leidos 2018).

One surface water sample was collected from a storm sewer manhole located within the Base boundary, near the Hangar 333 Release Area (PRL 1). This manhole discharges stormwater to the South Outfall (PRL 8) and is the last available surface water sample location within the Base boundary, as described in the SI WP (Leidos 2018). No sediment was present in the manhole associated with the South Outfall. A sediment sample was collected from a shallow ditch located outside ANG property, near the northern boundary of the Airport north of the North FETA (PRL 2), to evaluate surface water and sediment associated with the North Outfall (PRL 7) leaving the Base and Airport. No surface water was present in the ditch associated with the North Outfall.

Additional details on the field activities for each PRL are provided in Sections 5.3 through 5.10.

### **5.1.2 Deviations from the Work Plan**

The following minor deviations were observed during field activities:

- No sediment was observed in the accessible on-Base manhole for the South Outfall (PRL 8). Therefore, no sediment samples were collected at this PRL.
- Due to an oversight, the field reagent blank was not collected per the Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP) (Leidos 2018); note, this field quality control (QC) blank is not required under the Quality Systems Manual (QSM) Version 5.1 (DoD 2017) and does not impact the validation qualifiers assigned to the sample data and NFA is required.
- A groundwater sample from an existing well (MW-10-11-PRL04) was not collected because the well could not be located during the SI. As a result, the proposed new well (MW-KLA04-01) was relocated closer to the PRL and a groundwater sample was collected for the evaluation of PRL 4.
- At the request of ANG, a few changes were made to the sampling plan after the SI WP was approved by the Oregon Department of Environmental Quality. The changes were as follows:
  - PRL 2 was not included in the SI WP (Leidos 2018) because it is located off Base. However, to address ANG's request to collect samples from PRL 2, Leidos collected soil samples from three soil borings at PRL 2 (which included soil samples from a soil boring relocated from PRL 6 to PRL 2) and a groundwater sample from a monitoring well relocated from PRL 1 (MW-KLA01-02) to PRL 2 (MW-KLA02-01).
  - The proposed well MW-KLA01-01 at PRL 1 was moved slightly to the southeast to serve the dual purpose of a downgradient well and boundary well.
  - PRL 7 was not included in the SI WP (Leidos 2018) because it is located off Base. However to address ANG's request to collect samples from PRL 7, Leidos collected a sediment sample from a drainage ditch associated with the North Outfall (PRL 7). Surface water was not available at this PRL, and therefore, a surface water sample could not be collected.

### 5.1.3 Data Analysis

#### 5.1.3.1 Laboratory

Environmental samples were submitted to TestAmerica Analytical Laboratories, Inc. (TestAmerica), in West Sacramento, California. TestAmerica is accredited under the DoD Environmental Laboratory Accreditation Program and maintains a National Environmental Laboratory Accreditation Program certification.

#### 5.1.3.2 Screening criteria

Analytical data for three of the 2012 EPA UCMR3 COCs (PFOS, PFOA, PFBS) were compared to appropriate HA or risk-based screening criteria (Section 1.2 and Table 2) to determine whether further investigation is required. No HA or RSL criteria currently exist for PFHpA, PFHxS, or PFNA.

#### 5.1.3.3 Data validation

A UFP-QAPP was developed for this project as Appendix A of the SI WP (Leidos 2018). The UFP-QAPP was written to apply to all 15 Installations included in the scope of the Phase III SI contract. Specifics on the number and type of samples to be collected in characterizing the site, and the number and type of quality assurance (QA)/QC samples to be used to evaluate the quality of the data obtained, were included in the SI WP (Leidos 2018). Soil and sediment were collected in one 4-oz. high-density polyethylene (HDPE) container with an HDPE cap. Groundwater and surface water samples were collected in two 250-mL HDPE containers with HDPE caps. The following samples were collected during the Kingsley Field ANGB SI:

- Thirty-four soil samples,
- One sediment sample,
- Seven groundwater samples,
- One surface water sample,
- Five soil field duplicate samples,
- One sediment field duplicate,
- One groundwater field duplicate,
- Five equipment rinsates, and
- One field blank.

The results of the data quality evaluation of the investigative field sample data indicate that the overall quality of the data is acceptable to confirm the presence or absence of contamination. Through data verification, validation, and review, the analytical information has been qualified as appropriate. Data are considered usable if they are unqualified or qualified as estimated. For groundwater and surface water, 100% of the data were considered usable. For soil and sediment, 100% of the data were considered usable. The overall quality of the data meets or exceeds the established project objectives.

#### *Quality Control*

Seven field duplicate samples were collected, including five for soil, one for sediment, and one for groundwater, and analyzed for PFOS/PFOA. Field duplicate analytical results were generally consistent with their associated parent samples, indicating no significant issues with field and laboratory precision. The groundwater duplicate pair and four soil pairs had relative percent difference (RPD) values below the UFP-QAPP guidelines of 50% for all detected analytes. Two analytes in one soil field duplicate pair had RPD values above the guideline (64% for PFNA and 68% for PFOA in KLA05-SB1-01/01D).

Two analytes in the sediment field duplicate pair had RPD values above guidelines (81% for PFHxS and 81% for PFOS in KLA07-SD1-01/01D), although all parent results were non-detections. Data are not qualified on the basis of field duplicate results alone since the *Contract Laboratory Program National Functional Guidelines for the Organic Data Review* (EPA 1999), and the DoD QSM Version 5.1 (DoD 2017) do not include control limits for field duplicate RPD values. Five equipment rinsate samples were collected, including four associated with soil samples and one associated with groundwater. In equipment blank samples ER-01, ER-02, ER-04, and ER-05, PFOS/PFOA was detected, although at low estimated concentrations that did not result in additional field sample qualifications. Field blank sample FB-01 was collected from deionized water and analyzed for PFOS/PFOA. In field blank FB-01, PFOS/PFOA was detected at a low estimated concentration that resulted in one sample qualified as non-detect (U). For these reasons, SI data quality was not impacted as a result of PFOS/PFOA detections in the field blanks.

### **PFOS/PFOA**

Some PFOS/PFOA compounds were qualified as estimated due to minor QC outliers. Ten PFOS/PFOA results were qualified as estimated (J) due to surrogate recovery results outside control limits. Seventy PFOS/PFOA results were qualified as estimated (J/UJ) due to internal standard outliers. PFHpA and PFOA in KLA06-SB2-01 and PFOS in sample KLA02-SB1-01 were qualified as estimated (J) due to matrix spike/matrix spike duplicate (MS/MSD) recovery outliers. Five PFHxS results were qualified as non-detect due to continuing calibration blank contamination. Twelve PFOS/PFOA results were qualified as estimated due to results reported above the calibration range after maximum dilution. No other QC outliers resulted in qualification of the data during the data validation process.

Except as noted above, data produced for this investigation demonstrate that it can withstand scientific scrutiny; are appropriate for its intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

## **5.2 INVESTIGATION-DERIVED WASTE**

Investigation-derived waste (IDW) was managed in compliance with the SI WP (Leidos 2018). Five drums of non-hazardous soil IDW and six drums of non-hazardous water IDW were transported to a designated drum staging area located onsite. Two IDW samples (one aqueous and one solid) were collected for this event, and the results in conjunction with the historical site process knowledge were used for characterization of generated IDW. The IDW has been characterized as non-hazardous waste and the IDW drums have been removed from the Base for offsite disposal at a permitted facility.

## **5.3 PRL 1: HANGAR 333 – FUEL CELL MAINTENANCE DOCK**

A total of three soil borings and one monitoring well were installed and sampled at PRL 1 (Table 3), as described below.

### **5.3.1 Sampling Activities**

#### **5.3.1.1 Soil sampling**

A total of three soil borings were installed on May 2, 2018, in the PRL 1 area. KLA01-SB1 was installed in a grassy area north of the concrete ramp on the eastern portion of Hangar 333 (Figure 3). KLA01-SB2 was installed in a grassy area east of the concrete ramp on the eastern portion of Hangar 333, near the taxiway (Figure 3). KLA01-SB3 was installed in a grassy area east of Hangar 333, across the taxiway where AFFF removed from the Building 333 spill was reportedly discharged (Figure 3). The soil borings were advanced using a DPT drill rig. Borings were advanced to total depth of 10 ft BGS. Soil lithology

descriptions were logged on the soil boring logs (Appendix A). A total of six soil samples were collected and analyzed for PFOS/PFOA compounds.

### **5.3.1.2 Groundwater**

MW-KLA01-01 was drilled in the grassy area southeast of the Hangar 333 Release Area, downgradient from the PRL, near the Installation boundary, and in the general groundwater flow direction on May 1, 2018 (Figure 8). Well construction details are shown in Table 4. The soil lithology descriptions and well construction diagram are included in Appendix A.

MW-KLA01-01 was developed on May 5, 2018, and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-KLA01-01-01 was collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-KLA01-01 was surveyed by a licensed surveyor, and the well survey report is included in Appendix C.

## **5.3.2 Analytical Results**

### **5.3.2.1 Soil**

Six soil samples were collected and analyzed from PRL 1, as described in Section 5.3.1. All surface soil samples showed detections above the laboratory detection limit for PFOS, PFOA, PFBS, and PFHxS, except PFHxS was not detected in KLA01-SB3-01. PFNA was not detected in all three samples, and PFHpA was detected in KLA01-SB1-01 but not detected in KLA01-SB2-01 and KLA01-SB3-01. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria.

In the subsurface soil samples KLA01-SB1-02 and KLA01-SB2-02, PFOS, PFOA, PFBS, PFHpA, PFHxS were detected above the laboratory detection limit, and PFNA was not detected. PFOS and PFHxS were only detected in sample KLA01-SB3-02. All other PFOS/PFOA results were non-detect in KLA01-SB3-02. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria. Soil analytical results for PRL 1 are presented in Table 7 and shown in Figure 3.

### **5.3.2.2 Groundwater**

One groundwater sample was collected from MW-KLA01-01 and analyzed as described in Section 5.3.1. All six PFOS/PFOA compounds were detected above laboratory detection limits, and PFOS exceeded the 70-ng/L EPA drinking water HA (EPA 2016a) at a concentration of 500 J ng/L. The combined PFOS/PFOA concentration at this location is 520 ng/L, exceeding the EPA HA. PFOA was below the EPA HA and PFBS was below the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. Groundwater analytical results for PRL 1 are presented in Table 8 and shown in Figure 8.

## **5.4 PRL 2: FETA – NORTH**

A total of three soil borings and one monitoring well were installed and sampled at PRL 2 (Table 3), as described below.

## 5.4.1 Sampling Activities

### 5.4.1.1 Soil

A total of three soil borings were advanced on May 4, 2018, in the PRL 2 area. KLA02-SB1 was advanced in a grassy area in the northwestern portion of the PRL (Figure 4). KLA02-SB2 was advanced in a grassy area in the eastern portion of the PRL (Figure 4). KLA02-SB3 was advanced in a grassy area in the southwestern portion of the PRL (Figure 4). The soil borings were advanced using a DPT drill rig. Borings were advanced to total depths ranging from 7.5 ft BGS (KLA02-SB2) to 10 ft BGS (KLA02-SB3). Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of eight soil samples (including two field duplicates) were collected and analyzed for PFOS/PFOA compounds.

### 5.4.1.2 Groundwater

MW-KLA02-01 was drilled in the grassy area southeast and downgradient from the PRL, and in the general groundwater flow direction, on May 4, 2018 (Figure 8). Well construction details are shown in Table 4. The soil lithology descriptions and well construction diagram are included in Appendix A.

MW-KLA02-01 was developed on May 5, 2018, and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-KLA02-01-01 was collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-KLA02-01 was surveyed by a licensed surveyor, and the well survey report is included in Appendix C.

## 5.4.2 Analytical Results

### 5.4.2.1 Soil

Eight soil samples from KLA02-SB1, KLA02-SB2, and KLA02-SB3 were collected and analyzed as described in Section 5.4.1. All six PFOS/PFOA compounds were detected above laboratory detection limits in the surface soil samples with the exception of PFNA in KLA02-SB1-01. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria.

In the subsurface soil samples, all six PFOS/PFOA compounds were detected above laboratory detection limits with the exception of PFNA in KLA02-SB1-01. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria. PRL 2 soil analytical results are presented in Table 7 and shown in Figure 4.

### 5.4.2.2 Groundwater

One groundwater sample was collected from MW-KLA02-01 and analyzed as described in Section 5.4.1. All six PFOS/PFOA compounds were detected above laboratory detection limits, and PFOS and PFOA exceeded the 70-ng/L EPA drinking water HA (EPA 2016a and 2016b) at elevated concentrations of 380,000 J and 21,000 J ng/L, respectively. The combined PFOS/PFOA concentration at this location is 401,000 ng/L, significantly exceeding the EPA HA. PFBS was below the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. Groundwater analytical results for PRL 2 are presented in Table 8 and shown in Figure 8.

## **5.5 PRL 3: FETA – SOUTH**

A total of three soil borings and one monitoring well were installed and sampled at PRL 3 (Table 3), as described below.

### **5.5.1 Sampling Activities**

#### **5.5.1.1 Soil**

A total of three soil borings were installed on May 2, 2018, in the PRL 3 area. KLA03-SB1 and KLA03-SB3 were advanced in a grassy area in the northwestern portion of the PRL, within the Base boundary (Figure 3). KLA03-SB2 was installed in a grassy area in the northeastern portion of the PRL, within the Base boundary (Figure 3). The soil borings were advanced using a DPT drill rig. Borings were advanced to a total depth of 10 ft BGS. Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of seven soil samples (including one field duplicate) were collected and analyzed for PFOS/PFOA compounds.

#### **5.5.1.2 Groundwater**

MW-KLA03-01 was drilled in the grassy area in the northeastern portion of the PRL (within the Base boundary) and in the general groundwater flow direction on May 2, 2018 (Figure 8). Well construction details are shown in Table 4. The soil lithology descriptions and well construction diagram are included in Appendix A.

MW-KLA03-01 was developed on May 5, 2018, and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-KLA03-01-01 was collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-KLA03-01 was surveyed by a licensed surveyor, and the well survey report is included in Appendix C.

### **5.5.2 Analytical Results**

#### **5.5.2.1 Soil**

Seven soil samples from KLA03-SB1, KLA03-SB2, and KLA03-SB3 were collected and analyzed as described in Section 5.5.1. PFOS, PFHxS, and PFBS were detected above laboratory detection limits in surface soil samples KLA03-SB1-01, KLA03-SB2-01, and KLA03-SB3-01. PFOA was detected in KLA03-SB2-01 and KLA03-SB3-01, and PFHpA was only detected in KLA03-SB3-01. PFNA was not detected in all three samples. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria.

In the subsurface soil samples, PFOS, PFOA, PFBS, and PFHxS were detected in KLA03-SB1-01, KLA03-SB2-01, and KLA03-SB3-01. PFHpA was only detected in KLA03-SB3-01. PFNA was not detected in all three samples. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria. PRL 3 soil analytical results are presented in Table 7 and shown in Figure 3.

### 5.5.2.2 Groundwater

One groundwater sample was collected from MW-KLA03-01 and analyzed as described in Section 5.5.1. All six PFOS/PFOA compounds were detected above laboratory detection limits, and PFOS and PFOA exceeded the 70-ng/L EPA drinking water HA (EPA 2016a and 2016b) at concentrations of 6,100 and 290 ng/L. The combined PFOS/PFOA concentration at this location is 6,390 ng/L, exceeding the EPA HA. PFBS was detected below the EPA RSL. No screening criteria exist for PFNA, PFHxS, and PFHpA. Groundwater analytical results for PRL 3 are presented in Table 8 and shown in Figure 8.

## 5.6 PRL 4: FETA – COMPASS ROSE

A total of three soil borings and one monitoring well were installed and sampled at PRL 4 (Table 3), as described below.

### 5.6.1 Sampling Activities

#### 5.6.1.1 Soil

A total of three soil borings were installed on May 5, 2018, in the PRL 4 area. KLA04-SB1 was installed in a grassy area immediately north of the Compass Rose (Figure 5). KLA04-SB2 was installed in a grassy area immediately east of the Compass Rose (Figure 5). KLA04-SB3 was installed in a grassy area immediately southeast of the Compass Rose (Figure 5). The soil borings were advanced using a DPT drill rig. Borings were advanced to total depth of 10 ft BGS. Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of six soil samples were collected and analyzed for PFOS/PFOA compounds.

#### 5.6.1.2 Groundwater

The existing well (MW-10-11-PRL04) was not located during the SI, and no groundwater sample was collected. Therefore, the new well (MW-KLA04-01) was relocated west and closer to the PRL. MW-KLA04-01 was drilled in the grassy area southeast and downgradient from the PRL, and in the general groundwater flow direction, on May 3, 2018 (Figure 8). Well construction details are shown in Table 4. The soil lithology descriptions and well construction diagram are included in Appendix A.

MW-KLA04-01 was developed on May 5, 2018, and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-KLA04-01-01 was collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-KLA04-01 was surveyed by a licensed surveyor, and the well survey report is included in Appendix C.

### 5.6.2 Analytical Results

#### 5.6.2.1 Soil

Six soil samples from KLA04-SB1, KLA04-SB2, and KLA04-SB3 were collected and analyzed as described in Section 5.6.1. All six PFOS/PFOA compounds were detected above laboratory detection limits in surface soil samples KLA04-SB1-01, KLA04-SB2-01, and KLA04-SB3-01. The PFOS concentrations in surface soil samples KLA04-SB1, KLA04-SB2, and KLA04-SB3 were 2,200 J, 6,600 J, and 4,500 J µg/kg, respectively, and exceeded the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOA or PFBS exceeded the soil screening criteria.

In the subsurface soil samples, all six PFOS/PFOA compounds were detected above laboratory detection limits. The PFOS concentrations in subsurface soil samples KLA04-SB1, KLA04-SB2, and KLA04-SB3 were 3,600 J, 4,800 J, and 3,800 J µg/kg, respectively, and exceeded the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOA or PFBS exceeded the soil screening criteria. PRL 4 soil analytical results are presented in Table 7 and shown in Figure 5.

### **5.6.2.2 Groundwater**

One groundwater sample was collected from MW-KLA04-01 and analyzed as described in Section 5.6.1. Five of the six PFOS/PFOA compounds, with the exception of PFNA, were detected above laboratory detection limits, and PFOS exceeded the 70-ng/L EPA drinking water HA (EPA 2016a) at a concentration of 100 ng/L. The combined PFOS/PFOA concentration at this location is 141 ng/L, exceeding the EPA HA. PFOS was below the EPA HA and PFBS was below the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. Groundwater analytical results for PRL 4 are presented in Table 8 and shown in Figure 8.

## **5.7 PRL 5: BUILDING 573 – FORMER VEHICLE MAINTENANCE BUILDING**

A total of three soil borings were installed and sampled, and two existing monitoring wells were sampled at PRL 5 (Table 3), as described below.

### **5.7.1 Sampling Activities**

#### **5.7.1.1 Soil**

A total of three soil borings were installed on May 5, 2018, in the PRL 5 area. KLA05-SB1 was installed in a grassy area north of Building 573 (Figure 6). KLA05-SB2 was installed in a grassy area west of Building 573 (Figure 6). KLA05-SB3 was installed in a grassy area south of Building 573 (Figure 6). The soil borings were advanced using a DPT drill rig. Borings were advanced to total depths ranging from 7.5 ft BGS (KLA05-SB1, KLA05-SB2) to 8 ft BGS (KLA05-SB3). Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of seven soil samples (including one field duplicate) were collected and analyzed for PFOS/PFOA compounds.

#### **5.7.1.2 Groundwater**

Groundwater samples were collected from two existing wells (MW-572-02-PRL05, MW-573-03-PRL05). MW-572-02-PRL05 is located in the southeastern portion of the parking lot, near the Base boundary, and in the general direction of groundwater flow. MW-573-03-PRL05 is located just south of Building 573 and in the general direction of groundwater flow.

MW-572-02-PRL05 and MW-573-03-PRL05 were purged and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater samples MW-572-02-PRL05-01 (and one field duplicate) and MW-573-03-PRL05-01 were collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

### **5.7.2 Analytical Results**

#### **5.7.2.1 Soil**

Seven soil samples from KLA05-SB1, KLA05-SB2, and KLA05-SB3 were collected and analyzed as described in Section 5.7.1. All six PFOS/PFOA compounds were detected above laboratory detection

limits in surface soil samples KLA05-SB1-01, KLA05-SB2-01, and KLA05-SB3-01. The PFOS concentration in surface soil sample KLA05-SB3-01 was 14,000  $\mu\text{g}/\text{kg}$  and exceeded the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOA or PFBS exceeded the soil screening criteria.

In the subsurface soil samples, all six PFOS/PFOA compounds were detected in KLA05-SB2-02 and KLA05-SB3-02. PFOS, PFOA, PFHxS, and PFBS were detected in KLA05-SB1-02; PFNA and PFHpA were not detected. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria. PRL 5 soil analytical results are presented in Table 7 and shown in Figure 6.

### **5.7.2.2 Groundwater**

A total of three groundwater samples were collected – one from each of the wells (MW-572-02-PRL05, MW-573-03-PRL05) and a field duplicate. The groundwater samples were analyzed as described in Section 5.7.1. All six PFOS/PFOA compounds were detected above laboratory detection limits in both wells. PFOS and PFOA exceeded the 70-ng/L EPA drinking water HA (EPA 2016a and EPA 2016b) in well MW-573-03-PRL05. The PFOS concentration in MW-572-02-PRL05 (primary and duplicate samples) exceeded the EPA HA. The combined PFOS/PFOA concentrations at MW-572-02-PRL05 and MW-573-03-PRL05 are 1,156 ng/L (1,257 ng/L duplicate) and 69,700 ng/L, respectively. PFBS concentrations were below the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. Groundwater analytical results for PRL 5 are presented in Table 8 and shown in Figure 8.

## **5.8 PRL 6: BUILDING 216 – CURRENT AND FORMER FIRE STATION**

A total of two soil borings and one monitoring well were installed and sampled at PRL 6 (Table 3), as described below.

### **5.8.1 Sampling Activities**

#### **5.8.1.1 Soil**

A total of two soil borings were installed on May 1, 2018, in the PRL 6 area. KLA06-SB1 and KLA06-SB2 were installed in a grassy area north of Building 216 where spray testing occurred (Figure 7). The soil borings were advanced using a DPT drill rig. Borings were advanced to total depth 10 ft BGS. Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of five soil samples (including one field duplicate) were collected and analyzed for PFOS/PFOA compounds.

#### **5.8.1.2 Groundwater**

MW-KLA06-01 was drilled in the grassy area north of Building 216 where spray testing occurred, east of the two soil borings on May 1, 2018 (Figure 6). Well construction details are shown in Table 4. The soil lithology descriptions and well construction diagram are included in Appendix A.

MW-KLA06-01 was developed on May 5, 2018, and sampled on May 6, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-KLA06-01-01 was collected and analyzed for PFOS/PFOA compounds. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-KLA06-01 was surveyed by a licensed surveyor, and the well survey report is included in Appendix C.

## **5.8.2 Analytical Results**

### **5.8.2.1 Soil**

Five soil samples from KLA06-SB1 and KLA06-SB2 were collected and analyzed as described in Section 5.8.1. All six PFOS/PFOA compounds were detected above laboratory detection limits in surface soil samples KLA06-SB1-01 and KLA06-SB2-01. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria.

In the subsurface soil samples KLA06-SB1 and KLA06-SB2, all six PFOS/PFOA compounds were detected above the laboratory detection limits. The PFOS concentration in surface soil sample KLA06-SB2 was 1,600 J µg/kg and exceeded the EPA RSL. No screening criteria exist for PFNA, PFHxS, and PFHpA. None of the concentrations of PFOA or PFBS exceeded the soil screening criteria. PRL 6 soil analytical results are presented in Table 7 and shown in Figure 7.

### **5.8.2.2 Groundwater**

One groundwater sample was collected from MW-KLA06-01 and analyzed as described in Section 5.8.1. All six PFOS/PFOA compounds were detected above laboratory detection limits in both wells. PFOS and PFOA exceeded the 70-ng/L EPA drinking water HA (EPA 2016a and 2016b) at elevated concentrations of 130,000 J and 14,000 ng/L in MW-KLA06-01. The combined PFOS/PFOA concentration at this location is 144,000 ng/L, significantly exceeding the 70-ng/L EPA drinking water HA (EPA 2016a and 2016b). PFBS was below the EPA RSL. No screening criteria exist for PFHxS, PFHpA, and PFNA. Groundwater analytical results for PRL 6 are presented in Table 8 and shown in Figure 8.

## **5.9 PRL 7: NORTH OUTFALL**

The North Outfall is located at the northern boundary of the Klamath Falls Airport and likely discharges stormwater from PRL 2. The outfall also receives stormwater from other facilities at the northern portion of the Klamath Falls Airport. A sediment sample was collected from a drainage ditch prior to the North Outfall.

### **5.9.1 Sampling Activities**

#### **5.9.1.1 Sediment**

Sediment sample KLA07-SD1-01 was collected from a dry drainage ditch near the North Outfall on May 6, 2018, in the location shown in Figure 4. The sample was analyzed for PFOS/PFOA compounds.

#### **5.9.1.2 Surface water**

The collection of a surface water sample was attempted in the same location where the sediment sample was collected (Figure 6); however, no water was present in the ditch.

### **5.9.2 Analytical Results**

#### **5.9.2.1 Sediment**

Sediment sample KLA07-SD1-01 was collected and analyzed as described in Section 5.9.1. PFOS/PFOA compounds were not detected at concentrations exceeding the laboratory detection limit in the primary sample. However, five of the six PFOS/PFOA compounds with the exception of PFNA were detected at low concentrations in the duplicate sample. The detected concentrations of PFOS, PFOA, and PFBS were

below the screening criteria. No screening criteria exist for PFHxS, PFHpA, and PFNA. PRL 8 sediment analytical results are presented in Table 8 and shown in Figure 4.

## **5.10 PRL PRL 8: SOUTH OUTFALL**

The South Outfall is located in the western-central portion of the Klamath Falls Airport, south of the main portions of the Base boundary, and discharges the majority of the stormwater from Kingsley Field ANGB, including PRLs 1, 3, 4, 5, and 6. The South Outfall is representative of the overall impacts of PFOS/PFOA from the PRLs included in this SI. The outfall also receives stormwater from the Klamath Falls Airport. The last precipitation event was 0.01 in. on April 30, 2018. Surface water sample was collected inside of a storm sewer manhole located within the Installation boundary.

### **5.10.1 Sampling Activities**

#### **5.10.1.1 Surface water**

A surface water sample KLA08-SW1-01 was collected on May 7, 2018, in the location shown in Figure 3. Water quality parameters were measured as shown in Table 6. The samples were analyzed for PFOS/PFOA compounds. The Sample Collection Log is included in Appendix B.

#### **5.10.1.2 Sediment**

The collection of a sediment sample was attempted in the same location where the surface water sample was collected (Figure 3); however, no sediment was present in the manhole.

### **5.10.2 Analytical Results**

#### **5.10.2.1 Surface water**

Surface water sample KLA08-SW1-01 was collected and analyzed as described in Section 5.10.1. Five of the six PFOS/PFOA compounds were detected at concentrations exceeding the laboratory detection limit with the exception of PFBS in KLA08-SW1-01. No screening criteria exist for PFHxS, PFHpA, and PFNA. None of the concentrations of PFOS or PFOA exceeded the drinking water screening criteria. PRL 8 surface water analytical results are presented in Table 8 and shown in Figure 3.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

### 6.1 CONCLUSIONS

This section presents the SI conclusions and recommendations for each PRL. The recommended DQOs are based on data collected by Leidos during this SI and an evaluation of the analytical results compared to applicable screening criteria.

#### 6.1.1 PRL 1: Hangar 333 – Fuel Cell Maintenance Dock

Although PFOS/PFOA compounds were detected in PRL 1 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 1.

Evaluation of groundwater data compared to screening criteria indicates an exceedance of the EPA HA (70 ng/L) in MW-KLA01-01 for PFOS and PFOA (combined), with a result of 520 ng/L.

Based on the SI results, the following DQOs are recommended for PRL 1:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional new monitoring wells located both upgradient of and downgradient from PRL 1.

#### 6.1.2 PRL 2: FETA – North

Although PFOS/PFOA compounds were detected in PRL 2 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 2.

Evaluation of groundwater data compared to screening criteria indicate exceedances of the EPA HA (70 ng/L) in MW-KLA02-01 for PFOS, PFOA, and PFOS and PFOA (combined), with results of 380,000, 21,000, and 401,000 ng/L. MW-KLA02-01 had the highest reported concentration of PFOS and PFOA in groundwater or surface water for this SI.

Based on the SI results, the following DQOs are recommended for PRL 2:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional new monitoring wells located both upgradient of and downgradient from PRL 2 (which is located off Base).

#### 6.1.3 PRL 3: FETA – South

Although PFOS/PFOA compounds were detected in PRL 3 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 3.

Evaluation of groundwater data compared to screening criteria indicates an exceedance of the EPA HA (70 ng/L) in MW-KLA03-01 for PFOS and PFOA (combined), with a result of 6,390 ng/L.

Based on the SI results, the following DQOs are recommended for PRL 3:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional new monitoring wells located both upgradient of and downgradient from PRL 3.

#### **6.1.4 PRL 4: FETA – Compass Rose**

Although PFOS/PFOA compounds were detected in PRL 4 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOA. However, PFOS concentrations in both surface and subsurface soil exceeded the screening criteria at every soil boring in PRL 4. The PFOS concentrations in surface soil samples ranged from 2,200 J to 6,600 J  $\mu\text{g}/\text{kg}$  and exceeded the screening level (1,260  $\mu\text{g}/\text{kg}$ ). The PFOS concentrations in subsurface soil samples ranged from 3,600 J to 4,800 J  $\mu\text{g}/\text{kg}$  and exceeded the screening level (1,260  $\mu\text{g}/\text{kg}$ ).

Groundwater results for the downgradient well MW-KLA04-01 indicated all PFOS/PFOA compounds were detected, except PFNA. The results also indicated EPA HA exceedances for PFOS, with a result of 100 ng/L, and PFOS and PFOA (combined) (141 ng/L), and no EPA RSL exceedances for PFBS.

Based on the SI results, the following DQOs are recommended for PRL 4:

- Additional surface and subsurface soil samples to determine the extent of the elevated PFOS concentrations observed in all three soil borings and to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional monitoring wells located both upgradient of and downgradient from PRL 4.

#### **6.1.5 PRL 5: Building 573 – Former Vehicle Maintenance Building**

Although PFOS/PFOA compounds were detected in PRL 5 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and calculated residential risk-based screening level exceedances for PFOA, and only one screening level exceedance for PFOS for soil in PRL 5. The PFOS concentration in surface soil sample KLA05-SB3 was 14,000 J  $\mu\text{g}/\text{kg}$  and exceeded the screening level (1,260  $\mu\text{g}/\text{kg}$ ). KLA05-SB3 was the highest reported concentration of PFOS in soil for this SI.

Evaluation of groundwater data compared to screening criteria indicates exceedances of the EPA HA (70 ng/L) in MW-572-02-PRL05 and MW-573-03-PRL05 for PFOS and PFOA (combined), with a result of 69,700 and 1,156 ng/L, respectively.

Based on the SI results, the following DQOs are recommended for PRL 5:

- Additional surface and subsurface soil samples to determine the extent of the elevated PFOS concentration observed in KLA05-SB3 and to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional new monitoring wells located both upgradient of and downgradient from PRL 5.

#### **6.1.6 PRL 6: Building 216 – Current and Former Fire Station**

Although PFOS/PFOA compounds were detected in PRL 6 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedance PFOA, and only one screening level exceedance for PFOS for soil in PRL 6. The PFOS concentration in subsurface soil sample KLA06-SB2 was 1,600 J µg/kg and exceeded the screening level (1,260 µg/kg).

Evaluation of groundwater data compared to screening criteria indicates an exceedance of the EPA HA (70 ng/L) in MW-KLA06-01 for PFOS and PFOA (combined), with a result of 144,000 ng/L. There was no EPA RSL exceedance for PFBS.

Based on the SI results, the following DQOs are recommended for PRL 6:

- Additional surface and subsurface soil samples to determine the extent of the elevated PFOS concentration observed in KLA06-SB2 and to determine if a previously undetected source area exists that is contributing to the groundwater exceedances; and
- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically), through sampling of additional new monitoring wells located both upgradient of and downgradient from PRL 6.

#### **6.1.7 PRL 7: North Outfall**

PFOS/PFOA compounds were not detected at concentrations above the laboratory detection limit in the primary sediment sample from KLA07-SD1. However, low concentrations above the laboratory detection limit was detected for five of the six PFOS/PFOA compounds in the duplicate sediment sample from this location. No surface water was available in the ditch prior to the North Outfall; therefore, no surface water sample was collected.

The PA indicated that PRL 2 appeared to discharge to the North Outfall. Given the elevated PFOS concentration (401,000 ng/L) in groundwater at PRL 2 and low concentrations of PFOS/PFOA compounds detected in the sediment in the ditch associated with PRL 7, further investigation of the North Outfall is warranted.

Based on the SI results (including PRL 2), the following DQO is recommended for PRL 7:

- Additional investigation to further evaluate the concentrations of PFOS/PFOA in surface water and sediment.

### **6.1.8 PRL 8: South Outfall**

PFOS/PFOA compounds were not detected at concentrations above the laboratory detection limit in the primary surface water sample from KLA08-SW1. However low concentrations above the laboratory detection limit were detected for five of the six PFOS/PFOA compounds in the duplicate surface water sample from this location. No sediment was available in the storm sewer manhole within the Base boundary (north of the South Outfall, near PRLs 1 and 3); therefore, no sediment samples were collected.

The PA indicated that the South Outfall receives stormwater from PRLs 1, 3, 4, 5, and 6. Given the PFOS/PFOA exceedances in groundwater at all five PRLs and soil exceedances in three of the five PRLs, and the low concentrations of PFOS/PFOA detected in the surface water sample from KLA08-SW1, further investigation is warranted at PRL 8.

Based on the SI results, the following DQO is recommended for PRL 8:

- Additional investigation to further evaluate the concentrations of PFOS/PFOA in surface water and sediment.

### **6.1.9 PFOS/PFOA Contamination near Installation Boundary**

Samples from five monitoring wells (MW-KLA01-01, MW-KLA03-01, MW-KLA04-01, MW-KLA06-01, and MW-572-02-PRL05) were used to evaluate the PFOS/PFOA contamination near the Installation boundary. All six PFOS/PFOA compounds were detected in the samples collected from these well locations. The screening results indicate the consistent presence of PFOS and PFOA at concentrations exceeding the 70-ng/L EPA drinking water HA (EPA 2016a and 2016b). Elevated PFOS and PFOA concentrations were observed in the water samples from locations near the northern and southern Installation boundaries (MW-KLA06-01 and MW-KLA03-01, respectively). PFBS concentrations did not exceed the RSL at any of the groundwater sample locations. No screening criteria exist for PFHxS, PFHpA, or PFNA. PFOS/PFOA compounds are likely migrating offsite (Airport property) given their presence and magnitude near the Installation boundary and the groundwater exceedances observed at PRL 2 located north of the Installation boundary.

## **6.2 SUMMARY AND RECOMMENDATIONS**

In summary, additional investigations are recommended for soil and groundwater at PRLs 1, 2, 3, 4, 5, and 6, and surface water/sediment at PRLs 7 and 8. The recommendations are summarized in Table 9 and described briefly below:

- Further investigation at all PRLs is necessary to determine the nature and extent of PFOS/PFOA contamination due to detectable levels at the PRLs.
- Develop an expanded conceptual site model that considers localized groundwater and surface water flow paths to select future sampling locations.
- Complete the delineation of nature and extent of PFAS as part of an Expanded SI or an RI that could consist of:
  - Additional soil and sediment sampling and analysis of an expanded list of PFAS constituents (in addition to the six UCMR3 constituents) to determine if significant source areas related to precursor substances are present. Precursor substances have been demonstrated to oxidize into PFOS and PFOA, and thus could provide a lingering source of these compounds to soil and groundwater.

- An expanded groundwater sampling program (including analysis of an expanded list of PFAS constituents) to complete horizontal and vertical delineation of the PFOS/PFOA impacts. Further groundwater investigation at the Base boundary is recommended due to the presence of PFAS in groundwater above their respective screening criteria.
- The installation and sampling of upgradient and downgradient off-Base monitoring wells to better define the upgradient source of PFOS/PFOA as well as impacts of PFOS/PFOA that have migrated off Base.
- The sampling of upgradient and downgradient off-Base surface water and sediment (including analysis of an expanded list of PFAS constituents) to determine if there is an upgradient source of PFOS/PFOA and better define the nature and extent of PFOS/PFOA in surface water that have migrated off Base.
- Conduct preliminary site-specific risk assessment calculations in order to identify chemicals of potential concern (COPCs) in every medium and establish preliminary remedial goals for screening purposes.

DQOs are proposed based on the results of the SI and are presented in Table 9. In general, additional samples are required at each PRL in order to establish the nature and extent of PFOA/PFOS constituents for each applicable medium and determine if a complete receptor pathway exists. For soil, additional samples are proposed to delineate the nature and extent and to determine if a source area exists, and if so, the vertical and horizontal extent for both the vadose and saturated zones. Additional surface water and sediment samples should be collected at PRLs 7 and 8.

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## **TABLES**

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**Table 1. Preliminary Assessment Report Summary and Recommendations**

No.	Potential AFFF PRL	Rationale	Recommendation
1	Hangar 333	One documented significant AFFF discharge to grassy area east of the hangar in 2007.	Proceed to SI; focus on soil and groundwater immediately east of taxiway located east of Hangar 333.
2	FETA – North	Historical testing of FD equipment.	Proceed to SI, focus on soil and groundwater.
3	FETA – South	Historical testing of FD equipment.	Proceed to SI, focus on soil and groundwater.
4	FETA – Compass Rose	Historical testing of FD equipment. The most heavily used area on the Base.	Proceed to SI, focus on soil and groundwater.
5	Building 573	Minor amounts of AFFF potentially discharged to grassy areas outside fence to the north, west, and south of Building 573. Likely small amounts of AFFF utilized during post-repair mini tests.	Proceed to SI, focus on soil and groundwater.
6	Current and Former Fire Station – Building 216	Minor amounts of AFFF likely discharged to grassy surface during more recent foam testing in 2015.	Proceed to SI, focus on soil and groundwater.
7	North Outfall	Potential releases of AFFF may enter drainage ditches through this outfall.	Proceed to SI, focus on sediment and surface water.
8	South Outfall	Potential releases of AFFF may enter drainage ditches through this outfall.	Proceed to SI, focus on sediment and surface water.

AFFF = Aqueous film-forming foam.  
 FD = Fire department.  
 FETA = Fire equipment testing area.  
 PRL = Potential release location.  
 SI = Site inspection.

**Table 2. PFOS/PFOA SI Screening Criteria**

Parameter	Chemical Abstract Service Number	EPA RSL for Tap Water <sup>a</sup> (ng/L)	EPA Health Advisory <sup>b</sup> (ng/L)	Residential Risk-based Soil Screening Level <sup>c</sup> (µg/kg)
PFOS	1763-23-1	NA	70.0 <sup>d</sup>	1,260
PFOA	335-67-1	NA		1,260
PFBS	375-73-5	400,000 <sup>e</sup>	NA	1,260,000

<sup>a</sup> EPA RSL for tap water, May 2018; target HQ = 1.

<sup>b</sup> *Drinking Water Health Advisory for Perfluorooctanoic Acid* (EPA 2016b) and *Drinking Water Health Advisory for Perfluorooctane Sulfonate* (EPA 2016a).

<sup>c</sup> Residential risk-based soil screening levels determined by using the EPA RSL calculator ([https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)) and the May 2018 EPA RSL tables (<https://epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2018>) for soil and sediment; target HQ = 1.

<sup>d</sup> When PFOA and PFOS are both present, the combined detected concentrations of the compounds are compared with the 70-ng/L health advisory value.

<sup>e</sup> PFBS analytical results for groundwater and surface water have been compared to the tap water screening levels; target HQ = 1.

µg/kg = Micrograms per kilogram.  
 EPA = U.S. Environmental Protection Agency.  
 HQ = Hazard quotient.  
 NA = Not available.  
 ng/L = Nanograms per liter.

PFBS = Perfluorobutane sulfonate.  
 PFOA = Perfluorooctanoic acid.  
 PFOS = Perfluorooctane sulfonate.  
 RSL = Regional screening level.  
 SI = Site inspection.

**Table 3. Summary of SI Activities**

<b>PRL Name</b>	<b>Analyzed Parameters*</b>	<b>Soil Borings</b>	<b>Soil Samples</b>	<b>Groundwater Samples</b>	<b>Stormwater Samples</b>	<b>Sediment Samples</b>
1. Hangar 333	PFOS/PFOA	3	6	1	NA	NA
2. FETA – North	PFOS/PFOA	3	6	1	NA	NA
3. FETA – South	PFOS/PFOA	3	6	1	NA	NA
4. FETA – Compass Rose	PFOS/PFOA	3	6	1	NA	NA
5. Building 573	PFOS/PFOA	3	6	2	NA	NA
6. Current and Former Fire Station – Building 216	PFOS/PFOA	2	4	1	NA	NA
7. North Outfall	PFOS/PFOA	0	0	0	NS	1
8. South Outfall	PFOS/PFOA	0	0	0	1	NS

\* PFOS/PFOA is used generically in this SI Report to include the following six 2012 third Unregulated Contaminant Monitoring Rule emerging contaminants: PFOS, PFOA, perfluorobutane sulfonate, perfluorononanoic acid, perfluoroheptanoic acid, and perfluorohexane sulfonate. All samples were analyzed for PFOS/PFOA using U.S. Environmental Protection Agency, Method 537, revision 1.1.

FETA = Fire equipment testing area.

NA = Not Applicable.

NS = No sample collected due to no presence of sediment or surface water.

PFOA = Perfluorooctanoic acid.

PFOS = Perfluorooctane sulfonate.

PRL = Potential release location.

SI = Site inspection.

**Table 4. Well Construction Details for Kingsley Field ANGB SI**

<b>Monitoring Well</b>	<b>Top of Casing Elevation (ft AMSL)</b>	<b>Ground Elevation (ft AMSL)</b>	<b>Screened Interval (ft BGS)</b>	<b>Total Well Depth (ft BTOC)</b>	<b>Well Diameter (in.)</b>	<b>Casing</b>
<b>PRL 1</b>						
MW-KLA01-01	4,088.11	4088.01	5-15	15.5	2	PVC
<b>PRL 2</b>						
MW-KLA02-01	4,088.40	4,088.41	5-15	15.6	2	PVC
<b>PRL 3</b>						
MW-KLA03-01	4,089.72	4,089.66	4.8-14.8	16	2	PVC
<b>PRL 4</b>						
MW-KLA04-01	4,086.43	4,086.39	5.2-15.2	16	2	PVC
<b>PRL 6</b>						
MW-KLA06-01	4,089.08	4,088.98	4.7-14.7	15.5	2	PVC

Source: Top of casing elevation and ground surface elevation data for the new wells are from the monitoring well survey on May 8, 2018, by McBride Surveying Mapping (see Appendix C). Screened interval, total depth, and well diameter data in this table were obtained from the well construction diagrams provided in Appendix A.

AMSL = Above mean sea level.

ANGB = Air National Guard Base.

BGS = Below ground surface.

BTOC = Below top of casing.

PRL = Potential release location.

PVC = Polyvinyl chloride.

SI = Site inspection.

**Table 5. Water Level Measurements**

Monitoring Well Identifier	TOC Elevation (ft AMSL)	Screened Interval	May 2018	
			Depth to Water (ft BTOC)	Groundwater Elevation (ft AMSL)
MW-KLA01-01	4,088.11	5-15	4.32	4,083.79
MW-KLA02-01	4,088.40	5-15	3.89	4,084.51
MW-KLA03-01	4,089.72	4.8-14.8	6.25	4,083.47
MW-KLA04-01	4,086.43	5.2-15.2	2.55	4,083.88
MW-KLA06-01	4,089.08	4.7-14.7	8.24	4,080.84
MW-572-02-PRL05	4088.56	3 – 13	4.65	4083.91
MW-573-03-PRL05	4089.35	3 – 13	5.22	4084.13

Source: TOC elevation data for new wells are from the monitoring well survey on May 8, 2018 by McBride Surveying Mapping (See Appendix C). Screened interval and depth to water for the new wells were obtained from the well construction diagrams provided in Appendix A. TOC elevation and screening interval for the two existing wells were obtained from the 2014 SI Report (ANG 2014). Depth to water data for the existing wells is from the 2018 SI.

AMSL = Above mean sea level.  
 BTOC = Below top of casing.  
 TOC = Top of casing.

**Table 6. Water Quality Parameters**

Parameter	Groundwater						
	MW-KLA01-01	MW-KLA02-01	MW-KLA03-01	MW-KLA04-01	MW-KLA06-01	MW-572-02-PRL05	MW-573-03-PRL05
	5/6/2018	5/6/2018	5/6/2018	5/6/2018	5/6/2018	5/6/2018	5/6/2018
Dissolved oxygen (mg/L)	8.16	2.02	0.09	0.31	9.61	8.89	0.23
ORP (mV)	128	177	-247	-159	-187	168	115
pH (S.U.)	8.00	9.08	8.62	9.56	8.25	9.51	8.69
Conductivity (mS/cm)	19.6	4.31	1.18	1.63	0.99	0.92	1.29
Temperature (°C)	15.8	16.0	14.3	15.6	14.2	15.8	15.9
Turbidity (NTU)	67.7	333	471	292	150	43.5	51.1

mg/L = Milligrams per liter.  
 mS/cm = MicroSiemens per centimeter.  
 mV = millivolt.  
 NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 S.U. = Standard unit.

Table 7. Summary of Soil and Sediment Analytical Results

Analyte						Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorobutane Sulfonate (PFBS)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
Screening Level*						1,260	1,260	1,260,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
<i>Soil</i>											
1	KLA01-SB1	KLA01-SB1-01	5/2/18	0-2	REG	430 J	3.9	0.31 J	0.38	18	0.25 U
	KLA01-SB1	KLA01-SB1-02	5/2/18	5-6	REG	210 J	1.0	0.31 J	0.32 J	9.1	0.26 U
	KLA01-SB2	KLA01-SB2-01	5/2/18	0-2	REG	1.7	0.30 J	0.072 J	0.22 U	1.5	0.22 U
	KLA01-SB2	KLA01-SB2-02	5/2/18	6-7	REG	3.2	0.39	0.15 J	0.14 J	2.4	0.26 U
	KLA01-SB3	KLA01-SB3-01	5/2/18	0-2	REG	10	0.22 J	0.13 J	0.25 U	1.3 U	0.25 U
	KLA01-SB3	KLA01-SB3-02	5/2/18	5.5-6.5	REG	1.1 J	0.25 U	0.23 U	0.25 U	0.32 J	0.25 U
2	KLA02-SB1	KLA02-SB1-01	5/4/18	0-2	REG	7.6 J	0.46	0.25 J	0.16 J	2.6	0.26 U
	KLA02-SB1	KLA02-SB1-02	5/4/18	4.5-5.5	REG	6.1	0.28 J	0.22 J	0.18 J	1.6	0.24 U
	KLA02-SB1	KLA02-SB1-02D	5/4/18	4.5-5.5	FD	12	0.25 J	0.21 J	0.11 J	1.7	0.26 U
	KLA02-SB2	KLA02-SB2-01	5/4/18	0-2	REG	390 J	2.2	5.1	1.1	21	0.38
	KLA02-SB2	KLA02-SB2-02	5/4/18	3.5-4.5	REG	570 J	18	26	6.0	130 J	0.30 J
	KLA02-SB2	KLA02-SB2-02D	5/4/18	3.5-4.5	FD	490 J	15	24	5.6	110 J	0.34 J
	KLA02-SB3	KLA02-SB3-01	5/4/18	0-2	REG	140 J	0.45	0.50	0.47	5.4	0.40
	KLA02-SB3	KLA02-SB3-02	5/4/18	4-5	REG	21	1.0	1.8	0.81	9.4	0.12 J
3	KLA03-SB1	KLA03-SB1-01	5/1/18	0-2	REG	3.0	0.26 U	0.082 J	0.26 U	0.99	0.26 U
	KLA03-SB1	KLA03-SB1-02	5/1/18	5-6	REG	17	0.22 J	0.21 J	0.26 U	2.4	0.26 U
	KLA03-SB2	KLA03-SB2-01	5/2/18	0-2	REG	3.4	0.15 J	0.10 J	0.25 U	0.71	0.25 U
	KLA03-SB2	KLA03-SB2-01D	5/2/18	0-2	FD	2.7	0.16 J	0.098 J	0.26 U	0.71	0.26 U
	KLA03-SB2	KLA03-SB2-02	5/2/18	5.5-6.5	REG	4.9	0.15 J	0.15 J	0.26 U	1.1	0.26 U
	KLA03-SB3	KLA03-SB3-01	5/1/18	0-2	REG	3.2	0.37 J	0.21 J	0.36 J	2.7	0.27 U
	KLA03-SB3	KLA03-SB3-02	5/1/18	5.5-6.5	REG	14	1.3	0.75	0.59	12	0.27 U

Table 7. Summary of Soil and Sediment Analytical Results (continued)

Analyte						Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorobutane Sulfonate (PFBS)	Perfluorohexanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
Screening Level*						1,260	1,260	1,260,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
4	KLA04-SB1	KLA04-SB1-01	5/4/18	0-2	REG	2200 J	3.2	0.45 J	0.66	24	0.16 J
	KLA04-SB1	KLA04-SB1-02	5/4/18	4.5-5.5	REG	3600 J	19	14	4.4	190 J	0.60 J
	KLA04-SB2	KLA04-SB2-01	5/4/18	0-2	REG	6600 J	26 J	14 J	14	200 J	1.6 J
	KLA04-SB2	KLA04-SB2-02	5/4/18	4.5-5.5	REG	4800 J	210 J	84 J	44 J	1100 J	1.6
	KLA04-SB3	KLA04-SB3-01	5/4/18	0-2	REG	4500 J	12	19	3.8	53 J	1.1 J
	KLA04-SB3	KLA04-SB3-02	5/4/18	5.5-6.5	REG	3800 J	85 J	110 J	29	730 J	1.2
5	KLA05-SB1	KLA05-SB1-01	5/5/18	0-2	REG	170 J	2.3	4.9	1.6	78 J	0.61
	KLA05-SB1	KLA05-SB1-01D	5/5/18	0-2	FD	650 J	12	3.1	1.8	300 J	2.8
	KLA05-SB1	KLA05-SB1-02	5/5/18	5-6	REG	6.5	0.23 J	0.077 J	0.25 U	2.6	0.25 U
	KLA05-SB2	KLA05-SB2-01	5/5/18	0-2	REG	40 J	1.6	0.32 J	0.45	20	0.36
	KLA05-SB2	KLA05-SB2-02	5/5/18	5-6	REG	42 J	1.2	0.29 J	0.38 J	8.9	0.34 J
	KLA05-SB3	KLA05-SB3-01	5/5/18	0-2	REG	14000 J	62 J	6.7	14	650 J	2.6 J
6	KLA05-SB3	KLA05-SB3-02	5/5/18	5.5-6.5	REG	980 J	3.8	0.58	1.5	15	0.25 J
	KLA06-SB1	KLA06-SB1-01	5/1/18	0-2	REG	250 J	1.3	0.27 J	0.71	11	2.4
	KLA06-SB1	KLA06-SB1-02	5/1/18	4.5-5.5	REG	120 J	1.1	0.19 J	0.25 J	6.8	1.4
	KLA06-SB2	KLA06-SB2-01	5/1/18	0-2	REG	960 J	6.7 J	0.99	1.2 J	44 J	1.6
	KLA06-SB2	KLA06-SB2-02	5/1/18	4.5-5.5	REG	1600 J	6.4	2.1	1.6	45 J	1.7 J
	KLA06-SB2	KLA06-SB2-02D	5/1/18	4.5-5.5	FD	1100 J	4.1	1.4	1.0	45 J	1.8 J

**Table 7. Summary of Soil and Sediment Analytical Results (continued)**

						Analyte	Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorobutane Sulfonate (PFBS)	Perfluorheptanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
						Screening Level*	1,260	1,260	1,260,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	
<i>Sediment</i>												
7	KLA07-SD1	KLA07-SD1-01	5/6/18	0	REG	1.5 U	0.22 U	0.19 U	0.22 U	0.22 U	0.22 U	
	KLA07-SD1	KLA07-SD1-01D	5/6/18	0	FD	<b>15</b>	<b>0.48</b>	<b>0.20 J</b>	<b>0.12 J</b>	<b>2.1</b>	0.27 U	

\* U.S. Environmental Protection Agency (EPA) residential risk-based soil screening level determined using the EPA regional screening level (RSL) calculator and May 2018 EPA RSL tables.

**Bold** denotes detected concentration.

µg/kg = Micrograms per kilogram.

FD = Field duplicate.

NA = Not applicable.

PRL = Potential release location.

REG = Regular.

**Data Qualifiers:**

J = Estimated concentration.

U = Chemical not detected above the laboratory detection limit.

Table 8. Summary of Groundwater and Surface Water Analytical Results

						Analyte	Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	PFOS+PFOA	Perfluorobutane Sulfonate (PFBS)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
						Health Advisory <sup>a</sup>	70	70	70	NA	NA	NA	NA
						EPA RSL Tap Water <sup>b</sup>	NA	NA	NA	400,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	
<i>Groundwater</i>													
1	MW-KLA01-01	MW-KLA01-01-01	5/6/18	10	REG	<b>500J</b>	<b>20</b>	<b>520</b>	<b>39</b>	<b>7.6</b>	<b>220</b>	<b>0.56J</b>	
2	MW-KLA02-01	MW-KLA02-01-01	5/6/18	10	REG	<b>380000J</b>	<b>21000</b>	<b>401,000</b>	<b>9700J</b>	<b>7700J</b>	<b>66000J</b>	<b>340J</b>	
3	MW-KLA03-01	MW-KLA03-01-01	5/6/18	10	REG	<b>6100J</b>	<b>290</b>	<b>6390</b>	<b>180</b>	<b>200</b>	<b>2700J</b>	<b>16</b>	
4	MW-KLA04-01	MW-KLA04-01-01	5/6/18	10	REG	<b>100</b>	<b>41</b>	<b>141</b>	<b>96</b>	<b>27</b>	<b>690J</b>	<b>1.5U</b>	
5	MW-572-02-PRL05-01	MW-572-02-PRL05-01	5/6/18	10	REG	<b>1100J</b>	<b>56</b>	<b>1156</b>	<b>27</b>	<b>25</b>	<b>360J</b>	<b>3.8</b>	
	MW-572-02-PRL05-01	MW-572-02-PRL05-01D	5/6/18	10	FD	<b>1200J</b>	<b>57</b>	<b>1257</b>	<b>28</b>	<b>24</b>	<b>390J</b>	<b>3.9</b>	
	MW-573-03-PRL05	MW-573-03-PRL05-01	5/6/18	10	REG	<b>63000J</b>	<b>6700J</b>	<b>69,700</b>	<b>3900J</b>	<b>5100J</b>	<b>39000J</b>	<b>200J</b>	
6	MW-KLA06-01	MW-KLA06-01-01	5/6/18	10	REG	<b>130000J</b>	<b>14000J</b>	<b>144,000</b>	<b>7900J</b>	<b>5400J</b>	<b>68000J</b>	<b>490J</b>	
<i>Surface water</i>													
8	KLA07-SW1	KLA08-SW1-01	5/7/18	NA	REG	<b>28</b>	<b>1.8 J</b>	<b>29.8</b>	0.96 U	<b>1.5 J</b>	<b>3.7</b>	<b>0.95 J</b>	

<sup>a</sup> May 2016 EPA health advisory for PFOS/PFOA combined.

<sup>b</sup> May 2018 EPA RSL for tap water.

**Bold** denotes detected concentration.

**Bold highlighted** denotes concentration that exceeds screening criteria.

EPA = U.S. Environmental Protection Agency.

FD = Field duplicate.

NA = Not applicable.

ng/L = Nanograms per liter.

PRL = Potential release location.

REG = Regular.

RSL = Regional screening level.

**Data Qualifiers:**

J = Estimated concentration.

U = Chemical not detected above the laboratory detection limit.

**Table 9. SI Recommendation Summary Table**

PRL No.	PRL Description	Constituents Above Screening Criteria	Sampling Recommendations and Objectives
1	Hangar 333	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 1, there were exceedances in groundwater at the downgradient well MW-KLA01-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
2	FETA – North	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 2, exceedances occurred in groundwater at downgradient well MW-KLA02-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
3	FETA – South	<b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Although soil screening criteria were not exceeded at PRL 3, exceedances occurred in groundwater at downgradient well MW-KLA03-01. Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
4	FETA – Compass Rose	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to further define the nature and extent of PFOS soil exceedances and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
5	Building 573	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to determine the extent of the one PFOS exceedance and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.
6	Current and Former Fire Station – Building 216	<b>Soil:</b> PFOS <b>Groundwater:</b> PFOS + PFOA	<b>Soil:</b> Additional surface and subsurface soil samples are proposed to determine the extent of the one PFOS exceedance and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration. <b>Groundwater:</b> Determine the nature and extent both vertically and horizontally through the sampling of existing and additional new monitoring wells.

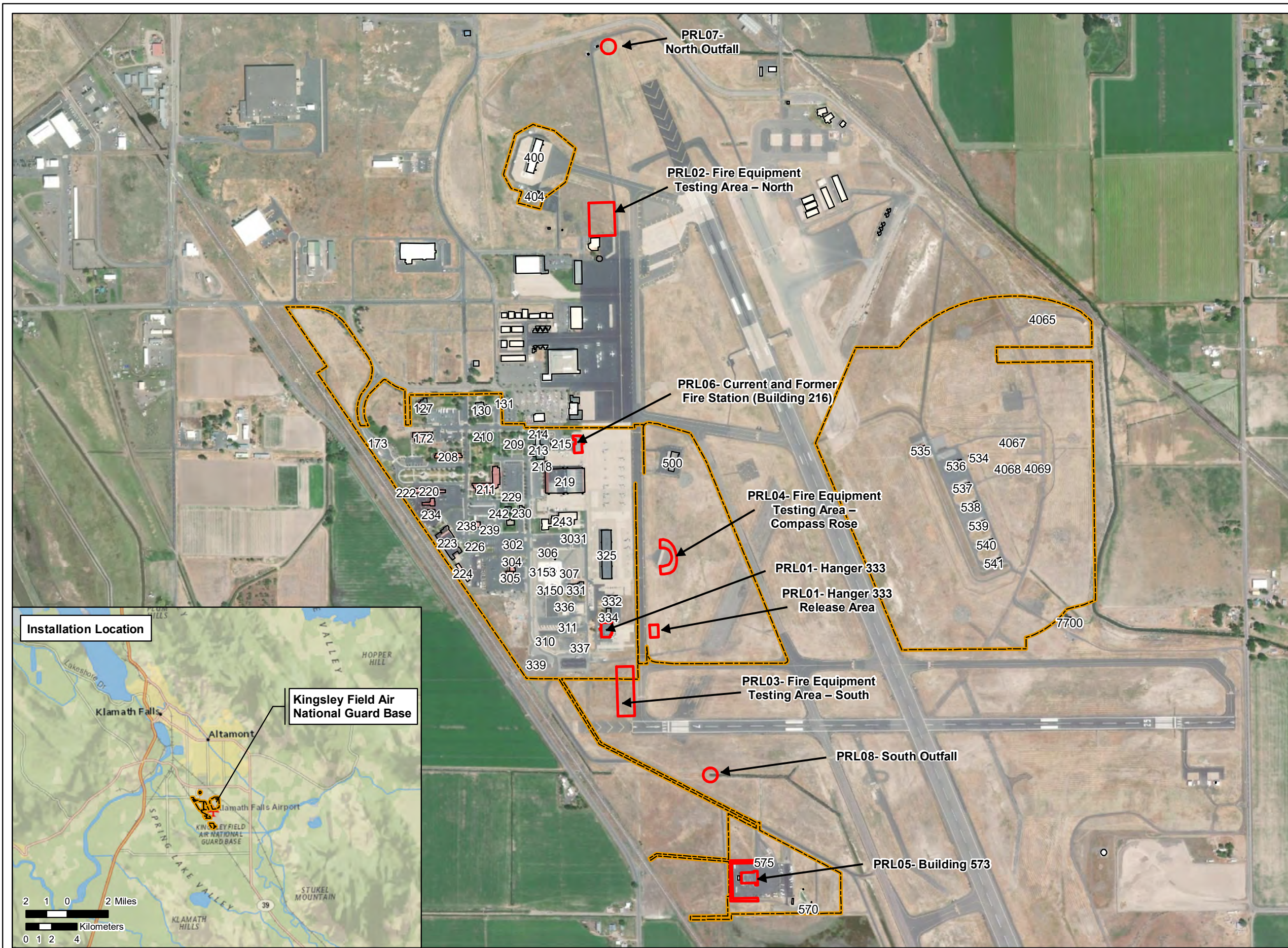
**Table 9. SI Recommendation Summary Table (continued)**

PRL No.	PRL Description	Constituents Above Screening Criteria	Sampling Recommendations and Objectives
7	North Outfall	None	<b>Surface Water and Sediment:</b> PFOS/PFOA compounds were detected in sediment below screening criteria. Determine the PFOS/PFOA impact to surface water through additional upgradient sampling of surface water and sediment and evaluate potential downgradient impacts at the outfall located off Base.
8	South Outfall	None	<b>Surface Water and Sediment:</b> PFOS/PFOA compounds were detected in surface water below screening criteria. Determine the PFOS/PFOA impact to surface water through additional upgradient sampling of surface water and sediment and evaluate potential downgradient impacts at the outfall located off Base.
<b>General</b>			<p><b>Soil:</b> Collect additional surface and subsurface soil samples to determine the nature and extent both vertically and horizontally of the exceedances and to determine if an unidentified source exists and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration.</p> <p><b>Groundwater:</b> (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources, and (2) collect additional groundwater samples off Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing.</p> <p><b>Surface Water/Sediment:</b> (1) Collect additional surface water and sediment samples in upgradient locations to quantify potential impacts from upgradient sources; (2) collect additional surface water and sediment samples from downgradient locations off Base to define the nature and extent of PFAS contamination beyond the Base boundary.</p>

FETA = Fire equipment testing area.  
PFOA = Perfluorooctanoic acid.  
PFOS = Perfluorooctane sulfonate.  
PRL = Potential release location.  
SI = Site inspection.

## **FIGURES**

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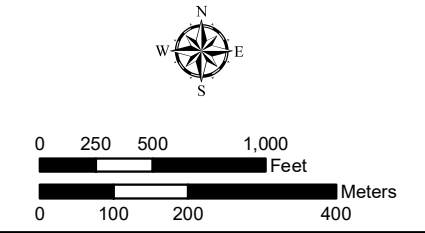
**LEGEND:**

- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 04/2016).



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KLAMATH FALLS, OREGON

KINGSLEY FIELD ANGB  
LOCATION MAP

FIGURE: 1 | DATE: 7/12/2018



**LEGEND:**

- SI Monitoring Well
- Soil Boring
- Surface Water Sample
- Sediment Sample
- Monitoring Well
- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*
- Inferred Regional Groundwater Flow

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.

- MW10-11 was not found. The proposed well MW-KLA04-01 was moved closer to PRL04 to replace MW10-11-PRL04.
- The groundwater flow direction was inferred using 2018 SI and historical water level data.
- Background Source: ESRI World Imagery (DigitalGlobe, 07/2017).

0 100 200 400 Feet  
0 25 50 100 Meters

0 200 400 800 Feet  
0 50 100 200 Meters

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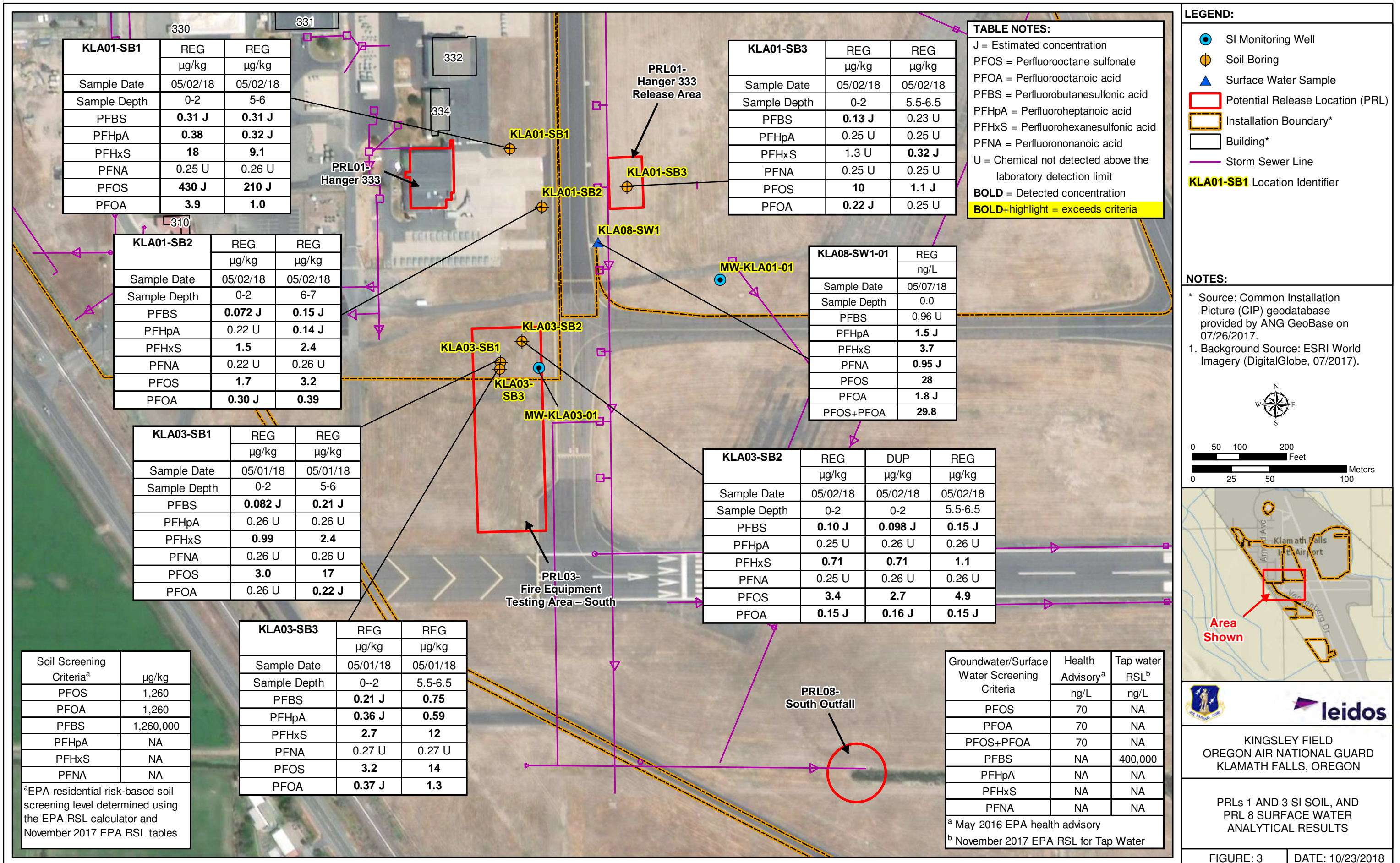
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KINGSLEY FIELD  
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KLAMATH FALLS, OREGON

KINGSLEY FIELD ANGB  
SI SAMPLING OVERVIEW MAP

FIGURE: 2 | DATE: 10/23/2018



**TABLE NOTES:**

J = Estimated concentration  
 PFOS = Perfluorooctane sulfonate  
 PFOA = Perfluorooctanoic acid  
 PFBS = Perfluorobutanesulfonic acid  
 PFHpA = Perfluoroheptanoic acid  
 PFHxS = Perfluorohexanesulfonic acid  
 PFNA = Perfluorononanoic acid  
 U = Chemical not detected above the laboratory detection limit  
**BOLD** = Detected concentration  
**BOLD+highlight** = exceeds criteria

Soil Screening Criteria <sup>a</sup>	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

<sup>a</sup>EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables

PRL07-  
North Outfall

**KLA07-SD1**

KLA07-SD1	REG	DUP
	µg/kg	µg/kg
Sample Date	05/06/18	05/06/18
Sample Depth	0.0	0.0
PFBS	0.19 U	<b>0.20 J</b>
PFHpA	0.22 U	<b>0.12 J</b>
PFHxS	0.22 U	<b>2.1</b>
PFNA	0.22 U	0.27 U
PFOS	1.5 U	<b>15</b>
PFOA	0.22 U	<b>0.48</b>

KLA02-SB1	REG	REG	DUP
	µg/kg	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18	05/04/18
Sample Depth	0-2	4.5-5.5	4.5-5.5
PFBS	<b>0.25 J</b>	<b>0.22 J</b>	<b>0.21 J</b>
PFHpA	<b>0.16 J</b>	<b>0.18 J</b>	<b>0.11 J</b>
PFHxS	<b>2.6</b>	<b>1.6</b>	<b>1.7</b>
PFNA	<b>0.26 U</b>	0.24 U	0.26 U
PFOS	<b>7.6 J</b>	<b>6.1</b>	<b>12</b>
PFOA	<b>0.46</b>	<b>0.28 J</b>	<b>0.25 J</b>

KLA02-SB2	REG	REG	DUP
	µg/kg	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18	05/04/18
Sample Depth	0-2	3.5-4.5	3.5-4.5
PFBS	<b>5.1</b>	<b>26</b>	<b>24</b>
PFHpA	<b>1.1</b>	<b>6.0</b>	<b>5.6</b>
PFHxS	<b>21</b>	<b>130 J</b>	<b>110 J</b>
PFNA	<b>0.38</b>	<b>0.30 J</b>	<b>0.34 J</b>
PFOS	<b>390 J</b>	<b>570 J</b>	<b>490 J</b>
PFOA	<b>2.2</b>	<b>18</b>	<b>15</b>

KLA02-SB3	REG	REG
	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18
Sample Depth	0-2	4-5
PFBS	<b>0.50</b>	<b>1.8</b>
PFHpA	<b>0.47</b>	<b>0.81</b>
PFHxS	<b>5.4</b>	<b>9.4</b>
PFNA	<b>0.40</b>	<b>0.12 J</b>
PFOS	<b>140 J</b>	<b>21</b>
PFOA	<b>0.45</b>	<b>1.0</b>

PRL02- Fire Equipment Testing Area – North

**KLA02-SB1**

**KLA02-SB2**

**KLA02-SB3**

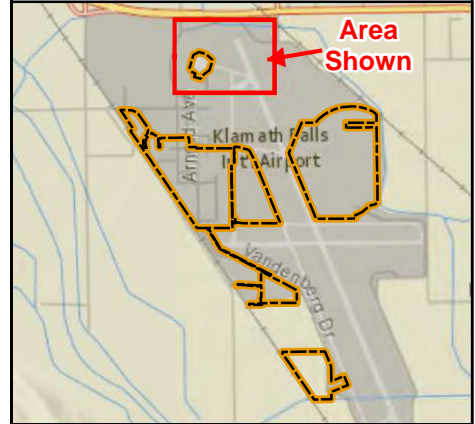
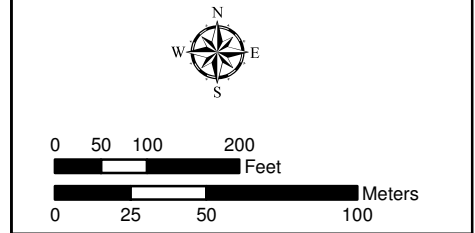
**MW-KLA02-01**

**LEGEND:**

- SI Monitoring Well
- Soil Boring
- Sediment Sample
- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*
- Storm Sewer Line
- KLA02-SB1** Location Identifier

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.  
 1. Background Source: ESRI World Imagery (DigitalGlobe, 07/2017).



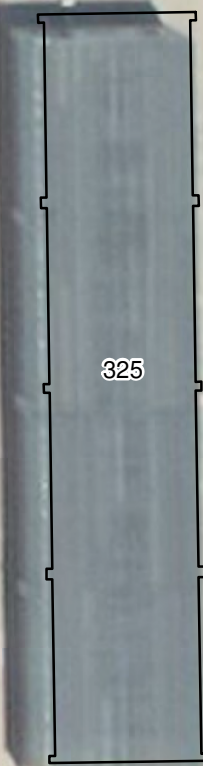
KINGSLEY FIELD  
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PRL 2 SI SOIL AND  
 PRL 7 SEDIMENT  
 ANALYTICAL RESULTS

FIGURE: 4 | DATE: 7/25/2018

**TABLE NOTES:**

J = Estimated concentration  
 PFOS = Perfluorooctane sulfonate  
 PFOA = Perfluorooctanoic acid  
 PFBS = Perfluorobutanesulfonic acid  
 PFHpA = Perfluoroheptanoic acid  
 PFHxS = Perfluorohexanesulfonic acid  
 PFNA = Perfluorononanoic acid  
 U = Chemical not detected above the laboratory detection limit  
**BOLD** = Detected concentration  
**BOLD+highlight** = exceeds criteria



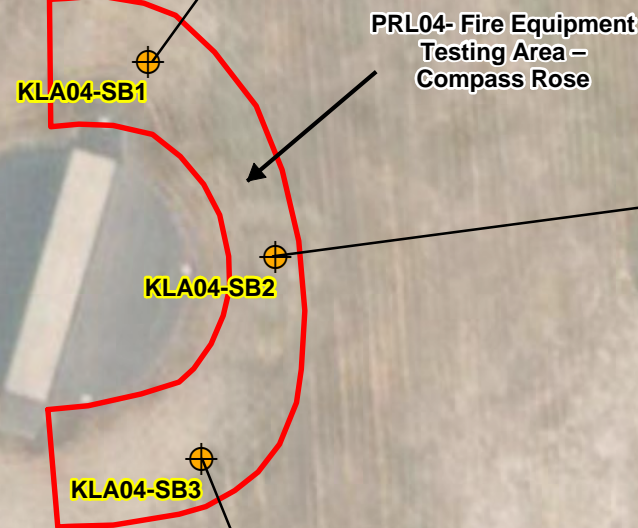
Soil Screening Criteria <sup>a</sup>	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

<sup>a</sup>EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables

KLA04-SB1	REG	REG
	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18
Sample Depth	0-2	4.5-5.5
PFBS	<b>0.45 J</b>	<b>14</b>
PFHpA	<b>0.66</b>	<b>4.4</b>
PFHxS	<b>24</b>	<b>190 J</b>
PFNA	<b>0.16 J</b>	<b>0.60 J</b>
PFOS	<b>2200 J</b>	<b>3600 J</b>
PFOA	<b>3.2</b>	<b>19</b>

KLA04-SB2	REG	REG
	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18
Sample Depth	0-2	4.5-5.5
PFBS	<b>14 J</b>	<b>84 J</b>
PFHpA	<b>14</b>	<b>44 J</b>
PFHxS	<b>200 J</b>	<b>1100 J</b>
PFNA	<b>1.6 J</b>	<b>1.6</b>
PFOS	<b>6600 J</b>	<b>4800 J</b>
PFOA	<b>26 J</b>	<b>210 J</b>

KLA04-SB3	REG	REG
	µg/kg	µg/kg
Sample Date	05/04/18	05/04/18
Sample Depth	0--2	5.5-6.5
PFBS	<b>19</b>	<b>110 J</b>
PFHpA	<b>3.8</b>	<b>29</b>
PFHxS	<b>53 J</b>	<b>730 J</b>
PFNA	<b>1.1 J</b>	<b>1.2</b>
PFOS	<b>4500 J</b>	<b>3800 J</b>
PFOA	<b>12</b>	<b>85 J</b>



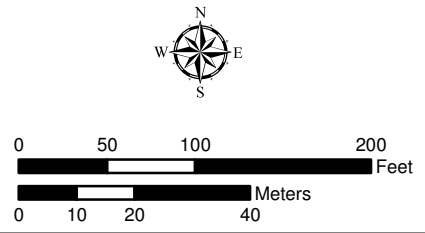
**LEGEND:**

- SI Monitoring Well
- Soil Boring
- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*

**KLA04-SB1** Location Identifier

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.  
 1. Background Source: ESRI World Imagery (DigitalGlobe, 07/2017).



KINGSLEY FIELD  
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PRL 4 SI SOIL  
 ANALYTICAL RESULTS

FIGURE: 5      DATE: 8/8/2018

**TABLE NOTES:**

J = Estimated concentration  
 PFOS = Perfluorooctane sulfonate  
 PFOA = Perfluorooctanoic acid  
 PFBS = Perfluorobutanesulfonic acid  
 PFHpA = Perfluoroheptanoic acid  
 PFHxS = Perfluorohexanesulfonic acid  
 PFNA = Perfluorononanoic acid  
 U = Chemical not detected above the laboratory detection limit  
**BOLD** = Detected concentration  
**BOLD+highlight** = exceeds criteria

KLA05-SB2	REG	REG
	µg/kg	µg/kg
Sample Date	05/05/18	05/05/18
Sample Depth	0-2	5-6
PFBS	<b>0.32 J</b>	<b>0.29 J</b>
PFHpA	<b>0.45</b>	<b>0.38 J</b>
PFHxS	<b>20</b>	<b>8.9</b>
PFNA	<b>0.36</b>	<b>0.34 J</b>
PFOS	<b>40 J</b>	<b>42 J</b>
PFOA	<b>1.6</b>	<b>1.2</b>

Soil Screening Criteria <sup>a</sup>	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

<sup>a</sup>EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables

KLA05-SB1	REG	DUP	REG
	µg/kg	µg/kg	µg/kg
Sample Date	05/05/18	05/05/18	05/05/18
Sample Depth	0-2	0-2	5-6
PFBS	<b>4.9</b>	<b>3.1</b>	<b>0.077 J</b>
PFHpA	<b>1.6</b>	<b>1.8</b>	0.25 U
PFHxS	<b>78 J</b>	<b>300 J</b>	<b>2.6</b>
PFNA	<b>0.61</b>	<b>2.8</b>	0.25 U
PFOS	<b>170 J</b>	<b>650 J</b>	<b>6.5</b>
PFOA	<b>2.3</b>	<b>12</b>	<b>0.23 J</b>

KLA05-SB3	REG	REG
	µg/kg	µg/kg
Sample Date	05/05/18	05/05/18
Sample Depth	0-2	5.5-6.5
PFBS	<b>6.7</b>	<b>0.58</b>
PFHpA	<b>14</b>	<b>1.5</b>
PFHxS	<b>650 J</b>	<b>15</b>
PFNA	<b>2.6 J</b>	<b>0.25 J</b>
PFOS	<b>14000 J</b>	<b>980 J</b>
PFOA	<b>62 J</b>	<b>3.8</b>

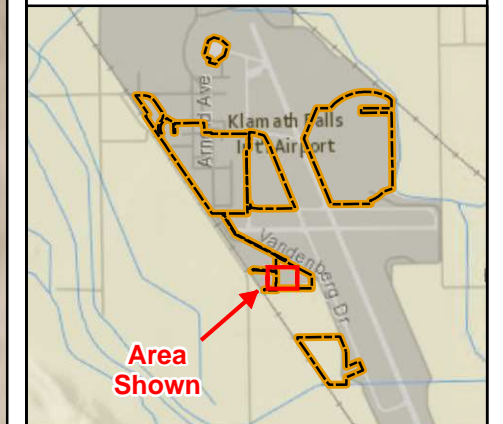
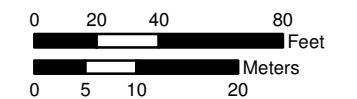
**LEGEND:**

- Soil Boring
- Existing Well
- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*

**KLA05-SB1** Location Identifier

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.  
 1. Background Source: ESRI World Imagery (DigitalGlobe, 07/2017).



KINGSLEY FIELD  
 OREGON AIR NATIONAL GUARD  
 KLAMATH FALLS, OREGON

PRL 5 SI SOIL  
 ANALYTICAL RESULTS

FIGURE: 6

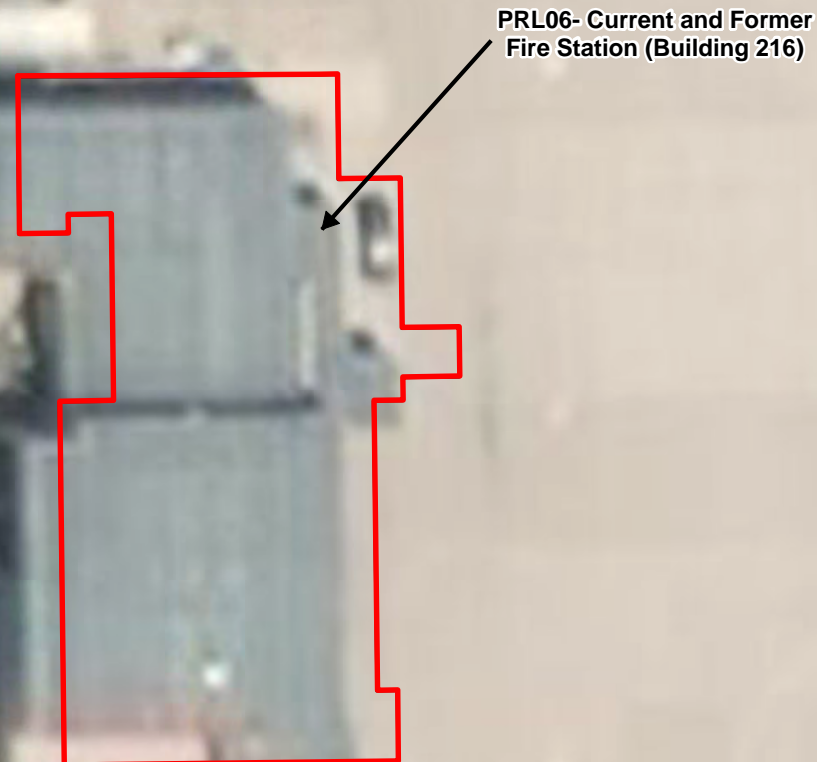
DATE: 7/25/2018

KLA06-SB1	REG	REG
	µg/kg	µg/kg
Sample Date	05/01/18	05/01/18
Sample Depth	0-2	4.5-5.5
PFBS	<b>0.27 J</b>	<b>0.19 J</b>
PFHpA	<b>0.71</b>	<b>0.25 J</b>
PFHxS	<b>11</b>	<b>6.8</b>
PFNA	<b>2.4</b>	<b>1.4</b>
PFOS	<b>250 J</b>	<b>120 J</b>
PFOA	<b>1.3</b>	<b>1.1</b>

KLA06-SB2	REG	REG	DUP
	µg/kg	µg/kg	µg/kg
Sample Date	05/01/18	05/01/18	05/01/18
Sample Depth	0-2	4.5-5.5	4.5-5.5
PFBS	<b>0.99</b>	<b>2.1</b>	<b>1.4</b>
PFHpA	<b>1.2 J</b>	<b>1.6</b>	<b>1.0</b>
PFHxS	<b>44 J</b>	<b>45 J</b>	<b>45 J</b>
PFNA	<b>1.6</b>	<b>1.7 J</b>	<b>1.8 J</b>
PFOS	<b>960 J</b>	<b>1600 J</b>	<b>1100 J</b>
PFOA	<b>6.7 J</b>	<b>6.4</b>	<b>4.1</b>

Soil Screening Criteria <sup>a</sup>	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

<sup>a</sup>EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables



**LEGEND:**

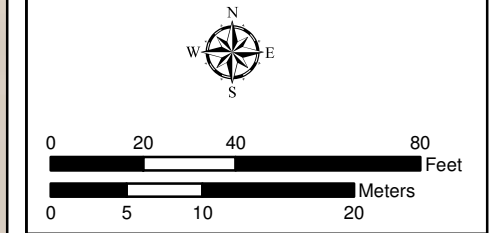
- SI Monitoring Well
- Soil Boring
- Potential Release Location (PRL)
- Installation Boundary\*
- Building\*

**KLA06-SB1** Location Identifier

**NOTES:**

\* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 07/26/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 07/2017).



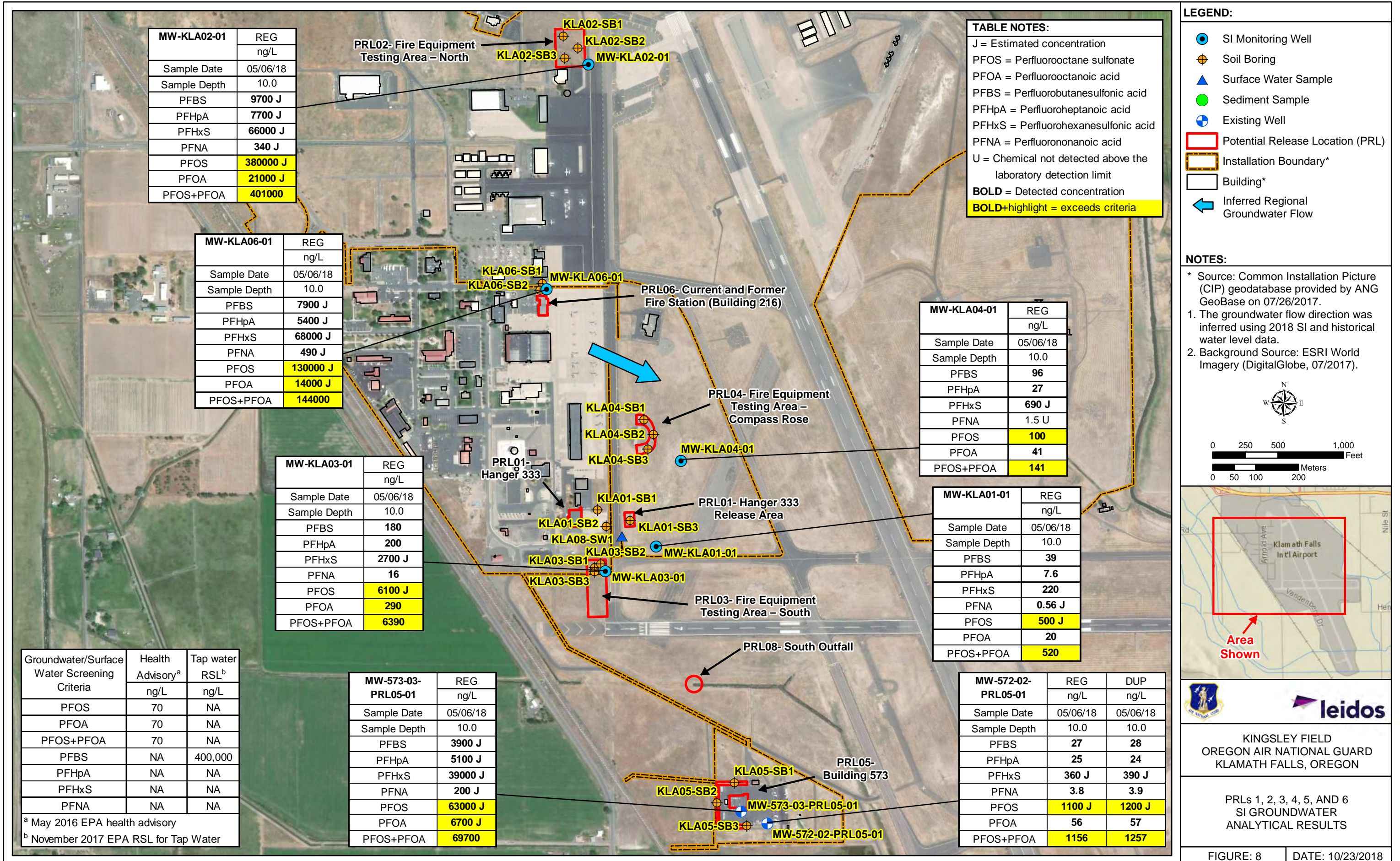
**TABLE NOTES:**

J = Estimated concentration  
 PFOS = Perfluorooctane sulfonate  
 PFOA = Perfluorooctanoic acid  
 PFBS = Perfluorobutanesulfonic acid  
 PFHpA = Perfluoroheptanoic acid  
 PFHxS = Perfluorohexanesulfonic acid  
 PFNA = Perfluorononanoic acid  
 U = Chemical not detected above the laboratory detection limit  
**BOLD** = Detected concentration  
**BOLD+highlight** = exceeds criteria

KINGSLEY FIELD  
 OREGON AIR NATIONAL GUARD  
 KLAMATH FALLS, OREGON

PRL 6 SI SOIL  
 ANALYTICAL RESULTS

FIGURE: 7      DATE: 7/25/2018



**APPENDIX A**

**SOIL BORINGS AND WELL CONSTRUCTION LOGS**

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Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA03-SB3</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <i>Cascade Sinters</i> ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822 OPT / Hand auger</i>			Borehole Location Description	
Date/Time Started: <i>5/1/18 / 0830</i>		Date/Time Finished: <i>5/1/18</i>		
Overburden Thickness <i>1"</i>	Depth to Groundwater <i>6.75</i>	Total Depth <i>10 ft</i>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA03-SB3_01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA03-SB3_02</b> Sample Interval: <b>5.5 to 6.5 ft</b>		
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>[Signature]</i>		
Monitoring Well ID: <i>N/A</i>	Backfill Type <i>Bentonite</i>	Date Backfilled:		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				
		⊗ SB 1		
		⊗ SA 3		

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA03-SB3		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.1.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	10YR 7/2 Very dark grayish brown silty SAND SM, dry Loose	0.0		KLA03-SB3-01 0845	
2.5	10YR 6/4 light yellowish brown fine SAND SM, damp, medium dense	0.0			
5.5	10YR 4/4 Dark yellowish brown silty SAND 5% gravel, SM saturated, med. dense	0.0		KLA03-SB3-02 0850	
9.5	BOE				

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA03-SB3
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	
Sample No. 1	
SAMPLE ID NUMBER:	KLA03-SB3-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.0	ppm
Date/Time: 5-1-18 0845		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	
Sample No. 2	
SAMPLE ID NUMBER:	KLA03-SB3-02
SAMPLE DEPTH:	5-5.65

FIELD	READING	UNITS
PID	0.0	ppm
Date/Time: 5-1-18 0850		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	



Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA07-SB 1		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		8.1.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	103/2 Very dark grayish brown SAND, SW, dry, loose	0.1		KLA07-SB1-01 C 0900	
3.5	104R S/3 Brown silty SAND, SM damp, med. dense	0.0		KLA07-SB1-02 C 0905	
6.5	104R 3/1 Very dark gray SAND, SM saturated, med. dense				
9.5	BOE				

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA03-SB /
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA03-SB i-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS	
PID		ppm	
Date/Time: 5-1-18 0900			

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA -SB -02
SAMPLE DEPTH:	5-6'

FIELD	READING	UNITS	
PID		ppm	
Date/Time: 5-1-18 0905			

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>KLACG-SB 2</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : Cascade ANG/Klamath ANGB		Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7820T</b>				Borehole Location Description <b>W. of AWKLAG-01</b>	
Date/Time Started : <b>5/1/18 / 1330</b>		Date/Time Finished : <b>5/1/18 / 1400</b>			
Overburden Thickness <b>3"</b>	Depth to Groundwater <b>6'</b>	Total Depth <b>10'</b>			
Sample for PFOS/PFOA Analysis Sample ID: <b>KLACG-SB 2_01</b> Sample Interval: <b>0 to 2 ft</b>			Sample for PFOS/PFOA Analysis Sample ID: <b>KLACG-SB 2_02</b> Sample Interval: <b>   </b> to <b>   </b> ft		
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID : <b>N/A</b>	Backfill Type <b>Bentonite</b>		Date Backfilled : <b>5/1/18</b>		
Latitude	Longitude		Elevation (ft)		
Notes:					
Sketch:					

Client/Installation		Borehole Number	Page	
ANG/Klamath ANGB		KLAOG-SB 2	Page 2 of 2	
Project		Inspector Name	Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt	5-1-18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	grass			
1	10YR 4/4 Dark yellowish brown silty SAND 5% gravel, SM, dry, loose	0.0		KLAOG-SB-2-01 @ 1345
1.5				
2				
2.5				
3				
3.5				
4	10YR 3/1 Very dark gray clayey SAND, CL, damp, med. dense	0.0		KLAOG-SB-2-02 @ 1350 + Dup.
4.5				
5				
5.5				
6				
6.5				
7	10YR 3/4 Dark Yellowish Brown SAND, SW saturated, loose	0.0		
7.5				
8				
8.5				
9				
9.5				
10				

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA06-SB2
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE:	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA06-SB2-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID		ppm

Date/Time: 5-1-18 1345

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA06-SB2-02
SAMPLE DEPTH:	4.5-5.5'

FIELD	READING	UNITS
PID		ppm

Date/Time: 5-1-18 1350

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: + MS/MSD

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	



Client/Installation ANG/Klamath ANGB		Borehole Number KLAGG-SB 1		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5-1-18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	g/r/s				
1	104R 5/3 Brown silty SAND w/ 10% gravel, SM, loose, dry	0.0		KLAGG-SB-1-01 @ 1415	
2					
2.5					
3	104R 3/1 Very dark gray silty SAND, SM, damp, med. dense	0.0			
3.5					
4					
4.5					
5	104R 3/2 very dark grayish brown SAND, SW, wet, med. dense	0.0		KLAGG-SB-1-02 @ 1420	
5.5					
6					
6.5					
7					
7.5					
8					
8.5	SAA				
9					
9.5					
10					

SAA - same as above

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLAC <del>6</del> -SB 1
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	
Sample No. 1	
SAMPLE ID NUMBER:	KLAC <del>6</del> -SB / -01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.0	ppm

Date/Time: 5-1-18 / 1415

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	
Sample No. 2	
SAMPLE ID NUMBER:	KLAC <del>6</del> -SB / -02
SAMPLE DEPTH:	4.5 - 5.5

FIELD	READING	UNITS
PID		ppm

Date/Time: 5-1-18 / 1420

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" Insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>MW-KLA06-01</b>	
Project <b>FY17 Phase 3 Regional SI for PFOS/PFOA</b>		Driller: <b>Esseece Stokes</b> ANG/Klamath ANGB		Page Page <u>1</u> of <u>4</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geopack 7822 DPT</b>			Borehole Location Description <b>E. of Horseshoe Pit</b>		
Date/Time Started: <b>5/1/18 / 1040</b>		Date/Time Finished: <b>5/1/18 /</b>			
Overburden Thickness <b>-</b>	Depth to Groundwater <b>~ 6</b>		Total Depth <b>19.5' (refusal)</b>		
Sample for PFOS/PFOA Analysis					
Sample ID: <b>MW-KLA06-0101</b>					
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID: <b>MW-KLA06-01</b>		Backfill Type <b>Bentonite</b>		Date Backfilled: <b>5-1-18</b>	
Latitude		Longitude		Elevation (ft)	
Notes:					
Sketch:					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLAG-01		Page Page 2 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.1.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	GRASS				
1					
1.5	10YR 4/3 Brown silty SAND, SM, dry loose	0.0			
2					
2.5					
3					
3.5					
4					
4.5					
5					
5.5	10YR 3/2 very dark grayish brown SAND, SM wet, med loose	0.1			
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLAC <sup>2</sup> -01		Page Page 3 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5/18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
10.5					
11.0					
11.5					
12.0	104R 4/4 Dark yellowish Brown SAND, SW saturated, med. dense	0.0			
12.5					
13.0					
13.5					
14.0					
14.5					
15.0	refusal				
15.5	↓				
16.0	BOE				
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA/6-01		Page Page 4 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date:	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
20.5					
21					
21.5					
22					
22.5					
23					
23.5					
24					
24.5					
25					
25.5					
26					
26.5					
27					
27.5					
28					
28.5					
29					
29.5					
30					

*Not used*

**MONITORING WELL**

PROJECT NAME: Phase III Regional Site Inspections for PFOS/PFOA

DELIVERY ORDER NO: 0011

WELL NUMBER: MW-KLA06-01

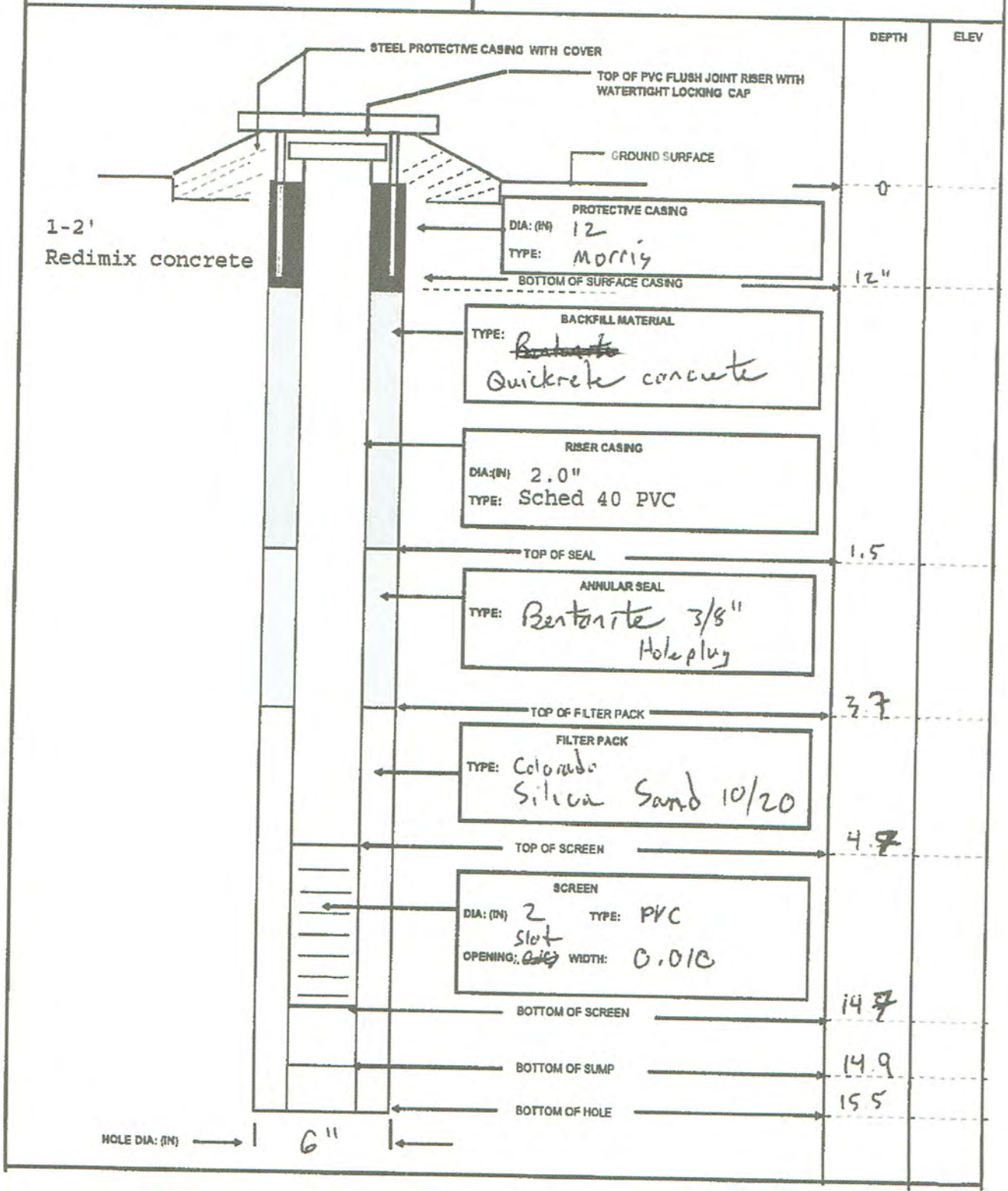
BEGIN: 1040

END: 1230

COORDINATES: N:  
E:

REFERENCE POINT:

ELEVATION:



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>MW-KLA03-01</b>	
Project <b>FY17 Phase 3 Regional SI for PFOS/PFOA</b>		Driller: <b>Cascade Stratins</b> ANG/Klamath ANGB		Page Page <u>1</u> of <u>4</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b> <b>Hollowstem</b>			Borehole Location Description <b>E. of New fire station</b>		
Date/Time Started: <b>5-2-18 0930</b>		Date/Time Finished: <b>5-2-18 1200</b>			
Overburden Thickness <b>1"</b>	Depth to Groundwater <b>~ 6'</b>		Total Depth <b>16'</b>		
Sample for PFOS/PFOA Analysis					
Sample ID: <b>MW-KLA03-01</b> <b>AKA</b>					
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>[Signature]</i>		
Monitoring Well ID: <b>MW-KLA03-01</b>		Backfill Type: <b>Bentonite</b>		Date Backfilled: <b>5-2-18</b>	
Latitude		Longitude		Elevation (ft)	
Notes:					
Sketch:					
<b>DN</b>					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLAG3-01		Page Page 2 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.2.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	GRSS	0.0			
1.0	10YR 3/4 Dark yellowish brown sandy SILT, no gravel no odor, SM, dry Loose				
3.5	SAA				
7.0	10YR 4/3 Brown silty SAND, SM, wet, med. dense				
10.0					

\* SAA = same as above

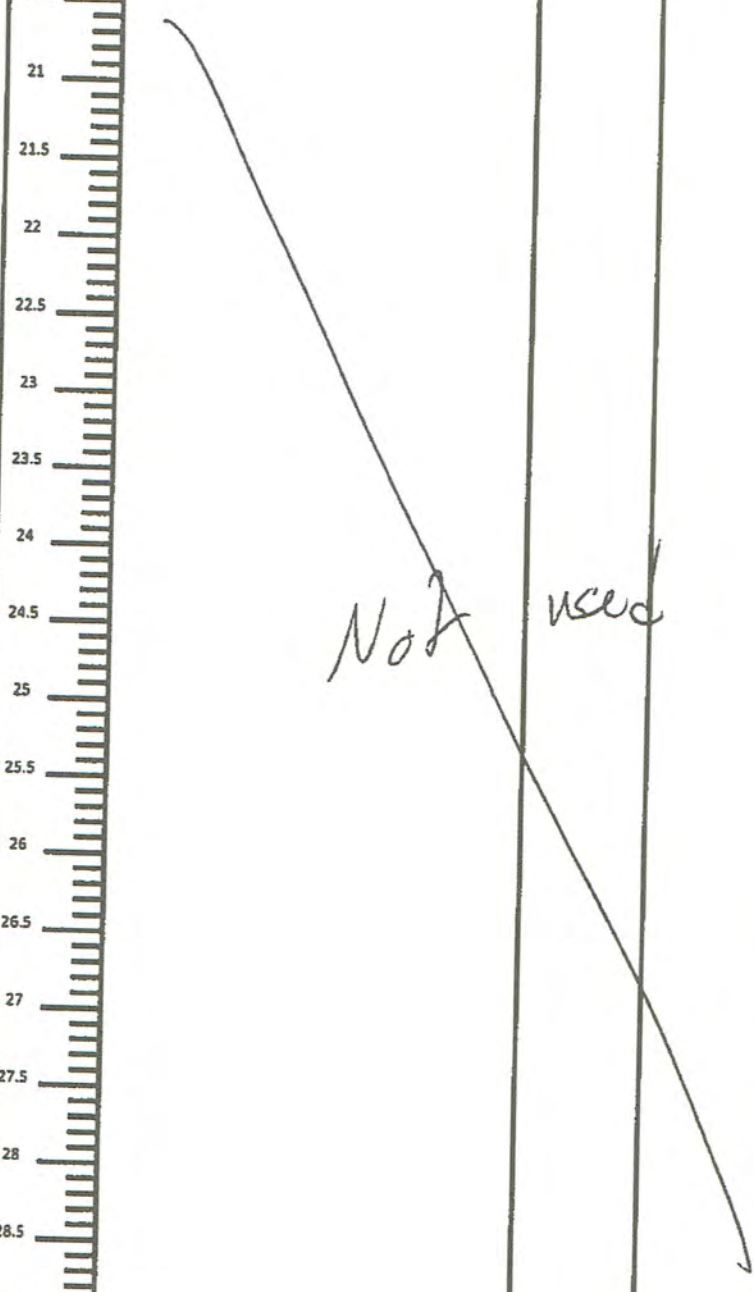
Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA03-01		Page Page 3 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.2.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					

10-12 4/3 silty  
SAND, SM,  
saturated, med. dense

0-3

Heaving sands

B.O.E.

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA - -		Page Page 4 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date:	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
20.5	 Not used				
21					
21.5					
22					
22.5					
23					
23.5					
24					
24.5					
25					
25.5					
26					
26.5					
27					
27.5					
28					
28.5					
29					
29.5					
30					

**MONITORING WELL**

PROJECT NAME: Phase III Regional Site Inspections for PFOS/PFOA

DELIVERY ORDER NO: 0011

WELL NUMBER: MW-KLA03-01

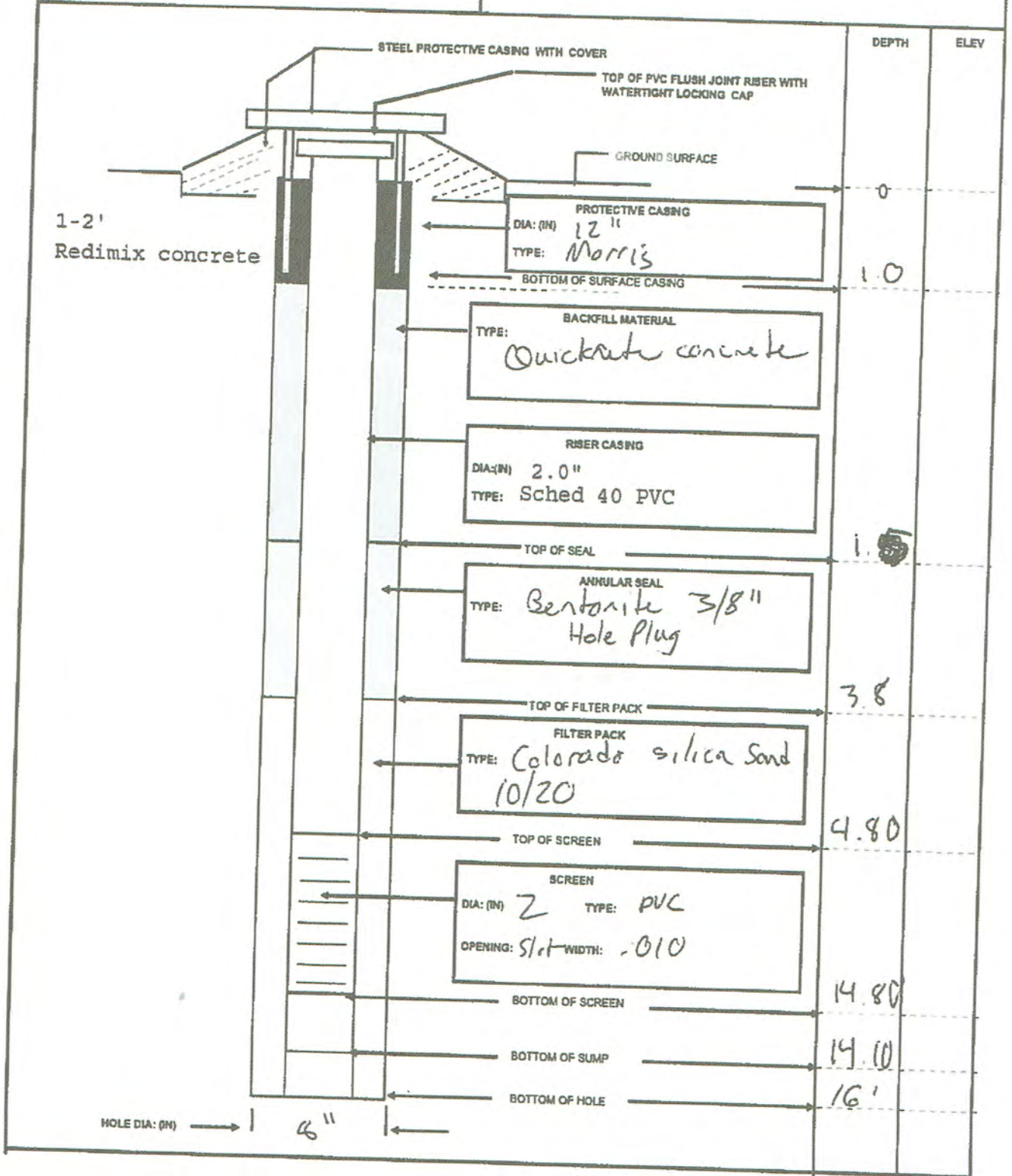
BEGIN: 5-2-18/0930

END: 5-2-18/1200

COORDINATES: N:  
E:

REFERENCE POINT:

ELEVATION:



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA 03-SB 2</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : Cascade <b>ANG/Klamath ANGB</b>	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Circ probe 7822</b>			Borehole Location Description <b>NW . f MW1</b>	
Date/Time Started : <b>5-2-18 12:10</b>		Date/Time Finished : <b>5-2-18</b>		
Overburden Thickness <b>2'</b>	Depth to Groundwater <b>7'</b>	Total Depth <b>10'</b>		
Sample for PFOS/PFOA Analysis		Sample for PFOS/PFOA Analysis		
Sample ID: <b>KLA03-SB201</b>		Sample ID: <b>KLA03-SB202</b>		
Sample Interval: <b>0 to 2 ft</b>		Sample Interval: <b>5.5 to 6.5 ft</b>		
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>[Signature]</i>		
Monitoring Well ID: <b>N/A</b>	Backfill Type <b>Bentonite</b>	Date Backfilled : <b>5-2-18</b>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				

Client/Installation ANG/Klamath ANGB		Borehole Number KLA03-SB 2		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.2.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	<del>10YR 3/4</del>				
1	10YR 3/4 Dark yellowish Brown silty SAND, SM, dry, loose	0.5 <del>0.5</del> ccw			KLA03-SB2-01 @ 1215
2					
2.5					
3	10YR 5/6 yellowish Brown silty SAND SM, damp, med. dense	0.7			
3.5					
4					
4.5					
5					
5.5					
6	10YR 3/6, dark yellowish brown silty SAND, SM w/ 20% gravel, wet gravel lens	0.5 <del>0.5</del> <del>0.5</del>			KLA03-SB2-02 @ 1220
6.5					
7					
7.5					
8	10YR 4/6 dark yellowish Brown SAND, SW, saturated, med. dense				
8.5					
9					
9.5					
10					

\* P10 moisture malfunction, cleaned + recalibrated

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA03-SB 2
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

0.5  
-4

Sample Data	
Sample No. 1	
SAMPLE ID NUMBER:	KLA03-SB 2-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.5	ppm

Date/Time: 5-2-18 / 1215

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	
Sample No. 2	
SAMPLE ID NUMBER:	KLA03-SB 2-02
SAMPLE DEPTH:	5.5-6.5

FIELD	READING	UNITS
PID	0.5	ppm

Date/Time: 5-2-18 / 1220

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: very high PID on both - PID malfunctioning

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

\* AD moisture error  
PID ~~was~~ fixed

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA01-SB2</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <i>Cascade</i> ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822</i>			Borehole Location Description <i>s of road</i>	
Date/Time Started: <i>5-2-18 1310</i>		Date/Time Finished: <i>5-2-18</i>		
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>7.5'</i>		Total Depth <i>10'</i>	
Sample for PFOS/PFOA Analysis Sample ID: <i>KLA01-SB2_01</i> Sample Interval: <i>0 to 2 ft</i>		Sample for PFOS/PFOA Analysis Sample ID: <i>KLA01-SB2_02</i> Sample Interval: <i>6 to 7 ft</i>		
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID: <u>                    </u>	Backfill Type <i>Bentonite</i>	Date Backfilled: <i>5-2-18</i>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				

Client/Installation ANG/Klamath ANGB		Borehole Number KLA01-SB2		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5-2-18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	gms				
1	10YR 4/4 dark, yellowish brown silty SAND SM, dry, loose	0.7		KLA01-SB2-01 @ 1315	
1.5					
2					
2.5					
3					
3.5	10YR 5/6 yellowish brown silty sand SM, damp, med. dense				
4					
4.5					
5					
5.5					
6					
6.5	10YR 3/4 dark yellowish brown SAND SW saturated, med. dense	0.9		KLA01-SB2-02 1320	
7					
7.5					
8					
8.5					
9	SAA				
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA01-SBZ
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA01-SBZ-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.7	ppm

Date/Time: 5.2.18 1315

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA01-SBZ-02
SAMPLE DEPTH:	0-7

FIELD	READING	UNITS
PID	0.9	ppm

Date/Time: 5.2.18 1320

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA01-SB1</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <i>Cascade Stratius</i> ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822</i>			Borehole Location Description <i>N of throat</i>	
Date/Time Started: <i>5-2-18 1350</i>		Date/Time Finished: <i>4:15 5-2-18</i>		
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>6.5'</i>	Total Depth <i>10'</i>		
Sample for PFOS/PFOA Analysis Sample ID: <i>KLA01-SB101</i> Sample Interval: <i>0 to 2 ft</i>		Sample for PFOS/PFOA Analysis Sample ID: <i>KLA01-SB102</i> Sample Interval: <i>5 to 6 ft</i>		
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>[Signature]</i>		
Monitoring Well ID: <i>—</i>	Backfill Type <i>Bentonite</i>	Date Backfilled: <i>5-2-18</i>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				

Client/Installation		Borehole Number		Page	
ANG/Kamath ANGB		KLA <sup>07</sup> -SB 1		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5-2-18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	9/15/18				
1.0	10YR 5/4 yellowish brown	0.1			KLA01-SB1-01
1.5	SAND, SW,				@ 1400
2.0	dry, loose				
2.5					
3.0					
3.5					
4.0					
4.5					
5.0	10YR 3/4 dark yellowish	0.1			KLA01-SB1-02
5.5	brown silty SAND				@ 1410
6.0	SM, damp,				
6.5	med. dense				
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					

## SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA01-SB1
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLAC(-SB)-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.1	ppm
Date/Time: 5-2-18 1400		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA01-SB1-02
SAMPLE DEPTH:	

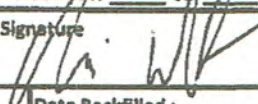
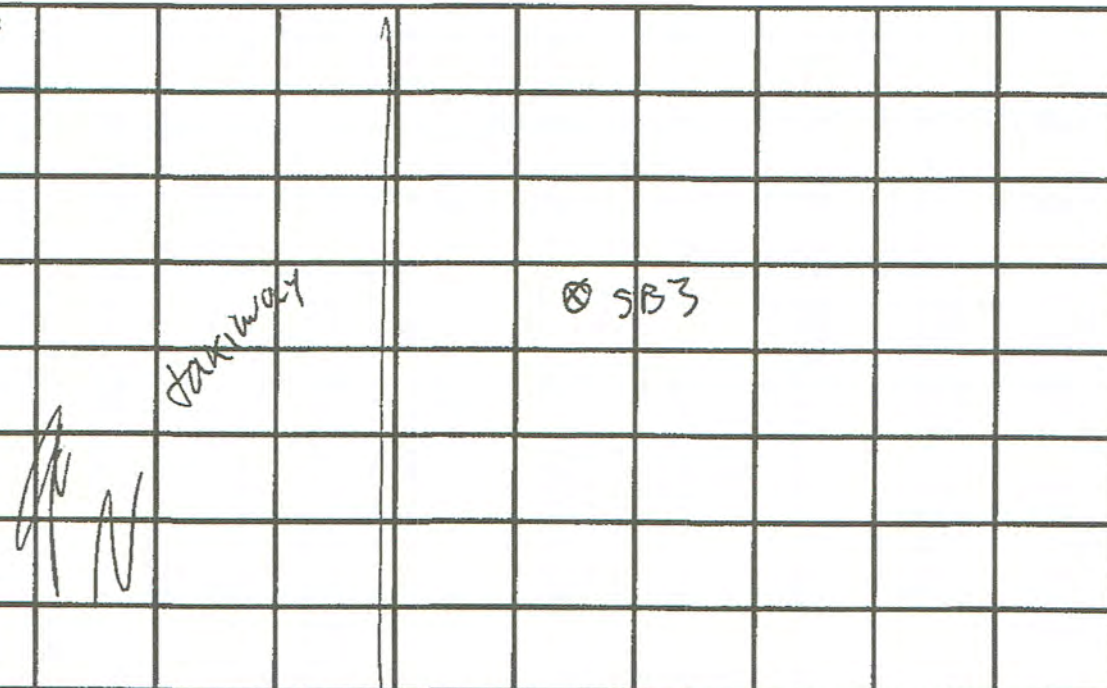
FIELD	READING	UNITS
PID	0.1	ppm
Date/Time: 5-2-18 1400		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
Chris Wildt			
COMPANY Leldos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA01-SB 3</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: Cascade ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>			Borehole Location Description <b>E of Highway</b>	
Date/Time Started: <b>1420 . 5.2.18</b>		Date/Time Finished: <b>5.2.18 1440</b>		
Overburden Thickness <b>2'</b>	Depth to Groundwater <b>7'</b>	Total Depth <b>10'</b>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA01-SB 3 01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA01-SB 3 02</b> Sample Interval: <b>to</b> ft		
Inspector Name <b>Chris Wildt</b>		Inspector Signature 		
Monitoring Well ID: <b>N/A</b>	Backfill Type <b> Bentonite</b>	Date Backfilled: <b>5.2.18</b>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				
				

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA01-SB3		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.2.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grass				
1	10YR 5/2 grayish brown silty SAND SM, dry, loose	0.7		KLA01-SB3-01	
1.5				@ 1425	
2	SAA				
2.5					
3					
3.5					
4	10YR 5/6 yellowish brown silty SAND SM, wet, med. dense	0.8		KLA01-SB3-02	
4.5				@ 1430	
5					
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

SAA: same as above

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA01-SB3
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA01-SB3-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	07	ppm

Date/Time: 5-2-18 1425

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA01-SB3-02
SAMPLE DEPTH:	5.5-6.5

FIELD	READING	UNITS
PID	08	ppm

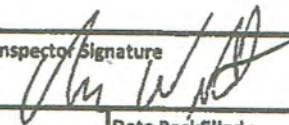
Date/Time: 5-2-18 1430

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

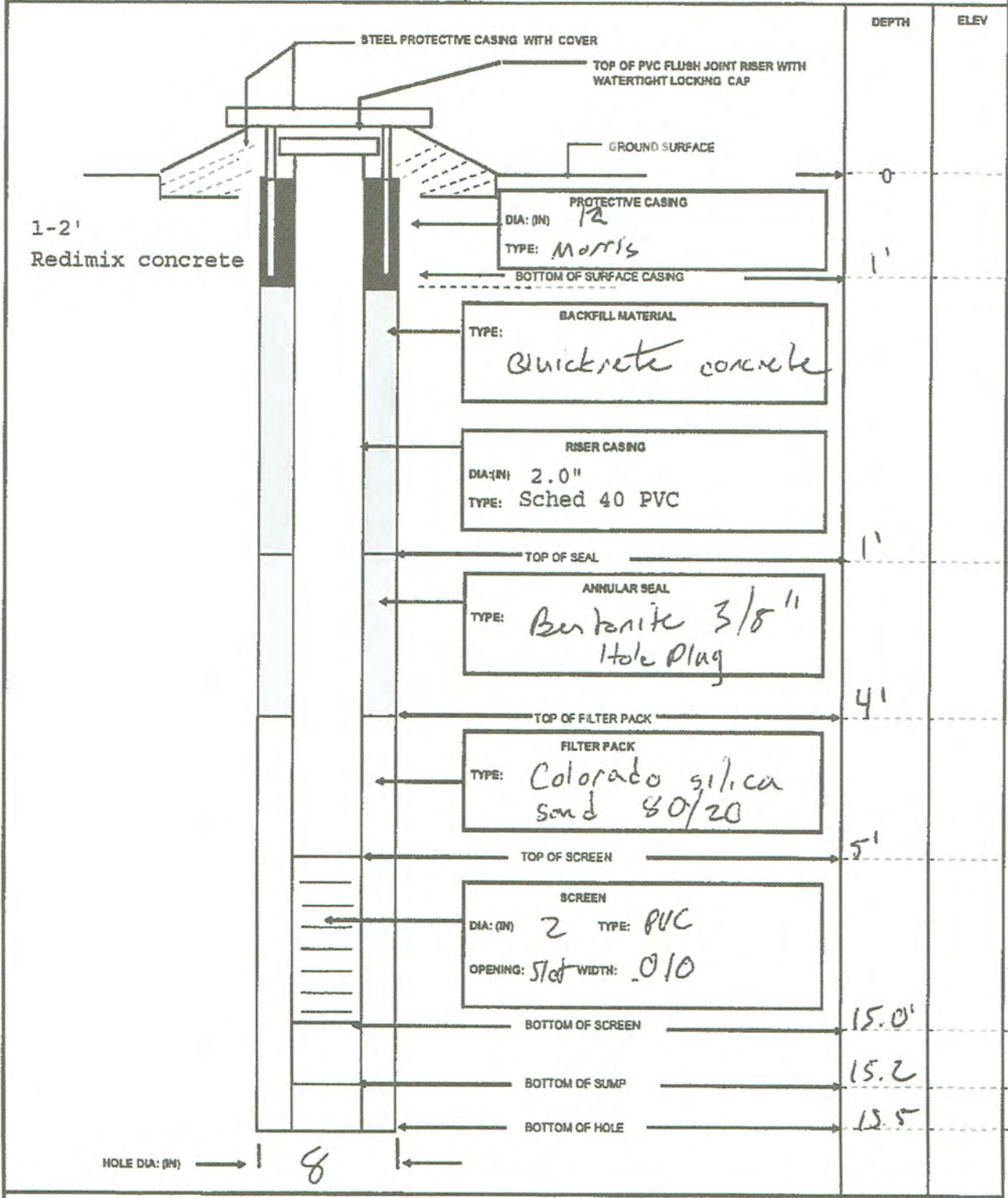
RELINQUISHED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
Chris Wildt			
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

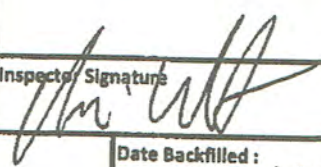
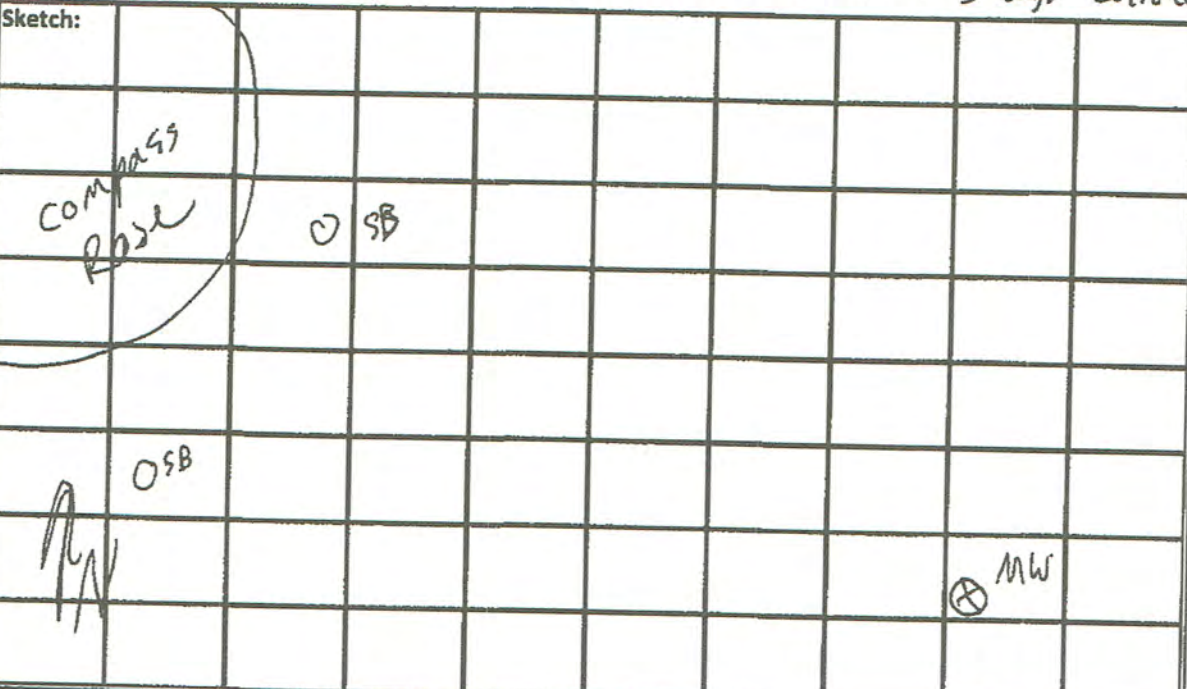
Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>MW-KLA<sup>01</sup>-01</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <b>Cascade Stratals</b> ANG/Klamath ANGB		Page Page <u>1</u> of <u>4</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geopoke 7822</b> <b>Hollowstem auger</b>			Borehole Location Description <b>Between taxiways</b>		
Date/Time Started: <b>5-3-18 0800</b>		Date/Time Finished: <b>5-3-18 1030</b>			
Overburden Thickness <b>2"</b>	Depth to Groundwater <b>~ 6'</b>	Total Depth <b>~ 15.5'</b>			
Sample for PFOS/PFOA Analysis					
Sample ID: <b>MW-KLA<sup>01</sup>-0101</b>					
Inspector Name <b>Chris Wildt</b>			Inspector Signature 		
Monitoring Well ID: <b>MW-KLA<sup>01</sup>-01</b>	Backfill Type <b>Bentonite</b>	Date Backfilled: <b>5-3-18</b>			
Latitude	Longitude	Elevation (ft)			
Notes: <b>refusal @ 15', heaving sands 10.5 bags sand</b> <b>2.5 bags bentonite</b>					
Sketch:					
old taxiway					
@ MW 1					
new taxiway					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLAC1-01		Page Page 2 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.3.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grass				
1					
1.5					
2					
2.5					
3	10YR 4/3 Brown clayey silty, CL dry, med. dense	0.0			
3.5					
4					
4.5					
5					
5.5					
6					
6.5	10YR 5/4 yellowish brown clayey silty CL, wet, med. dense	0.1			
7					
7.5					
8					
8.5					
9					
9.5					
10					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLAC1-C1		Page Page 3 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.3.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
10.5	<p>10YR 4/3 Brown SAND, SW, saturated, med. dense</p> <p>Heaving sands refused</p>	D.O			
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					

MONITORING WELL		
PROJECT NAME: Phase III Regional Site Inspections for PFOS/PFOA	DELIVERY ORDER NO: 0011	
WELL NUMBER: MW RA01-01	BEGIN: 5.3.18 0800	END: 5.3.18 1030
COORDINATES: N: E:	REFERENCE POINT:	ELEVATION:



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>MW-KLA 04-01</b>	
Project <b>FY17 Phase 3 Regional SI for PFOS/PFOA</b>		Driller : Cascade <b>ANG/Klamath ANGB</b>		Page Page <u>1</u> of <u>4</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822 Hollowstem</b>			Borehole Location Description <b>Between compass rose and E taxiway</b>		
Date/Time Started : <b>5-3-18 1230</b>		Date/Time Finished : <b>5-3-18 1505</b>			
Overburden Thickness <b>1"</b>	Depth to Groundwater <b>~ 5'</b>		Total Depth		
Sample for PFOS/PFOA Analysis					
Sample ID: <b>MW-KLA 04-0101</b>					
Inspector Name <b>Chris Wildt</b>			Inspector Signature 		
Monitoring Well ID : <b>MW-KLA04-01</b>		Backfill Type <b>Bentonite</b>		Date Backfilled : <b>5-3-18</b>	
Latitude		Longitude		Elevation (ft)	
Notes: <b>mould west from original location, located in low spot, 12 bags sand 2 conc, 3 bags bentonite</b>					
Sketch:					
					

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		MW-KLA04-01		Page 2 of 4	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5-3-18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5					
1					
1.5					
2					
2.5					
3					
3.5					
4					
4.5					
5					
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

Dark yellowish brown  
 10YR4/4 silty  
 SAND, SM  
 damp, med. dur.

0.3

SAA

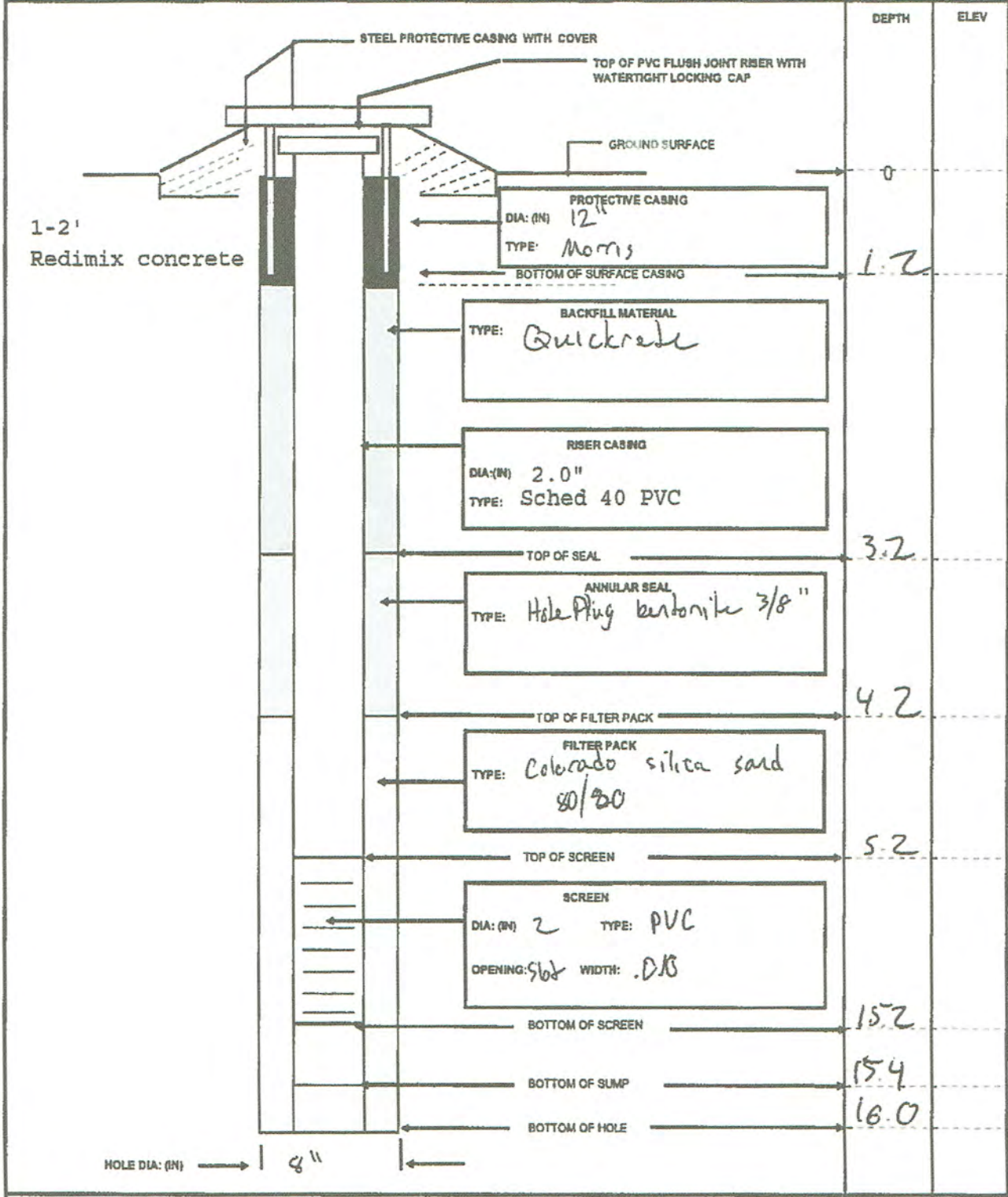
0.0

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA-4-01		Page Page 3 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.3.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
10.5					
11.0					
11.5					
12.0					
12.5					
13.0	10YR3/6 dark yellowish brown SAND, SW, saturated, med. dense	0.1			
13.5					
14.0					
14.5					
15.0					
15.5					
16.0	4/SG 4/1 Dark greenish gray SAND, SW, saturated, med. dense	0.0			
16.5					Bole
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA - -		Page Page <u>4</u> of <u>4</u>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date:	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
20.5					
21					
21.5					
22					
22.5					
23					
23.5					
24					
24.5					
25					
25.5					
26					
26.5					
27					
27.5					
28					
28.5					
29					
29.5					
30					

*Handwritten signature: Chris Wildt*

<b>MONITORING WELL</b>		<b>PROJECT NAME:</b> Phase III Regional Site Inspections for PFOS/PFOA	<b>DELIVERY ORDER NO:</b> 0011
<b>WELL NUMBER:</b> MW-KLAB04-01	<b>BEGIN:</b> 5-3-18 1230	<b>END:</b> 5-3-18	
<b>COORDINATES:</b> N: E:	<b>REFERENCE POINT:</b>	<b>ELEVATION:</b>	



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>KLA<sup>04</sup>-SB/1</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : Cascade ANG/Klamath ANGB		Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>				Borehole Location Description <b>N borehole</b>	
Date/Time Started : <b>5-4-18 0830</b>			Date/Time Finished : <b>5-4-18 0845</b>		
Overburden Thickness <b>2"</b>		Depth to Groundwater <b>6'</b>		Total Depth <b>10'</b>	
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>04</sup>-SB/01</b> Sample Interval: <b>0 to 2 ft</b>			Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>04</sup>-SB/02</b> Sample Interval: <b>4.5 to 5.5 ft</b>		
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID : _____		Backfill Type <b>Ben to ride</b>		Date Backfilled : <b>5-4-18</b>	
Latitude		Longitude		Elevation (ft)	
Notes:					
Sketch:					

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA04-SB01		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5				KLA04-01-01	
1	10YR4/3 Brown	1.4		@ 0835	
1.5	SILT ML				
2	dry, loose				
2.5					
3					
3.5					
4					
4.5				KLA04-01-02	
5	10YR4/2 dark	1.1		@ 0840	
5.5	grayish brown				
6	silty SAND, SM				
6.5	saturated, med. dense				
7					
7.5					
8					
8.5					
9					
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA04-SB01
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA04-SB 1-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID		ppm

Date/Time: 5.4.18 0835

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA04-SB 1-02
SAMPLE DEPTH:	4.5 - 5.5

FIELD	READING	UNITS
PID		ppm

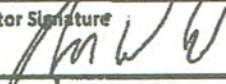
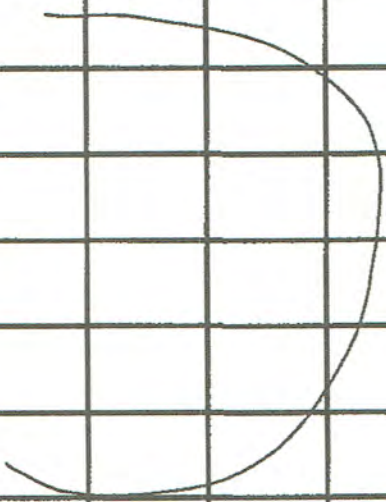
Date/Time: 5.4.18 0840

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA<del>04</del>-SB<del>3</del></b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: Geseader ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>			Borehole Location Description <b>S. Boing of KLA04</b>	
Date/Time Started: <b>5.4.18 0800</b>		Date/Time Finished: <b>5.4.18</b>		
Overburden Thickness <b>1"</b>	Depth to Groundwater <b>7'</b>	Total Depth <b>10'</b>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<del>04</del>-SB<del>3</del>01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<del>04</del>-SB<del>3</del>02</b> Sample Interval: <b>5.51 to 9.5 ft</b>		
Inspector Name <b>Chris Wildt</b>		Inspector Signature 		
Monitoring Well ID: <b>N/A</b>	Backfill Type <b>Bencrete</b>	Date Backfilled: <b>5.4.18</b>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				
		<b>SB1</b>		
				
			<b>SB2</b>	
		<b>SB3</b>		

Client/Installation ANG/Klamath ANGB		Borehole Number KLA04-SB3		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	10YR 4/4 DK Yellowish Brown silty SAND, SM dry, loose	1.8		KLA04-SB3-01	
1				@ 0805	
1.5					
2					
2.5	10YR 5/3 Brown sandy SILT, SM, wet, med. dense	1.0		KLA04-SB3-02	
3				@ 0810	
3.5					
4					
4.5					
5					
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA <sup>04</sup> -SB <sub>3</sub>
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data		Sample No. 1
SAMPLE ID NUMBER:	KLA <sup>04</sup> -SB <sub>3</sub> -01	
SAMPLE DEPTH:	0-2'	

FIELD	READING	UNITS
PID	1.8	ppm

Date/Time: 5.4.18 0805

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data		Sample No. 2
SAMPLE ID NUMBER:	KLA <sup>04</sup> -SB <sub>3</sub> -02	
SAMPLE DEPTH:	5.5-6.5	

FIELD	READING	UNITS
PID	1.0	ppm

Date/Time: 5.4.18 0810

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>MW-KLACZ-01</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : <i>Cascade Stratals</i> ANG/Klamath ANGB		Page Page <u>1</u> of <u>4</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822 Hollowstem auger</i>			Borehole Location Description <i>SE corner of PRC02</i>		
Date/Time Started : <i>5.4.18 0950</i>		Date/Time Finished : <i>5.4.18</i>			
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>~7</i>	Total Depth <i>18.6</i>			
Sample for PFOS/PFOA Analysis					
Sample ID: <b>MW-KLACZ-01.01</b>					
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID : <i>MW-KLACZ-01</i>	Backfill Type <i>ben-tonite</i>	Date Backfilled : <i>5.4.18</i>			
Latitude	Longitude	Elevation (ft)			
Notes: <i>10.5 bags sand, 2 bags bentonite, 1.5 cement</i>					
Sketch:					
<i>gms</i>					
<i>power vent</i>					
<i>MW</i> <i>⊗</i>					
<i>concrete</i>					
<i>AW</i>					

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLA02-01		Page Page 2 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 3.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	<del>grass</del>				
1					
1.5					
2	10YR 4/3 Brown sandy SILT	0.0			
2.5	SM, dry, loose				
3					
3.5					
4					
4.5					
5					
5.5					
6					
6.5	SAA, damp	0.1			
7					
7.5					
8					
8.5					
9					
9.5					
10					

SAA: same as above

Client/Installation ANG/Klamath ANGB		Borehole Number MW-KLACZ-01		Page Page 3 of 4	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					

104R 4/2 dark  
grayish brown  
clayey SAND  
CL, saturated,  
med. dense

0.3

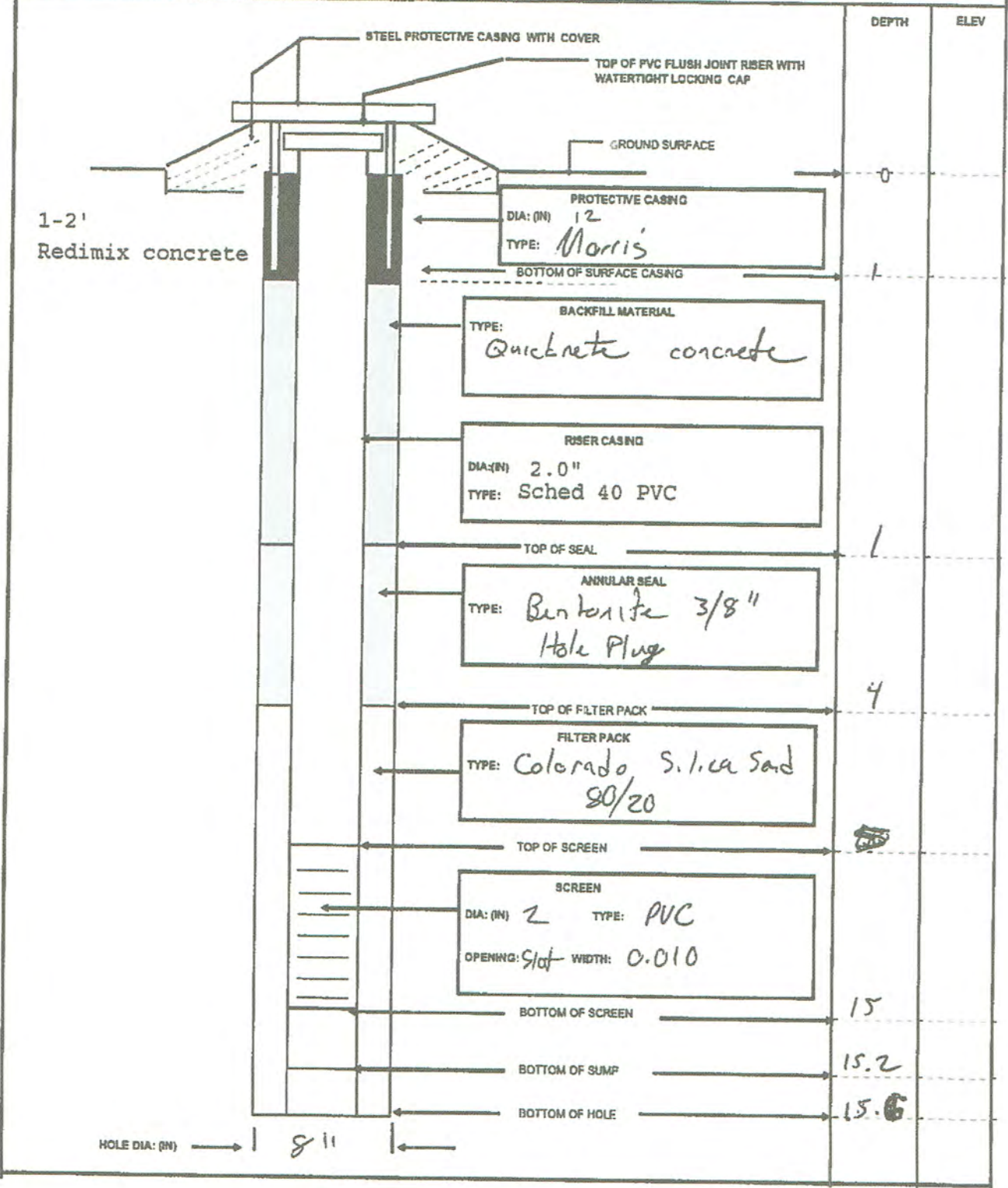
BOE

**MONITORING WELL**

PROJECT NAME: Phase III Regional Site Inspections for PFOS/PFOA      DELIVERY ORDER NO: 0011

WELL NUMBER: *MW-KLA02-01*      BEGIN: *5.4.18 0950*      END: *5.4.18 1230*

COORDINATES:      N:      REFERENCE POINT:      ELEVATION:  
                          E:



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leldos</b>	Borehole Number <b>KLA<sup>04</sup>-SB<sup>Z</sup></b>
Project <b>FY17 Phase 3 Regional SI for PFOS/PFOA</b>		Driller: <b>Cascade</b> <b>ANG/Klamath ANGB</b>	Page Page <u>1</u> of <u>2</u>
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>		Borehole Location Description <b>middle boring</b>	
Date/Time Started: <b>5.4.18 0815</b>		Date/Time Finished: <b>5.4.18</b>	
Overburden Thickness <b>1"</b>	Depth to Groundwater <b>6'</b>	Total Depth <b>10'</b>	
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>04</sup>SB<sup>Z</sup>01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>04</sup>SB<sup>Z</sup>02</b> Sample Interval: <b>4.5 to 5.5 ft</b>	
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>Chris Wildt</i>	
Monitoring Well ID:	Backfill Type <b>Benbrite</b>	Date Backfilled: <b>5.4.18</b>	
Latitude	Longitude	Elevation (ft)	
Notes:			
Sketch:			

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA04-SB2		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		8.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	10YR2/1 Black SILT, ML dry, med. dense	0.1		KLA04-SB2-01	
1				@ 0820	
1.5					
2					
2.5	10YR4/3 Brown sandy SILT, SM wet, med. dense	0.7		KLA04-SB2-02	
3				@ 0825	
3.5					
4					
4.5					
5					
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

V

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA04-SB 2
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA04-SB 2-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID		ppm

Date/Time: 5-4-18 0820

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA04-SB 2-02
SAMPLE DEPTH:	4.5-5.5

FIELD	READING	UNITS
PID		ppm

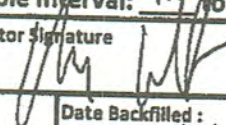
Date/Time: 5-4-18 0825

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA02-SB1</b>
Project <b>FY17 Phase 3 Regional SI for PFOS/PFOA</b>		Driller: <b>Cascade</b> <b>SKILMS</b> ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>		Borehole Location Description <b>Northern Boring</b>	
Date/Time Started: <b>5-4-18 1339</b>		Date/Time Finished: <b>5-4-18 1350</b>	
Overburden Thickness <b>2"</b>	Depth to Groundwater <b>6'</b>	Total Depth <b>8'</b>	
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA02-SB1 01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA02-SB1 02</b> Sample Interval: <b>4.5 to 5.5 ft</b>	
Inspector Name <b>Chris Wildt</b>		Inspector Signature 	
Monitoring Well ID: <b>—</b>	Backfill Type <b>ben tonite</b>	Date Backfilled: <b>5-4-18</b>	
Latitude	Longitude	Elevation (ft)	
Notes:			
Sketch:			
		⊗ SB1	
			⊗ SB2
		⊗ SB3	

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA02-SB 1		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grass				
1.0	10 YRS/2 grayish brown SAND, SW dry, loose	41.0	[shaded interval]	KLA02-SB1-01 @ 1340	
1.5					
2.0					
2.5					
3.0					
3.5					
4.0					
4.5	SAA, damp	0.4	[shaded interval]	KLA02-SB1-02 @ 1345	
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0	BOE				
8.5					
9.0					
9.5					
10.0					

SAA: same as above

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA02-SB 1
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE:	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA02-SB 1-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	4.0	ppm

Date/Time: 5.4.18 1340

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA02-SB 1-02
SAMPLE DEPTH:	4.5-5.5

FIELD	READING	UNITS
PID	0.4	ppm

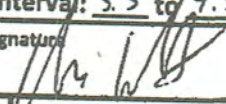

Date/Time: 5.4.18 1345

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>KLA02-SB 2</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : <b>Gesecade</b> ANG/Klamath ANGB		Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <b>Geoprobe 7822</b>			Borehole Location Description <b>Eastern Basin</b>		
Date/Time Started : <b>5.4.18 1310</b>		Date/Time Finished : <b>5.4.18 1330</b>			
Overburden Thickness <b>2"</b>	Depth to Groundwater <b>5</b>		Total Depth <b>7.5'</b>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA02-SB 2_01</b> Sample Interval: <b>0 to 2 ft</b>			Sample for PFOS/PFOA Analysis Sample ID: <b>KLA02-SB 2_02</b> Sample Interval: <b>3.5 to 4.5 ft</b>		
Inspector Name <b>Chris Wildt</b>			Inspector Signature 		
Monitoring Well ID :	Backfill Type <b>Bentonite</b>		Date Backfilled: <b>5.4.18</b>		
Latitude	Longitude		Elevation (ft)		
Notes:					
Sketch:					
			<b>SB1</b>		
					<b>SB2</b>
			<b>SB3</b>		
					

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA02-SB2		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grayish 10YR 5/2 Brown SAND, SW dry, loose	2.3		KLA02-SB2-01	
1				@ 1320	
1.5	10YR 4/4 Dark Yellowish Brown silty SAND, SM damp, med. dense	4.7		KLA02-SB2-02	
2				@ 1325	
2.5					
3					
3.5					
4					
4.5					
5					
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA 02-SB 2
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE:	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	
SAMPLE ID NUMBER:	KLA 02-SB 2-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	2.3	ppm
Date/Time: 5.4.18 1320		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	
SAMPLE ID NUMBER:	KLA 02-SB 2-02
SAMPLE DEPTH:	3.5-4.5

FIELD	READING	UNITS
PID	4.7	ppm
Date/Time: 5.4.18 1325		

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	



Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLA02-SB3		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.4.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grass			KLA02-SB3-01	
1.0	10YR 5/2 grayish brown SAND, SW dry, loose	1.2		@ 1355	
1.5					
2.0	10YR 3/4 dark yellowish brown silty SAND, SM damp, med. dense	0.9		KLA02-SB3-02 @ 1400	
2.5					
3.0					
3.5	10YR 5/2 grayish brown SAND, SW saturated, med. dense				
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA02-SB3
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA02-SB3-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS	
PID	1.2	ppm	

Date/Time: 54.18 1355

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA02-SB3-02
SAMPLE DEPTH:	4-5'

FIELD	READING	UNITS	
PID	0.9	ppm	

Date/Time: 54.18 1400

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS: \_\_\_\_\_

RELINQUISHED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
Chris Wildt			
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>KLA05-SB 2</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <b>Cascade</b> ANG/Klamath ANGB		Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7827</i>			Borehole Location Description <i>W Boring</i>		
Date/Time Started: <i>5.5.18 0920</i>		Date/Time Finished: <i>5.5.18 0950</i>			
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>6.5</i>		Total Depth <i>7.5</i>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA05-SB 101</b> Sample Interval: <b>0 to 2 ft</b>			Sample for PFOS/PFOA Analysis Sample ID: <b>KLA05-SB 102</b> Sample Interval: <b>5 to 6 ft</b>		
Inspector Name <b>Chris Wildt</b>			Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID: <u>          </u>	Backfill Type <i>Bentonite</i>		Date Backfilled: <i>5.5.18</i>		
Latitude	Longitude		Elevation (ft)		
Notes: <i>compact soils crushing sample tubes</i>					
Sketch:					
<i>01</i>					
<i>03</i>					

Client/Installation		Borehole Number		Page	
ANG/Klamath ANGB		KLAOS-SBZ		Page 2 of 2	
Project		Inspector Name		Date:	
FY17 Phase 3 Regional SI for PFOS/PFOA		Chris Wildt		5.5.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5					
1	10YR 4/2 Dark grayish brown silty SAND SM, dry, loose	0.5		KLAOS-SBZ-01	@ 0930
1.5					
2					
2.5					
3					
3.5					
4					
4.5					
5	10YR 4/4, dark yellowish brown silty SAND SM, saturated, med. dense	2.1		KLAOS-SBZ-02	@ 0940
5.5					
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA05-SB 2
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA05-SB 2-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS	
PID	0.5	ppm	
Date/Time: 5-5-18 0930			

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA05-SB 2-02
SAMPLE DEPTH:	5-6'

FIELD	READING	UNITS	
PID	2.1	ppm	
Date/Time: 5-5-18 0940			

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>		Borehole Number <b>KLA05-SB 3</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller : <i>Cascade</i> <i>Stanley</i> ANG/Klamath ANGB		Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822</i>			Borehole Location Description <i>S Basin</i>		
Date/Time Started : <i>5.5.18 1000</i>		Date/Time Finished : <i>5.5.18 1030</i>			
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>7'</i>	Total Depth <i>8' 11"</i>			
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA05SB 301</b> Sample Interval: <b>0 to 2 ft</b>			Sample for PFOS/PFOA Analysis Sample ID: <b>KLA05SB 302</b> Sample Interval: <i>5.5</i> to <i>6.5</i> ft		
Inspector Name <b>Chris Wildt</b>		Inspector Signature: <i>[Signature]</i>			
Monitoring Well ID : <u>                    </u>	Backfill Type <i>Bentonite</i>	Date Backfilled : <i>5.5.18</i>			
Latitude	Longitude	Elevation (ft)			
Notes:					
Sketch:					

Client/Installation ANG/Klamath ANGB		Borehole Number KLAOS-SB3		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 9.5.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	grass			KLAOS-SB3-01	
1	10YR 4/3 Brown silty SAND SM, dry, loose	1.0		@ 1010	
1.5					
2					
2.5					
3					
3.5					
4					
4.5					
5					
5.5	10YR 5/3 Brown silty SAND SM, damp, medium dense	0.4		KLA-SB3-02 @ 1020	
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					



Client/Installation <b>ANG/Klamath ANGB</b>		Oversight Contractor <b>Leidos</b>	Borehole Number <b>KLA<sup>05</sup>-SB 1</b>	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Driller: <i>Cascada status</i> ANG/Klamath ANGB	Page Page <u>1</u> of <u>2</u>	
Sizes and Type of Drilling and Sampling Equipment <i>Geoprobe 7822</i>			Borehole Location Description <i>N boring</i>	
Date/Time Started: <i>5.5.18 0840</i>		Date/Time Finished: <i>5.5.18 0910</i>		
Overburden Thickness <i>2"</i>	Depth to Groundwater <i>6.5</i>	Total Depth <i>7.5</i>		
Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>05</sup>-SB 1 01</b> Sample Interval: <b>0 to 2 ft</b>		Sample for PFOS/PFOA Analysis Sample ID: <b>KLA<sup>05</sup>-SB 1 02</b> Sample Interval: <i>5</i> to <i>6</i> ft		
Inspector Name <b>Chris Wildt</b>		Inspector Signature <i>Chris Wildt</i>		
Monitoring Well ID: <u>                    </u>	Backfill Type <i>Bentonite</i>	Date Backfilled: <i>5.5.18</i>		
Latitude	Longitude	Elevation (ft)		
Notes:				
Sketch:				

Client/Installation ANG/Klamath ANGB		Borehole Number KLA05-SB 1		Page Page 2 of 2	
Project FY17 Phase 3 Regional SI for PFOS/PFOA		Inspector Name Chris Wildt		Date: 5.5.18	
Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:	
0.5	2 mass			KLA05-SBI-01	
1	10YR 4/3 Brown	0.7		@ 0900	
1.5	silty SAND, SW				
2	dry, loose				
2.5					
3	10YR 5/3 Brown				
3.5	SAND, SW				
4	well graded, damp				
4.5	loose			KLA05-SBI-02	
5				@ 0910	
5.5		1.5			
6					
6.5					
7					
7.5					
8					
8.5					
9					
9.5					
10					

# SAMPLE COLLECTION/CHAIN-OF-CUSTODY RECORD

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Borehole Data	
SAMPLING POINT:	KLA05-SB 1
SAMPLE LOCATION:	
SAMPLE MEDIA:	Soil
SAMPLE TYPE	Grab
LOGBOOK NUMBER:	1

SAC - TestAmerica Sacramento

Sample Data	Sample No. 1
SAMPLE ID NUMBER:	KLA05-SB 1-01
SAMPLE DEPTH:	0-2'

FIELD	READING	UNITS
PID	0.7	ppm

Date/Time: 5-5-18 0900

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

Sample Data	Sample No. 2
SAMPLE ID NUMBER:	KLA05-SB 1-02
SAMPLE DEPTH:	5-6'

FIELD	READING	UNITS
PID	0.5	ppm

Date/Time: 5-5-18 0910

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
1-4oz	plastic	PFOS/PFOA	cold, no preservative	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

COMMENTS:

RELINQUISHED BY: Chris Wildt	DATE/TIME	RELINQUISHED BY:	DATE/TIME
COMPANY Leidos		COMPANY	
RECEIVED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
COMPANY		COMPANY	

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**APPENDIX B**

**GROUNDWATER SAMPLING LOGS**

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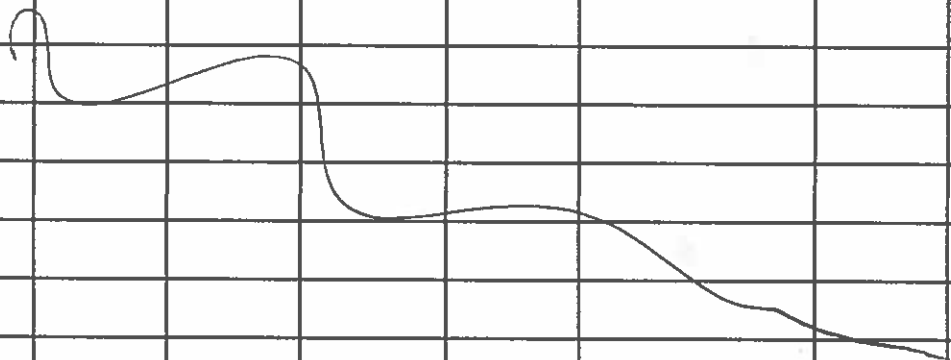
# GROUND WATER DEVELOPMENT LOG

WELL ID: MW-KLA02-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>9.5.18</u> TIME	Volume Purged (liters)	PURGE RATE <u>gpm</u> <del>(L/min)</del>	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond <u>S/cm</u>	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1110		1	155	14.8	6.17	1.16	12.58	—	3.94	blew fuse on pump
1135	5gal	1gpm	153	14.3	9.38	2.73	12.67	—	9.20	
1145	15	"	162	15.3	9.25	2.68	12.41	—	11.05	
1150	20	"	161	15.2	9.31	2.69	12.01	—	Dry	
1200	25		153	14.5	9.25	3.05	11.36	—	Dry	



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QA CHECKED BY: \_\_\_\_\_  
(Signature)

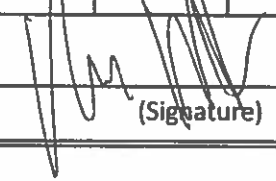
# GROUND WATER DEVELOPMENT LOG

WELL ID: MW-KLA06-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5.5.18</u> TIME	Volume Purged (liters)	PURGE RATE (gpm)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond _S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1210	5	1 gpm	-377	12.2	8.76	0.90	12.43	—	12.53	
1225	10	"	-250	12.6	8.01	0.89	12.41	—	Dry	
1230	12	"	+87	14.0	8.62	0.90	10.16	—	12.15	Very slow recharge
1245	13	0.5	-180	12.9	8.51	0.97	10.79	—	Dry	
1330	—————									Dry

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QA CHECKED BY: \_\_\_\_\_  
(Signature)

# GROUND WATER DEVELOPMENT LOG

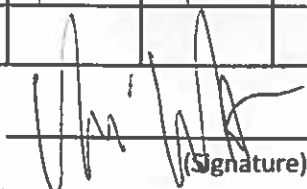
WELL ID: MW-KLAD4-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5/5/18</u> TIME	Volume Purged (liters)	PURGE RATE (ML/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond <u>S/cm</u>	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1340	0.5	0.5	-7	14.2	10.3	1.01	11.57	~	2.60	
1345	2.5	0.5	68	12.6	9.78	1.16	12.30	-5.0	4.34	
1350	5.0	0.5	34	12.3	9.74	1.23	11.83	-5.0	4.42	
1355	7.5	1.0	<del>81</del> -43	12.8	9.76	1.34	10.07	-5.0	5.05	
1400	12.5	1.0	-15	12.1	9.46	1.37	5.45	-5.0	5.89	
1405	17.5	1.0	29	12.9	9.51	1.49	6.87	-5.0	6.15	
1410	22.5	1.0	14	13.0	9.51	1.36	4.72	-5.0	6.80	
1415	27.5	1.0	-3	13.0	9.72	1.35	11.77	-5.0	6.95	
1420	32.5	1.0	37	12.2	9.59	1.37	12.35	-5.0	7.20	
1425	37.5	1.0	36	12.3	9.67	1.40	12.37	-5.0	7.50	
1430	42.5	1.0	-21	11.9	9.44	1.40	4.88	-5.0	8.05	
1435	47.5	1.0	12	11.9	9.51	1.40	7.29	-5.0	8.15	
1440	52.5	1.0	14	11.8	9.50	1.40	7.06	-5.0	8.35	
1445	57.5	1.0	-12	11.5	9.42	1.40	6.25	-5.0	8.89	

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QA CHECKED BY:

DMW

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(Signature)

End purge due to scheduling

# GROUND WATER DEVELOPMENT LOG

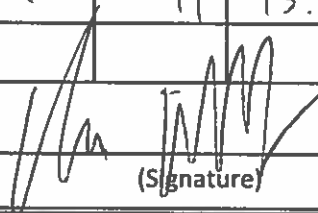
WELL ID: MW-1CLAB3-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5-5-18</u> TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1600	0.5	1 gpm	-385	13.8	9.12	1.45	5.07	-5.0	7.60	
1605	5	1 gpm	-340	12.4	8.85	1.19	7.82	-5.0	8.85	
1610	10	"	—	—	—	1.08	—	—		
1620	20	"	-203	12.3	8.68	1.08	10.80	—	9.50	
1625	25	"	-185	12.9	8.98	1.07	12.90	—	9.95	
1630	30	"	-92	13.4	8.78	1.08	8.64	—	10.09	
1635	35	"	-91	13.3	8.80	1.07	—	—	10.20	
1640	40	"	-140	12.5	8.55	1.08	3.92	—	10.30	
1645	45	"	-135	12.1	8.61	1.09	3.89	—	10.35	
1650	50	"	-140	12.9	8.71	1.10	3.81	—	10.41	
1700	60	"	-55	14.0	8.87	1.08	13.14	—	10.48	
1705	65	"	-36	13.0	8.81	1.05	12.63	—	10.51	
1710	70	"	-40	13.1	8.82	1.10	12.61	—	10.60	
1715	75	"	-41	13.0	8.79	1.09	12.60	—	10.65	

RECORDED BY:

  
(Signature)

QA CHECKED BY:

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(Signature)

# GROUND WATER DEVELOPMENT LOG

WELL ID: MW-KLA01-01

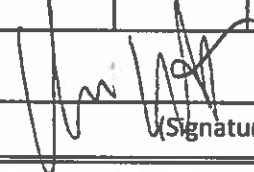
PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5-5-18</u> TIME	Volume Purged (liters)	PURGE RATE (ml/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond <u>µS/cm</u>	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1500	0.5	1.0	79	13.5	8.89	4.41	11.05	—	6.01	
1505	5.0	1.0	-3	12.6	8.39	5.26	9.37	—	8.30	
1510	10.0	1.0	-4	12.5	8.16	6.74	11.35	-5.0	9.28	
1515	15.0	1.0	-5	12.4	8.03	7.98	12.36	-5.0	9.80	
1520	20.0	1.0	-33	12.5	7.81	9.96	12.08	-5.0	10.38	
1525	25.0	1.0	-16	12.6	7.80	19.4	11.59	-5.0	10.65	
1530	30.0	1.0	-6	12.6	7.73	20.3	8.03	-5.0	10.80	
1535	35.0	1.0	-14	12.6	7.71	20.8	6.81	680	11.50	
1540	40.0	1.0	-12	12.6	7.78	20.1	6.91	390	11.80	
1545	45.0	1.0	-13	12.5	7.75	20.3	6.95	200	12.01	
1550	50	1.0	-11	12.4	7.75	20.4	6.91	190	12.50	
1555	55	1.0	-10	12.5	7.73	20.3	6.94	110	12.89	

DRY

RECORDED BY:

  
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(Signature)

QA CHECKED BY:

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(Signature)



# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.6.18

TIME: 0830

WELL ID NUMBER: MW-573-03-PR05

WELL LOCATION: Bldg 573

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 15<sup>2</sup> ft.

INNER CASING: TYPE: PVC ID: 2"

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82662

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 5.22 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: ~5 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

PURGE/SAMPLE METHOD:  Monsoon  Peristaltic Pump  Other Pump Type \_\_\_\_\_

PURGE START TIME: 0840 PURGE END TIME: 0910

TOTAL VOLUME PURGED: 3.0 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED:  Yes  No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY: \_\_\_\_\_  
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: ~~0900~~ 0915

Sample Location: Building 573

SAMPLE ID NUMBER:	MW-573-03-PRL05-01
SAMPLE LOCATION:	MW-573-03-PRL05
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	1.29	S/cm	
DO	0.23	mg/L	
ORP	115	mV	
Temperature	15.9	degrees, C	
Turbidity	5.1	NTUs	
pH	8.69	S.U.	
PID	0.1	ppm	

COMMENTS: JMS/MSD

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1030

WELL ID NUMBER: MW-572-02-PRL05

WELL LOCATION: Bldg 573

DEPTH OF SCREENED INTERVAL (toc notch): 9 ft. to 15<sup>1</sup> ft.

INNER CASING: TYPE: PVC ID: 2"

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82667

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 4.65 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT

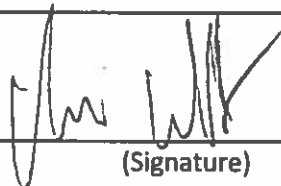
DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

PURGE/SAMPLE METHOD:  Monsoon  Peristaltic Pump  Other Pump Type \_\_\_\_\_

PURGE START TIME: 1000 PURGE END TIME: 1025

TOTAL VOLUME PURGED: \_\_\_\_\_ (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED:  Yes  No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:   
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

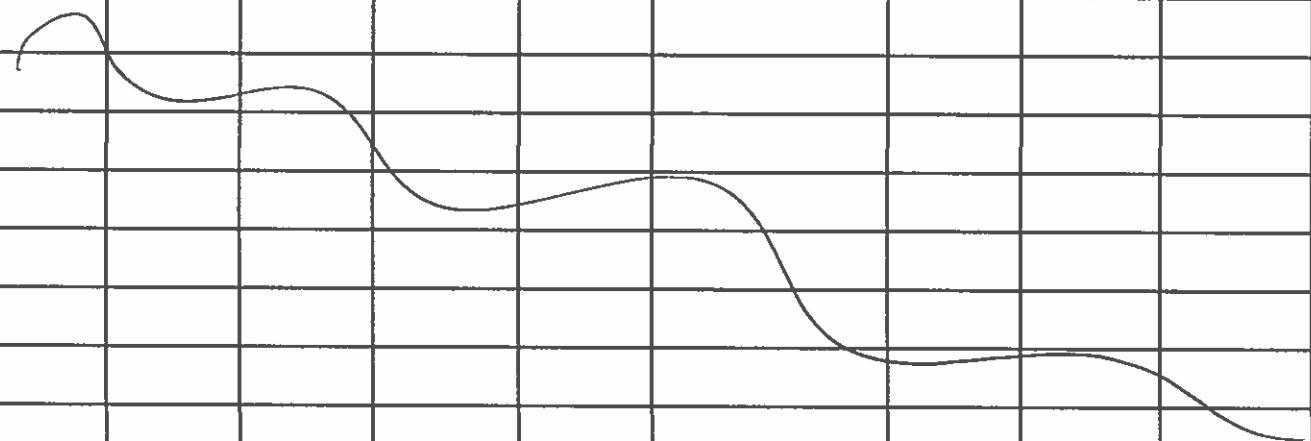
## GROUND WATER LOW-FLOW PURGE LOG

WELL ID: MIN 572-02-PRLOS

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5-6-12</u> TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1000	—	100	140	16.1	9.79	0.90	13.57	257	4.75	
1005	0.5	100	157	15.5	9.61	0.90	9.55	175	4.78	
1010	1.0	"	160	15.5	9.64	0.90	9.23	87.5	4.80	
1015	1.5	"	167	15.8	9.52	0.90	8.83	43.1	4.85	
1020	2.0	"	169	15.7	9.52	0.91	8.90	47.1	4.85	
1025	2.5	"	168	15.8	9.51	0.92	8.89	43.5	4.88	



RECORDED BY:

*[Signature]*  
(Signature)

QA CHECKED BY:

\_\_\_\_\_  
(Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: S.B. 18

TIME: 1030

Sample Location: Building 573

SAMPLE ID NUMBER:	MW-572-02-PRL05-01
SAMPLE LOCATION:	MW-572-02-PRL05
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	0.92	__S/cm	
DO	8.89	mg/L	
ORP	168	mV	
Temperature	15.8	degrees, C	
Turbidity	43.5	NTUs	
pH	9.51	S.U.	
PID	0.1	ppm	

COMMENTS: + Duplicate on this well

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# SAMPLE COLLECTION SEDIMENT/SURFACE WATER

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.6.18

TIME: 1130

Sample Location: North end fall

SAMPLE ID NUMBER:	<u>KLA07-SD1-01</u>
SAMPLE LOCATION:	<u>KLA07-SD1</u>
SAMPLE DEPTH:	<u>Surface</u>
SAMPLING POINT:	
SAMPLE MEDIA:	<u>Soil</u>
SAMPLE TYPE	<u>Grab</u>

FIELD	READING	UNITS	H&S (Y/N)
Conductivity		<u>S/cm</u>	
DO		mg/L	
ORP		mV	
Temperature		degrees, C	
Turbidity		NTUs	
pH		S.U.	
PID		ppm	

COMMENTS: + Duplicate

NO. CONTAINERS & VOLUME	CONTAINER TYPE	<u>1402</u> ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.6.18

TIME: 1140

WELL ID NUMBER: MW-KLA02-01

WELL LOCATION: SE corner of PRLO2

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 15 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82662

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 3.89 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT


DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

PURGE/SAMPLE METHOD: [ ] Monsoon [  ] Peristaltic Pump [ ] Other Pump Type \_\_\_\_\_

PURGE START TIME: 1140 PURGE END TIME: 1205

TOTAL VOLUME PURGED: 307 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED: [  ] Yes [ ] No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:   
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

## GROUND WATER LOW-FLOW PURGE LOG

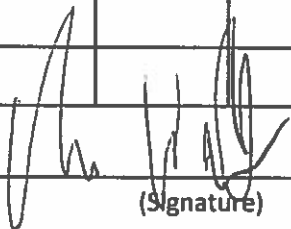
WELL ID: MW-KLAG2-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5-6-18</u> TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1140	-	100	157	17.1	9.57	3.99	12.68	475.0	3.89	
1143	0.3	"	160	16.9	9.34	4.31	11.94	471.0	3.95	
1145	0.5	"	163	16.6	9.24	4.28	5.18	455.0	3.99	
1150	1.0	"	173	17.2	9.11	4.23	2.28	414.0	4.01	
1155	1.5	"	174	16.7	9.09	4.32	2.22	392.0	4.03	
1200	2.0	"	177	16.5	9.08	4.28	2.16	386.0	4.05	
1203	2.5	"	177	15.9	9.09	4.31	2.02	340.0	4.08	
1205	2.0	"	177	16.0	9.08	4.31	2.01	333.0	4.09	

RECORDED BY:



(Signature)

QA CHECKED BY:

\_\_\_\_\_

(Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1205

Sample Location: MW-KLA02-01

SAMPLE ID NUMBER:	MW-KLA02-01-01
SAMPLE LOCATION:	MW-KLA02-01
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	4.31	__S/cm	
DO	2.02	mg/L	
ORP	177	mV	
Temperature	16.0	degrees, C	
Turbidity	333.0	NTUs	
pH	9.08	S.U.	
PID	0.0	ppm	

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-ml polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1241

WELL ID NUMBER: MW-KLA<sup>OG</sup>-01

WELL LOCATION: SE corner of PRLOG

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 15 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82662

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 8.24 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

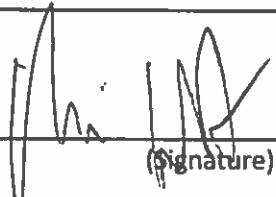
PURGE/SAMPLE METHOD:  Monsoon  Peristaltic Pump  Other Pump Type \_\_\_\_\_

PURGE START TIME: 1245

PURGE END TIME: 1300

TOTAL VOLUME PURGED: 2.0 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED:  Yes  No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:  (Signature)

QA CHECKED BY: \_\_\_\_\_ (Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1315

Sample Location: MW-KLAG-01

SAMPLE ID NUMBER:	MW-KLAG-01-01
SAMPLE LOCATION:	MW-KLAG-01
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	0.99	__S/cm	
DO	9.61	mg/L	
ORP	-157	mV	
Temperature	14.2	degrees, C	
Turbidity	150.0	NTUs	
pH	8.25	S.U.	
PID	0.0	ppm	

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

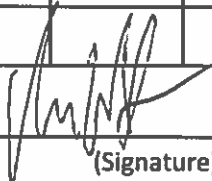
## GROUND WATER LOW-FLOW PURGE LOG

WELL ID: MW-KLA06-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: <u>5-6-18</u> TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1245	—	100	-193	15.0	8.61	1.17	13.24	151.0	<del>8.35</del>	
1250	0.5	"	-191	14.1	8.30	1.02	10.91	155.0	8.70	
1255	1.5	"	-188	14.0	8.21	0.98	9.25	152.0	8.80	
1300	2.0	"	-187	14.2	8.25	0.99	9.61	150.0	8.85	

RECORDED BY:  \_\_\_\_\_  
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1340

WELL ID NUMBER: MW-KLACH-01

WELL LOCATION: SU corner PRLO4

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 10 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82667

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 2.55 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

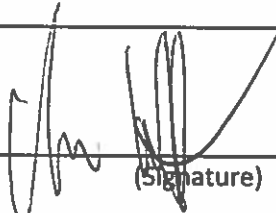
PURGE/SAMPLE METHOD:  Monsoon  Peristaltic Pump  Other Pump Type \_\_\_\_\_

PURGE START TIME: 1340

PURGE END TIME: 1410

TOTAL VOLUME PURGED: 3.0 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED:  Yes  No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:   
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)



# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1415

Sample Location: PR04

SAMPLE ID NUMBER:	MW-KLA <sup>04</sup> -01-01
SAMPLE LOCATION:	MW-KLA <sup>04</sup> -01
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	1.63	µS/cm	
DO	0.31	mg/L	
ORP	-159	mV	
Temperature	15.6	degrees, C	
Turbidity	292.0	NTUs	
pH	9.56	S.U.	
PID	0-1	ppm	

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1430

WELL ID NUMBER: MW-KLA01-01

WELL LOCATION: SE Corner PKL01

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 10 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82662

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 4.32 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

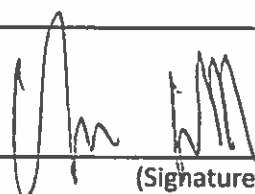
PURGE/SAMPLE METHOD: [ ] Monsoon  Peristaltic Pump [ ] Other Pump Type \_\_\_\_\_

PURGE START TIME: 1430

PURGE END TIME: 1445

TOTAL VOLUME PURGED: 1.5 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED:  Yes [ ] No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:  (Signature)

QA CHECKED BY: \_\_\_\_\_ (Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5-6-18

TIME: 1450

Sample Location: PRLO1

SAMPLE ID NUMBER:	MW-KLAD1-01-01
SAMPLE LOCATION:	MW-KLAD1-01
SAMPLE DEPTH:	10'
SAMPLING POINT:	mid point of screen
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	19.6	µS/cm	
DO	8.16	mg/L	
ORP	128	mV	
Temperature	15.8	degrees, C	
Turbidity	67.7	NTUs	
pH	8.00	S.U.	
PID	0.1	ppm	

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

## GROUND WATER LOW-FLOW PURGE LOG

WELL ID: MW-KLA01-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1430	-	100	149	16.2	8.11	20.3	12.34	45.3	4.35	
1435	0.5	"	137	15.8	8.02	19.7	<del>19.7</del>	63.2	4.40	
1438	0.8	"	133	15.9	8.02	19.6	8.64	64.2	4.41	
1441	1.1	"	131	15.8	8.01	19.6	8.51	72.1	4.45	
1445	1.5	"	129	15.8	8.00	19.6	8.35	70.1	4.46	

RECORDED BY:   
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

# GROUND WATER LOW-FLOW PURGE SHEET

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.6.18

TIME: 1500

WELL ID NUMBER: MW-KLA03-01

WELL LOCATION: SE corner of PRL03

DEPTH OF SCREENED INTERVAL (toc notch): 5 ft. to 10 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WATER QUALITY METER ID: 82551

WATER LEVEL INDICATOR ID: 82662

PUMP ID: 83008

TURBIDITY ID: 82551

PID ID: 81470

DEPTH TO WATER: 6.25 FT FROM MEASURE POINT

DEPTH TO TOP OF SCREEN: 5 FT FROM MEASURE POINT

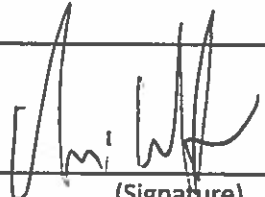
DEPTH TO PUMP INTAKE: 10 FT FROM MEASURE POINT

PURGE/SAMPLE METHOD: [ ] Monsoon [X] Peristaltic Pump [ ] Other Pump Type \_\_\_\_\_

PURGE START TIME: 1505 PURGE END TIME: 1550

TOTAL VOLUME PURGED: 4.5 (liters)

S&A PLAN SAMPLING PROCEDURE FOLLOWED: [X] Yes [ ] No IF NO, WHY WAS A DEVIATION NECESSARY: \_\_\_\_\_

RECORDED BY:   
(Signature)

QA CHECKED BY: \_\_\_\_\_  
(Signature)

## GROUND WATER LOW-FLOW PURGE LOG

WELL ID: MW-KLA03-01

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

Date: TIME	Volume Purged (liters)	PURGE RATE (mL/min)	ORP (mv)	TEMP (°C)	pH (s.u.)	SpecCond $\mu$ S/cm	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
5-6-18 1505	-	100	-204	16.3	8.92	1.44	13.55	-	6.28	turb over
1510	0.5	100	-237	16.2	8.81	1.26	3.48	-	6.29	
1515	1.0	"	-243	15.9	8.74	1.23	1.76	475.0	6.29	
1520	1.5	"	-253	15.1	8.67	1.20	0.74	474.0	6.30	
1525	2.0	"	-252	15.2	8.65	1.19	0.49	475.0	6.31	
1530	2.5	"	-249	15.1	8.63	1.19	0.28	472.0	6.32	
1535	3.0	"	-249	15.2	8.61	1.17	0.20	473.0	6.33	
1540	3.5	"	-234	14.9	8.61	1.18	0.12	470.0	6.34	
1545	4.0	"	-243	14.9	8.61	1.18	0.11	471.0	6.34	
1550	4.5	"	-245	14.7	8.61	1.18	0.10	472.0	6.35	

RECORDED BY:

(Signature)

QA CHECKED BY:

\_\_\_\_\_  
(Signature)

# SAMPLE COLLECTION

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.6.18

TIME: 1555

Sample Location: SE Corner PRL03

SAMPLE ID NUMBER:	MW-KLA05-01-01
SAMPLE LOCATION:	MW-KLABS-01
SAMPLE DEPTH:	10'
SAMPLING POINT:	
SAMPLE MEDIA:	GW
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	1.18	µS/cm	
DO	0.09	mg/L	
ORP	-247	mV	
Temperature	14.3	degrees, C	
Turbidity	471.0	NTUs	
pH	8.62	S.U.	
PID	0.0	ppm	

COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

SAC - TestAmerica Sacramento

TRIP BLANK ID: \_\_\_\_\_

# SAMPLE COLLECTION SEDIMENT/SURFACE WATER

PROJECT NAME: Kingsley Field ANGB

DELIVERY ORDER 0011

DATE: 5.7.18

TIME: 0830

Sample Location: South Outfall

SAMPLE ID NUMBER:	KLA08-SW1-01
SAMPLE LOCATION:	KLA08-SW1
SAMPLE DEPTH:	
SAMPLING POINT:	
SAMPLE MEDIA:	
SAMPLE TYPE	Grab

FIELD	READING	UNITS	H&S (Y/N)
Conductivity	0.397	__S/cm	
DO	6.62	mg/L	
ORP	-27	mV	
Temperature	13.2	degrees, C	
Turbidity	<del>over</del>	NTUs	
pH	8.80	S.U.	
PID	0.1	ppm	

COMMENTS: collected from approx 5" standing water in storm drain using a 4' bailer

NO. CONTAINERS & VOLUME	CONTAINER TYPE	ANALYSIS	PRESERVATION TYPE (TYPE/VOL)	LABORATORY	COLLECTION CODE**
2 ea - 250-mL polypropylene with polypropylene cap		PFOS/PFOA	Cool to 4°C ±2°	SAC	

\*\* "X" analysis collected; "IS" insufficient volume; "NR" not required; define other code as appropriate

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TRIP BLANK ID: \_\_\_\_\_

**APPENDIX C**

**SURVEY REPORT FOR NEW MONITORING WELLS**

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1045-18 LEIDOS KINGSLEY FIELD WELL LOCATIONS (5-8-18)

MW-KLA01-01		WELL CAP	RIM	GROUND
SPCS, OR 3062, USFT, NAD83	NORTHING	181,574.9		
	EASTING	4,584,702.1		
WGS84 (DD)	LATITUDE	42.158031		
	LONGITUDE	-121.741191		
NAVD88	ELEVATION (FT)		4,088.11	4,088.01
MW-KLA02-01		WELL CAP	RIM	GROUND
SPCS, OR 3062, USFT, NAD83	NORTHING	185,270.4		
	EASTING	4,584,293.7		
WGS84 (DD)	LATITUDE	42.168153		
	LONGITUDE	-121.742899		
NAVD88	ELEVATION (FT)		4,088.40	4,088.41
MW-KLA03-01		WELL CAP	RIM	GROUND
SPCS, OR 3062, USFT, NAD83	NORTHING	181,398.1		
	EASTING	4,584,309.8		
WGS84 (DD)	LATITUDE	42.157530		
	LONGITUDE	-121.742628		
NAVD88	ELEVATION (FT)		4,089.72	4,089.66
MW-KLA04-01		WELL CAP	RIM	GROUND
SPCS, OR 3062, USFT, NAD83	NORTHING	182,222.0		
	EASTING	4,584,912.3		
WGS84 (DD)	LATITUDE	42.159815		
	LONGITUDE	-121.740451		
NAVD88	ELEVATION (FT)		4,086.43	4,086.39
MW-KLA06-01		WELL CAP	RIM	GROUND
SPCS, OR 3062, USFT, NAD83	NORTHING	183,564.5		
	EASTING	4,583,923.5		
WGS84 (DD)	LATITUDE	42.163458		
	LONGITUDE	-121.744171		
NAVD88	ELEVATION (FT)		4,089.08	4,088.98

VERTICAL ELEVATION BENCHMARK

PID: NY0350 NGS Datasheet	NORTHING	185,913.9851
	EASTING	4,585,944.5715
	ELEVATION (FT)	4,089.17

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*Michelle McBride*

OREGON  
SEPTEMBER 13, 2016  
MICHELLE McBRIDE  
91128PLS

EXPIRATION DATE: 12/31/18

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**APPENDIX D**  
**DATA VALIDATION REPORTS**

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## LEIDOS Laboratory Data Verification Checklist

<b>Project:</b>	Kingsley	Page 1 of 3
<b>SDG No:</b>	J39023	<b>Analyte Group:</b>
		PFCs
		<b>Sample Matrix:</b>
		Water/Soil
		<b>EDD (Y/N):</b>
<b>Disposition of Data Package:</b>		
<b>NCR No. (if applicable):</b>		

### 1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	Y
Check that discussion covers each analytical type included in the SDG	Y
Check for identified nonconforming items (e.g., missed holding times, etc.)	Y

### 2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	Y
Check that COC signature blocks are complete	Y
Check COC project sample IDs vs. Lab IDs and Result Form IDs	Y
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	Y

### 3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	Y
On each Result Form check:	
SDG No.	Y
Sample ID	Y
Lab ID	Y
Date Collected	Y
Date Extracted	Y
Date Analyzed	Y
Result Matrix	Y
Result Units	Y

4. Project Verification

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	Y
Check analyte reporting levels vs. project reporting level goals	Y

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)	Y
Check for LCS results (e.g., org. form III, inorg. form XII)	Y
Check for method blank results ( e.g., org. form IV, inorg. form III)	Y
Check for MS/MSD results (e.g., inorg. form V)	Y
Check for laboratory duplicate results (e.g., inorg. form VI)	NA

Check for Method Calibration and Run Documentation

organic:	instrument performance check	Y
	initial calibration data	Y
	continuing calibration data	Y
	internal standard areas	Y
	internal standard retention times	Y
	sample clean-up documentation (org. forms V through X)	Y
metal:	initial calibration data	
	continuing calibration data	
	method detection limits	
	method linear range	
	sample run sequence (inorg. forms II, IV, and VIII through XIV)	
other:	initial calibration data	
	continuing calibration data	
	method detection limits	
	sample run sequence	





# Sample Summary

Client: Leidos, Inc.

TestAmerica Job ID: 320-39023-1

Project/Site: Phase III, ANG-Kingsley

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-39023-1	MW-KLA01-01-01	Water	05/06/18 14:50	05/08/18 09:00
320-39023-2	MW-KLA02-01-01	Water	05/06/18 12:05	05/09/18 09:20
320-39023-3	MW-KLA03-01-01	Water	05/06/18 15:55	05/08/18 09:00
320-39023-4	MW-KLA04-01-01	Water	05/06/18 14:15	05/08/18 09:00
320-39023-5	MW-573-03-PRL05-01	Water	05/06/18 09:15	05/08/18 09:00
320-39023-6	MW-572-02-PRL05-01	Water	05/06/18 10:30	05/08/18 09:00
320-39023-7	MW-KLA06-01-01	Water	05/06/18 13:15	05/08/18 09:00
320-39023-8	KLA08-SW1-01	Water	05/07/18 08:30	05/08/18 09:00
320-39023-9	KLA-01-SB1-01	Solid	05/02/18 14:00	05/09/18 09:20
320-39023-10	KLA-01-SB1-02	Solid	05/02/18 14:10	05/09/18 09:20
320-39023-11	KLA-01-SB2-01	Solid	05/02/18 13:15	05/09/18 09:20
320-39023-12	KLA-01-SB2-02	Solid	05/02/18 13:20	05/09/18 09:20
320-39023-13	KLA-01-SB3-01	Solid	05/02/18 14:25	05/09/18 09:20
320-39023-14	KLA-01-SB3-02	Solid	05/02/18 14:30	05/09/18 09:20
320-39023-15	KLA02-SB1-01	Solid	05/04/18 13:40	05/09/18 09:20
320-39023-16	KLA02-SB1-02	Solid	05/04/18 13:45	05/09/18 09:20
320-39023-17	KLA02-SB2-01	Solid	05/04/18 13:20	05/09/18 09:20
320-39023-18	KLA02-SB2-02	Solid	05/04/18 13:25	05/09/18 09:20
320-39023-19	KLA02-SB3-01	Solid	05/04/18 13:55	05/09/18 09:20
320-39023-20	KLA02-SB3-02	Solid	05/04/18 14:00	05/09/18 09:20
320-39023-21	KLA03-SB1-01	Solid	05/01/18 09:00	05/09/18 09:20
320-39023-22	KLA03-SB1-02	Solid	05/01/18 09:05	05/09/18 09:20
320-39023-23	KLA03-SB2-01	Solid	05/02/18 12:15	05/09/18 09:20
320-39023-24	KLA03-SB2-02	Solid	05/02/18 12:20	05/09/18 09:20
320-39023-25	KLA03-SB3-01	Solid	05/01/18 08:45	05/09/18 09:20
320-39023-26	KLA03-SB3-02	Solid	05/01/18 08:50	05/09/18 09:20
320-39023-27	KLA04-SB1-01	Solid	05/04/18 08:35	05/09/18 09:20
320-39023-28	KLA04-SB1-02	Solid	05/04/18 08:40	05/09/18 09:20
320-39023-29	KLA04-SB2-01	Solid	05/04/18 08:20	05/09/18 09:20
320-39023-30	KLA04-SB2-02	Solid	05/04/18 08:25	05/09/18 09:20
320-39023-31	KLA04-SB3-01	Solid	05/04/18 08:05	05/09/18 09:20
320-39023-32	KLA04-SB3-02	Solid	05/04/18 08:10	05/09/18 09:20
320-39023-33	KLA05-SB1-01	Solid	05/05/18 09:00	05/09/18 09:20
320-39023-34	KLA05-SB1-02	Solid	05/05/18 09:10	05/09/18 09:20
320-39023-35	KLA05-SB2-01	Solid	05/05/18 09:30	05/09/18 09:20
320-39023-36	KLA05-SB2-02	Solid	05/05/18 09:40	05/09/18 09:20
320-39023-37	KLA05-SB3-01	Solid	05/05/18 10:10	05/09/18 09:20
320-39023-38	KLA05-SB3-02	Solid	05/05/18 10:20	05/09/18 09:20
320-39023-39	KLA06-SB1-01	Solid	05/01/18 14:15	05/09/18 09:20
320-39023-40	KLA06-SB1-02	Solid	05/01/18 14:20	05/09/18 09:20
320-39023-41	KLA06-SB2-01	Solid	05/01/18 13:45	05/09/18 09:20
320-39023-42	KLA06-SB2-02	Solid	05/01/18 13:50	05/09/18 09:20
320-39023-43	KLA07-SD1-01	Solid	05/06/18 11:30	05/09/18 09:20
320-39023-44	ER-01	Water	05/01/18 15:30	05/09/18 09:20
320-39023-45	FB-01	Water	05/01/18 15:50	05/09/18 09:20
320-39023-46	ER-02	Water	05/02/18 09:40	05/09/18 09:20
320-39023-47	ER-03	Water	05/03/18 10:30	05/08/18 09:00
320-39023-48	ER-04	Water	05/04/18 11:00	05/09/18 09:20
320-39023-49	MW-572-02-PRL05-01D	Water	05/06/18 10:30	05/08/18 09:00
320-39023-51	KLA03-SB-2-01D	Solid	05/02/18 12:15	05/09/18 09:20
320-39023-52	KLA06-SB-2-02D	Solid	05/01/18 13:50	05/09/18 09:20
320-39023-53	KLA02-SB2-02D	Solid	05/04/18 13:25	05/09/18 09:20
320-39023-54	KLA02-SB1-02D	Solid	05/04/18 13:45	05/09/18 09:20

TestAmerica Sacramento

# Sample Summary

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Matrix</b>	<b>Collected</b>	<b>Received</b>
320-39023-55	KLA05-SB1-01D	Solid	05/05/18 09:00	05/09/18 09:20
320-39023-56	ER-05	Water	05/06/18 16:00	05/08/18 09:00
320-39023-57	IDW-KINGSLEY-SO-LDOS01	Solid	05/07/18 09:45	05/08/18 09:00
320-39023-58	IDW-KINGSLEY-WA-LDOS01	Water	05/07/18 09:30	05/08/18 09:00
320-39023-59	KLA07-SD1-01D	Solid	05/06/18 11:30	05/08/18 09:00

**Leidos - Horsham Project Specific  
PFASs by LC/MS/MS Methods Data Verification/Validation**

**Project:** Kingsley

Page 1 of 10

**SDG No:** J39023

**Analysis:** PFC

**Laboratory:** Test America

**Method:** E537

**Matrix:** Water/Soil

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrity of the data were based on DOD QSM 5.1 guidance and examination of the following:

Case Narrative	Instrument Sensitivity Checks
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

**\* If this SDG requires full validation; recalculations from the raw data are required for one point for each ICAL, one CCV, one of each QC sample, and one field sample.**

**Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.**

**Remarks:** DoD QSM

Some results were qualified as estimated due to surrogate, IS, and/or MS/MSD discrepancies

Some results were qualified as non-detect due to blank contamination

Definition of Qualifiers:

"U", not detected at the associated level  
"UJ", not detected and associated value estimated  
"J", associated value estimated  
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Brooke Francis

QA Reviewed by: Brooke Francis

Date: 6/15/18

Date: \_\_\_\_\_

7/2/2018





**Injection Internal Standards (IS)**

List any field samples, field QC samples, or laboratory QC samples where injection internal standards are not within 50 to 150% of the peak areas from the ICAL midpoint or daily initial CCV, as applicable.

*\*\*See attached for additional discrepancies \*\**

**Deviations:**

Sample #	Injection IS/% Rec	Affected PFAS Compounds
KLA-01-SB1-01DL	PFOA 228222	
	0.....+	

**Actions:**

If any injection IS is <25%, qualify detects as J; non-detects as R

If any Injection IS is > upper control limit; qualify detects as J, no action for non-detects

If any surrogate is ≥ 25%, but < the lower control limit, then qualify detects as J, non-detects as UJ

**Injection IS - Target PFAS Compounds Associations:**

~~13C3-PFBA: PFBS~~

13C2-PFOA: PFOA, PFHxS, PFHpA *all compounds*

~~13C4-PFOS: PFOS, PFNA~~

~~13C2-PFDA: No PFAS project compounds~~

**Remarks:**

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FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-39023-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-225818/3 Date Analyzed: 05/28/2018 07:15  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.05.27LLADX\_003 Heated Purge: (Y/N) N  
 Calibration ID: 39198

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		5150922	2.70				
UPPER LIMIT		7726383	2.90				
LOWER LIMIT		2575461	2.50				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-225818/1		4948330	2.70				
CCVL 320-225818/2		4974159	2.70				
MB 320-223615/1-A		4525357	2.70				
LCS 320-223615/2-A		5050927	2.71				
CCV 320-225818/14		5195418	2.70				
CCV 320-225818/25		4983990	2.70				
CCV 320-225820/1		5071434	2.70				
MB 320-224065/1-A		4644358	2.71				
LCS 320-224065/2-A		5665654	2.71				
320-39023-1	MW-KLA01-01-01	5410474	2.70				
320-39023-2	MW-KLA02-01-01	1305306Q	2.71				
320-39023-3	MW-KLA03-01-01	5330619	2.71				
320-39023-5	MW-573-03-PRL05-01	2314739Q	2.71				
320-39023-5 MS	MW-573-03-PRL05-01 MS	2201473Q	2.71				
320-39023-5 MSD	MW-573-03-PRL05-01 MSD	2321634Q	2.72				
320-39023-6	MW-572-02-PRL05-01	4879691	2.71				
CCV 320-225820/12		4860082	2.71				
320-39023-7	MW-KLA06-01-01	1650740Q	2.72				
320-39023-49	MW-572-02-PRL05-01D	6287034	2.71				
CCV 320-225820/16		4898728	2.70				

13PFOA = 13C2-PFOA  
 13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 0.2 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-39023-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-225899/3 Date Analyzed: 05/29/2018 07:19  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.05.28LLB\_033.d Heated Purge: (Y/N) N  
 Calibration ID: 39198

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4832975	2.70				
UPPER LIMIT		7249463	2.90				
LOWER LIMIT		2416488	2.50				
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-39023-10 DL	KLA-01-SB1-02 DL	239883Q	2.71				
320-39023-39 DL	KLA06-SB1-01 DL	255085Q	2.71				
320-39023-40 DL	KLA06-SB1-02 DL	236462Q	2.71				
CCV 320-226044/8		4769042	2.71				
320-39023-41 DL2	KLA06-SB2-01 DL2	52350Q	2.71				
320-39023-41 MS DL2	KLA06-SB2-01 MS DL2	53260Q	2.72				
320-39023-41 MSD DL2	KLA06-SB2-01 MSD DL2	52931Q	2.71				
320-39023-42 DL2	KLA06-SB2-02 DL2	53215Q	2.71				
320-39023-52 DL2	KLA06-SB-2-02D DL2	56168Q	2.71				
320-39023-55 DL	KLA05-SB1-01D DL	55907Q	2.71				
320-39023-41 DL	KLA06-SB2-01 DL	500756Q	2.71				
320-39023-41 MS DL	KLA06-SB2-01 MS DL	488067Q	2.71				
320-39023-41 MSD DL	KLA06-SB2-01 MSD DL	522528Q	2.71				
CCV 320-226044/19		4840719	2.71				
320-39023-42 DL	KLA06-SB2-02 DL	481468Q	2.72				
320-39023-52 DL	KLA06-SB-2-02D DL	455759Q	2.71				
CCV 320-226044/23		4662987	2.71				
CCV 320-226051/1		4655044	2.71				
320-39023-34	KLA05-SB1-02	4607254	2.71				
320-39023-19 DL	KLA02-SB3-01 DL	243200Q	2.71				
320-39023-33 DL	KLA05-SB1-01 DL	270174Q	2.71				
320-39023-35 DL	KLA05-SB2-01 DL	520023Q	2.72				
320-39023-36 DL	KLA05-SB2-02 DL	523724Q	2.71				
320-39023-17 DL	KLA02-SB2-01 DL	54227Q	2.71				
CCV 320-226051/12		4909517	2.71				
320-39023-27 DL	KLA04-SB1-01 DL	52579Q	2.71				
320-39023-28 DL2	KLA04-SB1-02 DL2	52259Q	2.71				
320-39023-29 DL	KLA04-SB2-01 DL	51909Q	2.72				

13PFOA = 13C2-PFOA  
 13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 0.2 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-39023-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-225899/3 Date Analyzed: 05/29/2018 07:19  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.05.28LLB\_033.d Heated Purge: (Y/N) N  
 Calibration ID: 39198

	13PFOA		AREA #	RT #	AREA #	RT #	AREA #	RT #
	AREA #	RT #						
12/24 HOUR STD	4832975	2.70						
UPPER LIMIT	7249463	2.90						
LOWER LIMIT	2416488	2.50						
LAB SAMPLE ID	CLIENT SAMPLE ID							
320-39023-30 DL	KLA04-SB2-02 DL	52642Q	2.71					
320-39023-31 DL2	KLA04-SB3-01 DL2	57055Q	2.71					
320-39023-32 DL2	KLA04-SB3-02 DL2	56058Q	2.72					
320-39023-37 DL	KLA05-SB3-01 DL	50302Q	2.72					
320-39023-38 DL	KLA05-SB3-02 DL	50073Q	2.71					
CCV 320-226051/23		4597435	2.71					
320-39023-18 DL	KLA02-SB2-02 DL	244352Q	2.71					
320-39023-28 DL	KLA04-SB1-02 DL	237462Q	2.70					
320-39023-31 DL	KLA04-SB3-01 DL	252970Q	2.71					
320-39023-32 DL	KLA04-SB3-02 DL	242527Q	2.71					
320-39023-53 DL	KLA02-SB2-02D DL	281812Q	2.70					
CCV 320-226051/32		4791311	2.71					

13PFOA = 13C2-PFOA  
 13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 0.2 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-39023-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-226055/3 Date Analyzed: 05/29/2018 18:33  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.05.29LLB\_004.d Heated Purge: (Y/N) N  
 Calibration ID: 39198

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4490167	2.71				
UPPER LIMIT		6735251	2.91				
LOWER LIMIT		2245084	2.51				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-226055/1		4995766	2.71				
CCVL 320-226055/2		4987736	2.71				
320-39023-1 DL	MW-KLA01-01-01 DL	1186556Q	2.71				
320-39023-2 DL	MW-KLA02-01-01 DL	65701Q	2.72				
320-39023-3 DL	MW-KLA03-01-01 DL	120036Q	2.71				
320-39023-4 DL	MW-KLA04-01-01 DL	1297832Q	2.71				
320-39023-4	MW-KLA04-01-01	5705596	2.72				
320-39023-5 DL	MW-573-03-PRL05-01 DL	55596Q	2.71				
320-39023-5 MS DL	MW-573-03-PRL05-01 MS DL	56729Q	2.71				
320-39023-5 MSD DL	MW-573-03-PRL05-01 MSD DL	59482Q	2.71				
CCV 320-226055/14		4699321	2.72				
320-39023-6 DL	MW-572-02-PRL05-01 DL	680737Q	2.72				
320-39023-7 DL2	MW-KLA06-01-01 DL2	78115Q	2.71				
320-39023-49 DL	MW-572-02-PRL05-01D DL	689713Q	2.71				
320-39023-56	ER-05	4587675	2.71				
CCV 320-226055/25		4360000	2.71				

13PFOA = 13C2-PFOA  
 13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 0.2 minutes of internal standard RT

# Column used to flag values outside QC limits

**Surrogates/Extraction Internal Standards (IS)**

List any field samples, field QC samples, or laboratory QC samples where surrogates/extraction internal standards are not within 50% ± of their true value.

**Note:** Extraction Internal Standards and surrogates are the same thing. For purposes of data validation and applying validation reason codes, they will be treated as surrogates. Injection internal standards will be treated as internal standards and the use of internal standard reason codes will be used.

**Deviations:** *\*\*SEe attached for additional discrepancies\*\**

Sample #	Surrogate - % Rec	Affected PFAS Compounds
KLA-01-SB1-01	PFOS 48%	
KLA06-SB2-02	PFNA 44%	
	PFOS 40%	
KLA06-SB-2-02D	PFNA 47%	
	PFOS 44%	

**Actions:**

If any injection IS is <25%, qualify detects as J; non-detects as R

If any Injection IS is > upper control limit; qualify detects as J, no action for non-detects

If any surrogate is ≥ 25%, but < the lower control limit, then qualify detects as J, non-detects as UJ

**Surrogate - Target PFAS Compounds Associations:**

- 13C3-PFBS - PFBS
- 13C3-PFHxS - PFHxS
- 13C4-PFHpA - PFHpA
- 13C8-PFOA - PFOA
- 13C9-PFNA - PFNA
- 13C8-PFOS - PFOS

**Remarks:**

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FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-39023-1

SDG No.: \_\_\_\_\_

Matrix: Solid

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBS #	PFHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
KLA02-SB1-01	320-39023-15	81	93	88	93	86	100
KLA02-SB1-02	320-39023-16	71	81	77	84	76	85
KLA02-SB2-01	320-39023-17	78	85	78	94	55	66
KLA02-SB2-01 DL	320-39023-17 DL	94 M	72	66	87	68	84
KLA02-SB2-02	320-39023-18	82	78	72	89	60	71
KLA02-SB2-02 DL	320-39023-18 DL	71	78	82	91	71	86
KLA02-SB3-01	320-39023-19	78	86	82	92	68	85
KLA02-SB3-01 DL	320-39023-19 DL	77 M	84	75	91	74	100
KLA02-SB3-02	320-39023-20	75	80	80	90	76	92
KLA04-SB1-01	320-39023-27	87	98	87	88	30 Q	37 Q
KLA04-SB1-01 DL	320-39023-27 DL	99 M	77	67	93	70	79
KLA04-SB1-02	320-39023-28	95	85	78	84	26 Q	34 Q
KLA04-SB1-02 DL	320-39023-28 DL	70 M	84	71	84	59	76
KLA04-SB1-02 DL2	320-39023-28 DL2	96 M	80	76	95	63	73
KLA04-SB2-01	320-39023-29	96	88	86	83	18 Q	25 Q
KLA04-SB2-01 DL	320-39023-29 DL	111 M	74	64	80	58	68
KLA04-SB2-02	320-39023-30	125	69	65	82	39 Q	55
KLA04-SB2-02 DL	320-39023-30 DL	133 M	70	78	95	61	78
KLA04-SB3-01	320-39023-31	86	88	77	84	20 Q	28 Q
KLA04-SB3-01 DL	320-39023-31 DL	54	75	69	82	47 Q	59
KLA04-SB3-01 DL2	320-39023-31 DL2	71 M	74	53	78	57	73
KLA04-SB3-02	320-39023-32	109	77	65	87	39 Q	51
KLA04-SB3-02 DL	320-39023-32 DL	88	84	76	87	63	78
KLA04-SB3-02 DL2	320-39023-32 DL2	72 M	62	69	89	64	78
KLA05-SB1-01	320-39023-33	72	81	68	90	68	74
KLA05-SB1-01 DL	320-39023-33 DL	54	83	75	97	69	90
KLA05-SB1-02	320-39023-34	68	81	70	88	72	88
KLA05-SB2-01	320-39023-35	69	85	71	92	73	89
KLA05-SB2-01 DL	320-39023-35 DL	59	82	70	86	69	89
KLA05-SB2-02	320-39023-36	70	74	74	85	72	87
KLA05-SB2-02 DL	320-39023-36 DL	72	77	72	92	70	85
KLA05-SB3-01	320-39023-37	122	66	46 Q	87	13 Q	19 Q
KLA05-SB3-01 DL	320-39023-37 DL	60 M	80	75	82	53	68
KLA05-SB3-02	320-39023-38	73	81	73	87	40 Q	50
KLA05-SB3-02 DL	320-39023-38 DL	78 M	81	79	99	70	98

QC LIMITS

PFBS = 13C3-PFBS	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 18O2 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFOS = 13C4 PFOS	50-150
PFNA = 13C5 PFNA	50-150

# Column to be used to flag recovery values

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-39023-1

SDG No.: \_\_\_\_\_

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBS #	PFHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
MW-KLA01-01-01	320-39023-1	75	79	80	87	74	81
MW-KLA01-01-01 DL	320-39023-1 DL	72	77	72	83	67	77
MW-KLA02-01-01	320-39023-2	321 Q	44 Q	77	65	28 Q	40 Q
MW-KLA02-01-01 DL	320-39023-2 DL	176 Q	54	96	68	44 Q	53
MW-KLA03-01-01	320-39023-3	75	69	66	85	54	62
MW-KLA03-01-01 DL	320-39023-3 DL	68 M	72	72	83	75	77
MW-KLA04-01-01	320-39023-4	71	74	69	80	69	79
MW-KLA04-01-01 DL	320-39023-4 DL	63	65	62	75	62	67
MW-573-03-PRL05-01	320-39023-5	136	46 Q	54	77	48 Q	58
MW-573-03-PRL05-01 DL	320-39023-5 DL	99 M	64	73	73	66	69
MW-572-02-PRL05-01	320-39023-6	85	83	81	89	74	82
MW-572-02-PRL05-01 DL	320-39023-6 DL	69 M	79	77	92	75	84
MW-KLA06-01-01	320-39023-7	233 Q	37 Q	54	52	36 Q	50
MW-KLA06-01-01 DL2	320-39023-7 DL2	145 M	53	76	58	46 Q	51
MW-572-02-PRL05-01 D	320-39023-49	59	60	58	65	55	61
MW-572-02-PRL05-01 D DL	320-39023-49 DL	53	56	52	63	53	60
ER-05	320-39023-56	84	93	87	98	91	104
	MB 320-224065/1-A	88	93	94	103	92	106
	LCS 320-224065/2-A	66	70	70	74	66	72
MW-573-03-PRL05-01 MS	320-39023-5 MS	146	48 Q	55	80	48 Q	62
MW-573-03-PRL05-01 MS DL	320-39023-5 MS DL	107 M	64	82	86	61	71
MW-573-03-PRL05-01 MSD	320-39023-5 MSD	134	45 Q	54	76	45 Q	58
MW-573-03-PRL05-01 MSD DL	320-39023-5 MSD DL	107 M	65	76	76	64	72

QC LIMITS

PFBS = 13C3-PFBS	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 1802 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFOS = 13C4 PFOS	50-150
PFNA = 13C5 PFNA	50-150

# Column to be used to flag recovery values

FORM II EPA 537 (Mod)



**VI. Blanks (continued)**


Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

$$1.82 \text{ ng/L} * 0.01\text{L}/0.25\text{L} =$$

$$0.00909 \text{ ng/mL} * 10\text{mL}/0.25\text{L} =$$

**Deviations:**

Compound	Maximum Conc. Detected, (ppb)	Action Level (ppb)	Samples Affected
PFOS	1.82 ng/L	0.364 ng/L	320-224509 320-39023-8 MB 320-224509
PFHxS	0.00909 ng/mL	0.0909 ug/kg or 1.81 ng/L	CCB All samples
PFHpA ER-1	0.88 ng/L	4.40 ng/L 0.008 ug/kg	Sampled 5/1/18 Results either ND or >AL
PFOA	1.7 ng/L	8.5 ng/L 0.017 ug/kg	Results either ND or >AL
PFBS	0.40 ng/L	2.0 ng/L 0.004 ug/kg	
PFOS	8.7 ng/L	43.5 ng/L 0.087 ug/kg	Results either ND or >AL
PFOS FB	1.7 ng/L 8.5	8.5 ng/L 0.017 ug/kg	All samples Results either ND or >AL
PFOA ER-2	0.52 ng/L	2.6 ng/L 0.005 ug/kg	Sampled 5/2/18 Results either ND or >AL
PFOS	4.4 ng/L	22.0 ng/L 0.04 ug/kg	Results either ND or >AL
PFOS ER-4	1.3 ng/L	6.5 ng/L	Sampled 5/4/18 Results either ND or >AL
PFOA ER-5	0.74 ng/L 3.7	3.7 ng/L	Sampled 5/6/18 Results either ND or >AL
PFBS	0.52 ng/L 2.6	2.6 ng/L	
PFOS	13 ng/L 65	65 ng/L	Results either ND or >AL
			
Field (FB) and rinsate blanks (ER) prepared the same as aqueous samples so AL is ER*5 for any aqueous sample			

**Actions:**

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the LOD
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed.  
Unless the MB results are < 1/10 the amount in associated samples or < 10 the action level, which ever is greater

**Remarks:**

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**VII. Initial & Continuing Calibration**

Date of initial calibration: \_\_\_\_\_

%RSD of RFs < 20% or  $r^2 \geq 0.99$  for each analyte?

Analytes within 70-130% of their true value in each ICAL standard?

ICV within  $\pm 30\%$  of true value?

Date(s) of continuing calibration: \_\_\_\_\_

CCV analyzed at beginning and end of analytical sequence and after every 10 field samples?

CCV within  $\pm 30\%$  of true value?

Instrument sensitivity check (ISC) performed at the LOQ prior to analysis and every 12 hours?

ICS within  $\pm 30\%$  of true value?**Deviations:**

Compound	Date	r value	%Drift	Samples Affected

**Actions:**

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ), using professional judgement (i.e. if only the low standard is out, and the higher standards are in, then only qualify those results near the low standard).
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply.
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondetects require no action.
4. If a CCV is below the lower control limit but > 40% recovery, qualify results as estimated (J/UJ).
5. If a CCV is  $\leq 40\%$  recovery, qualify detects as estimated (J) and nondetects as rejected (R).
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If ISC is > UCL, estimate (J) detects, no action for non-detects; If ISC is < LCL, estimate data (J/UJ), if ISC is < 30% reject (R) non-detects

Remarks: \_\_\_\_\_

All calibration results met control limits

\_\_\_\_\_

\_\_\_\_\_

**IX. Matrix Spike/Matrix Spike Duplicate Information**

General MS/MSD Criteria:  
 percent recovery (%R) in-house limits  
 relative percent difference (RPD) 30% RPD

Project Sample(s) Spiked: MW-573-03-PRL05-01 MW-573-03-PRL05-01DL  
 KLA02-SB1-01 KLA06-SB2-01 KLA06-SB2-01DL  
 KLA07-SD1-01D

**Deviations:**

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected
PFHpA	125/141	76-124			KLA06-SB2-01
PFOA	151/205	76-121			KLA06-SB2-01
PFHpA	181/194	76-124			KLA06-SB2-01DL
PFOA	177/226	76-121			↓
PFBS	153	73-124			
PFOS	48	69-131			KLA02-SB1-01

**Actions:**

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
  2. If the spike recovery is below the lower control limit (LCL), qualify positive values as estimated (J). And non-detects as estimated (UJ).
  3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
  4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
  5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
  6. Use professional judgement for qualification of data for unspiked compounds
- \* If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

**Remarks:**

Sample concentrations > 4 x the spike amount precluded an assessment of accuracy; results were not qualified for samples with elevated native concentrations



# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-KLA01-01-01**

**Lab Sample ID: 320-39023-1**

Date Collected: 05/06/18 14:50

Matrix: Water

Date Received: 05/08/18 09:00

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	7.6		1.9	0.59	ng/L		05/18/18 10:26	05/28/18 11:18	1
Perfluorooctanoic acid (PFOA)	20		1.9	0.52	ng/L		05/18/18 10:26	05/28/18 11:18	1
Perfluorononanoic acid (PFNA)	0.56	J M J	1.9	0.50	ng/L		05/18/18 10:26	05/28/18 11:18	1
Perfluorobutanesulfonic acid (PFBS)	39	M =	1.9	0.44	ng/L		05/18/18 10:26	05/28/18 11:18	1
Perfluorohexanesulfonic acid (PFHxS)	220		1.9	0.37	ng/L		05/18/18 10:26	05/28/18 11:18	1
Perfluorooctanesulfonic acid (PFOS)	510	E *	3.9	1.1	ng/L		05/18/18 10:26	05/28/18 11:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	75		50 - 150				05/18/18 10:26	05/28/18 11:18	1
13C4-PFHpA	79		50 - 150				05/18/18 10:26	05/28/18 11:18	1
13C4 PFOA	87		50 - 150				05/18/18 10:26	05/28/18 11:18	1
13C5 PFNA	81		50 - 150				05/18/18 10:26	05/28/18 11:18	1
18O2 PFHxS	80		50 - 150				05/18/18 10:26	05/28/18 11:18	1
13C4 PFOS	74		50 - 150				05/18/18 10:26	05/28/18 11:18	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	7.5	J D *	9.7	2.9	ng/L		05/18/18 10:26	05/29/18 18:41	5
Perfluorooctanoic acid (PFOA)	22	D	9.7	2.6	ng/L		05/18/18 10:26	05/29/18 18:41	5
Perfluorononanoic acid (PFNA)	7.2	U M	9.7	2.5	ng/L		05/18/18 10:26	05/29/18 18:41	5
Perfluorobutanesulfonic acid (PFBS)	40	D M	9.7	2.2	ng/L		05/18/18 10:26	05/29/18 18:41	5
Perfluorohexanesulfonic acid (PFHxS)	230	D	9.7	1.8	ng/L		05/18/18 10:26	05/29/18 18:41	5
Perfluorooctanesulfonic acid (PFOS)	500	D J K01	19	5.3	ng/L		05/18/18 10:26	05/29/18 18:41	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	72		50 - 150				05/18/18 10:26	05/29/18 18:41	5
13C4-PFHpA	77		50 - 150				05/18/18 10:26	05/29/18 18:41	5
13C4 PFOA	83		50 - 150				05/18/18 10:26	05/29/18 18:41	5
13C5 PFNA	77		50 - 150				05/18/18 10:26	05/29/18 18:41	5
18O2 PFHxS	72		50 - 150				05/18/18 10:26	05/29/18 18:41	5
13C4 PFOS	67		50 - 150				05/18/18 10:26	05/29/18 18:41	5

**Client Sample ID: MW-KLA02-01-01**

**Lab Sample ID: 320-39023-2**

Date Collected: 05/06/18 12:05

Matrix: Water

Date Received: 05/09/18 09:20

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	7300	E *	1.8	0.55	ng/L		05/18/18 10:26	05/28/18 11:26	1
Perfluorooctanoic acid (PFOA)	13000	E M *	1.8	0.49	ng/L		05/18/18 10:26	05/28/18 11:26	1
Perfluorononanoic acid (PFNA)	340	M J G02 K01	1.8	0.47	ng/L		05/18/18 10:26	05/28/18 11:26	1
Perfluorobutanesulfonic acid (PFBS)	1500	E M *	1.8	0.42	ng/L		05/18/18 10:26	05/28/18 11:26	1
Perfluorohexanesulfonic acid (PFHxS)	14000	E M *	1.8	0.34	ng/L		05/18/18 10:26	05/28/18 11:26	1
Perfluorooctanesulfonic acid (PFOS)	88000	E M *	3.6	1.0	ng/L		05/18/18 10:26	05/28/18 11:26	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-KLA02-01-01**

**Lab Sample ID: 320-39023-2**

**Date Collected: 05/06/18 12:05**

**Matrix: Water**

**Date Received: 05/09/18 09:20**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	321	Q	50 - 150	05/18/18 10:26	05/28/18 11:26	1
13C4-PFHpA	44	Q	50 - 150	05/18/18 10:26	05/28/18 11:26	1
13C4 PFOA	65		50 - 150	05/18/18 10:26	05/28/18 11:26	1
13C5 PFNA	40	Q	50 - 150	05/18/18 10:26	05/28/18 11:26	1
18O2 PFHxS	77		50 - 150	05/18/18 10:26	05/28/18 11:26	1
13C4 PFOS	28	Q	50 - 150	05/18/18 10:26	05/28/18 11:26	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	7700	D <del>+</del> * J K01	180	55	ng/L		05/18/18 10:26	05/29/18 18:49	100
Perfluorooctanoic acid (PFOA)	21000	D <del>+</del> * J K01	180	49	ng/L		05/18/18 10:26	05/29/18 18:49	100
Perfluorononanoic acid (PFNA)	340	D M * <del>J K01</del>	180	47	ng/L		05/18/18 10:26	05/29/18 18:49	100
Perfluorobutanesulfonic acid (PFBS)	9700	D <del>+</del> * J K01	180	42	ng/L		05/18/18 10:26	05/29/18 18:49	100
Perfluorohexanesulfonic acid (PFHxS)	66000	E D J K01 , N03	180	34	ng/L		05/18/18 10:26	05/29/18 18:49	100
Perfluorooctanesulfonic acid (PFOS)	380000	E D J G02 K01 N03	360	100	ng/L		05/18/18 10:26	05/29/18 18:49	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	176	Q	50 - 150	05/18/18 10:26	05/29/18 18:49	100
13C4-PFHpA	54		50 - 150	05/18/18 10:26	05/29/18 18:49	100
13C4 PFOA	68		50 - 150	05/18/18 10:26	05/29/18 18:49	100
13C5 PFNA	53		50 - 150	05/18/18 10:26	05/29/18 18:49	100
18O2 PFHxS	96		50 - 150	05/18/18 10:26	05/29/18 18:49	100
13C4 PFOS	44	Q	50 - 150	05/18/18 10:26	05/29/18 18:49	100

**Client Sample ID: MW-KLA03-01-01**

**Lab Sample ID: 320-39023-3**

**Date Collected: 05/06/18 15:55**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	200		2.0	0.61	ng/L		05/18/18 10:26	05/28/18 11:34	1
Perfluorooctanoic acid (PFOA)	290		2.0	0.54	ng/L		05/18/18 10:26	05/28/18 11:34	1
Perfluorononanoic acid (PFNA)	16	M =	2.0	0.52	ng/L		05/18/18 10:26	05/28/18 11:34	1
Perfluorobutanesulfonic acid (PFBS)	180		2.0	0.46	ng/L		05/18/18 10:26	05/28/18 11:34	1
Perfluorohexanesulfonic acid (PFHxS)	1800	E *	2.0	0.38	ng/L		05/18/18 10:26	05/28/18 11:34	1
Perfluorooctanesulfonic acid (PFOS)	5200	E *	4.0	1.1	ng/L		05/18/18 10:26	05/28/18 11:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	75		50 - 150	05/18/18 10:26	05/28/18 11:34	1
13C4-PFHpA	69		50 - 150	05/18/18 10:26	05/28/18 11:34	1
13C4 PFOA	85		50 - 150	05/18/18 10:26	05/28/18 11:34	1
13C5 PFNA	62		50 - 150	05/18/18 10:26	05/28/18 11:34	1
18O2 PFHxS	66		50 - 150	05/18/18 10:26	05/28/18 11:34	1
13C4 PFOS	54		50 - 150	05/18/18 10:26	05/28/18 11:34	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	190	D *	100	30	ng/L		05/18/18 10:26	05/29/18 19:04	50

N03: Professional judgment used to qualify data that exceeded calibration range after maximum dilution

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-KLA03-01-01**

**Lab Sample ID: 320-39023-3**

**Date Collected: 05/06/18 15:55**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	300	D *	100	27	ng/L		05/18/18 10:26	05/29/18 19:04	50
Perfluorononanoic acid (PFNA)	75	U *	100	26	ng/L		05/18/18 10:26	05/29/18 19:04	50
Perfluorobutanesulfonic acid (PFBS)	170	D *	100	23	ng/L		05/18/18 10:26	05/29/18 19:04	50
Perfluorohexanesulfonic acid (PFHxS)	2700	D J K01	100	19	ng/L		05/18/18 10:26	05/29/18 19:04	50
Perfluorooctanesulfonic acid (PFOS)	6100	D M J K01	200	55	ng/L		05/18/18 10:26	05/29/18 19:04	50
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	68	M	50 - 150				05/18/18 10:26	05/29/18 19:04	50
13C4-PFHpA	72		50 - 150				05/18/18 10:26	05/29/18 19:04	50
13C4 PFOA	83		50 - 150				05/18/18 10:26	05/29/18 19:04	50
13C5 PFNA	77		50 - 150				05/18/18 10:26	05/29/18 19:04	50
18O2 PFHxS	72		50 - 150				05/18/18 10:26	05/29/18 19:04	50
13C4 PFOS	75		50 - 150				05/18/18 10:26	05/29/18 19:04	50

**Client Sample ID: MW-KLA04-01-01**

**Lab Sample ID: 320-39023-4**

**Date Collected: 05/06/18 14:15**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	27		2.0	0.60	ng/L		05/18/18 10:26	05/29/18 19:20	1
Perfluorooctanoic acid (PFOA)	41		2.0	0.53	ng/L		05/18/18 10:26	05/29/18 19:20	1
Perfluorononanoic acid (PFNA)	1.5	U M U	2.0	0.51	ng/L		05/18/18 10:26	05/29/18 19:20	1
Perfluorobutanesulfonic acid (PFBS)	96		2.0	0.45	ng/L		05/18/18 10:26	05/29/18 19:20	1
Perfluorohexanesulfonic acid (PFHxS)	610	E *	2.0	0.38	ng/L		05/18/18 10:26	05/29/18 19:20	1
Perfluorooctanesulfonic acid (PFOS)	100		4.0	1.1	ng/L		05/18/18 10:26	05/29/18 19:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	71		50 - 150				05/18/18 10:26	05/29/18 19:20	1
13C4-PFHpA	74		50 - 150				05/18/18 10:26	05/29/18 19:20	1
13C4 PFOA	80		50 - 150				05/18/18 10:26	05/29/18 19:20	1
13C5 PFNA	79		50 - 150				05/18/18 10:26	05/29/18 19:20	1
18O2 PFHxS	69		50 - 150				05/18/18 10:26	05/29/18 19:20	1
13C4 PFOS	69		50 - 150				05/18/18 10:26	05/29/18 19:20	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	31	D *	9.9	3.0	ng/L		05/18/18 10:26	05/29/18 19:12	5
Perfluorooctanoic acid (PFOA)	43	D *	9.9	2.7	ng/L		05/18/18 10:26	05/29/18 19:12	5
Perfluorononanoic acid (PFNA)	7.4	U M *	9.9	2.6	ng/L		05/18/18 10:26	05/29/18 19:12	5
Perfluorobutanesulfonic acid (PFBS)	95	D *	9.9	2.3	ng/L		05/18/18 10:26	05/29/18 19:12	5
Perfluorohexanesulfonic acid (PFHxS)	690	D J K01	9.9	1.9	ng/L		05/18/18 10:26	05/29/18 19:12	5
Perfluorooctanesulfonic acid (PFOS)	100	D *	20	5.4	ng/L		05/18/18 10:26	05/29/18 19:12	5

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-KLA04-01-01**

**Lab Sample ID: 320-39023-4**

**Date Collected: 05/06/18 14:15**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	63		50 - 150	05/18/18 10:26	05/29/18 19:12	5
13C4-PFHpA	65		50 - 150	05/18/18 10:26	05/29/18 19:12	5
13C4 PFOA	75		50 - 150	05/18/18 10:26	05/29/18 19:12	5
13C5 PFNA	67		50 - 150	05/18/18 10:26	05/29/18 19:12	5
18O2 PFHxS	62		50 - 150	05/18/18 10:26	05/29/18 19:12	5
13C4 PFOS	62		50 - 150	05/18/18 10:26	05/29/18 19:12	5

**Client Sample ID: MW-573-03-PRL05-01**

**Lab Sample ID: 320-39023-5**

**Date Collected: 05/06/18 09:15**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	4400	E J1 *	2.0	0.60	ng/L		05/18/18 10:26	05/28/18 11:50	1
Perfluorooctanoic acid (PFOA)	4700	E J1 *	2.0	0.54	ng/L		05/18/18 10:26	05/28/18 11:50	1
Perfluorononanoic acid (PFNA)	200	J1 J K01	2.0	0.52	ng/L		05/18/18 10:26	05/28/18 11:50	1
Perfluorobutanesulfonic acid (PFBS)	1900	E J1 M *	2.0	0.46	ng/L		05/18/18 10:26	05/28/18 11:50	1
Perfluorohexanesulfonic acid (PFHxS)	12000	E J1 *	2.0	0.38	ng/L		05/18/18 10:26	05/28/18 11:50	1
Perfluorooctanesulfonic acid (PFOS)	32000	J1 E M *	4.0	1.1	ng/L		05/18/18 10:26	05/28/18 11:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	136		50 - 150	05/18/18 10:26	05/28/18 11:50	1
13C4-PFHpA	46	Q	50 - 150	05/18/18 10:26	05/28/18 11:50	1
13C4 PFOA	77		50 - 150	05/18/18 10:26	05/28/18 11:50	1
13C5 PFNA	58		50 - 150	05/18/18 10:26	05/28/18 11:50	1
18O2 PFHxS	54		50 - 150	05/18/18 10:26	05/28/18 11:50	1
13C4 PFOS	48	Q	50 - 150	05/18/18 10:26	05/28/18 11:50	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5100	J1 D J K01	200	60	ng/L		05/18/18 10:26	05/29/18 19:28	100
Perfluorooctanoic acid (PFOA)	6700	J1 D J K01	200	54	ng/L		05/18/18 10:26	05/29/18 19:28	100
Perfluorononanoic acid (PFNA)	190	J J1 D M *	200	52	ng/L		05/18/18 10:26	05/29/18 19:28	100
Perfluorobutanesulfonic acid (PFBS)	3900	J1 D J K01	200	46	ng/L		05/18/18 10:26	05/29/18 19:28	100
Perfluorohexanesulfonic acid (PFHxS)	39000	E J1 D J K01 NO3	200	38	ng/L		05/18/18 10:26	05/29/18 19:28	100
Perfluorooctanesulfonic acid (PFOS)	63000	J1 E D J K01 NO3	400	110	ng/L		05/18/18 10:26	05/29/18 19:28	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	99	M	50 - 150	05/18/18 10:26	05/29/18 19:28	100
13C4-PFHpA	64		50 - 150	05/18/18 10:26	05/29/18 19:28	100
13C4 PFOA	73		50 - 150	05/18/18 10:26	05/29/18 19:28	100
13C5 PFNA	69		50 - 150	05/18/18 10:26	05/29/18 19:28	100
18O2 PFHxS	73		50 - 150	05/18/18 10:26	05/29/18 19:28	100
13C4 PFOS	66		50 - 150	05/18/18 10:26	05/29/18 19:28	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-572-02-PRL05-01**

**Lab Sample ID: 320-39023-6**

Date Collected: 05/06/18 10:30

Matrix: Water

Date Received: 05/08/18 09:00

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	25		1.9	0.57	ng/L		05/18/18 10:26	05/28/18 12:13	1
Perfluorooctanoic acid (PFOA)	56		1.9	0.51	ng/L		05/18/18 10:26	05/28/18 12:13	1
Perfluorononanoic acid (PFNA)	3.8		1.9	0.49	ng/L		05/18/18 10:26	05/28/18 12:13	1
Perfluorobutanesulfonic acid (PFBS)	27		1.9	0.43	ng/L		05/18/18 10:26	05/28/18 12:13	1
Perfluorohexanesulfonic acid (PFHxS)	360	E *	1.9	0.36	ng/L		05/18/18 10:26	05/28/18 12:13	1
Perfluorooctanesulfonic acid (PFOS)	1100	E M *	3.8	1.0	ng/L		05/18/18 10:26	05/28/18 12:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	85		50 - 150				05/18/18 10:26	05/28/18 12:13	1
13C4-PFHpA	83		50 - 150				05/18/18 10:26	05/28/18 12:13	1
13C4 PFOA	89		50 - 150				05/18/18 10:26	05/28/18 12:13	1
13C5 PFNA	82		50 - 150				05/18/18 10:26	05/28/18 12:13	1
18O2 PFHxS	81		50 - 150				05/18/18 10:26	05/28/18 12:13	1
13C4 PFOS	74		50 - 150				05/18/18 10:26	05/28/18 12:13	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	23	D *	19	5.7	ng/L		05/18/18 10:26	05/29/18 20:07	10
Perfluorooctanoic acid (PFOA)	55	D *	19	5.1	ng/L		05/18/18 10:26	05/29/18 20:07	10
Perfluorononanoic acid (PFNA)	14	U M *	19	4.9	ng/L		05/18/18 10:26	05/29/18 20:07	10
Perfluorobutanesulfonic acid (PFBS)	27	D *	19	4.3	ng/L		05/18/18 10:26	05/29/18 20:07	10
Perfluorohexanesulfonic acid (PFHxS)	360	D J K01	19	3.6	ng/L		05/18/18 10:26	05/29/18 20:07	10
Perfluorooctanesulfonic acid (PFOS)	1100	D J K01	38	10	ng/L		05/18/18 10:26	05/29/18 20:07	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	69	M	50 - 150				05/18/18 10:26	05/29/18 20:07	10
13C4-PFHpA	79		50 - 150				05/18/18 10:26	05/29/18 20:07	10
13C4 PFOA	92		50 - 150				05/18/18 10:26	05/29/18 20:07	10
13C5 PFNA	84		50 - 150				05/18/18 10:26	05/29/18 20:07	10
18O2 PFHxS	77		50 - 150				05/18/18 10:26	05/29/18 20:07	10
13C4 PFOS	75		50 - 150				05/18/18 10:26	05/29/18 20:07	10

**Client Sample ID: MW-KLA06-01-01**

**Lab Sample ID: 320-39023-7**

Date Collected: 05/06/18 13:15

Matrix: Water

Date Received: 05/08/18 09:00

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	6100	E *	1.9	0.59	ng/L		05/18/18 10:26	05/28/18 12:29	1
Perfluorooctanoic acid (PFOA)	11000	E M	1.9	0.52	ng/L		05/18/18 10:26	05/28/18 12:29	1
Perfluorononanoic acid (PFNA)	500	E M	1.9	0.50	ng/L		05/18/18 10:26	05/28/18 12:29	1
Perfluorobutanesulfonic acid (PFBS)	1600	E	1.9	0.45	ng/L		05/18/18 10:26	05/28/18 12:29	1
Perfluorohexanesulfonic acid (PFHxS)	17000	E M	1.9	0.37	ng/L		05/18/18 10:26	05/28/18 12:29	1
Perfluorooctanesulfonic acid (PFOS)	57000	E	3.9	1.1	ng/L		05/18/18 10:26	05/28/18 12:29	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-KLA06-01-01**

**Lab Sample ID: 320-39023-7**

Date Collected: 05/06/18 13:15

Matrix: Water

Date Received: 05/08/18 09:00

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	233	Q	50 - 150	05/18/18 10:26	05/28/18 12:29	1
13C4-PFHpa	37	Q	50 - 150	05/18/18 10:26	05/28/18 12:29	1
13C4 PFOA	52		50 - 150	05/18/18 10:26	05/28/18 12:29	1
13C5 PFNA	50		50 - 150	05/18/18 10:26	05/28/18 12:29	1
18O2 PFHxS	54		50 - 150	05/18/18 10:26	05/28/18 12:29	1
13C4 PFOS	36	Q	50 - 150	05/18/18 10:26	05/28/18 12:29	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5400	D J K01	190	59	ng/L		05/18/18 10:26	05/29/18 20:31	100
Perfluorooctanoic acid (PFOA)	14000	D J K01	190	52	ng/L		05/18/18 10:26	05/29/18 20:31	100
Perfluorononanoic acid (PFNA)	490	D J K01	190	50	ng/L		05/18/18 10:26	05/29/18 20:31	100
Perfluorobutanesulfonic acid (PFBS)	7900	D J K01	190	45	ng/L		05/18/18 10:26	05/29/18 20:31	100
Perfluorohexanesulfonic acid (PFHxS)	68000	E D J K01 N03	190	37	ng/L		05/18/18 10:26	05/29/18 20:31	100
Perfluorooctanesulfonic acid (PFOS)	130000	E D J G02 K01 N03	390	110	ng/L		05/18/18 10:26	05/29/18 20:31	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	145	M	50 - 150	05/18/18 10:26	05/29/18 20:31	100
13C4-PFHpa	53		50 - 150	05/18/18 10:26	05/29/18 20:31	100
13C4 PFOA	58		50 - 150	05/18/18 10:26	05/29/18 20:31	100
13C5 PFNA	51		50 - 150	05/18/18 10:26	05/29/18 20:31	100
18O2 PFHxS	76		50 - 150	05/18/18 10:26	05/29/18 20:31	100
13C4 PFOS	46	Q	50 - 150	05/18/18 10:26	05/29/18 20:31	100

**Client Sample ID: KLA08-SW1-01**

**Lab Sample ID: 320-39023-8**

Date Collected: 05/07/18 08:30

Matrix: Water

Date Received: 05/08/18 09:00

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	J M J	1.9	0.58	ng/L		05/21/18 12:01	05/31/18 04:51	1
Perfluorooctanoic acid (PFOA)	1.8	J M J	1.9	0.52	ng/L		05/21/18 12:01	05/31/18 04:51	1
Perfluorononanoic acid (PFNA)	0.95	J M J	1.9	0.50	ng/L		05/21/18 12:01	05/31/18 04:51	1
Perfluorobutanesulfonic acid (PFBS)	0.96	U M U	1.9	0.44	ng/L		05/21/18 12:01	05/31/18 04:51	1
Perfluorohexanesulfonic acid (PFHxS)	3.7	M =	1.9	0.36	ng/L		05/21/18 12:01	05/31/18 04:51	1
Perfluorooctanesulfonic acid (PFOS)	28	M =	3.8	1.1	ng/L		05/21/18 12:01	05/31/18 04:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	76		50 - 150	05/21/18 12:01	05/31/18 04:51	1
13C4-PFHpa	76		50 - 150	05/21/18 12:01	05/31/18 04:51	1
13C4 PFOA	95		50 - 150	05/21/18 12:01	05/31/18 04:51	1
13C5 PFNA	103		50 - 150	05/21/18 12:01	05/31/18 04:51	1
18O2 PFHxS	93		50 - 150	05/21/18 12:01	05/31/18 04:51	1
13C4 PFOS	101		50 - 150	05/21/18 12:01	05/31/18 04:51	1

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA-01-SB1-01**

**Lab Sample ID: 320-39023-9**

Date Collected: 05/02/18 14:00

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 79.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.38		0.38	0.098	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
Perfluorooctanoic acid (PFOA)	3.9		0.38	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
Perfluorononanoic acid (PFNA)	0.25	U M U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
Perfluorobutanesulfonic acid (PFBS)	0.31	J	0.50	0.074	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
Perfluorohexanesulfonic acid (PFHxS)	18		0.38	0.078	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
Perfluorooctanesulfonic acid (PFOS)	240	E *	1.3	0.30	ug/Kg	☼	05/14/18 13:10	05/29/18 03:32	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	74		50 - 150				05/14/18 13:10	05/29/18 03:32	1
13C4-PFHpA	82		50 - 150				05/14/18 13:10	05/29/18 03:32	1
13C4 PFOA	86		50 - 150				05/14/18 13:10	05/29/18 03:32	1
13C5 PFNA	60		50 - 150				05/14/18 13:10	05/29/18 03:32	1
18O2 PFHxS	78		50 - 150				05/14/18 13:10	05/29/18 03:32	1
13C4 PFOS	48	Q	50 - 150				05/14/18 13:10	05/29/18 03:32	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.0	U *	7.5	2.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
Perfluorooctanoic acid (PFOA)	3.9	J D M *	7.5	2.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
Perfluorononanoic acid (PFNA)	5.0	U *	7.5	2.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
Perfluorobutanesulfonic acid (PFBS)	4.5	U *	10	1.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
Perfluorohexanesulfonic acid (PFHxS)	17	D *	7.5	1.6	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
Perfluorooctanesulfonic acid (PFOS)	430	D J K01	25	6.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:07	20
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	79	M	50 - 150				05/14/18 13:10	05/29/18 11:07	20
13C4-PFHpA	89		50 - 150				05/14/18 13:10	05/29/18 11:07	20
13C4 PFOA	90		50 - 150				05/14/18 13:10	05/29/18 11:07	20
13C5 PFNA	90		50 - 150				05/14/18 13:10	05/29/18 11:07	20
18O2 PFHxS	82		50 - 150				05/14/18 13:10	05/29/18 11:07	20
13C4 PFOS	74		50 - 150				05/14/18 13:10	05/29/18 11:07	20

**Client Sample ID: KLA-01-SB1-02**

**Lab Sample ID: 320-39023-10**

Date Collected: 05/02/18 14:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.32	J	0.38	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1
Perfluorooctanoic acid (PFOA)	1.0		0.38	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1
Perfluorononanoic acid (PFNA)	0.26	U M U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1
Perfluorobutanesulfonic acid (PFBS)	0.31	J	0.51	0.075	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1
Perfluorohexanesulfonic acid (PFHxS)	9.1		0.38	0.079	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1
Perfluorooctanesulfonic acid (PFOS)	150	E *	1.3	0.31	ug/Kg	☼	05/14/18 13:10	05/29/18 03:40	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA-01-SB1-02**

**Lab Sample ID: 320-39023-10**

**Date Collected: 05/02/18 14:10**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 77.4**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	69		50 - 150	05/14/18 13:10	05/29/18 03:40	1
13C4-PFHpA	83		50 - 150	05/14/18 13:10	05/29/18 03:40	1
13C4 PFOA	82		50 - 150	05/14/18 13:10	05/29/18 03:40	1
13C5 PFNA	67		50 - 150	05/14/18 13:10	05/29/18 03:40	1
18O2 PFHxS	75		50 - 150	05/14/18 13:10	05/29/18 03:40	1
13C4 PFOS	54		50 - 150	05/14/18 13:10	05/29/18 03:40	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.1	U *	7.7	2.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20
Perfluorooctanoic acid (PFOA)	5.1	U M *	7.7	2.6	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20
Perfluorononanoic acid (PFNA)	5.1	U *	7.7	2.1	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20
Perfluorobutanesulfonic acid (PFBS)	4.6	U M *	10	1.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>9.1</b>	<b>D *</b>	7.7	1.6	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>210</b>	<b>D J K01</b>	26	6.1	ug/Kg	☼	05/14/18 13:10	05/29/18 11:15	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	71	M	50 - 150	05/14/18 13:10	05/29/18 11:15	20
13C4-PFHpA	78		50 - 150	05/14/18 13:10	05/29/18 11:15	20
13C4 PFOA	89		50 - 150	05/14/18 13:10	05/29/18 11:15	20
13C5 PFNA	79		50 - 150	05/14/18 13:10	05/29/18 11:15	20
18O2 PFHxS	70		50 - 150	05/14/18 13:10	05/29/18 11:15	20
13C4 PFOS	63		50 - 150	05/14/18 13:10	05/29/18 11:15	20

**Client Sample ID: KLA-01-SB2-01**

**Lab Sample ID: 320-39023-11**

**Date Collected: 05/02/18 13:15**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 87.9**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.22	U	0.34	0.088	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.30</b>	<b>J</b>	0.34	0.11	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1
Perfluorononanoic acid (PFNA)	0.22	U	0.34	0.091	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.072</b>	<b>J</b>	0.45	0.066	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.5</b>		0.34	0.070	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.7</b>		1.1	0.27	ug/Kg	☼	05/14/18 13:10	05/29/18 03:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150	05/14/18 13:10	05/29/18 03:48	1
13C4-PFHpA	84		50 - 150	05/14/18 13:10	05/29/18 03:48	1
13C4 PFOA	88		50 - 150	05/14/18 13:10	05/29/18 03:48	1
13C5 PFNA	92		50 - 150	05/14/18 13:10	05/29/18 03:48	1
18O2 PFHxS	71		50 - 150	05/14/18 13:10	05/29/18 03:48	1
13C4 PFOS	72		50 - 150	05/14/18 13:10	05/29/18 03:48	1

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA-01-SB2-02**

**Lab Sample ID: 320-39023-12**

Date Collected: 05/02/18 13:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 75.7

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.14	J	0.39	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Perfluorooctanoic acid (PFOA)	0.39		0.39	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Perfluorononanoic acid (PFNA)	0.26	U M U	0.39	0.11	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Perfluorobutanesulfonic acid (PFBS)	0.15	J	0.52	0.077	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Perfluorohexanesulfonic acid (PFHxS)	2.4		0.39	0.081	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Perfluorooctanesulfonic acid (PFOS)	3.2	M =	1.3	0.31	ug/Kg	☼	05/14/18 13:10	05/29/18 03:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	71		50 - 150				05/14/18 13:10	05/29/18 03:56	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	05/29/18 03:56	1
13C4 PFOA	84		50 - 150				05/14/18 13:10	05/29/18 03:56	1
13C5 PFNA	87		50 - 150				05/14/18 13:10	05/29/18 03:56	1
18O2 PFHxS	76		50 - 150				05/14/18 13:10	05/29/18 03:56	1
13C4 PFOS	74		50 - 150				05/14/18 13:10	05/29/18 03:56	1

**Client Sample ID: KLA-01-SB3-01**

**Lab Sample ID: 320-39023-13**

Date Collected: 05/02/18 14:25

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.099	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Perfluorooctanoic acid (PFOA)	0.22	J	0.38	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Perfluorononanoic acid (PFNA)	0.25	U M U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Perfluorobutanesulfonic acid (PFBS)	0.13	J	0.51	0.075	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Perfluorohexanesulfonic acid (PFHxS)	1.3	U F06	0.38	0.079	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Perfluorooctanesulfonic acid (PFOS)	10		1.3	0.30	ug/Kg	☼	05/14/18 13:10	05/29/18 04:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	67		50 - 150				05/14/18 13:10	05/29/18 04:04	1
13C4-PFHpA	82		50 - 150				05/14/18 13:10	05/29/18 04:04	1
13C4 PFOA	84		50 - 150				05/14/18 13:10	05/29/18 04:04	1
13C5 PFNA	84		50 - 150				05/14/18 13:10	05/29/18 04:04	1
18O2 PFHxS	73		50 - 150				05/14/18 13:10	05/29/18 04:04	1
13C4 PFOS	68		50 - 150				05/14/18 13:10	05/29/18 04:04	1

**Client Sample ID: KLA-01-SB3-02**

**Lab Sample ID: 320-39023-14**

Date Collected: 05/02/18 14:30

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.099	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.38	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1
Perfluorononanoic acid (PFNA)	0.25	U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.075	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA-01-SB3-02**

**Lab Sample ID: 320-39023-14**

Date Collected: 05/02/18 14:30

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.32	J	0.38	0.078	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.3	0.30	ug/Kg	☼	05/14/18 13:10	05/29/18 04:12	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	67		50 - 150				05/14/18 13:10	05/29/18 04:12	1
13C4-PFHpA	80		50 - 150				05/14/18 13:10	05/29/18 04:12	1
13C4 PFOA	80		50 - 150				05/14/18 13:10	05/29/18 04:12	1
13C5 PFNA	82		50 - 150				05/14/18 13:10	05/29/18 04:12	1
18O2 PFHxS	70		50 - 150				05/14/18 13:10	05/29/18 04:12	1
13C4 PFOS	64		50 - 150				05/14/18 13:10	05/29/18 04:12	1

**Client Sample ID: KLA02-SB1-01**

**Lab Sample ID: 320-39023-15**

Date Collected: 05/04/18 13:40

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.16	J	0.39	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
Perfluorooctanoic acid (PFOA)	0.46	M =	0.39	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
Perfluorononanoic acid (PFNA)	0.26	U	0.39	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
Perfluorobutanesulfonic acid (PFBS)	0.25	J	0.52	0.077	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		0.39	0.081	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
Perfluorooctanesulfonic acid (PFOS)	7.6	J1 J H02	1.3	0.31	ug/Kg	☼	05/14/18 14:03	05/29/18 07:43	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	81		50 - 150				05/14/18 14:03	05/29/18 07:43	1
13C4-PFHpA	93		50 - 150				05/14/18 14:03	05/29/18 07:43	1
13C4 PFOA	93		50 - 150				05/14/18 14:03	05/29/18 07:43	1
13C5 PFNA	100		50 - 150				05/14/18 14:03	05/29/18 07:43	1
18O2 PFHxS	88		50 - 150				05/14/18 14:03	05/29/18 07:43	1
13C4 PFOS	86		50 - 150				05/14/18 14:03	05/29/18 07:43	1

**Client Sample ID: KLA02-SB1-02**

**Lab Sample ID: 320-39023-16**

Date Collected: 05/04/18 13:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 80.8

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.18	J	0.36	0.095	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1
Perfluorooctanoic acid (PFOA)	0.28	J M J	0.36	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1
Perfluorononanoic acid (PFNA)	0.24	U M U	0.36	0.098	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1
Perfluorobutanesulfonic acid (PFBS)	0.22	J	0.49	0.072	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1
Perfluorohexanesulfonic acid (PFHxS)	1.6		0.36	0.075	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1
Perfluorooctanesulfonic acid (PFOS)	6.1		1.2	0.29	ug/Kg	☼	05/14/18 14:03	05/29/18 08:07	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA02-SB1-02**

**Lab Sample ID: 320-39023-16**

Date Collected: 05/04/18 13:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 80.8

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	71		50 - 150	05/14/18 14:03	05/29/18 08:07	1
13C4-PFHpa	81		50 - 150	05/14/18 14:03	05/29/18 08:07	1
13C4 PFOA	84		50 - 150	05/14/18 14:03	05/29/18 08:07	1
13C5 PFNA	85		50 - 150	05/14/18 14:03	05/29/18 08:07	1
18O2 PFHxS	77		50 - 150	05/14/18 14:03	05/29/18 08:07	1
13C4 PFOS	76		50 - 150	05/14/18 14:03	05/29/18 08:07	1

**Client Sample ID: KLA02-SB2-01**

**Lab Sample ID: 320-39023-17**

Date Collected: 05/04/18 13:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 79.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.1		0.37	0.097	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1
Perfluorooctanoic acid (PFOA)	2.2		0.37	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1
Perfluorononanoic acid (PFNA)	0.38		0.37	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1
Perfluorobutanesulfonic acid (PFBS)	5.1		0.50	0.074	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1
Perfluorohexanesulfonic acid (PFHxS)	21		0.37	0.077	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1
Perfluorooctanesulfonic acid (PFOS)	270	E *	1.2	0.30	ug/Kg	☼	05/14/18 14:03	05/29/18 08:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	78		50 - 150	05/14/18 14:03	05/29/18 08:14	1
13C4-PFHpa	85		50 - 150	05/14/18 14:03	05/29/18 08:14	1
13C4 PFOA	94		50 - 150	05/14/18 14:03	05/29/18 08:14	1
13C5 PFNA	66		50 - 150	05/14/18 14:03	05/29/18 08:14	1
18O2 PFHxS	78		50 - 150	05/14/18 14:03	05/29/18 08:14	1
13C4 PFOS	55		50 - 150	05/14/18 14:03	05/29/18 08:14	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	25	U *	37	9.7	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100
Perfluorooctanoic acid (PFOA)	25	U *	37	12	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100
Perfluorononanoic acid (PFNA)	25	U *	37	10	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100
Perfluorobutanesulfonic acid (PFBS)	22	U *	50	7.4	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100
Perfluorohexanesulfonic acid (PFHxS)	21	J D *	37	7.7	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100
Perfluorooctanesulfonic acid (PFOS)	390	D J K01	120	30	ug/Kg	☼	05/14/18 14:03	05/29/18 15:02	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	94	M	50 - 150	05/14/18 14:03	05/29/18 15:02	100
13C4-PFHpa	72		50 - 150	05/14/18 14:03	05/29/18 15:02	100
13C4 PFOA	87		50 - 150	05/14/18 14:03	05/29/18 15:02	100
13C5 PFNA	84		50 - 150	05/14/18 14:03	05/29/18 15:02	100
18O2 PFHxS	66		50 - 150	05/14/18 14:03	05/29/18 15:02	100
13C4 PFOS	68		50 - 150	05/14/18 14:03	05/29/18 15:02	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA02-SB2-02**

**Lab Sample ID: 320-39023-18**

Date Collected: 05/04/18 13:25

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 59.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	6.0		0.51	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
Perfluorooctanoic acid (PFOA)	18		0.51	0.17	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
Perfluorononanoic acid (PFNA)	0.30	J	0.51	0.14	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
Perfluorobutanesulfonic acid (PFBS)	26		0.68	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
Perfluorohexanesulfonic acid (PFHxS)	110	E *	0.51	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
Perfluorooctanesulfonic acid (PFOS)	410	E *	1.7	0.41	ug/Kg	☼	05/14/18 14:03	05/29/18 08:22	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	82		50 - 150				05/14/18 14:03	05/29/18 08:22	1
13C4-PFHpA	78		50 - 150				05/14/18 14:03	05/29/18 08:22	1
13C4 PFOA	89		50 - 150				05/14/18 14:03	05/29/18 08:22	1
13C5 PFNA	71		50 - 150				05/14/18 14:03	05/29/18 08:22	1
18O2 PFHxS	72		50 - 150				05/14/18 14:03	05/29/18 08:22	1
13C4 PFOS	60		50 - 150				05/14/18 14:03	05/29/18 08:22	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	6.4	J D *	10	2.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
Perfluorooctanoic acid (PFOA)	17	D *	10	3.4	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
Perfluorononanoic acid (PFNA)	6.8	U *	10	2.7	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
Perfluorobutanesulfonic acid (PFBS)	30	D *	14	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
Perfluorohexanesulfonic acid (PFHxS)	130	D J K01	10	2.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
Perfluorooctanesulfonic acid (PFOS)	570	D M J K01	34	8.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:07	20
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	71		50 - 150				05/14/18 14:03	05/29/18 17:07	20
13C4-PFHpA	78		50 - 150				05/14/18 14:03	05/29/18 17:07	20
13C4 PFOA	91		50 - 150				05/14/18 14:03	05/29/18 17:07	20
13C5 PFNA	86		50 - 150				05/14/18 14:03	05/29/18 17:07	20
18O2 PFHxS	82		50 - 150				05/14/18 14:03	05/29/18 17:07	20
13C4 PFOS	71		50 - 150				05/14/18 14:03	05/29/18 17:07	20

**Client Sample ID: KLA02-SB3-01**

**Lab Sample ID: 320-39023-19**

Date Collected: 05/04/18 13:55

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 83.8

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.47		0.36	0.094	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1
Perfluorooctanoic acid (PFOA)	0.45		0.36	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1
Perfluorononanoic acid (PFNA)	0.40		0.36	0.098	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1
Perfluorobutanesulfonic acid (PFBS)	0.50		0.48	0.071	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1
Perfluorohexanesulfonic acid (PFHxS)	5.4		0.36	0.075	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1
Perfluorooctanesulfonic acid (PFOS)	110	E M *	1.2	0.29	ug/Kg	☼	05/14/18 14:03	05/29/18 08:30	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA02-SB3-01**

**Lab Sample ID: 320-39023-19**

**Date Collected: 05/04/18 13:55**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 83.8**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	78		50 - 150	05/14/18 14:03	05/29/18 08:30	1
13C4-PFHpA	86		50 - 150	05/14/18 14:03	05/29/18 08:30	1
13C4 PFOA	92		50 - 150	05/14/18 14:03	05/29/18 08:30	1
13C5 PFNA	85		50 - 150	05/14/18 14:03	05/29/18 08:30	1
18O2 PFHxS	82		50 - 150	05/14/18 14:03	05/29/18 08:30	1
13C4 PFOS	68		50 - 150	05/14/18 14:03	05/29/18 08:30	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	4.8	U *	7.2	1.9	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20
Perfluorooctanoic acid (PFOA)	4.8	U *	7.2	2.4	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20
Perfluorononanoic acid (PFNA)	4.8	U *	7.2	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20
Perfluorobutanesulfonic acid (PFBS)	4.3	U *	9.6	1.4	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20
Perfluorohexanesulfonic acid (PFHxS)	5.7	J D *	7.2	1.5	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20
Perfluorooctanesulfonic acid (PFOS)	140	D J K01	24	5.8	ug/Kg	☼	05/14/18 14:03	05/29/18 14:30	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	77	M	50 - 150	05/14/18 14:03	05/29/18 14:30	20
13C4-PFHpA	84		50 - 150	05/14/18 14:03	05/29/18 14:30	20
13C4 PFOA	91		50 - 150	05/14/18 14:03	05/29/18 14:30	20
13C5 PFNA	100		50 - 150	05/14/18 14:03	05/29/18 14:30	20
18O2 PFHxS	75		50 - 150	05/14/18 14:03	05/29/18 14:30	20
13C4 PFOS	74		50 - 150	05/14/18 14:03	05/29/18 14:30	20

**Client Sample ID: KLA02-SB3-02**

**Lab Sample ID: 320-39023-20**

**Date Collected: 05/04/18 14:00**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 72.4**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.81		0.41	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1
Perfluorooctanoic acid (PFOA)	1.0		0.41	0.14	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1
Perfluorononanoic acid (PFNA)	0.12	J M J	0.41	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1
Perfluorobutanesulfonic acid (PFBS)	1.8		0.55	0.081	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1
Perfluorohexanesulfonic acid (PFHxS)	9.4		0.41	0.086	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1
Perfluorooctanesulfonic acid (PFOS)	21	M =	1.4	0.33	ug/Kg	☼	05/14/18 14:03	05/29/18 08:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	75		50 - 150	05/14/18 14:03	05/29/18 08:38	1
13C4-PFHpA	80		50 - 150	05/14/18 14:03	05/29/18 08:38	1
13C4 PFOA	90		50 - 150	05/14/18 14:03	05/29/18 08:38	1
13C5 PFNA	92		50 - 150	05/14/18 14:03	05/29/18 08:38	1
18O2 PFHxS	80		50 - 150	05/14/18 14:03	05/29/18 08:38	1
13C4 PFOS	76		50 - 150	05/14/18 14:03	05/29/18 08:38	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA03-SB1-01**

**Lab Sample ID: 320-39023-21**

Date Collected: 05/01/18 09:00

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.7

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.39	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
Perfluorooctanoic acid (PFOA)	0.26	U M U	0.39	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
Perfluorononanoic acid (PFNA)	0.26	U	0.39	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.082</b>	<b>J</b>	0.52	0.076	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.99</b>		0.39	0.080	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.0</b>		1.3	0.31	ug/Kg	☼	05/14/18 13:10	05/29/18 04:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150				05/14/18 13:10	05/29/18 04:19	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	05/29/18 04:19	1
13C4 PFOA	85		50 - 150				05/14/18 13:10	05/29/18 04:19	1
13C5 PFNA	83		50 - 150				05/14/18 13:10	05/29/18 04:19	1
18O2 PFHxS	71		50 - 150				05/14/18 13:10	05/29/18 04:19	1
13C4 PFOS	69		50 - 150				05/14/18 13:10	05/29/18 04:19	1

**Client Sample ID: KLA03-SB1-02**

**Lab Sample ID: 320-39023-22**

Date Collected: 05/01/18 09:05

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 74.7

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.40	0.10	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.22</b>	<b>J M J</b>	0.40	0.13	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
Perfluorononanoic acid (PFNA)	0.26	U	0.40	0.11	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.21</b>	<b>J</b>	0.53	0.078	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.4</b>		0.40	0.082	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>17</b>		1.3	0.32	ug/Kg	☼	05/14/18 13:10	05/29/18 04:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	70		50 - 150				05/14/18 13:10	05/29/18 04:27	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	05/29/18 04:27	1
13C4 PFOA	87		50 - 150				05/14/18 13:10	05/29/18 04:27	1
13C5 PFNA	91		50 - 150				05/14/18 13:10	05/29/18 04:27	1
18O2 PFHxS	74		50 - 150				05/14/18 13:10	05/29/18 04:27	1
13C4 PFOS	71		50 - 150				05/14/18 13:10	05/29/18 04:27	1

**Client Sample ID: KLA03-SB2-01**

**Lab Sample ID: 320-39023-23**

Date Collected: 05/02/18 12:15

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 81.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.37	0.096	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.15</b>	<b>J</b>	0.37	0.12	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1
Perfluorononanoic acid (PFNA)	0.25	U M U	0.37	0.099	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.10</b>	<b>J</b>	0.49	0.072	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA03-SB2-01**

**Lab Sample ID: 320-39023-23**

Date Collected: 05/02/18 12:15

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 81.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.71		0.37	0.076	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1
Perfluorooctanesulfonic acid (PFOS)	3.4		1.2	0.29	ug/Kg	☼	05/14/18 13:10	06/06/18 22:47	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	69		50 - 150				05/14/18 13:10	06/06/18 22:47	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	06/06/18 22:47	1
13C4 PFOA	83		50 - 150				05/14/18 13:10	06/06/18 22:47	1
13C5 PFNA	81		50 - 150				05/14/18 13:10	06/06/18 22:47	1
18O2 PFHxS	73		50 - 150				05/14/18 13:10	06/06/18 22:47	1
13C4 PFOS	72		50 - 150				05/14/18 13:10	06/06/18 22:47	1

**Client Sample ID: KLA03-SB2-02**

**Lab Sample ID: 320-39023-24**

Date Collected: 05/02/18 12:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
Perfluorooctanoic acid (PFOA)	0.15	J	0.38	0.13	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
Perfluorononanoic acid (PFNA)	0.26	U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
Perfluorobutanesulfonic acid (PFBS)	0.15	J	0.51	0.075	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
Perfluorohexanesulfonic acid (PFHxS)	1.1		0.38	0.079	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
Perfluorooctanesulfonic acid (PFOS)	4.9	M =	1.3	0.31	ug/Kg	☼	05/14/18 13:10	06/06/18 22:55	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	68		50 - 150				05/14/18 13:10	06/06/18 22:55	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	06/06/18 22:55	1
13C4 PFOA	82		50 - 150				05/14/18 13:10	06/06/18 22:55	1
13C5 PFNA	78		50 - 150				05/14/18 13:10	06/06/18 22:55	1
18O2 PFHxS	75		50 - 150				05/14/18 13:10	06/06/18 22:55	1
13C4 PFOS	70		50 - 150				05/14/18 13:10	06/06/18 22:55	1

**Client Sample ID: KLA03-SB3-01**

**Lab Sample ID: 320-39023-25**

Date Collected: 05/01/18 08:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 74.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.36	J	0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1
Perfluorooctanoic acid (PFOA)	0.37	J	0.41	0.14	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1
Perfluorononanoic acid (PFNA)	0.27	U M U	0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1
Perfluorobutanesulfonic acid (PFBS)	0.21	J	0.54	0.080	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1
Perfluorohexanesulfonic acid (PFHxS)	2.7		0.41	0.084	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1
Perfluorooctanesulfonic acid (PFOS)	3.2		1.4	0.32	ug/Kg	☼	05/14/18 13:10	06/06/18 23:03	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

## Client Sample ID: KLA03-SB3-01

Date Collected: 05/01/18 08:45

Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-25

Matrix: Solid

Percent Solids: 74.9

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	78		50 - 150	05/14/18 13:10	06/06/18 23:03	1
13C4-PFHpA	85		50 - 150	05/14/18 13:10	06/06/18 23:03	1
13C4 PFOA	85		50 - 150	05/14/18 13:10	06/06/18 23:03	1
13C5 PFNA	87		50 - 150	05/14/18 13:10	06/06/18 23:03	1
18O2 PFHxS	83		50 - 150	05/14/18 13:10	06/06/18 23:03	1
13C4 PFOS	79		50 - 150	05/14/18 13:10	06/06/18 23:03	1

## Client Sample ID: KLA03-SB3-02

Date Collected: 05/01/18 08:50

Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-26

Matrix: Solid

Percent Solids: 73.6

### Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.59		0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1
Perfluorooctanoic acid (PFOA)	1.3		0.41	0.14	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1
Perfluorononanoic acid (PFNA)	0.27	U	0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1
Perfluorobutanesulfonic acid (PFBS)	0.75		0.54	0.080	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1
Perfluorohexanesulfonic acid (PFHxS)	12		0.41	0.084	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1
Perfluorooctanesulfonic acid (PFOS)	14	M =	1.4	0.32	ug/Kg	☼	05/14/18 13:10	06/06/18 23:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	77		50 - 150	05/14/18 13:10	06/06/18 23:10	1
13C4-PFHpA	85		50 - 150	05/14/18 13:10	06/06/18 23:10	1
13C4 PFOA	84		50 - 150	05/14/18 13:10	06/06/18 23:10	1
13C5 PFNA	83		50 - 150	05/14/18 13:10	06/06/18 23:10	1
18O2 PFHxS	79		50 - 150	05/14/18 13:10	06/06/18 23:10	1
13C4 PFOS	76		50 - 150	05/14/18 13:10	06/06/18 23:10	1

## Client Sample ID: KLA04-SB1-01

Date Collected: 05/04/18 08:35

Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-27

Matrix: Solid

Percent Solids: 72.6

### Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.66		0.42	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1
Perfluorooctanoic acid (PFOA)	3.2		0.42	0.14	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1
Perfluorononanoic acid (PFNA)	0.16	J M J G02	0.42	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1
Perfluorobutanesulfonic acid (PFBS)	0.45	J	0.56	0.082	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1
Perfluorohexanesulfonic acid (PFHxS)	24		0.42	0.086	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1
Perfluorooctanesulfonic acid (PFOS)	930	E *	1.4	0.33	ug/Kg	☼	05/14/18 14:03	05/29/18 08:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	87		50 - 150	05/14/18 14:03	05/29/18 08:54	1
13C4-PFHpA	98		50 - 150	05/14/18 14:03	05/29/18 08:54	1
13C4 PFOA	88		50 - 150	05/14/18 14:03	05/29/18 08:54	1
13C5 PFNA	37	Q	50 - 150	05/14/18 14:03	05/29/18 08:54	1
18O2 PFHxS	87		50 - 150	05/14/18 14:03	05/29/18 08:54	1
13C4 PFOS	30	Q	50 - 150	05/14/18 14:03	05/29/18 08:54	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

## Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	28	U *	42	11	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Perfluorooctanoic acid (PFOA)	28	U M *	42	14	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Perfluorononanoic acid (PFNA)	28	U *	42	11	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Perfluorobutanesulfonic acid (PFBS)	25	U *	56	8.2	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Perfluorohexanesulfonic acid (PFHxS)	23	J D *	42	8.6	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Perfluorooctanesulfonic acid (PFOS)	2200	D J K01	140	33	ug/Kg	☼	05/14/18 14:03	05/29/18 15:33	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	99	M	50 - 150				05/14/18 14:03	05/29/18 15:33	100
13C4-PFHpA	77		50 - 150				05/14/18 14:03	05/29/18 15:33	100
13C4 PFOA	93		50 - 150				05/14/18 14:03	05/29/18 15:33	100
13C5 PFNA	79		50 - 150				05/14/18 14:03	05/29/18 15:33	100
18O2 PFHxS	67		50 - 150				05/14/18 14:03	05/29/18 15:33	100
13C4 PFOS	70		50 - 150				05/14/18 14:03	05/29/18 15:33	100

## Client Sample ID: KLA04-SB1-02

Date Collected: 05/04/18 08:40  
Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-28

Matrix: Solid  
Percent Solids: 77.2

## Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	4.4		0.39	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Perfluorooctanoic acid (PFOA)	19		0.39	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Perfluorononanoic acid (PFNA)	0.60	M J G02	0.39	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Perfluorobutanesulfonic acid (PFBS)	14		0.52	0.077	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Perfluorohexanesulfonic acid (PFHxS)	130	E *	0.39	0.081	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Perfluorooctanesulfonic acid (PFOS)	1800	E M *	1.3	0.31	ug/Kg	☼	05/14/18 14:03	05/29/18 09:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	95		50 - 150				05/14/18 14:03	05/29/18 09:02	1
13C4-PFHpA	85		50 - 150				05/14/18 14:03	05/29/18 09:02	1
13C4 PFOA	84		50 - 150				05/14/18 14:03	05/29/18 09:02	1
13C5 PFNA	34	Q	50 - 150				05/14/18 14:03	05/29/18 09:02	1
18O2 PFHxS	78		50 - 150				05/14/18 14:03	05/29/18 09:02	1
13C4 PFOS	26	Q	50 - 150				05/14/18 14:03	05/29/18 09:02	1

## Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	4.0	J D *	7.8	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Perfluorooctanoic acid (PFOA)	19	D *	7.8	2.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Perfluorononanoic acid (PFNA)	5.2	U *	7.8	2.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Perfluorobutanesulfonic acid (PFBS)	15	D *	10	1.5	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Perfluorohexanesulfonic acid (PFHxS)	190	D J K01	7.8	1.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Perfluorooctanesulfonic acid (PFOS)	2900	E D *	26	6.3	ug/Kg	☼	05/14/18 14:03	05/29/18 17:15	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	70	M	50 - 150				05/14/18 14:03	05/29/18 17:15	20
13C4-PFHpA	84		50 - 150				05/14/18 14:03	05/29/18 17:15	20
13C4 PFOA	84		50 - 150				05/14/18 14:03	05/29/18 17:15	20
13C5 PFNA	76		50 - 150				05/14/18 14:03	05/29/18 17:15	20

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA04-SB1-02**

**Lab Sample ID: 320-39023-28**

Date Collected: 05/04/18 08:40

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 77.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	71		50 - 150	05/14/18 14:03	05/29/18 17:15	20
13C4 PFOS	59		50 - 150	05/14/18 14:03	05/29/18 17:15	20

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	26	U *	39	10	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100
Perfluorooctanoic acid (PFOA)	17	J D *	39	13	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100
Perfluorononanoic acid (PFNA)	26	U *	39	11	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100
Perfluorobutanesulfonic acid (PFBS)	10	J D *	52	7.7	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100
Perfluorohexanesulfonic acid (PFHxS)	160	D *	39	8.1	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100
Perfluorooctanesulfonic acid (PFOS)	3600	E D M J K01, N08	130	31	ug/Kg	☼	05/14/18 14:03	05/29/18 15:41	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	96	M	50 - 150	05/14/18 14:03	05/29/18 15:41	100
13C4-PFHpA	80		50 - 150	05/14/18 14:03	05/29/18 15:41	100
13C4 PFOA	95		50 - 150	05/14/18 14:03	05/29/18 15:41	100
13C5 PFNA	73		50 - 150	05/14/18 14:03	05/29/18 15:41	100
18O2 PFHxS	76		50 - 150	05/14/18 14:03	05/29/18 15:41	100
13C4 PFOS	63		50 - 150	05/14/18 14:03	05/29/18 15:41	100

**Client Sample ID: KLA04-SB2-01**

**Lab Sample ID: 320-39023-29**

Date Collected: 05/04/18 08:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	14		0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1
Perfluorooctanoic acid (PFOA)	27	E *	0.38	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1
Perfluorononanoic acid (PFNA)	1.6	M J G02	0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1
Perfluorobutanesulfonic acid (PFBS)	24	E *	0.51	0.075	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1
Perfluorohexanesulfonic acid (PFHxS)	140	E *	0.38	0.079	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1
Perfluorooctanesulfonic acid (PFOS)	2600	E *	1.3	0.31	ug/Kg	☼	05/14/18 14:03	05/29/18 09:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	96		50 - 150	05/14/18 14:03	05/29/18 09:09	1
13C4-PFHpA	88		50 - 150	05/14/18 14:03	05/29/18 09:09	1
13C4 PFOA	83		50 - 150	05/14/18 14:03	05/29/18 09:09	1
13C5 PFNA	25	Q	50 - 150	05/14/18 14:03	05/29/18 09:09	1
18O2 PFHxS	86		50 - 150	05/14/18 14:03	05/29/18 09:09	1
13C4 PFOS	18	Q	50 - 150	05/14/18 14:03	05/29/18 09:09	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	14	J D *	38	10	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100
Perfluorooctanoic acid (PFOA)	26	J D M J K01	38	13	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100
Perfluorononanoic acid (PFNA)	26	U M *	38	10	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA04-SB2-01**

**Lab Sample ID: 320-39023-29**

Date Collected: 05/04/18 08:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	14	J D J K01	51	7.5	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100
Perfluorohexanesulfonic acid (PFHxS)	200	D J K01	38	7.9	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100
Perfluorooctanesulfonic acid (PFOS)	6600	E D J K01, N03	130	31	ug/Kg	☼	05/14/18 14:03	05/29/18 15:49	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	111	M	50 - 150				05/14/18 14:03	05/29/18 15:49	100
13C4-PFHpA	74		50 - 150				05/14/18 14:03	05/29/18 15:49	100
13C4 PFOA	80		50 - 150				05/14/18 14:03	05/29/18 15:49	100
13C5 PFNA	68		50 - 150				05/14/18 14:03	05/29/18 15:49	100
18O2 PFHxS	64		50 - 150				05/14/18 14:03	05/29/18 15:49	100
13C4 PFOS	58		50 - 150				05/14/18 14:03	05/29/18 15:49	100

**Client Sample ID: KLA04-SB2-02**

**Lab Sample ID: 320-39023-30**

Date Collected: 05/04/18 08:25

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 76.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	45	E *	0.39	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Perfluorooctanoic acid (PFOA)	200	E *	0.39	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Perfluorononanoic acid (PFNA)	1.6		0.39	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Perfluorobutanesulfonic acid (PFBS)	91	E *	0.53	0.078	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Perfluorohexanesulfonic acid (PFHxS)	510	E *	0.39	0.082	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Perfluorooctanesulfonic acid (PFOS)	2100	E *	1.3	0.32	ug/Kg	☼	05/14/18 14:03	05/29/18 09:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	125		50 - 150				05/14/18 14:03	05/29/18 09:17	1
13C4-PFHpA	69		50 - 150				05/14/18 14:03	05/29/18 09:17	1
13C4 PFOA	82		50 - 150				05/14/18 14:03	05/29/18 09:17	1
13C5 PFNA	55		50 - 150				05/14/18 14:03	05/29/18 09:17	1
18O2 PFHxS	65		50 - 150				05/14/18 14:03	05/29/18 09:17	1
13C4 PFOS	39	Q	50 - 150				05/14/18 14:03	05/29/18 09:17	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	44	D J K01	39	10	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Perfluorooctanoic acid (PFOA)	210	D J K01	39	13	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Perfluorononanoic acid (PFNA)	26	U M *	39	11	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Perfluorobutanesulfonic acid (PFBS)	84	D J K01	53	7.8	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Perfluorohexanesulfonic acid (PFHxS)	1100	D J K01	39	8.2	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Perfluorooctanesulfonic acid (PFOS)	4800	E D M J K01, N03	30	32	ug/Kg	☼	05/14/18 14:03	05/29/18 15:57	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	133	M	50 - 150				05/14/18 14:03	05/29/18 15:57	100
13C4-PFHpA	70		50 - 150				05/14/18 14:03	05/29/18 15:57	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA04-SB2-02**

**Lab Sample ID: 320-39023-30**

Date Collected: 05/04/18 08:25

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 76.0

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	95		50 - 150	05/14/18 14:03	05/29/18 15:57	100
13C5 PFNA	78		50 - 150	05/14/18 14:03	05/29/18 15:57	100
18O2 PFHxS	78		50 - 150	05/14/18 14:03	05/29/18 15:57	100
13C4 PFOS	61		50 - 150	05/14/18 14:03	05/29/18 15:57	100

**Client Sample ID: KLA04-SB3-01**

**Lab Sample ID: 320-39023-31**

Date Collected: 05/04/18 08:05

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.8		0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1
Perfluorooctanoic acid (PFOA)	12		0.38	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1
Perfluorononanoic acid (PFNA)	1.1	M J G02	0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1
Perfluorobutanesulfonic acid (PFBS)	19		0.51	0.076	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1
Perfluorohexanesulfonic acid (PFHxS)	51	E *	0.38	0.079	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1
Perfluorooctanesulfonic acid (PFOS)	1600	E *	1.3	0.31	ug/Kg	☼	05/14/18 14:03	05/29/18 09:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	86		50 - 150	05/14/18 14:03	05/29/18 09:25	1
13C4-PFHpA	88		50 - 150	05/14/18 14:03	05/29/18 09:25	1
13C4 PFOA	84		50 - 150	05/14/18 14:03	05/29/18 09:25	1
13C5 PFNA	28	Q	50 - 150	05/14/18 14:03	05/29/18 09:25	1
18O2 PFHxS	77		50 - 150	05/14/18 14:03	05/29/18 09:25	1
13C4 PFOS	20	Q	50 - 150	05/14/18 14:03	05/29/18 09:25	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.7	J D *	7.7	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20
Perfluorooctanoic acid (PFOA)	12	D *	7.7	2.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20
Perfluorononanoic acid (PFNA)	5.1	U M *	7.7	2.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20
Perfluorobutanesulfonic acid (PFBS)	24	D *	10	1.5	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20
Perfluorohexanesulfonic acid (PFHxS)	53	D J K01	7.7	1.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20
Perfluorooctanesulfonic acid (PFOS)	3500	E D *	26	6.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:23	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	54		50 - 150	05/14/18 14:03	05/29/18 17:23	20
13C4-PFHpA	75		50 - 150	05/14/18 14:03	05/29/18 17:23	20
13C4 PFOA	82		50 - 150	05/14/18 14:03	05/29/18 17:23	20
13C5 PFNA	59		50 - 150	05/14/18 14:03	05/29/18 17:23	20
18O2 PFHxS	69		50 - 150	05/14/18 14:03	05/29/18 17:23	20
13C4 PFOS	47	Q	50 - 150	05/14/18 14:03	05/29/18 17:23	20

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	26	U *	38	10	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100
Perfluorooctanoic acid (PFOA)	13	J D *	38	13	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA04-SB3-01**

**Lab Sample ID: 320-39023-31**

Date Collected: 05/04/18 08:05

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	26	U *	38	10	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100
Perfluorobutanesulfonic acid (PFBS)	16	J D *	51	7.6	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100
Perfluorohexanesulfonic acid (PFHxS)	61	D *	38	7.9	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100
Perfluorooctanesulfonic acid (PFOS)	4500	E D J K01 , N03	130	31	ug/Kg	☼	05/14/18 14:03	05/29/18 16:12	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	71	M	50 - 150				05/14/18 14:03	05/29/18 16:12	100
13C4-PFHpA	74		50 - 150				05/14/18 14:03	05/29/18 16:12	100
13C4 PFOA	78		50 - 150				05/14/18 14:03	05/29/18 16:12	100
13C5 PFNA	73		50 - 150				05/14/18 14:03	05/29/18 16:12	100
18O2 PFHxS	53		50 - 150				05/14/18 14:03	05/29/18 16:12	100
13C4 PFOS	57		50 - 150				05/14/18 14:03	05/29/18 16:12	100

**Client Sample ID: KLA04-SB3-02**

**Lab Sample ID: 320-39023-32**

Date Collected: 05/04/18 08:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 65.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	29		0.46	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Perfluorooctanoic acid (PFOA)	83	E *	0.46	0.15	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Perfluorononanoic acid (PFNA)	1.2		0.46	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Perfluorobutanesulfonic acid (PFBS)	80	E *	0.61	0.091	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Perfluorohexanesulfonic acid (PFHxS)	410	E *	0.46	0.095	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Perfluorooctanesulfonic acid (PFOS)	1900	E M *	1.5	0.37	ug/Kg	☼	05/14/18 14:03	05/29/18 09:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	109		50 - 150				05/14/18 14:03	05/29/18 09:33	1
13C4-PFHpA	77		50 - 150				05/14/18 14:03	05/29/18 09:33	1
13C4 PFOA	87		50 - 150				05/14/18 14:03	05/29/18 09:33	1
13C5 PFNA	51		50 - 150				05/14/18 14:03	05/29/18 09:33	1
18O2 PFHxS	65		50 - 150				05/14/18 14:03	05/29/18 09:33	1
13C4 PFOS	39	Q	50 - 150				05/14/18 14:03	05/29/18 09:33	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	27	D *	9.2	2.4	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Perfluorooctanoic acid (PFOA)	85	D J K01	9.2	3.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Perfluorononanoic acid (PFNA)	6.1	U M *	9.2	2.5	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Perfluorobutanesulfonic acid (PFBS)	110	D J K01	12	1.8	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Perfluorohexanesulfonic acid (PFHxS)	730	E D *	9.2	1.9	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Perfluorooctanesulfonic acid (PFOS)	3500	E D M *	31	7.4	ug/Kg	☼	05/14/18 14:03	05/29/18 17:31	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	88		50 - 150				05/14/18 14:03	05/29/18 17:31	20

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA04-SB3-02**

**Lab Sample ID: 320-39023-32**

Date Collected: 05/04/18 08:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 65.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	84		50 - 150	05/14/18 14:03	05/29/18 17:31	20
13C4 PFOA	87		50 - 150	05/14/18 14:03	05/29/18 17:31	20
13C5 PFNA	78		50 - 150	05/14/18 14:03	05/29/18 17:31	20
18O2 PFHxS	76		50 - 150	05/14/18 14:03	05/29/18 17:31	20
13C4 PFOS	63		50 - 150	05/14/18 14:03	05/29/18 17:31	20

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	33	J D *	46	12	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100
Perfluorooctanoic acid (PFOA)	79	D *	46	15	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100
Perfluorononanoic acid (PFNA)	31	U M *	46	12	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100
Perfluorobutanesulfonic acid (PFBS)	110	D *	61	9.1	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100
Perfluorohexanesulfonic acid (PFHxS)	730	D J K01	46	9.5	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100
Perfluorooctanesulfonic acid (PFOS)	3800	E D M J K01 , N03	150	37	ug/Kg	☼	05/14/18 14:03	05/29/18 16:20	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	72	M	50 - 150	05/14/18 14:03	05/29/18 16:20	100
13C4-PFHpA	62		50 - 150	05/14/18 14:03	05/29/18 16:20	100
13C4 PFOA	89		50 - 150	05/14/18 14:03	05/29/18 16:20	100
13C5 PFNA	78		50 - 150	05/14/18 14:03	05/29/18 16:20	100
18O2 PFHxS	69		50 - 150	05/14/18 14:03	05/29/18 16:20	100
13C4 PFOS	64		50 - 150	05/14/18 14:03	05/29/18 16:20	100

**Client Sample ID: KLA05-SB1-01**

**Lab Sample ID: 320-39023-33**

Date Collected: 05/05/18 09:00

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 79.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.6		0.38	0.098	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1
Perfluorooctanoic acid (PFOA)	2.3		0.38	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1
Perfluorononanoic acid (PFNA)	0.61	M =	0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1
Perfluorobutanesulfonic acid (PFBS)	4.9		0.50	0.074	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1
Perfluorohexanesulfonic acid (PFHxS)	74	E *	0.38	0.078	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1
Perfluorooctanesulfonic acid (PFOS)	130	E *	1.3	0.30	ug/Kg	☼	05/14/18 14:03	05/29/18 09:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	72		50 - 150	05/14/18 14:03	05/29/18 09:41	1
13C4-PFHpA	81		50 - 150	05/14/18 14:03	05/29/18 09:41	1
13C4 PFOA	90		50 - 150	05/14/18 14:03	05/29/18 09:41	1
13C5 PFNA	74		50 - 150	05/14/18 14:03	05/29/18 09:41	1
18O2 PFHxS	68		50 - 150	05/14/18 14:03	05/29/18 09:41	1
13C4 PFOS	68		50 - 150	05/14/18 14:03	05/29/18 09:41	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.0	U *	7.6	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA05-SB1-01**

**Lab Sample ID: 320-39023-33**

Date Collected: 05/05/18 09:00

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 79.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.0	U M *	7.6	2.5	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20
Perfluorononanoic acid (PFNA)	5.0	U *	7.6	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>6.2</b>	<b>J D *</b>	10	1.5	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>78</b>	<b>D J K01</b>	7.6	1.6	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>170</b>	<b>D J K01</b>	25	6.0	ug/Kg	☼	05/14/18 14:03	05/29/18 14:38	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	54		50 - 150				05/14/18 14:03	05/29/18 14:38	20
13C4-PFHpA	83		50 - 150				05/14/18 14:03	05/29/18 14:38	20
13C4 PFOA	97		50 - 150				05/14/18 14:03	05/29/18 14:38	20
13C5 PFNA	90		50 - 150				05/14/18 14:03	05/29/18 14:38	20
18O2 PFHxS	75		50 - 150				05/14/18 14:03	05/29/18 14:38	20
13C4 PFOS	69		50 - 150				05/14/18 14:03	05/29/18 14:38	20

**Client Sample ID: KLA05-SB1-02**

**Lab Sample ID: 320-39023-34**

Date Collected: 05/05/18 09:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 78.5

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.098	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.23</b>	<b>J</b>	0.38	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
Perfluorononanoic acid (PFNA)	0.25	U	0.38	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.077</b>	<b>J</b>	0.50	0.074	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.6</b>		0.38	0.078	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>6.5</b>		1.3	0.30	ug/Kg	☼	05/14/18 14:03	05/29/18 14:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150				05/14/18 14:03	05/29/18 14:15	1
13C4-PFHpA	81		50 - 150				05/14/18 14:03	05/29/18 14:15	1
13C4 PFOA	88		50 - 150				05/14/18 14:03	05/29/18 14:15	1
13C5 PFNA	88		50 - 150				05/14/18 14:03	05/29/18 14:15	1
18O2 PFHxS	70		50 - 150				05/14/18 14:03	05/29/18 14:15	1
13C4 PFOS	72		50 - 150				05/14/18 14:03	05/29/18 14:15	1

**Client Sample ID: KLA05-SB2-01**

**Lab Sample ID: 320-39023-35**

Date Collected: 05/05/18 09:30

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 85.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.45</b>		0.36	0.092	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.6</b>		0.36	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.36</b>		0.36	0.096	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.32</b>	<b>J</b>	0.47	0.070	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA05-SB2-01**

**Lab Sample ID: 320-39023-35**

Date Collected: 05/05/18 09:30

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 85.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	20		0.36	0.073	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1
Perfluorooctanesulfonic acid (PFOS)	37	E *	1.2	0.28	ug/Kg	☼	05/14/18 14:03	05/29/18 09:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	69		50 - 150				05/14/18 14:03	05/29/18 09:56	1
13C4-PFHpa	85		50 - 150				05/14/18 14:03	05/29/18 09:56	1
13C4 PFOA	92		50 - 150				05/14/18 14:03	05/29/18 09:56	1
13C5 PFNA	89		50 - 150				05/14/18 14:03	05/29/18 09:56	1
18O2 PFHxS	71		50 - 150				05/14/18 14:03	05/29/18 09:56	1
13C4 PFOS	73		50 - 150				05/14/18 14:03	05/29/18 09:56	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	2.4	U *	3.6	0.92	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Perfluorooctanoic acid (PFOA)	1.8	J D *	3.6	1.2	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Perfluorononanoic acid (PFNA)	2.4	U M *	3.6	0.96	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Perfluorobutanesulfonic acid (PFBS)	2.1	U *	4.7	0.70	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Perfluorohexanesulfonic acid (PFHxS)	20	D *	3.6	0.73	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Perfluorooctanesulfonic acid (PFOS)	40	D J K01	12	2.8	ug/Kg	☼	05/14/18 14:03	05/29/18 14:46	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	59		50 - 150				05/14/18 14:03	05/29/18 14:46	10
13C4-PFHpa	82		50 - 150				05/14/18 14:03	05/29/18 14:46	10
13C4 PFOA	86		50 - 150				05/14/18 14:03	05/29/18 14:46	10
13C5 PFNA	89		50 - 150				05/14/18 14:03	05/29/18 14:46	10
18O2 PFHxS	70		50 - 150				05/14/18 14:03	05/29/18 14:46	10
13C4 PFOS	69		50 - 150				05/14/18 14:03	05/29/18 14:46	10

**Client Sample ID: KLA05-SB2-02**

**Lab Sample ID: 320-39023-36**

Date Collected: 05/05/18 09:40

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 75.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.38	J	0.40	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Perfluorooctanoic acid (PFOA)	1.2		0.40	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Perfluorononanoic acid (PFNA)	0.34	J M J	0.40	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Perfluorobutanesulfonic acid (PFBS)	0.29	J	0.53	0.078	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Perfluorohexanesulfonic acid (PFHxS)	8.9		0.40	0.082	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Perfluorooctanesulfonic acid (PFOS)	40	E *	1.3	0.32	ug/Kg	☼	05/14/18 14:03	05/29/18 10:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	70		50 - 150				05/14/18 14:03	05/29/18 10:04	1
13C4-PFHpa	74		50 - 150				05/14/18 14:03	05/29/18 10:04	1
13C4 PFOA	85		50 - 150				05/14/18 14:03	05/29/18 10:04	1
13C5 PFNA	87		50 - 150				05/14/18 14:03	05/29/18 10:04	1
18O2 PFHxS	74		50 - 150				05/14/18 14:03	05/29/18 10:04	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA05-SB2-02**

**Lab Sample ID: 320-39023-36**

Date Collected: 05/05/18 09:40

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 75.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOS	72		50 - 150	05/14/18 14:03	05/29/18 10:04	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	2.7	U *	4.0	1.0	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.3</b>	<b>J D *</b>	4.0	1.3	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10
Perfluorononanoic acid (PFNA)	2.7	U *	4.0	1.1	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10
Perfluorobutanesulfonic acid (PFBS)	2.4	U *	5.3	0.78	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>9.7</b>	<b>D *</b>	4.0	0.82	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>42</b>	<b>D M J K01</b>	13	3.2	ug/Kg	☼	05/14/18 14:03	05/29/18 14:54	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	72		50 - 150	05/14/18 14:03	05/29/18 14:54	10
<sup>13</sup> C4-PFHpA	77		50 - 150	05/14/18 14:03	05/29/18 14:54	10
<sup>13</sup> C4 PFOA	92		50 - 150	05/14/18 14:03	05/29/18 14:54	10
<sup>13</sup> C5 PFNA	85		50 - 150	05/14/18 14:03	05/29/18 14:54	10
<sup>18</sup> O2 PFHxS	72		50 - 150	05/14/18 14:03	05/29/18 14:54	10
<sup>13</sup> C4 PFOS	70		50 - 150	05/14/18 14:03	05/29/18 14:54	10

**Client Sample ID: KLA05-SB3-01**

**Lab Sample ID: 320-39023-37**

Date Collected: 05/05/18 10:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 83.8

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	14		0.36	0.092	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1
Perfluorooctanoic acid (PFOA)	57	E *	0.36	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1
Perfluorononanoic acid (PFNA)	2.6	M J G02	0.36	0.096	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1
Perfluorobutanesulfonic acid (PFBS)	6.7		0.47	0.070	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1
Perfluorohexanesulfonic acid (PFHxS)	430	E *	0.36	0.073	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1
Perfluorooctanesulfonic acid (PFOS)	4600	E *	1.2	0.28	ug/Kg	☼	05/14/18 14:03	05/29/18 10:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	122		50 - 150	05/14/18 14:03	05/29/18 10:20	1
<sup>13</sup> C4-PFHpA	66		50 - 150	05/14/18 14:03	05/29/18 10:20	1
<sup>13</sup> C4 PFOA	87		50 - 150	05/14/18 14:03	05/29/18 10:20	1
<sup>13</sup> C5 PFNA	19	Q	50 - 150	05/14/18 14:03	05/29/18 10:20	1
<sup>18</sup> O2 PFHxS	46	Q	50 - 150	05/14/18 14:03	05/29/18 10:20	1
<sup>13</sup> C4 PFOS	13	Q	50 - 150	05/14/18 14:03	05/29/18 10:20	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	13	J D *	36	9.2	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100
Perfluorooctanoic acid (PFOA)	62	D J K01	36	12	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100
Perfluorononanoic acid (PFNA)	24	U *	36	9.6	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100
Perfluorobutanesulfonic acid (PFBS)	7.3	J D *	47	7.0	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA05-SB3-01**

**Lab Sample ID: 320-39023-37**

Date Collected: 05/05/18 10:10

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 83.8

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	650	D J K01	36	7.3	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100
Perfluorooctanesulfonic acid (PFOS)	14000	E D J K01 , N03	120	28	ug/Kg	☼	05/14/18 14:03	05/29/18 16:28	100
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	60	M	50 - 150				05/14/18 14:03	05/29/18 16:28	100
13C4-PFHpA	80		50 - 150				05/14/18 14:03	05/29/18 16:28	100
13C4 PFOA	82		50 - 150				05/14/18 14:03	05/29/18 16:28	100
13C5 PFNA	68		50 - 150				05/14/18 14:03	05/29/18 16:28	100
18O2 PFHxS	75		50 - 150				05/14/18 14:03	05/29/18 16:28	100
13C4 PFOS	53		50 - 150				05/14/18 14:03	05/29/18 16:28	100

**Client Sample ID: KLA05-SB3-02**

**Lab Sample ID: 320-39023-38**

Date Collected: 05/05/18 10:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 80.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5		0.37	0.097	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
Perfluorooctanoic acid (PFOA)	3.8		0.37	0.12	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
Perfluorononanoic acid (PFNA)	0.25	J M J	0.37	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
Perfluorobutanesulfonic acid (PFBS)	0.58		0.50	0.074	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
Perfluorohexanesulfonic acid (PFHxS)	15		0.37	0.077	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
Perfluorooctanesulfonic acid (PFOS)	560	E *	1.2	0.30	ug/Kg	☼	05/14/18 14:03	05/29/18 10:28	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	73		50 - 150				05/14/18 14:03	05/29/18 10:28	1
13C4-PFHpA	81		50 - 150				05/14/18 14:03	05/29/18 10:28	1
13C4 PFOA	87		50 - 150				05/14/18 14:03	05/29/18 10:28	1
13C5 PFNA	50		50 - 150				05/14/18 14:03	05/29/18 10:28	1
18O2 PFHxS	73		50 - 150				05/14/18 14:03	05/29/18 10:28	1
13C4 PFOS	40	Q	50 - 150				05/14/18 14:03	05/29/18 10:28	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	25	U *	37	9.7	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
Perfluorooctanoic acid (PFOA)	25	U *	37	12	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
Perfluorononanoic acid (PFNA)	25	U *	37	10	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
Perfluorobutanesulfonic acid (PFBS)	22	U *	50	7.4	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
Perfluorohexanesulfonic acid (PFHxS)	13	J D *	37	7.7	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
Perfluorooctanesulfonic acid (PFOS)	980	D J K01	120	30	ug/Kg	☼	05/14/18 14:03	05/29/18 16:44	100
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	78	M	50 - 150				05/14/18 14:03	05/29/18 16:44	100
13C4-PFHpA	81		50 - 150				05/14/18 14:03	05/29/18 16:44	100
13C4 PFOA	99		50 - 150				05/14/18 14:03	05/29/18 16:44	100
13C5 PFNA	98		50 - 150				05/14/18 14:03	05/29/18 16:44	100
18O2 PFHxS	79		50 - 150				05/14/18 14:03	05/29/18 16:44	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA05-SB3-02**

Date Collected: 05/05/18 10:20

Date Received: 05/09/18 09:20

**Lab Sample ID: 320-39023-38**

Matrix: Solid

Percent Solids: 80.4

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOS	70		50 - 150	05/14/18 14:03	05/29/18 16:44	100

**Client Sample ID: KLA06-SB1-01**

Date Collected: 05/01/18 14:15

Date Received: 05/09/18 09:20

**Lab Sample ID: 320-39023-39**

Matrix: Solid

Percent Solids: 73.2

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.71		0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1
Perfluorooctanoic acid (PFOA)	1.3		0.41	0.14	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1
Perfluorononanoic acid (PFNA)	2.4		0.41	0.11	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1
Perfluorobutanesulfonic acid (PFBS)	0.27	J	0.54	0.080	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1
Perfluorohexanesulfonic acid (PFHxS)	11		0.41	0.084	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1
Perfluorooctanesulfonic acid (PFOS)	190	M E *	1.4	0.32	ug/Kg	☼	05/14/18 13:10	06/06/18 23:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	72		50 - 150	05/14/18 13:10	06/06/18 23:18	1
<sup>13</sup> C4-PFHpA	77		50 - 150	05/14/18 13:10	06/06/18 23:18	1
<sup>13</sup> C4 PFOA	79		50 - 150	05/14/18 13:10	06/06/18 23:18	1
<sup>13</sup> C5 PFNA	62		50 - 150	05/14/18 13:10	06/06/18 23:18	1
<sup>18</sup> O2 PFHxS	73		50 - 150	05/14/18 13:10	06/06/18 23:18	1
<sup>13</sup> C4 PFOS	62		50 - 150	05/14/18 13:10	06/06/18 23:18	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.4	U *	8.1	2.1	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20
Perfluorooctanoic acid (PFOA)	5.4	U M *	8.1	2.7	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20
Perfluorononanoic acid (PFNA)	2.5	J D *	8.1	2.2	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20
Perfluorobutanesulfonic acid (PFBS)	4.9	U *	11	1.6	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20
Perfluorohexanesulfonic acid (PFHxS)	11	D *	8.1	1.7	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20
Perfluorooctanesulfonic acid (PFOS)	250	D J K01	27	6.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:30	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	67		50 - 150	05/14/18 13:10	05/29/18 11:30	20
<sup>13</sup> C4-PFHpA	76		50 - 150	05/14/18 13:10	05/29/18 11:30	20
<sup>13</sup> C4 PFOA	82		50 - 150	05/14/18 13:10	05/29/18 11:30	20
<sup>13</sup> C5 PFNA	79		50 - 150	05/14/18 13:10	05/29/18 11:30	20
<sup>18</sup> O2 PFHxS	71		50 - 150	05/14/18 13:10	05/29/18 11:30	20
<sup>13</sup> C4 PFOS	68		50 - 150	05/14/18 13:10	05/29/18 11:30	20

**Client Sample ID: KLA06-SB1-02**

Date Collected: 05/01/18 14:20

Date Received: 05/09/18 09:20

**Lab Sample ID: 320-39023-40**

Matrix: Solid

Percent Solids: 79.6

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	J	0.37	0.097	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1
Perfluorooctanoic acid (PFOA)	1.1		0.37	0.12	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA06-SB1-02**

**Lab Sample ID: 320-39023-40**

Date Collected: 05/01/18 14:20

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 79.6

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	1.4		0.37	0.10	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1
Perfluorobutanesulfonic acid (PFBS)	0.19	J	0.50	0.073	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1
Perfluorohexanesulfonic acid (PFHxS)	6.8		0.37	0.077	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1
Perfluorooctanesulfonic acid (PFOS)	100	M E *	1.2	0.30	ug/Kg	☼	05/14/18 13:10	06/06/18 23:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150				05/14/18 13:10	06/06/18 23:26	1
13C4-PFHpA	81		50 - 150				05/14/18 13:10	06/06/18 23:26	1
13C4 PFOA	76		50 - 150				05/14/18 13:10	06/06/18 23:26	1
13C5 PFNA	70		50 - 150				05/14/18 13:10	06/06/18 23:26	1
18O2 PFHxS	72		50 - 150				05/14/18 13:10	06/06/18 23:26	1
13C4 PFOS	68		50 - 150				05/14/18 13:10	06/06/18 23:26	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.0	U M *	7.4	1.9	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Perfluorooctanoic acid (PFOA)	5.0	U *	7.4	2.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Perfluorononanoic acid (PFNA)	5.0	U M *	7.4	2.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Perfluorobutanesulfonic acid (PFBS)	4.5	U M *	9.9	1.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Perfluorohexanesulfonic acid (PFHxS)	6.6	J D *	7.4	1.5	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Perfluorooctanesulfonic acid (PFOS)	120	D J K01	25	6.0	ug/Kg	☼	05/14/18 13:10	05/29/18 11:38	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	69		50 - 150				05/14/18 13:10	05/29/18 11:38	20
13C4-PFHpA	76		50 - 150				05/14/18 13:10	05/29/18 11:38	20
13C4 PFOA	81		50 - 150				05/14/18 13:10	05/29/18 11:38	20
13C5 PFNA	78		50 - 150				05/14/18 13:10	05/29/18 11:38	20
18O2 PFHxS	69		50 - 150				05/14/18 13:10	05/29/18 11:38	20
13C4 PFOS	68		50 - 150				05/14/18 13:10	05/29/18 11:38	20

**Client Sample ID: KLA06-SB2-01**

**Lab Sample ID: 320-39023-41**

Date Collected: 05/01/18 13:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 63.5

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	J1 J H01	0.48	0.12	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Perfluorooctanoic acid (PFOA)	6.7	J1 J H01	0.48	0.16	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Perfluorononanoic acid (PFNA)	1.6		0.48	0.13	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Perfluorobutanesulfonic acid (PFBS)	0.99		0.64	0.094	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Perfluorohexanesulfonic acid (PFHxS)	42	E J1 *	0.48	0.099	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Perfluorooctanesulfonic acid (PFOS)	580	E J1 *	1.6	0.38	ug/Kg	☼	05/14/18 13:10	06/06/18 23:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	82		50 - 150				05/14/18 13:10	06/06/18 23:34	1
13C4-PFHpA	82		50 - 150				05/14/18 13:10	06/06/18 23:34	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA06-SB2-01**

**Lab Sample ID: 320-39023-41**

Date Collected: 05/01/18 13:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 63.5

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	84		50 - 150	05/14/18 13:10	06/06/18 23:34	1
13C5 PFNA	54		50 - 150	05/14/18 13:10	06/06/18 23:34	1
18O2 PFHxS	75		50 - 150	05/14/18 13:10	06/06/18 23:34	1
13C4 PFOS	54		50 - 150	05/14/18 13:10	06/06/18 23:34	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	J D J1 *	4.8	1.2	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10
Perfluorooctanoic acid (PFOA)	6.7	D J1 *	4.8	1.6	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10
Perfluorononanoic acid (PFNA)	1.6	J D *	4.8	1.3	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10
Perfluorobutanesulfonic acid (PFBS)	1.0	J D J1 *	6.4	0.94	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10
Perfluorohexanesulfonic acid (PFHxS)	44	D J1 J K01	4.8	0.99	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10
Perfluorooctanesulfonic acid (PFOS)	860	E D M J1 *	16	3.8	ug/Kg	☼	05/14/18 13:10	05/29/18 12:49	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	67		50 - 150	05/14/18 13:10	05/29/18 12:49	10
13C4-PFHpA	80		50 - 150	05/14/18 13:10	05/29/18 12:49	10
13C4 PFOA	85		50 - 150	05/14/18 13:10	05/29/18 12:49	10
13C5 PFNA	77		50 - 150	05/14/18 13:10	05/29/18 12:49	10
18O2 PFHxS	74		50 - 150	05/14/18 13:10	05/29/18 12:49	10
13C4 PFOS	64		50 - 150	05/14/18 13:10	05/29/18 12:49	10

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	32	U *	48	12	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100
Perfluorooctanoic acid (PFOA)	32	U *	48	16	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100
Perfluorononanoic acid (PFNA)	32	U *	48	13	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100
Perfluorobutanesulfonic acid (PFBS)	29	U *	64	9.4	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100
Perfluorohexanesulfonic acid (PFHxS)	39	J D J1 *	48	9.9	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100
Perfluorooctanesulfonic acid (PFOS)	960	D M J1 J K01	160	38	ug/Kg	☼	05/14/18 13:10	05/29/18 12:02	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	68	M	50 - 150	05/14/18 13:10	05/29/18 12:02	100
13C4-PFHpA	66		50 - 150	05/14/18 13:10	05/29/18 12:02	100
13C4 PFOA	81		50 - 150	05/14/18 13:10	05/29/18 12:02	100
13C5 PFNA	74		50 - 150	05/14/18 13:10	05/29/18 12:02	100
18O2 PFHxS	71		50 - 150	05/14/18 13:10	05/29/18 12:02	100
13C4 PFOS	60		50 - 150	05/14/18 13:10	05/29/18 12:02	100

**Client Sample ID: KLA06-SB2-02**

**Lab Sample ID: 320-39023-42**

Date Collected: 05/01/18 13:50

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 70.3

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.6		0.43	0.11	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1
Perfluorooctanoic acid (PFOA)	6.4		0.43	0.14	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1
Perfluorononanoic acid (PFNA)	1.7	J G02	0.43	0.12	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA06-SB2-02**

**Lab Sample ID: 320-39023-42**

Date Collected: 05/01/18 13:50

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 70.3

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.1		0.57	0.084	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1
Perfluorohexanesulfonic acid (PFHxS)	40	E *	0.43	0.089	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1
Perfluorooctanesulfonic acid (PFOS)	920	E *	1.4	0.34	ug/Kg	☼	05/14/18 13:10	06/07/18 00:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	81		50 - 150				05/14/18 13:10	06/07/18 00:13	1
13C4-PFHpA	83		50 - 150				05/14/18 13:10	06/07/18 00:13	1
13C4 PFOA	83		50 - 150				05/14/18 13:10	06/07/18 00:13	1
13C5 PFNA	44	Q	50 - 150				05/14/18 13:10	06/07/18 00:13	1
18O2 PFHxS	75		50 - 150				05/14/18 13:10	06/07/18 00:13	1
13C4 PFOS	40	Q	50 - 150				05/14/18 13:10	06/07/18 00:13	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.8	J D *	4.3	1.1	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Perfluorooctanoic acid (PFOA)	6.2	D *	4.3	1.4	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Perfluorononanoic acid (PFNA)	1.8	J D *	4.3	1.2	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Perfluorobutanesulfonic acid (PFBS)	2.1	J D *	5.7	0.84	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Perfluorohexanesulfonic acid (PFHxS)	45	D J K01	4.3	0.89	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Perfluorooctanesulfonic acid (PFOS)	1300	E D *	14	3.4	ug/Kg	☼	05/14/18 13:10	05/29/18 13:28	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	73		50 - 150				05/14/18 13:10	05/29/18 13:28	10
13C4-PFHpA	78		50 - 150				05/14/18 13:10	05/29/18 13:28	10
13C4 PFOA	90		50 - 150				05/14/18 13:10	05/29/18 13:28	10
13C5 PFNA	75		50 - 150				05/14/18 13:10	05/29/18 13:28	10
18O2 PFHxS	72		50 - 150				05/14/18 13:10	05/29/18 13:28	10
13C4 PFOS	61		50 - 150				05/14/18 13:10	05/29/18 13:28	10

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	29	U *	43	11	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Perfluorooctanoic acid (PFOA)	29	U M *	43	14	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Perfluorononanoic acid (PFNA)	29	U *	43	12	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Perfluorobutanesulfonic acid (PFBS)	26	U *	57	8.4	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Perfluorohexanesulfonic acid (PFHxS)	42	J D *	43	8.9	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Perfluorooctanesulfonic acid (PFOS)	1600	D J K01	140	34	ug/Kg	☼	05/14/18 13:10	05/29/18 12:25	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	61	M	50 - 150				05/14/18 13:10	05/29/18 12:25	100
13C4-PFHpA	72		50 - 150				05/14/18 13:10	05/29/18 12:25	100
13C4 PFOA	78		50 - 150				05/14/18 13:10	05/29/18 12:25	100
13C5 PFNA	78		50 - 150				05/14/18 13:10	05/29/18 12:25	100
18O2 PFHxS	64		50 - 150				05/14/18 13:10	05/29/18 12:25	100
13C4 PFOS	59		50 - 150				05/14/18 13:10	05/29/18 12:25	100

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA07-SD1-01**

**Lab Sample ID: 320-39023-43**

**Date Collected: 05/06/18 11:30**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 92.9**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.22	U	0.32	0.084	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1
Perfluorooctanoic acid (PFOA)	0.22	U	0.32	0.11	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1
Perfluorononanoic acid (PFNA)	0.22	U	0.32	0.088	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1
Perfluorobutanesulfonic acid (PFBS)	0.19	U	0.43	0.064	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1
Perfluorohexanesulfonic acid (PFHxS)	0.22	U	0.32	0.067	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.5</b>	<b>U F04</b>	1.1	0.26	ug/Kg	☼	05/14/18 13:10	06/07/18 00:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150	05/14/18 13:10	06/07/18 00:52	1
13C4-PFHpA	80		50 - 150	05/14/18 13:10	06/07/18 00:52	1
13C4 PFOA	84		50 - 150	05/14/18 13:10	06/07/18 00:52	1
13C5 PFNA	82		50 - 150	05/14/18 13:10	06/07/18 00:52	1
18O2 PFHxS	73		50 - 150	05/14/18 13:10	06/07/18 00:52	1
13C4 PFOS	75		50 - 150	05/14/18 13:10	06/07/18 00:52	1

**Client Sample ID: ER-01**

**Lab Sample ID: 320-39023-44**

**Date Collected: 05/01/18 15:30**

**Matrix: Water**

**Date Received: 05/09/18 09:20**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.88	J	1.7	0.51	ng/L		05/15/18 12:48	05/21/18 14:03	1
Perfluorooctanoic acid (PFOA)	1.7		1.7	0.46	ng/L		05/15/18 12:48	05/21/18 14:03	1
Perfluorononanoic acid (PFNA)	1.3	U	1.7	0.44	ng/L		05/15/18 12:48	05/21/18 14:03	1
Perfluorobutanesulfonic acid (PFBS)	0.40	J M J	1.7	0.39	ng/L		05/15/18 12:48	05/21/18 14:03	1
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.7	0.32	ng/L		05/15/18 12:48	05/21/18 14:03	1
Perfluorooctanesulfonic acid (PFOS)	8.7		3.4	0.93	ng/L		05/15/18 12:48	05/21/18 14:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	88		50 - 150	05/15/18 12:48	05/21/18 14:03	1
13C4-PFHpA	88		50 - 150	05/15/18 12:48	05/21/18 14:03	1
13C4 PFOA	90		50 - 150	05/15/18 12:48	05/21/18 14:03	1
13C5 PFNA	92		50 - 150	05/15/18 12:48	05/21/18 14:03	1
18O2 PFHxS	88		50 - 150	05/15/18 12:48	05/21/18 14:03	1
13C4 PFOS	82		50 - 150	05/15/18 12:48	05/21/18 14:03	1

**Client Sample ID: FB-01**

**Lab Sample ID: 320-39023-45**

**Date Collected: 05/01/18 15:50**

**Matrix: Water**

**Date Received: 05/09/18 09:20**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	U	1.7	0.51	ng/L		05/15/18 12:48	05/19/18 06:46	1
Perfluorooctanoic acid (PFOA)	1.2	U	1.7	0.45	ng/L		05/15/18 12:48	05/19/18 06:46	1
Perfluorononanoic acid (PFNA)	1.2	U	1.7	0.43	ng/L		05/15/18 12:48	05/19/18 06:46	1
Perfluorobutanesulfonic acid (PFBS)	0.83	U	1.7	0.38	ng/L		05/15/18 12:48	05/19/18 06:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.61	J U F06	1.7	0.32	ng/L		05/15/18 12:48	05/19/18 06:46	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: FB-01**  
**Date Collected: 05/01/18 15:50**  
**Date Received: 05/09/18 09:20**

**Lab Sample ID: 320-39023-45**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.3	0.91	ng/L		05/15/18 12:48	05/19/18 06:46	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	91		50 - 150				05/15/18 12:48	05/19/18 06:46	1
13C4-PFHpA	101		50 - 150				05/15/18 12:48	05/19/18 06:46	1
13C4 PFOA	94		50 - 150				05/15/18 12:48	05/19/18 06:46	1
13C5 PFNA	105		50 - 150				05/15/18 12:48	05/19/18 06:46	1
18O2 PFHxS	93		50 - 150				05/15/18 12:48	05/19/18 06:46	1
13C4 PFOS	95		50 - 150				05/15/18 12:48	05/19/18 06:46	1

**Client Sample ID: ER-02**  
**Date Collected: 05/02/18 09:40**  
**Date Received: 05/09/18 09:20**

**Lab Sample ID: 320-39023-46**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.3	U	1.7	0.53	ng/L		05/16/18 14:51	05/28/18 09:29	1
Perfluorooctanoic acid (PFOA)	0.52	J M J	1.7	0.47	ng/L		05/16/18 14:51	05/28/18 09:29	1
Perfluorononanoic acid (PFNA)	1.3	U	1.7	0.45	ng/L		05/16/18 14:51	05/28/18 09:29	1
Perfluorobutanesulfonic acid (PFBS)	0.87	U	1.7	0.40	ng/L		05/16/18 14:51	05/28/18 09:29	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J U F06	1.7	0.33	ng/L		05/16/18 14:51	05/28/18 09:29	1
Perfluorooctanesulfonic acid (PFOS)	4.4	M =	3.5	0.96	ng/L		05/16/18 14:51	05/28/18 09:29	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	75		50 - 150				05/16/18 14:51	05/28/18 09:29	1
13C4-PFHpA	71		50 - 150				05/16/18 14:51	05/28/18 09:29	1
13C4 PFOA	80		50 - 150				05/16/18 14:51	05/28/18 09:29	1
13C5 PFNA	84		50 - 150				05/16/18 14:51	05/28/18 09:29	1
18O2 PFHxS	75		50 - 150				05/16/18 14:51	05/28/18 09:29	1
13C4 PFOS	77		50 - 150				05/16/18 14:51	05/28/18 09:29	1

**Client Sample ID: ER-03**  
**Date Collected: 05/03/18 10:30**  
**Date Received: 05/08/18 09:00**

**Lab Sample ID: 320-39023-47**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.3	U	1.8	0.55	ng/L		05/17/18 14:42	05/25/18 23:59	1
Perfluorooctanoic acid (PFOA)	1.3	U	1.8	0.49	ng/L		05/17/18 14:42	05/25/18 23:59	1
Perfluorononanoic acid (PFNA)	1.3	U	1.8	0.47	ng/L		05/17/18 14:42	05/25/18 23:59	1
Perfluorobutanesulfonic acid (PFBS)	0.90	U	1.8	0.41	ng/L		05/17/18 14:42	05/25/18 23:59	1
Perfluorohexanesulfonic acid (PFHxS)	0.90	U	1.8	0.34	ng/L		05/17/18 14:42	05/25/18 23:59	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	0.99	ng/L		05/17/18 14:42	05/25/18 23:59	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	65		50 - 150				05/17/18 14:42	05/25/18 23:59	1
13C4-PFHpA	66		50 - 150				05/17/18 14:42	05/25/18 23:59	1
13C4 PFOA	69		50 - 150				05/17/18 14:42	05/25/18 23:59	1
13C5 PFNA	71		50 - 150				05/17/18 14:42	05/25/18 23:59	1
18O2 PFHxS	63		50 - 150				05/17/18 14:42	05/25/18 23:59	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: ER-03**  
**Date Collected: 05/03/18 10:30**  
**Date Received: 05/08/18 09:00**

**Lab Sample ID: 320-39023-47**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOS	64		50 - 150	05/17/18 14:42	05/25/18 23:59	1

**Client Sample ID: ER-04**  
**Date Collected: 05/04/18 11:00**  
**Date Received: 05/09/18 09:20**

**Lab Sample ID: 320-39023-48**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.4	U	1.9	0.57	ng/L		05/17/18 14:42	05/26/18 00:15	1
Perfluorooctanoic acid (PFOA)	1.4	U M U	1.9	0.50	ng/L		05/17/18 14:42	05/26/18 00:15	1
Perfluorononanoic acid (PFNA)	1.4	U	1.9	0.48	ng/L		05/17/18 14:42	05/26/18 00:15	1
Perfluorobutanesulfonic acid (PFBS)	0.93	U	1.9	0.43	ng/L		05/17/18 14:42	05/26/18 00:15	1
Perfluorohexanesulfonic acid (PFHxS)	0.46	J U F06	1.9	0.35	ng/L		05/17/18 14:42	05/26/18 00:15	1
Perfluorooctanesulfonic acid (PFOS)	1.3	J	3.7	1.0	ng/L		05/17/18 14:42	05/26/18 00:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	70		50 - 150	05/17/18 14:42	05/26/18 00:15	1
<sup>13</sup> C4-PFHpA	70		50 - 150	05/17/18 14:42	05/26/18 00:15	1
<sup>13</sup> C4 PFOA	73		50 - 150	05/17/18 14:42	05/26/18 00:15	1
<sup>13</sup> C5 PFNA	78		50 - 150	05/17/18 14:42	05/26/18 00:15	1
<sup>18</sup> O2 PFHxS	69		50 - 150	05/17/18 14:42	05/26/18 00:15	1
<sup>13</sup> C4 PFOS	69		50 - 150	05/17/18 14:42	05/26/18 00:15	1

**Client Sample ID: MW-572-02-PRL05-01D**  
**Date Collected: 05/06/18 10:30**  
**Date Received: 05/08/18 09:00**

**Lab Sample ID: 320-39023-49**  
**Matrix: Water**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	24		1.9	0.58	ng/L		05/18/18 10:26	05/28/18 12:37	1
Perfluorooctanoic acid (PFOA)	57		1.9	0.51	ng/L		05/18/18 10:26	05/28/18 12:37	1
Perfluorononanoic acid (PFNA)	3.9		1.9	0.50	ng/L		05/18/18 10:26	05/28/18 12:37	1
Perfluorobutanesulfonic acid (PFBS)	28		1.9	0.44	ng/L		05/18/18 10:26	05/28/18 12:37	1
Perfluorohexanesulfonic acid (PFHxS)	370	E *	1.9	0.36	ng/L		05/18/18 10:26	05/28/18 12:37	1
Perfluorooctanesulfonic acid (PFOS)	1200	E *	3.8	1.0	ng/L		05/18/18 10:26	05/28/18 12:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<sup>13</sup> C3-PFBS	59		50 - 150	05/18/18 10:26	05/28/18 12:37	1
<sup>13</sup> C4-PFHpA	60		50 - 150	05/18/18 10:26	05/28/18 12:37	1
<sup>13</sup> C4 PFOA	65		50 - 150	05/18/18 10:26	05/28/18 12:37	1
<sup>13</sup> C5 PFNA	61		50 - 150	05/18/18 10:26	05/28/18 12:37	1
<sup>18</sup> O2 PFHxS	58		50 - 150	05/18/18 10:26	05/28/18 12:37	1
<sup>13</sup> C4 PFOS	55		50 - 150	05/18/18 10:26	05/28/18 12:37	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	24	D *	19	5.8	ng/L		05/18/18 10:26	05/29/18 20:54	10
Perfluorooctanoic acid (PFOA)	62	D *	19	5.1	ng/L		05/18/18 10:26	05/29/18 20:54	10

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: MW-572-02-PRL05-01D**

**Lab Sample ID: 320-39023-49**

**Date Collected: 05/06/18 10:30**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	14	U M *	19	5.0	ng/L		05/18/18 10:26	05/29/18 20:54	10
Perfluorobutanesulfonic acid (PFBS)	28	D *	19	4.4	ng/L		05/18/18 10:26	05/29/18 20:54	10
Perfluorohexanesulfonic acid (PFHxS)	390	D J K01	19	3.6	ng/L		05/18/18 10:26	05/29/18 20:54	10
Perfluorooctanesulfonic acid (PFOS)	1200	D J K01	38	10	ng/L		05/18/18 10:26	05/29/18 20:54	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	53		50 - 150				05/18/18 10:26	05/29/18 20:54	10
13C4-PFHpA	56		50 - 150				05/18/18 10:26	05/29/18 20:54	10
13C4 PFOA	63		50 - 150				05/18/18 10:26	05/29/18 20:54	10
13C5 PFNA	60		50 - 150				05/18/18 10:26	05/29/18 20:54	10
18O2 PFHxS	52		50 - 150				05/18/18 10:26	05/29/18 20:54	10
13C4 PFOS	53		50 - 150				05/18/18 10:26	05/29/18 20:54	10

**Client Sample ID: KLA03-SB-2-01D**

**Lab Sample ID: 320-39023-51**

**Date Collected: 05/02/18 12:15**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 78.6**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Perfluorooctanoic acid (PFOA)	0.16	J	0.38	0.13	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Perfluorononanoic acid (PFNA)	0.26	U	0.38	0.10	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Perfluorobutanesulfonic acid (PFBS)	0.098	J	0.51	0.076	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Perfluorohexanesulfonic acid (PFHxS)	0.71		0.38	0.080	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Perfluorooctanesulfonic acid (PFOS)	2.7		1.3	0.31	ug/Kg	☼	05/14/18 13:10	06/07/18 01:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	79		50 - 150				05/14/18 13:10	06/07/18 01:00	1
13C4-PFHpA	90		50 - 150				05/14/18 13:10	06/07/18 01:00	1
13C4 PFOA	89		50 - 150				05/14/18 13:10	06/07/18 01:00	1
13C5 PFNA	93		50 - 150				05/14/18 13:10	06/07/18 01:00	1
18O2 PFHxS	84		50 - 150				05/14/18 13:10	06/07/18 01:00	1
13C4 PFOS	82		50 - 150				05/14/18 13:10	06/07/18 01:00	1

**Client Sample ID: KLA06-SB-2-02D**

**Lab Sample ID: 320-39023-52**

**Date Collected: 05/01/18 13:50**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 67.8**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.0		0.44	0.12	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1
Perfluorooctanoic acid (PFOA)	4.1		0.44	0.15	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1
Perfluorononanoic acid (PFNA)	1.8	J G02	0.44	0.12	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1
Perfluorobutanesulfonic acid (PFBS)	1.4		0.59	0.087	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1
Perfluorohexanesulfonic acid (PFHxS)	41	E *	0.44	0.091	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA06-SB-2-02D**

**Lab Sample ID: 320-39023-52**

**Date Collected: 05/01/18 13:50**

**Matrix: Solid**

**Date Received: 05/09/18 09:20**

**Percent Solids: 67.8**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	690	E *	1.5	0.35	ug/Kg	☼	05/14/18 13:10	06/07/18 00:21	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	76		50 - 150				05/14/18 13:10	06/07/18 00:21	1
13C4-PFHpA	86		50 - 150				05/14/18 13:10	06/07/18 00:21	1
13C4 PFOA	83		50 - 150				05/14/18 13:10	06/07/18 00:21	1
13C5 PFNA	47	Q	50 - 150				05/14/18 13:10	06/07/18 00:21	1
18O2 PFHxS	76		50 - 150				05/14/18 13:10	06/07/18 00:21	1
13C4 PFOS	44	Q	50 - 150				05/14/18 13:10	06/07/18 00:21	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.4	J D *	4.4	1.2	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
Perfluorooctanoic acid (PFOA)	4.4	D *	4.4	1.5	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
Perfluorononanoic acid (PFNA)	1.8	J D *	4.4	1.2	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
Perfluorobutanesulfonic acid (PFBS)	1.3	J D *	5.9	0.87	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
Perfluorohexanesulfonic acid (PFHxS)	45	D J K01	4.4	0.91	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
Perfluorooctanesulfonic acid (PFOS)	1000	E D *	15	3.5	ug/Kg	☼	05/14/18 13:10	05/29/18 13:36	10
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	66		50 - 150				05/14/18 13:10	05/29/18 13:36	10
13C4-PFHpA	75		50 - 150				05/14/18 13:10	05/29/18 13:36	10
13C4 PFOA	84		50 - 150				05/14/18 13:10	05/29/18 13:36	10
13C5 PFNA	79		50 - 150				05/14/18 13:10	05/29/18 13:36	10
18O2 PFHxS	71		50 - 150				05/14/18 13:10	05/29/18 13:36	10
13C4 PFOS	62		50 - 150				05/14/18 13:10	05/29/18 13:36	10

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL2**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	29	U *	44	12	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
Perfluorooctanoic acid (PFOA)	29	U M *	44	15	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
Perfluorononanoic acid (PFNA)	29	U *	44	12	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
Perfluorobutanesulfonic acid (PFBS)	27	U *	59	8.7	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
Perfluorohexanesulfonic acid (PFHxS)	46	D *	44	9.1	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
Perfluorooctanesulfonic acid (PFOS)	1100	D J K01	150	35	ug/Kg	☼	05/14/18 13:10	05/29/18 12:33	100
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	51	M	50 - 150				05/14/18 13:10	05/29/18 12:33	100
13C4-PFHpA	64		50 - 150				05/14/18 13:10	05/29/18 12:33	100
13C4 PFOA	84		50 - 150				05/14/18 13:10	05/29/18 12:33	100
13C5 PFNA	74		50 - 150				05/14/18 13:10	05/29/18 12:33	100
18O2 PFHxS	59		50 - 150				05/14/18 13:10	05/29/18 12:33	100
13C4 PFOS	57		50 - 150				05/14/18 13:10	05/29/18 12:33	100

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: KLA02-SB2-02D**

**Lab Sample ID: 320-39023-53**

Date Collected: 05/04/18 13:25

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 59.1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.6		0.50	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
Perfluorooctanoic acid (PFOA)	15		0.50	0.17	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
Perfluorononanoic acid (PFNA)	0.34	J M J	0.50	0.14	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
Perfluorobutanesulfonic acid (PFBS)	24		0.67	0.099	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
Perfluorohexanesulfonic acid (PFHxS)	95	E *	0.50	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
Perfluorooctanesulfonic acid (PFOS)	380	E *	1.7	0.40	ug/Kg	☼	05/14/18 14:03	05/29/18 10:36	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	78		50 - 150				05/14/18 14:03	05/29/18 10:36	1
13C4-PFHpA	78		50 - 150				05/14/18 14:03	05/29/18 10:36	1
13C4 PFOA	84		50 - 150				05/14/18 14:03	05/29/18 10:36	1
13C5 PFNA	71		50 - 150				05/14/18 14:03	05/29/18 10:36	1
18O2 PFHxS	73		50 - 150				05/14/18 14:03	05/29/18 10:36	1
13C4 PFOS	60		50 - 150				05/14/18 14:03	05/29/18 10:36	1

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.5	J D *	10	2.6	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
Perfluorooctanoic acid (PFOA)	14	D *	10	3.3	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
Perfluorononanoic acid (PFNA)	6.7	U M *	10	2.7	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
Perfluorobutanesulfonic acid (PFBS)	23	D *	13	2.0	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
Perfluorohexanesulfonic acid (PFHxS)	110	D J K01	10	2.1	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
Perfluorooctanesulfonic acid (PFOS)	490	D J K01	33	8.0	ug/Kg	☼	05/14/18 14:03	05/29/18 17:38	20
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3-PFBS	74	M	50 - 150				05/14/18 14:03	05/29/18 17:38	20
13C4-PFHpA	72		50 - 150				05/14/18 14:03	05/29/18 17:38	20
13C4 PFOA	86		50 - 150				05/14/18 14:03	05/29/18 17:38	20
13C5 PFNA	81		50 - 150				05/14/18 14:03	05/29/18 17:38	20
18O2 PFHxS	70		50 - 150				05/14/18 14:03	05/29/18 17:38	20
13C4 PFOS	67		50 - 150				05/14/18 14:03	05/29/18 17:38	20

**Client Sample ID: KLA02-SB1-02D**

**Lab Sample ID: 320-39023-54**

Date Collected: 05/04/18 13:45

Matrix: Solid

Date Received: 05/09/18 09:20

Percent Solids: 75.9

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.11	J	0.39	0.10	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1
Perfluorooctanoic acid (PFOA)	0.25	J M J	0.39	0.13	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1
Perfluorononanoic acid (PFNA)	0.26	U M U	0.39	0.11	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1
Perfluorobutanesulfonic acid (PFBS)	0.21	J	0.52	0.077	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1
Perfluorohexanesulfonic acid (PFHxS)	1.7		0.39	0.081	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1
Perfluorooctanesulfonic acid (PFOS)	12		1.3	0.31	ug/Kg	☼	05/14/18 14:03	05/29/18 10:43	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

## Client Sample ID: KLA02-SB1-02D

Date Collected: 05/04/18 13:45

Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-54

Matrix: Solid

Percent Solids: 75.9

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	73		50 - 150	05/14/18 14:03	05/29/18 10:43	1
13C4-PFHpa	83		50 - 150	05/14/18 14:03	05/29/18 10:43	1
13C4 PFOA	91		50 - 150	05/14/18 14:03	05/29/18 10:43	1
13C5 PFNA	96		50 - 150	05/14/18 14:03	05/29/18 10:43	1
18O2 PFHxS	81		50 - 150	05/14/18 14:03	05/29/18 10:43	1
13C4 PFOS	80		50 - 150	05/14/18 14:03	05/29/18 10:43	1

## Client Sample ID: KLA05-SB1-01D

Date Collected: 05/05/18 09:00

Date Received: 05/09/18 09:20

## Lab Sample ID: 320-39023-55

Matrix: Solid

Percent Solids: 82.2

### Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.8		0.37	0.095	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1
Perfluorooctanoic acid (PFOA)	12		0.37	0.12	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1
Perfluorononanoic acid (PFNA)	2.8		0.37	0.099	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1
Perfluorobutanesulfonic acid (PFBS)	3.1		0.49	0.072	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1
Perfluorohexanesulfonic acid (PFHxS)	170	E *	0.37	0.076	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1
Perfluorooctanesulfonic acid (PFOS)	390	E *	1.2	0.29	ug/Kg	☼	05/14/18 13:10	06/07/18 00:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	77		50 - 150	05/14/18 13:10	06/07/18 00:29	1
13C4-PFHpa	64		50 - 150	05/14/18 13:10	06/07/18 00:29	1
13C4 PFOA	84		50 - 150	05/14/18 13:10	06/07/18 00:29	1
13C5 PFNA	56		50 - 150	05/14/18 13:10	06/07/18 00:29	1
18O2 PFHxS	64		50 - 150	05/14/18 13:10	06/07/18 00:29	1
13C4 PFOS	57		50 - 150	05/14/18 13:10	06/07/18 00:29	1

### Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	24	U *	37	9.5	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100
Perfluorooctanoic acid (PFOA)	13	J D *	37	12	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100
Perfluorononanoic acid (PFNA)	24	U *	37	9.9	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100
Perfluorobutanesulfonic acid (PFBS)	22	U *	49	7.2	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100
Perfluorohexanesulfonic acid (PFHxS)	300	D J K01	37	7.6	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100
Perfluorooctanesulfonic acid (PFOS)	650	D J K01	120	29	ug/Kg	☼	05/14/18 13:10	05/29/18 12:41	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	82	M	50 - 150	05/14/18 13:10	05/29/18 12:41	100
13C4-PFHpa	69		50 - 150	05/14/18 13:10	05/29/18 12:41	100
13C4 PFOA	81		50 - 150	05/14/18 13:10	05/29/18 12:41	100
13C5 PFNA	84		50 - 150	05/14/18 13:10	05/29/18 12:41	100
18O2 PFHxS	61		50 - 150	05/14/18 13:10	05/29/18 12:41	100
13C4 PFOS	62		50 - 150	05/14/18 13:10	05/29/18 12:41	100

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: ER-05**

**Lab Sample ID: 320-39023-56**

**Date Collected: 05/06/18 16:00**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.4	U	1.9	0.58	ng/L		05/18/18 10:26	05/29/18 21:18	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.74</b>	<b>J M J</b>	1.9	0.51	ng/L		05/18/18 10:26	05/29/18 21:18	1
Perfluorononanoic acid (PFNA)	1.4	U	1.9	0.49	ng/L		05/18/18 10:26	05/29/18 21:18	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.52</b>	<b>J</b>	1.9	0.44	ng/L		05/18/18 10:26	05/29/18 21:18	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>3.4</b>	<b>U F06</b>	1.9	0.36	ng/L		05/18/18 10:26	05/29/18 21:18	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>13</b>		3.8	1.0	ng/L		05/18/18 10:26	05/29/18 21:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3-PFBS	84		50 - 150				05/18/18 10:26	05/29/18 21:18	1
13C4-PFHpA	93		50 - 150				05/18/18 10:26	05/29/18 21:18	1
13C4 PFOA	98		50 - 150				05/18/18 10:26	05/29/18 21:18	1
13C5 PFNA	104		50 - 150				05/18/18 10:26	05/29/18 21:18	1
18O2 PFHxS	87		50 - 150				05/18/18 10:26	05/29/18 21:18	1
13C4 PFOS	91		50 - 150				05/18/18 10:26	05/29/18 21:18	1

**Client Sample ID: IDW-KINGSLEY-SO-LDOS01**

**Lab Sample ID: 320-39023-57**

**Date Collected: 05/07/18 09:45**

**Matrix: Solid**

**Date Received: 05/08/18 09:00**

**Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0040	U	0.010	0.0016	mg/L			05/29/18 15:26	1
2-Butanone (MEK)	0.040	U	0.10	0.018	mg/L			05/29/18 15:26	1
Carbon tetrachloride	0.0040	U	0.010	0.0019	mg/L			05/29/18 15:26	1
Chlorobenzene	0.0040	U	0.010	0.0017	mg/L			05/29/18 15:26	1
Chloroform	0.0040	U	0.010	0.0016	mg/L			05/29/18 15:26	1
1,2-Dichloroethane	0.0040	U	0.010	0.0013	mg/L			05/29/18 15:26	1
1,1-Dichloroethene	0.0080	U	0.010	0.0023	mg/L			05/29/18 15:26	1
Tetrachloroethene	0.0040	U	0.010	0.0020	mg/L			05/29/18 15:26	1
Trichloroethene	0.0040	U	0.010	0.0016	mg/L			05/29/18 15:26	1
Vinyl chloride	0.0020	U	0.010	0.0010	mg/L			05/29/18 15:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		78 - 120					05/29/18 15:26	1
1,2-Dichloroethane-d4 (Surr)	98		64 - 129					05/29/18 15:26	1
4-Bromofluorobenzene (Surr)	90		78 - 121					05/29/18 15:26	1
Dibromofluoromethane (Surr)	103		79 - 119					05/29/18 15:26	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylphenol	0.010	U	0.050	0.0049	mg/L		05/21/18 08:55	05/25/18 21:36	1
3 & 4 Methylphenol	0.0025	U	0.050	0.0013	mg/L		05/21/18 08:55	05/25/18 21:36	1
1,4-Dichlorobenzene	0.020	U	0.020	0.0016	mg/L		05/21/18 08:55	05/25/18 21:36	1
2,4-Dinitrotoluene	0.022	U	0.050	0.0083	mg/L		05/21/18 08:55	05/25/18 21:36	1
Hexachlorobenzene	0.010	U	0.050	0.0033	mg/L		05/21/18 08:55	05/25/18 21:36	1
Hexachlorobutadiene	0.050	U	0.050	0.017	mg/L		05/21/18 08:55	05/25/18 21:36	1
Hexachloroethane	0.022	U	0.050	0.011	mg/L		05/21/18 08:55	05/25/18 21:36	1
Nitrobenzene	0.010	U	0.050	0.0041	mg/L		05/21/18 08:55	05/25/18 21:36	1
Pentachlorophenol	0.20	U	0.25	0.10	mg/L		05/21/18 08:55	05/25/18 21:36	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: IDW-KINGSLEY-SO-LDOS01**

**Lab Sample ID: 320-39023-57**

**Date Collected: 05/07/18 09:45**

**Matrix: Solid**

**Date Received: 05/08/18 09:00**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP (Continued)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Pyridine	0.022	U	0.10	0.0057	mg/L		05/21/18 08:55	05/25/18 21:36	1
2,4,5-Trichlorophenol	0.0050	U	0.050	0.0022	mg/L		05/21/18 08:55	05/25/18 21:36	1
2,4,6-Trichlorophenol	0.0050	U	0.025	0.0014	mg/L		05/21/18 08:55	05/25/18 21:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	100		49 - 120				05/21/18 08:55	05/25/18 21:36	1
2-Fluorophenol (Surr)	90		50 - 120				05/21/18 08:55	05/25/18 21:36	1
2,4,6-Tribromophenol (Surr)	97		51 - 120				05/21/18 08:55	05/25/18 21:36	1
Nitrobenzene-d5 (Surr)	88		51 - 120				05/21/18 08:55	05/25/18 21:36	1
Phenol-d5 (Surr)	78		47 - 120				05/21/18 08:55	05/25/18 21:36	1
Terphenyl-d14 (Surr)	94		56 - 120				05/21/18 08:55	05/25/18 21:36	1

**Client Sample ID: IDW-KINGSLEY-WA-LDOS01**

**Lab Sample ID: 320-39023-58**

**Date Collected: 05/07/18 09:30**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

**Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0040	U	0.010	0.0016	mg/L			05/21/18 17:50	1
2-Butanone (MEK)	0.040	U	0.10	0.018	mg/L			05/21/18 17:50	1
Carbon tetrachloride	0.0040	U	0.010	0.0019	mg/L			05/21/18 17:50	1
Chlorobenzene	0.0040	U	0.010	0.0017	mg/L			05/21/18 17:50	1
Chloroform	0.0040	U	0.010	0.0016	mg/L			05/21/18 17:50	1
1,2-Dichloroethane	0.0040	U	0.010	0.0013	mg/L			05/21/18 17:50	1
1,1-Dichloroethene	0.0080	U	0.010	0.0023	mg/L			05/21/18 17:50	1
Tetrachloroethene	0.0040	U	0.010	0.0020	mg/L			05/21/18 17:50	1
Trichloroethene	0.0040	U	0.010	0.0016	mg/L			05/21/18 17:50	1
Vinyl chloride	0.0020	U	0.010	0.0010	mg/L			05/21/18 17:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		78 - 120					05/21/18 17:50	1
1,2-Dichloroethane-d4 (Surr)	109		64 - 129					05/21/18 17:50	1
4-Bromofluorobenzene (Surr)	95		78 - 121					05/21/18 17:50	1
Dibromofluoromethane (Surr)	103		79 - 119					05/21/18 17:50	1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylphenol	0.010	U	0.050	0.0049	mg/L		05/21/18 08:46	05/25/18 20:46	1
3 & 4 Methylphenol	0.0025	U	0.050	0.0013	mg/L		05/21/18 08:46	05/25/18 20:46	1
1,4-Dichlorobenzene	0.020	U	0.020	0.0016	mg/L		05/21/18 08:46	05/25/18 20:46	1
2,4-Dinitrotoluene	0.022	U	0.050	0.0083	mg/L		05/21/18 08:46	05/25/18 20:46	1
Hexachlorobenzene	0.010	U	0.050	0.0033	mg/L		05/21/18 08:46	05/25/18 20:46	1
Hexachlorobutadiene	0.050	U	0.050	0.017	mg/L		05/21/18 08:46	05/25/18 20:46	1
Hexachloroethane	0.022	U	0.050	0.011	mg/L		05/21/18 08:46	05/25/18 20:46	1
Nitrobenzene	0.010	U	0.050	0.0041	mg/L		05/21/18 08:46	05/25/18 20:46	1
Pentachlorophenol	0.20	U	0.25	0.10	mg/L		05/21/18 08:46	05/25/18 20:46	1
Pyridine	0.022	U	0.10	0.0057	mg/L		05/21/18 08:46	05/25/18 20:46	1
2,4,5-Trichlorophenol	0.0050	U M	0.050	0.0022	mg/L		05/21/18 08:46	05/25/18 20:46	1
2,4,6-Trichlorophenol	0.0050	U M	0.025	0.0014	mg/L		05/21/18 08:46	05/25/18 20:46	1

TestAmerica Sacramento

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Phase III, ANG-Kingsley

TestAmerica Job ID: 320-39023-1

**Client Sample ID: IDW-KINGSLEY-WA-LDOS01**

**Lab Sample ID: 320-39023-58**

**Date Collected: 05/07/18 09:30**

**Matrix: Water**

**Date Received: 05/08/18 09:00**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	68		49 - 120	05/21/18 08:46	05/25/18 20:46	1
2-Fluorophenol (Surr)	51		50 - 120	05/21/18 08:46	05/25/18 20:46	1
2,4,6-Tribromophenol (Surr)	92		51 - 120	05/21/18 08:46	05/25/18 20:46	1
Nitrobenzene-d5 (Surr)	56		51 - 120	05/21/18 08:46	05/25/18 20:46	1
Phenol-d5 (Surr)	51		47 - 120	05/21/18 08:46	05/25/18 20:46	1
Terphenyl-d14 (Surr)	90		56 - 120	05/21/18 08:46	05/25/18 20:46	1

**Client Sample ID: KLA07-SD1-01D**

**Lab Sample ID: 320-39023-59**

**Date Collected: 05/06/18 11:30**

**Matrix: Solid**

**Date Received: 05/08/18 09:00**

**Percent Solids: 73.7**

**Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.12	J	0.40	0.10	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1
Perfluorooctanoic acid (PFOA)	0.48		0.40	0.13	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1
Perfluorononanoic acid (PFNA)	0.27	U	0.40	0.11	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1
Perfluorobutanesulfonic acid (PFBS)	0.20	J	0.54	0.079	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1
Perfluorohexanesulfonic acid (PFHxS)	2.1		0.40	0.083	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1
Perfluorooctanesulfonic acid (PFOS)	15	J1 =	1.3	0.32	ug/Kg	☼	05/19/18 09:21	05/31/18 02:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	73		50 - 150	05/19/18 09:21	05/31/18 02:30	1
13C4-PFHpA	81		50 - 150	05/19/18 09:21	05/31/18 02:30	1
13C4-PFOA	88		50 - 150	05/19/18 09:21	05/31/18 02:30	1
13C5-PFNA	94		50 - 150	05/19/18 09:21	05/31/18 02:30	1
18O2-PFHxS	79		50 - 150	05/19/18 09:21	05/31/18 02:30	1
13C4-PFOS	78		50 - 150	05/19/18 09:21	05/31/18 02:30	1