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FINAL

SITE INSPECTION REPORT

DAVIS-MONTHAN AIR FORCE BASE TUCSON, AZ

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide

Contract FA8903-16-D-0027
Task Order 0004

Prepared for:

Air Force Civil Engineer Center
JBSA Lackland, Texas

February 2019

Submitted by:

amec foster wheeler

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FINAL

SITE INSPECTION REPORT

SITE INSPECTION OF AQUEOUS FILM FORMING FOAM (AFFF) RELEASE AREAS ENVIRONMENTAL PROGRAMS WORLDWIDE INSTALLATION

DAVIS-MONTHAN AIR FORCE BASE
TUCSON, ARIZONA

Project No. 775303101

Prepared for:
Air Force Civil Engineer Center
Joint Base San Antonio – Lackland, Texas

Prepared by:

Amec Foster Wheeler Programs, Inc.

Contract FA8903-16-D-0027
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TABLE OF CONTENTS

FIGURES

Information about private water sources has been masked as it is not publicly releasable and is maintained in a separate portion of the Air Force Administrative Record that is not accessible to the public.

TABLES

APPENDICES

ACRONYMS

ADEQ	Arizona Department of Environmental Quality
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	Aqueous Film Forming Foam
Amec Foster Wheeler	Amec Foster Wheeler Programs, Inc. and its affiliate Amec Foster Wheeler Environment & Infrastructure Inc.
AMSL	Above Mean Sea Level
ARCH	Air Rotary Casing Hammer
ADWR	Arizona Department of Water Resources
BGS	Below Ground Surface
BTOC	Below Top of Casing
CoC	Chain-of-Custody
DL	Detection Limit
DMAFB	Davis-Monthan Air Force Base
DO	Dissolved Oxygen
DoD	Department of Defense
EC	Emerging Contaminants
ft	foot or feet
FTA	Fire Training Area
FTS	Fluorotelomer Sulfonate
Gpd/ft2	Gallons per day per square foot
HA	Health Advisory
HSA	Hollow Stem Auger
HDPE	High-Density Polyethylene
HGL	HydroGeoLogic, Inc.
IDW	Investigation-Derived Waste
in	inch or inches
ISWP	Installation-Specific Work Plan
LC-MS/MS	Liquid Chromatography and Tandem Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram

NAD83	North American Datum of 1983
NAVD88	North American Datum of 1988
NEtFOSAA	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)
NMeFOSAA	N-Methyl Perfluorooctanesulfonamidoacetic Acid
NTU	Nephelometric Turbidity Units
ORP	Oxygen Reduction Potential
PA	Preliminary Assessment
PFAS	Per- and Polyfluorinated Alkyl Substances
PFBS	Perfluorobutanesulfonic Acid
PFC	Perfluorinated Compound
PFDA	Perfluorodecanoic Acid
PFDoA	Perfluorododecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFTA	Perfluorotetradecanoic Acid
PFTrDA	Perfluorotridecanoic Acid
PFUnA	Perfluoroundecanoic Acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
QPP	Quality Program Plan
RSL	Regional Screening Level
SI	Site Inspection
SIR	Site Inspection Report
SOP	Standard Operating Procedure
S.U.	Standard Unit
THQ	Total Hazard Quotient
TOC	Total Organic Carbon
URS	URS Corporation
USAF	United States Air Force
USEPA	United States Environmental Protection Agency

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EXECUTIVE SUMMARY

This Site Inspection (SI) Report (SIR) was prepared by Amec Foster Wheeler Programs, Inc., together with affiliate Wood Environment & Infrastructure Solutions, Inc. (formerly known as Amec Foster Wheeler Environment & Infrastructure, Inc.)[1], collectively referred to as Amec Foster Wheeler, under Contract No. FA8903-16-D-0027, Task Order 0004, to document the results of SI activities conducted at three aqueous film forming foam (AFFF) release areas, located at Davis-Monthan Air Force Base (DMAFB). The purpose of the SI was to determine, through environmental media sampling, if a release of per- and polyfluorinated alkyl substances (PFAS) has occurred at potential AFFF release areas identified by others during the Preliminary Assessment (PA) (HydroGeologic, Inc. [HGL], 2015), or by Amec Foster Wheeler during the installation scoping visit conducted at DMAFB on 1 September 2016. The data presented in this SIR were collected and evaluated in accordance with the Final Installation-Specific Work Plan (ISWP) (Amec Foster Wheeler, 2017a) and the General Quality Program Plan (QPP) (Amec Foster Wheeler, 2017b).

PFAS are a class of synthetic organofluorine compounds that possess a chemical structure that gives them unique properties, including thermal stability and the ability to repel both water and oil. These chemical properties make them useful components in a wide variety of consumer and industrial products, including non-stick cookware, food packaging, waterproof clothing, fabric stain protectors, lubricants, paints, and firefighting foams such as AFFF. AFFF concentrate contains fluorocarbon surfactants to meet required performance standards for fire extinguishing agents (Department of Defense [DoD] Military Specification MIL-F-24385F [SH], Amendment 1, 5 August 1984). The United States Air Force (USAF) began purchasing and using AFFF containing PFAS (perfluorooctanesulfonic acid [PFOS] and/or perfluorooctanoic acid [PFOA]) for extinguishing petroleum fires and during firefighting training activities in 1970. AFFF was primarily used on USAF installations at fire training areas (FTAs), but may have also been used, stored or released from hangar fire suppression systems, at firefighting equipment testing and maintenance areas, and during emergency response actions for fuel spills and/or aircraft mishaps.

The United States Environmental Protection Agency (USEPA) Office of Water issued lifetime drinking water Health Advisory (HA) values for PFOS and PFOA in May 2016 that replaced the 2009 Provisional HA values. The HA values for PFOS and PFOA are 0.07 micrograms per liter (µg/L) for each constituent; however, when these two chemicals co-occur in a drinking water source, a conservative and health-protective approach is recommended that compares the sum of the concentrations (PFOS + PFOA) to the HA value (0.07 µg/L). HA values are not to be construed as legally enforceable federal standards and are subject to change as new information becomes available (USEPA, 2016a and 2016b). Although the USEPA has not established HA values for PFAS in soil, the USAF calculated a residential screening level of 1.26 milligrams per kilogram (mg/kg) for PFOS and PFOA in soil, based on a total hazard quotient (THQ) of 1.0,

[1] Amec Foster Wheeler Environment & Infrastructure, Inc. changed its name on 6 April 2018 to Wood Environment & Infrastructure Solutions, Inc., to reflect Wood Group's acquisition of Amec Foster Wheeler. All resource documents created and activities conducted under Amec Foster Wheeler Environment & Infrastructure, Inc. remain in place, will be referred to Amec Foster Wheeler, and are executed under Wood Environment & Infrastructure Solutions, Inc.

using the USEPA Regional Screening Level (RSL) calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search). This screening value was presented in the Final ISWP (Amec Foster Wheeler, 2017a). In March 2018, the USAF issued revised guidance, *PFAS Site Inspection Objectives and Follow-On Activities,* whereby a new residential screening level for soil and sediment of 0.126 mg/kg was calculated based on a THQ of 0.1 (USAF, 2018).

While PFOS and PFOA in groundwater are the focus of the HA and provide specific targets for the USAF to address in the SI, USEPA has also derived Tap Water RSL values for perfluorobutanesulfonic acid (PFBS) for which there is a Tier 2 toxicity value (Provisional Peer Review Toxicity Value) (USEPA, 2017a). Based on the Final ISWP (Amec Foster Wheeler, 2017a), concentrations of PFBS detected in groundwater and soil were to be compared to the Tap Water RSL of 400 µg/L and residential RSL of 1,300 mg/kg, respectively. However, as per the USAF revised guidance issued subsequent to the ISWP, revised residential screening levels for PFBS in Tap Water of 40 µg/L and in soil of 130 mg/kg were calculated based on a THQ of 0.1 and will be used for comparison in this SIR (USAF, 2018).

The Arizona Department of Environmental Quality (ADEQ) has not issued screening criteria or promulgated standards for any PFAS constituent to date.

DMAFB is in Pima County, within the city limits of Tucson, Arizona. The Strategic Air Command stationed two B-29 bombardment groups at the facility in 1946, which remained until it was transferred to the Tactical Air Command in 1976. The 355th Wing is currently the host unit at DMAFB. The Wing's missions are to train A-10 and OA-10 pilots and to provide support and forward air control to ground forces worldwide. The 355th Wing also provides command, control, and communications countermeasures in support of tactical forces with the EC-130H aircraft (URS, 2011).

The developed portions of DMAFB include aviation support, industrial, institutional, commercial, residential, public and recreational facilities, agricultural land, and an airfield with an associated 13,645-feet (ft) runway. In addition to the main installation, DMAFB includes the Air Force Materiel Command's Aerospace Maintenance and Regeneration Group; an industrial complex within the contiguous property that provides long-term aircraft preservation and storage, as well as parts reclamation (URS, 2011).

HGL was contracted by the Air Force Civil Engineer Center (AFCEC) to prepare a PA of FTA and non-FTA sites at DMAFB to identify locations where PFAS may have been used and released into the environment, and to provide an initial assessment of possible migration pathways and receptors of potential contamination (HGL, 2015). The PA Report identified 37 potential AFFF release areas, six of which were identified for SI. Four of the six areas are airfield plane crash sites which were combined into one AFFF release area. The three AFFF release areas for SI are listed below.

- AFFF Release Area 1: FT-03 (Former FTA)
- AFFF Release Area 2: Airfield Crash Sites
    i. Plane Crash 1: F-16 crash (1992)
    ii. Plane Crash 2: F-86 crash (2006)

iii. Plane Crash 3: Southern end of runway crash (1990s)
iv. Plane Crash 4: Cessna crash (1990s)

- AFFF Release Area 3: Stormwater Outfall Canal

The specific objectives of the SI were as follows:

- Determine if PFAS are present in soil, groundwater, and/or surface water/sediment at AFFF release areas selected for SI;
- Determine if PFOS and PFOA concentrations in soil exceed the calculated RSL, based on a residential exposure scenario, of 0.126 mg/kg, and if PFBS concentrations in soil exceed the USEPA residential RSL of 130 mg/kg;
- Determine if concentrations of PFOS, PFOA, or the sum of PFOS and PFOA in groundwater exceed the USEPA HA value of 0.07 µg/L, and if PFBS concentrations in groundwater exceed the USEPA Tap Water RSL of 40 µg/L;
- Determine if concentrations of PFOS or PFOA in sediment exceed the calculated RSL, based on a residential exposure scenario, of 0.126 mg/kg; and,
- Identify potential receptor pathways with immediate impacts to human health (immediate impact to human health is considered consumption of drinking water with PFOS/PFOA above the USEPA HA value, or PFBS above the USEPA Tap Water RSL).

PFAS Analytical Results

Soil was collected for laboratory analysis at AFFF Release Areas 1, 2, and 3. PFOS and PFOA were detected in surface soil at concentrations exceeding the calculated RSLs based on a residential exposure scenario at AFFF Release Area 1. PFOS and PFOA were not detected in subsurface soil at concentrations exceeding the calculated RSLs based on a residential exposure scenario at any Release Areas. PFBS was not detected at concentrations above the USEPA RSL at any Release Areas.

Groundwater was collected for laboratory analysis at AFFF Release Areas 1, 2, and 3. PFOS, PFOA and/or PFOS+PFOA were not detected in groundwater at concentrations exceeding the USEPA HAs and PFBS was not detected at concentrations above the USEPA Tapwater RSL at any Release Areas.

Sediment was collected for laboratory analysis at AFFF Release Areas 1 and 3. PFOS was detected in sediment at a concentration exceeding the calculated RSL based on a residential exposure scenario at AFFF Release Area 1. PFOA and PFBS were not detected at concentrations above the respective RSLs at any Release Areas.

Soil Receptors

Based on the SI results, potentially complete soil exposure pathways exist at AFFF Release Area 1. Potential human exposure receptors from PFOS and PFOA in surface soil include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers. Further investigation and evaluation of specific exposure conditions is required to determine if exposure pathways are complete.

Groundwater Receptors

PFOA in groundwater did not exceed the USEPA HA value of 0.07 µg/L for PFOS, PFOA, and/or the sum of PFOS/PFOA, across the installation. Based on the current understanding of the conceptual site model, higher concentrations of PFOS/PFOA detected in Tucson Water supply wells downgradient of DMAFB may be attributable to the upgradient proximity of the Stormwater Outfall Canal and vertical migration within the aquifer in response to historical pumping regimes.

While the results of the SI do not necessarily indicate any migration of contaminants off base, based on the CSM and the levels of PFOS/PFOA in the Tucson Water municipal supply wells, additional investigation in the area of the Stormwater Outfall Canal is warranted. Installation and sampling of water table and deeper aquifer monitoring wells located downgradient of the Stormwater Outfall Canal at the northern base boundary is recommended to determine if PFAS is present in groundwater at the installation boundary, upgradient of Tucson Water supply wells.

Sediment Receptors

PFOS was detected in sediments collected from AFFF Release Area 1 at concentrations exceeding the calculated RSL. Potential exposure receptors include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers that may come into contact with sediment at this AFFF Release Area. Further investigation and evaluation of specific exposure conditions is required to determine if exposure pathways are complete.

1.0 INTRODUCTION

This Site Inspection (SI) Report (SIR) was prepared by Amec Foster Wheeler Programs, Inc., together with affiliate Wood Environment & Infrastructure Solutions, Inc. (formerly known as Amec Foster Wheeler Environment & Infrastructure, Inc.)[2], collectively referred to as Amec Foster Wheeler, under Contract No. FA8903-16-D-0027, Task Order 0004, to document the results of SI activities conducted at three aqueous film forming foam (AFFF) release areas located at Davis-Monthan Air Force Base (DMAFB). The purpose of the SI was to determine, through environmental media sampling, if a release of per- and polyfluorinated alkyl substances (PFAS) has occurred at potential AFFF release areas identified by others during a Preliminary Assessment (PA) (HydroGeologic Inc. [HGL], 2015), or during the installation scoping visit conducted by Amec Foster Wheeler on 1 September 2016 and the Sampling Design and Rationale Teleconference held on 19 December 2016.

The data presented in this SIR were collected and evaluated in accordance with the Final Installation-Specific Work Plan (ISWP) (Amec Foster Wheeler, 2017a) and the General Quality Program Plan (QPP) (Amec Foster Wheeler, 2017b).

1.1 PER- AND POLY-FLUORINATED ALKYL SUBSTANCES OVERVIEW

PFAS are a class of synthetic organofluorine compounds that possess a chemical structure that gives them unique properties, including thermal stability and the ability to repel both water and oil. These chemical properties make them useful components in a wide variety of consumer and industrial products, including non-stick cookware, food packaging, waterproof clothing, fabric stain protectors, lubricants, paints, and firefighting foams such as AFFF. AFFF concentrate contains fluorocarbon surfactants to meet required performance standards for fire extinguishing agents (Department of Defense [DoD] Military Specification MIL-F-24385F [SH], Amendment 1, 5 August 1984). The United States Air Force (USAF) began purchasing and using AFFF containing PFAS (perfluorooctanesulfonic acid [PFOS] and/or perfluorooctanoic acid [PFOA]) for extinguishing petroleum fires and during firefighting training activities in 1970, as confirmed by the following federal government documents:

- Military Specification for AFFF (MIL-F-24385), formally issued in 1969;
- General Accounting Office determination on sole source award protest to provide AFFF to the Navy in December 1969; and,
- *A History of USAF Fire Protection Training at Chanute Air Force Base*, 1964-1976 (Coates, 1977).

[2] Amec Foster Wheeler Environment & Infrastructure, Inc. changed its name on 6 April 2018 to Wood Environment & Infrastructure Solutions, Inc., to reflect Wood Group's acquisition of Amec Foster Wheeler. All resource documents created and activities conducted under Amec Foster Wheeler Environment & Infrastructure, Inc. remain in place, will be referred to Amec Foster Wheeler, and are executed under Wood Environment & Infrastructure Solutions, Inc.

AFFF was primarily used on USAF installations at fire training areas (FTAs), but may have also been used, stored or released from hangar fire suppression systems, at firefighting equipment testing and maintenance areas, and during emergency response actions for fuel spills and/or aircraft mishaps.

The United States Environmental Protection Agency (USEPA) Office of Water issued lifetime drinking water Health Advisory (HA) values for PFOS and PFOA in May 2016 that replaced the 2009 Provisional HA values. The HA values for PFOS and PFOA are 0.07 micrograms per liter (µg/L) for each constituent; however, when these two chemicals co-occur in a drinking water source, a conservative and health-protective approach is recommended that compares the sum of the concentrations (PFOS + PFOA) to the HA value (0.07 µg/L). The HA values are non-regulatory concentrations of drinking water contaminants at or below which adverse health effects are not anticipated to occur over specific exposure durations (e.g., 1 day, 10 days, and a lifetime). They serve as informal technical guidance to assist federal, state, and local officials, and managers of public or community water systems in protecting public health when emergency spills or other contamination situations occur. A HA document provides information on the environmental properties, health effects, analytical methodology, and treatment technologies for removing drinking water contaminants. HA values are not to be construed as legally enforceable federal standards and are subject to change as new information becomes available (USEPA, 2016a and 2016b).

The USEPA has not published Regional Screening Levels (RSLs) for PFOS or PFOA for soil or sediment; however; as per the Final ISWP (Amec Foster Wheeler, 2017a), a residential screening level of 1.26 milligrams per kilogram (mg/kg) for PFOS and PFOA was derived using the USEPA RSL calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/ csl_search), based on a total hazard quotient (THQ) of 1.0. The toxicity value input for the calculator is the Tier 3 value reference dose of 0.00002 mg/kg per day derived by the USEPA in their Drinking Water HA values for both PFOS and PFOA (USEPA, 2016a and 2016b). In March 2018, the USAF issued revised guidance, *PFAS Site Inspection Objectives and Follow-On Activities,* whereby a new residential screening level for soil and sediment of 0.126 mg/kg was calculated based on a THQ of 0.1 (USAF, 2018).

While PFOS and PFOA are the focus of the HA and provide specific targets for the USAF to address in the SI, USEPA has also derived RSL values for perfluorobutanesulfonic acid (PFBS) for which there is a Tier 2 toxicity value (Provisional Peer Review Toxicity Value) (USEPA, 2017a). Based on the Final ISWP (Amec Foster Wheeler, 2017a), concentrations of PFBS detected in groundwater and soil were to be compared to the Tap Water RSL of 400 µg/L and residential RSL of 1,300 mg/kg, respectively. However, as per the USAF revised guidance issued subsequent to the ISWP, revised RSLs for PFBS in Tap Water of 40 µg/L and in soil of 130 mg/kg were calculated based on a THQ of 0.1 and will be used for comparison in this SIR (USAF, 2018). The Arizona Department of Environmental Quality (ADEQ) has not issued promulgated standards for any PFAS to date.

Table 1.1-1 below presents the screening values for comparing analytical results for PFOS, PFOA, and PFBS.

Table 1.1-1. Regulatory Screening Values

Parameter	Chemical Abstract Number	USEPA Regional Screening Level Table (November 2017)[a]		Calculated RSL for Soils and Sediments[b] (mg/kg)	USEPA Health Advisory for Drinking Water (Surface Water or Groundwater)[c] (µg/L)
		Residential Soil and Sediments (mg/kg)	Tap Water (µg/L)		
PFOS	1763-23-1	NL	NL	0.126	0.07[d]
PFOA	335-67-1	NL	NL	0.126	
PFBS	375-73-5	130	40	NL	NL

Notes:

a USEPA Regional Screening Levels (November, 2017a) [https://semspub.epa.gov/work/HQ/197025.pdf].

b Screening levels calculated using the USEPA Regional Screening Level calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

c USEPA, May 2016a. "Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)" and USEPA, May 2016b. "Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA)."

d When both PFOA and PFOS are both present, the combined concentrations of PFOA and PFOS should be compared with the 0.07 µg/L health advisory level.

mg/kg - milligrams per kilogram
µg/L - micrograms per liter
NL - not listed
PFBS - perfluorobutanesulfonic acid
PFOA - perfluorooctanoic acid
PFOS - perfluorooctanesulfonic acid
RSL - Regional Screening Level
USEPA - United States Environmental Protection Agency

1.2 PROJECT OBJECTIVES

In accordance with DoD Instruction 4715.18, "Emerging Contaminants (ECs)" (DoD, 2009), the *Interim AF Guidance on Sampling and Response Actions for Perfluorinated Compounds at Active and Base Realignment and Closure Installations* (USAF, 2012), and the *SAF/IE Policy on Perfluorinated Compounds of Concern* (USAF, 2016) the USAF will:

1) Identify locations where there is a reasonable expectation that there may have been a release of PFAS (defined below) associated with USAF actions;

2) Determine if there is unacceptable risk to human health and the environment; and,

3) Address releases that pose an unacceptable risk, including offsite migration.

The primary objectives of this SI were to:

- Determine if PFOS, PFOA, or PFBS are present in soil, groundwater, or sediment at AFFF release areas selected for SI;

- Determine if PFOS and PFOA concentrations in soil or sediment exceed the calculated RSL, based on a residential scenario, of 0.126 mg/kg, and if PFBS concentrations in soil exceed the USEPA residential RSL of 130 mg/kg;
- Determine if PFOS, PFOA, or sum of PFOS and PFOA concentrations in groundwater exceed the USEPA HA value of 0.07 µg/L, and if PFBS concentrations in groundwater exceed the USEPA Tap Water RSL of 40 µg/L; and,
- Identify potential receptor pathways with immediate impacts to human health (immediate impact to human health is considered consumption of drinking water with PFOS/PFOA above the USEPA HA value, or PFBS above the USEPA Tap Water RSL).

1.3 PROJECT SCOPE

AFFF release areas were selected for SI at DMAFB based on research conducted by HGL (2015) during a PA, the installation scoping visit conducted by Amec Foster Wheeler on 1 September 2016 and the Sampling Design and Rationale Teleconference held on 19 December 2016.

The PA report identified 37 potential AFFF release areas, six of which were identified for SI. Four plane crash sites identified in the PA were combined into one area. The resulting three AFFF release areas for SI at DMAFB are as follows:

- AFFF Release Area 1: FT-03 (Former FTA)
- AFFF Release Area 2: Airfield Crash Sites
    i. Plane Crash 1: F-16 crash (1992)
    ii. Plane Crash 2: F-86 crash (2006)
    iii. Plane Crash 3: Southern end of runway crash (1990s)
    iv. Plane Crash 4: Cessna crash (1990s)
- AFFF Release Area 3: Stormwater Outfall Canal

Media evaluated at each area included surface and subsurface (vadose zone) soil, sediment, and groundwater collected from new and existing monitoring wells.

This SIR discusses and provides a comparison of the analytical results to screening values for PFOS, PFOA, and PFBS in soil, groundwater, and sediment. The remaining PFAS do not have screening values; therefore, only the results of PFOS, PFOA, and PFBS are discussed in detail and presented on figures. Analytical data for all PFAS are included in the tables.

2.0 AFFF RELEASE AREA BACKGROUND

2.1 SITE LOCATION AND SETTING

DMAFB is located in Pima County, within the city limits of Tucson, Arizona (**Figure 2.1-1**). The facility was established in 1925 and encompasses approximately 11,000 acres (URS Corporation [URS],2011).

2.2 SITE HISTORY

DMAFB was originally established as Tucson Landing Field in 1925. The Strategic Air Command stationed two B-29 bombardment groups at the facility in 1946, which remained until it was transferred to the Tactical Air Command in 1976. The 355th Wing is currently the host unit at DMAFB. The Wing's missions are to train A-10 and OA-10 pilots and to provide support and forward air control to ground forces worldwide. The 355th Wing also provides command, control, and communications countermeasures in support of tactical forces with the EC-130H aircraft (URS, 2011).

The total population of the installation is approximately 12,200, composed of approximately 7,000 military personnel, 3,200 dependents, and an estimated 2,000 civilian non-residents that commute to the installation daily. The developed portions of DMAFB include aviation support, industrial, institutional, commercial, residential, public and recreational facilities, agricultural land, and an airfield with an associated 13,645 foot (ft) long runway. In addition to the main installation, DMAFB includes the Air Force Materiel Command's Aerospace Maintenance and Regeneration Group; an industrial complex within the contiguous property that provides long-term aircraft preservation and storage, as well as parts reclamation (URS, 2011).

2.3 PREVIOUS INVESTIGATIONS

HGL was contracted by Air Force Civil Engineer Center (AFCEC) to prepare a PA of FTA and non-FTA sites at DMAFB to identify locations where PFAS may have been used and released into the environment, and to provide an initial assessment of possible migration pathways and receptors of potential contamination (HGL, 2015). Thirty-seven potential AFFF release areas were identified during the PA research, six of which were identified for SI and are listed below:

- Site FT-03
- Plane Crash 1
- Plane Crash 2
- Plane Crash 3
- Plane Crash 4
- Stormwater Outfall Canal

These six areas have been grouped into three SI investigation areas (**Figure 2.3-1**):

1) Site FT-03 is a former FTA located east of the airfield within the boundaries of the active FTA. The former FTA consisted of three circular unlined earthen berms and was used for training exercises from 1968 until the active FTA was established in March 1989. From 1968 to 1972, the

exercises were conducted once per week and from 1972 to 1989 the exercises were conducted once per month. An unknown amount of AFFF was used to extinguish fires during training exercises from 1970 to 1989.

2) Crash Sites 1, 2, 3, and 4: An unknown amount of AFFF was discharged to extinguish fires at four crash incident sites located adjacent to the active runway.
    a. Plane Crash 1: In 1992, an F-16 crash-landed and AFFF foam was applied to the north end of the runway. The AFFF was applied to the runway surface and most likely allowed to dry and/or evaporate.
    b. Plane Crash 2: In 2006, an F-86 aircraft crash-landed near the mid-point of the runway, north of Taxiway A3. Approximately 30 gallons of AFFF was applied to the runway surface and most likely allowed to dry and/or evaporate.
    c. Plane Crash 3: A plane crash in the early- to mid-1990s occurred near the southern end of the runway south of Taxiway A4. Less than 50 gallons of AFFF was used to extinguish an aircraft fire and was left to dissipate where it was applied.
    d. Plane Crash 4: In the early- to mid-1990s, a Cessna aircraft crash-landed short of the runway. Less than 15 gallons of AFFF was applied to the desert area south of the runway to extinguish the aircraft fire and was left to dissipate.
3) Stormwater Outfall Canal: The unlined canal receives surface water from the FTA, flightline and plane crash locations. Water, possibly containing AFFF, was received at each of the two firehose washout locations. Hose washouts were conducted on the North Ramp apron and on the 79th Ramp apron. The washout waters were discharged into stormwater drains that are routed to the outfalls in the Stormwater Canal. The surface drainage across the installation is routed to the Stormwater Outfall Canal then to the Tucson Diversion Channel, which is a tributary of the Santa Cruz River.

3.0 FIELD ACTIVITIES AND ANALYTICAL PROTOCOL

SI activities were conducted at DMAFB from 10 October 2017 to 29 January 2018 at the three AFFF Release Areas identified during the PA (HGL, 2015), Amec Foster Wheeler installation scoping visit, and Sampling Design and Rationale Teleconference (**Figures 2.3-1**). Sample locations were determined following discussions between Amec Foster Wheeler, DMAFB and AFCEC personnel, and were documented in the Final ISWP (Amec Foster Wheeler, 2017a). Media sampled during the SI included surface soil, subsurface soil, sediment, and groundwater collected from new and existing monitoring wells.

Photographic documentation of the SI activities is provided in **Appendix A** and field documentation is provided in **Appendix B**. Inspection activities were recorded by field personnel on field activity daily logs (**Appendix B-1**), and daily PFAS protocol checklists were completed to ensure PFAS were not introduced by Amec Foster Wheeler employees or subcontractors (**Appendix B-2**). Tailgate safety meetings were also conducted each morning prior to beginning work (**Appendix B-3**).

Soil Boring Advancement and Soil Sample Collection

Three deep borings were advanced using air rotary casing hammer (ARCH) drilling techniques for soil sample collection and installation of new monitoring wells in general accordance with Standard Operating Procedure (SOP) AFW-02, *Soil Sampling* and AFW-04, *Monitoring Well Installation* (Appendix D, General QPP), respectively. Five additional borings were advanced, two shallow borings using hollow stem auger (HSA) drilling techniques and three surface soil borings using a hand auger, for soil sample collection. All borings, except for the surface soil borings, were advanced by an Arizona-licensed driller, Yellow Jacket Drilling, Inc. of Phoenix, Arizona. HSA and ARCH borings were initially cleared to a depth of 5 ft below ground surface (bgs) using a hand auger prior to being advanced to total depth.

Three surface soil borings were advanced using a decontaminated hand auger by Amec Foster Wheeler field personnel from ground surface to maximum depths of 1 ft bgs. Two shallow soil borings were advanced using HSA and continuously cored from ground surface to maximum depths of 31.5 ft bgs using decontaminated 2-ft split spoon samplers. Soil cores were field-screened with a photoionization detector (PID) equipped with a 10.6 electron volt lamp for volatile organic vapors and logged by a qualified geoscientist in accordance with the Unified Soil Classification System. The three deep borings for new monitoring well installations were advanced using ARCH to maximum depths of 371 ft bgs.

The ARCH drilling system consisted of a non-rotating flush-threaded 10-inch (in) casing driven in conjunction with a conventional air rotary drill string with a 9 5/8-in diameter tricone bit advanced through 12-inch steel conductor casings cemented in place from ground surface to approximately 21-ft bgs. Cuttings and water added during drilling for dust control were cleared from the hole by bit rotation and air circulation and discharged through a hose into a cyclone to separate the air from the formation cuttings and facilitate drill cuttings containment. Sample intervals were cored using a wire line coring system with down hole hammer equipped with split spoon samplers, approximately 2.5-in outside

diameter and 2-ft in length. Drill cuttings were collected from the cyclone at least every 10 ft for PID screening and logging.

Soil samples for laboratory analysis were extracted from the hand auger bucket, split spoon sampler, or drill cuttings using nitrile gloves and transferred directly into laboratory-provided high-density polyethylene (HDPE) containers, in accordance with the ISWP and SOP AFW-02 (PFAS), *Soil Sampling* (Appendix D, General QPP). Sample containers were sealed, labeled, packed into ice-filled coolers, and delivered under chain-of-custody (CoC) to SGS Accutest in Orlando, Florida for PFAS analysis, and CT Laboratories in Baraboo, Wisconsin for physiochemical properties analysis.

The resulting soil boring information, PID readings, lithologic data, and analytical soil sample collection intervals are included on soil boring/monitoring well records, provided in **Appendix B-4.** Analytical soil sample collection details (sample ID numbers, date/time collected, and depths) are recorded on daily field activity logs and on soil boring/monitoring well records provided in **Appendix B-1** and **Appendix B-4**. A basewide geologic cross section developed from the lithologic data collected during SI well installation activities is provided on **Figure 3.0-1**.

Monitoring Well Installation and Development

Three new permanent groundwater monitoring wells were installed in accordance with SOP AFW-04, *Monitoring Well Installation* (Appendix D, General QPP), one at each of the AFFF release areas. Monitoring well design was based on observed depth to water at the time of drilling and geologic conditions encountered. New monitoring wells were constructed of threaded 4-in diameter, Schedule 80 polyvinyl chloride (PVC) blank casing sections, 20-ft sections of 0.020-in machine slotted 4-inch diameter Schedule 80 PVC screen, and PVC end caps, in accordance with the ISWP. Stainless steel centralizers were installed every 50 ft from the bottom of the blank casing to ensure proper placement inside the borehole.

The well strings were suspended in tension from the surface by means of a landing clamp during placement of annular materials. The filter pack was placed in the annular space by pouring it down the inside of the drive casing from the surface. Size 10/20 mesh, clean Colorado Silica filter sand was installed from the bottom of the open borehole to 3 ft above the top of the screen interval. When the filter pack reached the desired depth level, the well screened interval was surged until no settlement of the sand pack was observed during sounding. After placement of the filter pack was completed, a minimum 3-ft Quik-Gel Baroid bentonite chip transition seal was placed above the filter pack sand. The bentonite seal was allowed to hydrate completely before placement of remaining annular materials in the borehole. The annular seal consisted of a cement bentonite grout mixture generally containing five to six gallons of clean water mixed with each 94-pound bag of Portland cement and approximately 5 percent by weight of bentonite (4.7 pounds of bentonite per 94 pounds of Portland cement). The cement bentonite grout was placed in approximately 100 ft lifts from the top of the transition seal to within 5 ft of surface grade. The upper 5 ft of the boreholes inclusive of the remaining annular space were sealed with cement, followed by 1 ft of concrete to surface. The wells were completed with a concrete pad base and flush mount well vault. New monitoring well construction details are recorded on well construction forms, provided in

Appendix B-5 and summarized in **Table 3.0-1**. **Table 3.0-1** also includes available well construction data for existing monitoring wells sampled during this SI.

New and existing monitoring wells were developed a minimum of 24 hours after completion, in accordance with SOP AFW-05, *Monitoring Well Development* (Appendix D, General QPP). The wells were developed by surging, bailing, and pumping. Surging was performed using a surge block, which consisted of a solid piston with a rubber flange attached to the bottom of a drop pipe. The surge block was lowered and raised multiple times within the casing in stages to surge water into and out of the well screen openings. Formation solids brought in through the well screen during surging were removed from the bottom of the well using a stainless-steel bailer. Following surging and bailing, the wells were pumped using a stainless-steel Grundfos electric submersible pump. Pump development was completed by pumping the well screen intervals in stages until stable water quality parameters were reached.

Development water quality parameters (pH, specific conductance, temperature, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity) were measured using a calibrated water quality meter and recorded on well development logs, provided in **Appendix B-6**. A minimum of three saturated casing volumes of water were purged, and development continued until the field water quality parameters stabilized and/or water is generally sediment-free or clear (less than 50 nephelometric turbidity units (NTU)). Water quality meter calibration forms are provided in **Appendix B-7**.

Surveying

Soil borings, newly installed, and existing monitoring wells were surveyed by an Arizona Licensed Professional Surveyor (Amec Foster Wheeler, Phoenix, Arizona) for horizontal coordinates, ground surface elevation, and top-of-casing elevation, where applicable (**Table 3.0-1; Appendix E**). Horizontal coordinates were surveyed based on Arizona State Plane Coordinate System, East Zone, United States Survey Feet, North American Datum of 1983 (NAD83). Groundwater surface elevations were calculated relative to surveyed top-of-casing elevations based on North American Vertical Datum of 1988 (NAVD88).

Groundwater Elevations

Depth to water measurements were recorded from new and existing monitoring wells prior to groundwater purging and sampling, and groundwater elevations were calculated relative to top of casing elevations (**Table 3.0-2**). Depth to groundwater on 29 January 2018 at Davis-Monthan AFB ranged from 282.49 to 350.49 ft below top of casing (btoc), with the calculated groundwater elevations ranging from 2263.03 to 2428.95 ft above mean sea level (amsl) (**Table 3.0-2**). Local groundwater flow varies depending on proximity to local production wells; however, the general groundwater flow direction at DMAFB is to the northwest as depicted on **Figure 3.0-2**.

Groundwater Sampling

The groundwater sampling program included the collection of groundwater samples for laboratory chemical analysis of PFAS from three new monitoring wells and four existing monitoring wells. Samples were collected using low-flow groundwater sampling methods with a submersible Grundfos pump

outfitted with PVC piping or utilizing existing submersible pumps that had been previously installed. The PVC was connected to galvanized steel connections, a brass flow meter, and a brass discharge valve at a galvanized steel tee which was connected to a flow-through cell by HDPE tubing, whereby recovered groundwater was monitored for pH, temperature, specific conductivity, DO, and ORP as depicted in Photo 19, **Appendix A**. Turbidity was measured with a separate turbidity meter.

Groundwater samples were collected after they achieved stabilization criteria. At the following wells within AFFF Area 2, the three turbidity measurements before sampling were under 10 NTU, but not with 10% of the previous reading: MW02001, ST-35-MW-40, ST-35-MW-42, ST-35-MW-43, ST-35-MW-44.

Groundwater sampling equipment was calibrated prior to use, with the resulting data recorded on water quality sampling instrument calibration forms contained in **Appendix B-7**. Depth to water measurements and field parameters were monitored until groundwater indicator parameters reached stabilization criteria in accordance with SOP AFW-03 (PFAS)-*Groundwater Sampling* (Appendix D, General QPP). The flow-through cell was then removed and groundwater samples were collected directly into laboratory-provided HDPE containers from the brass discharge port. The sample containers were sealed, labeled, packed on ice in an insulated cooler, and delivered to SGS Accutest under CoC protocol. Groundwater sampling activities were documented on groundwater sampling logs provided in **Appendix B-8**.

Sediment Sampling

Sediment samples were collected during the SI to assess the presence or absence of PFAS along the Stormwater Outfall Canal and the drainage slope of the fire training rings associated with AFFF Release Area 1 (FT-03 [Former Fire Training Area]) and 3 (Stormwater Outfall Canal). Samples were collected with a HDPE cup mounted on an extendable pole or with a stainless-steel spoon and decanted into laboratory-provided containers, in accordance with SOP AFW-07 *Sediment Sampling* as described in Appendix D of the General QPP (Amec Foster Wheeler, 2017b). The sample containers were sealed, labeled, packed on ice in an insulated cooler, and delivered to SGS Accutest under CoC protocol. Sample collection data was documented on sediment sample collection logs provided in **Appendix B-9**.

Surface Water Sampling

Four proposed surface water samples, SW01001 (AFFF Release Area 1), SW03001, SW03002, SW03003, and SW03004 (AFFF Release Area 3) were not collected. This was attributed to the lack of water in the drainage areas and the overall arid conditions observed during the SI.

Total Sample Counts

The following total sample counts for each media (including field duplicate samples) during SI activities at Davis-Monthan AFB are listed below:

- Twenty soil samples (including two duplicate samples) were collected at eight soil boring locations during the SI;

- Eight groundwater samples (including one duplicate sample) were collected from three new monitoring wells and four existing monitoring wells during the SI; and,
- Six sediment samples (including one duplicate sample) were collected from the Stormwater Outfall Canal and the drainage depression at FT-03 during the SI.

Samples collected during the SI were analyzed for the following 16 PFAS compounds:

- PFOS;
- PFOA;
- PFBS;
- Perfluoroheptanoic acid (PFHpA);
- Perfluorohexanesulfonic acid (PFHxS);
- Perfluorononanoic acid (PFNA);
- N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA);
- N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA);
- Perfluorodecanoic acid (PFDA);
- Perfluorotetradecanoic acid (PFTA);
- Perfluorododecanoic acid (PFDoA);
- Perfluorohexanoic acid (PFHxA);
- Perfluorotridecanoic acid (PFTrDA);
- Perfluoroundecanoic acid (PFUnA);
- 6:2 fluorotelomer sulfonate (FTS); and,
- 8:2 FTS.

Soil, groundwater, and sediment samples were analyzed by SGS Accutest in Orlando, Florida, a DoD Environmental Laboratory Accreditation Program accredited laboratory. Samples were analyzed by Modified USEPA Method 537 using Liquid Chromatography and Tandem Mass Spectrometry (LC-MS/MS). The LC-MS/MS method provides acceptable detection limits to confirm the presence of PFAS listed above. The laboratory analytical reports for the PFAS samples collected during the SI are included in **Appendix C**.

Analytical results for PFOS, PFOA, and PFBS are discussed in the following sections, while the analytical results for the remaining PFAS constituents are tabulated and provided at the conclusion of this SIR.

Co-occurrence of PFOS and PFOA (PFOS + PFOA) in aqueous samples was reported using the following guidelines:

1. If PFOS and PFOA are both detected in concentrations at or above the laboratory detection limit (DL) in groundwater, then the reported concentration for PFOA was added to the reported concentration for PFOS.
2. If only PFOS or only PFOA is detected at or above the DL in groundwater, then the concentration of the detected analyte only is reported.

3. If neither PFOA nor PFOS are detected at concentrations at or above the DL, then co-occurrence was reported as *Not Detected*.

One composite surface soil sample and one composite subsurface soil sample were also collected at each AFFF release area where soil sampling was conducted and submitted to CT Laboratories in Baraboo, Wisconsin for laboratory analysis of physiochemical properties, including soil pH (USEPA Method 9045B), particle size analysis (ASTM International D422), and total organic carbon (TOC) content (Lloyd Kahn 9060A Method). The particle size analysis was subcontracted to Mi-Tech Services, Inc. in Weston, Wisconsin. The laboratory analytical reports for the physiochemical properties samples collected during the SI are included in **Appendix C**.

Data Validation and Usability Assessment

Analytical laboratory data from soil and groundwater samples analyzed for PFAS were validated in February 2018.

Amec Foster Wheeler evaluated a total of 544 data records from field samples collected at Davis-Monthan AFB during the validation. Amec Foster Wheeler J or UJ qualified 100 records (18.4%) as estimated values because of low surrogate recoveries, analyte concentrations between the DL and the limit of quantitation (LOQ), and/or field duplicate imprecision. Amec Foster Wheeler also, Q qualified 2 records (0.4%) because of target analyte detections in associated equipment blanks and 100% of the data should be considered usable, meeting the QPP-specified 90% completeness goal.

For the areas sampled in this SI, the decision to advance each of the areas for further investigation was based on non-qualified data. A description of the data validation scope, procedures, observations and actions is presented in the Data Validation Report provided in **Appendix D**.

Investigation-Derived Waste

Investigation-Derived Waste (IDW) consisted of soil cuttings and water from soil boring advancement, well development water, groundwater sampling purge water, equipment decontamination water, disposable personal protective equipment (PPE), and other miscellaneous refuse. Used PPE and other miscellaneous refuse was placed in plastic bags and discarded into an on-site sanitary trash container for disposal at a sanitary landfill. Soil IDW consisting of drill cuttings generated from the shallow soil borings were placed back in the boreholes after sampling was completed. The remaining drill cuttings for all borings were containerized into six 20-cubic yard open-top roll off bins and transported to the DMAFB Landfill 01 designated staging area pending analysis and disposal. Liquid IDW generated during the SI was containerized into a 4,900-gallon poly tanks with spillguards pending analysis and disposal generated during the SI. The one poly tank is stored just outside the FT-03, to the northwest, which was the designated area pending analysis and disposal. The samples were submitted to SGS Accutest in Orlando, Florida for laboratory analysis of PFAS, volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, and metals, polychlorinated biphenyls, total petroleum hydrocarbons (gasoline

range organics and diesel range organics), flashpoint, pH, sulfide, and cyanide. IDW photo logs, analytical reports, signed profiles and IDW transportation/disposal documentation are provided in **Appendix F**.

A detailed description of sampling locations and results at each AFFF release area is provided in the following sections.

3.1 AFFF RELEASE AREA 1: FT-03 (FORMER FIRE TRAINING AREA)

AFFF Release Area 1 consisted of three unlined circular, bermed former burn pits where AFFF was used during training activities. Exercises using AFFF occurred weekly from 1970-1972 and monthly from 1972 to 1989.

3.1.1 Sample Location and Methodologies

3.1.1.1 Soil Samples

Three soil borings (MW01001, SB01002, and SB01003) were advanced between 16 October 2017 and 26 October 2017 within the footprint of former burn pits where AFFF may have been released (**Figure 3.1-1**). SB01002 was advanced within the footprint of the south fire ring to a depth of 31.5 ft bgs and SB01003 was advanced within the footprint of the east fire ring to a depth of 31 ft bgs. MW01001 was advanced below the water table within the west fire ring to a depth of 371 ft bgs. Surface soil samples were collected from all soil borings MW01001, SB01002, and SB01003 at 0 to 1 ft bgs, for PFAS analysis and one composite sample was taken for TOC, pH, and particle size analysis of the surface soil. Subsurface soil samples were collected from 29 to 30 ft bgs for PFAS analysis at SB01002 and SB01003. Subsurface soil samples were collected from the intervals 29 to 30, 170 to 171, and 350 to 351 ft bgs, for PFAS analysis at MW01001 and composited for TOC, pH, and particle size analysis. Groundwater was encountered at 353 ft bgs during boring advancement.

3.1.1.2 Groundwater Samples

A permanent monitoring well was installed in the soil boring for MW01001 between 27 and 29 October 2017 to assess PFAS concentrations in groundwater beneath FT-03 (**Figure 3.1-1**). The new monitoring well was developed on 2 January 2018 and sampled on 3 January 2018.

3.1.1.1 Sediment Samples

One sediment location (SD01001) was sampled on 26 October 2017 from a low-lying depression located downslope of the fire training rings, to determine the presence of residual PFAS (**Figure 3.1-1**).

3.1.2 Analytical Results

3.1.2.1 Soil Results

Three surface and six subsurface soil samples (including one field duplicate) were collected from borings MW01001, SB01002, and SB01003 between 16 and 26 October 2017. PFAS results are provided in **Table 3.1-1**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.1-2** and summarized below.

MW01001:

- PFOS was detected above the calculated RSL in surface soil (0 to 1 ft bgs) at a concentration of 4.87 mg/kg and was detected below the calculated RSL in subsurface soils at estimated concentrations of 0.0582 mg/kg (29 to 30 ft bgs) and 0.00321 mg/kg (field duplicate, 350 to 351 ft bgs).
- PFOA was detected above the calculated RSL in surface soil (0 to 1 ft bgs) at a concentration of 2.26 mg/kg and was not detected in subsurface soils (29 to 30, 170 to 171, and 350 to 351 ft bgs).
- PFBS was detected below the RSL in surface soil (0 to 1 ft bgs) at a concentration of 0.921 mg/kg and was not detected in subsurface soils (29 to 30, 170 to 171, and 350 to 351 ft bgs).

SB01002:

- PFOS was detected above the calculated RSL in surface soil at a concentration of 1.86 mg/kg (0 to 1 ft bgs) and was detected below the calculated RSL at a concentration of 0.0127 mg/kg in subsurface soil (29 to 30 ft bgs).
- PFOA was detected above the calculated RSL in surface soil at a concentration of 1.80 mg/kg (0 to 1 ft bgs) and was detected below the calculated RSL at a concentration of 0.0208 mg/kg in subsurface soil (29 to 30 ft bgs).
- PFBS was detected below the RSL in surface and subsurface soils at a concentration of 0.858 mg/kg (0 to 1 ft bgs) and an estimated concentration of 0.00786 mg/kg (29 to 30 ft bgs).

SB01003:

- PFOS was detected above the calculated RSL in surface soil at a concentration of 0.865 mg/kg (0 to 1 ft bgs) and below the calculated RSL at an estimated concentration of 0.00169 mg/kg in subsurface soil (29 to 30 ft bgs).
- PFOA was detected above the calculated RSL in surface soil at a concentration of 0.601 mg/kg (0 to 1 feet bgs) and below the calculated RSL at an estimated concentration of 0.00183 mg/kg in subsurface soil (29 to 30 ft bgs).
- PFBS was not detected in surface or subsurface soil.

Physiochemical properties analysis of composite samples indicated TOC concentrations of 4,090 mg/kg (0 to 1 ft bgs) and 171 mg/kg (350 to 351 ft bgs) and pH concentrations of 7.49 Standard Unit (S.U.) (0 to 1 ft bgs) and 8.64 S.U. (350 to 351 ft bgs) (**Table 3.1-2**). Particle size analysis of the composite sample collected from the 0 to 1 ft bgs sample was 42.4% fines (silt and clay), 57.4% sand (fine to coarse), and 0.2% gravel (fine), and analysis of the subsurface sample indicated 59.5% fines (silt and clay), 63.5% sand (fine to coarse), and 0.9% gravel (fine). The material descriptions for the 0 to 1 ft bgs sample was a reddish brown, silty sand, while the subsurface sample was described as reddish brown silt with sand.

3.1.2.2 Groundwater Results

One groundwater sample was collected from new monitoring well MW01001. PFAS results are provided in **Table 3.1-3**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.1-3** and summarized below.

MW01001:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

3.1.2.3 Sediment Results

One sediment sample was collected for PFAS analysis, with the results provided in **Table 3.1-4**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.1-4** and are summarized below.

SD01001:

- PFOS was detected above the calculated RSL at a concentration of 0.332 mg/kg.
- PFOA was detected below the calculated RSL at a concentration of 0.00298 mg/kg.
- PFBS was detected below the RSL at an estimated concentration of 0.000811 mg/kg.

3.1.3 Conclusions

PFOS and PFOA were detected in soil at AFFF Release Area 1 at concentrations above the calculated RSL. The highest concentrations were identified in surface soils at MW01001 and SB01002 located inside the boundary of the West Fire Ring and the South Fire Ring where AFFF was released. PFOS, PFOA, and PFBS were not detected in groundwater. PFOS was detected above the calculated RSL in the sediment.

3.2 AFFF RELEASE AREA 2: AIRFIELD CRASH SITES

There are four individual crash events located adjacent to the active runway where unknown amounts of AFFF was used to extinguish fires. Plane crash 1 is located on the north end of the runway where an F-16 crash landed in 1992. Plane Crash 2 is located adjacent to the runway when a F-86 crash landed. Plane crash 3 is located adjacent to the runway when an airplane crash landed. Plane crash 4 is located south of the runway after a Cessna airplane crashed short of the runway.

3.2.1 Sample Location and Methodologies

3.2.1.1 Soil Samples

Four soil borings, MW02001, SB02002, SB02003, and SB02004 were advanced along the runway from 19 to 21 December 2017 (**Figure 3.2-1**). MW02001 was advanced below the water table within the boundary of Plane Crash 4 at the southern, upgradient end of the runway to a depth 308 ft bgs. SB02002, SB02003, and SB02004 were sampled via hand auger methods to depths of 1 ft bgs. Surface soil samples were collected from 0 to 1 ft bgs at all four boring locations for PFAS analysis and composited for TOC, pH, and particle size analysis. Subsurface soil samples at MW02001 were collected from 29 to 30 for PFAS analysis and from 170 to 171 ft bgs for PFAS analysis and composited for TOC, pH, and particle size analysis. A soil sample was not collected from just above the water table because the depth to groundwater encountered during drilling, approximately 287 ft bgs, was shallower than anticipated.

3.2.1.2 Groundwater Samples

A permanent monitoring well was installed in the soil boring for MW02001 between 21 and 23 December 2017 to assess PFAS concentrations at airfield Crash Site 4 and upgradient of the active runway (**Figure 3.2-1**). The monitoring well was developed on 4 January 2018 and sampled on 5 January 2018. Groundwater samples were also collected from existing airfield monitoring wells: ST-35-MW-40, located northeast of Plane Crash 2; ST-35-MW-42 and ST-35-MW-43, located on the north end of the airfield downgradient from the Plane Crash locations; and ST-35-MW-44, located near the center of the east side of the runway and downgradient of Plan Crash locations 2, 3, and 4. Groundwater samples were not collected from existing monitoring well ST-35-MW-35 because it had been abandoned and replaced with ST-35-MW-44, or from existing monitoring wells ST-35-MW-28 or ST-35-32 because the existing pumps were not functional.

3.2.2 Analytical Results

3.2.2.1 Soil Results

Five surface soil samples (including one field duplicate) were collected from soil borings MW02001, SB02002, SB02003, and SB02004 and two subsurface soil samples were collected from the soil boring for MW02001 between 19 and 21 December 2017. PFAS results are provided in **Table 3.1-1**. PFOS, PFOA and PFBS results are illustrated on **Figure 3.2-2** and are summarized below.

MW02001:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

SB02002:

- PFOS was detected below the calculated RSL at an estimated concentration of 0.00135 mg/kg (0 to 1 ft bgs).
- PFOA was not detected.
- PFBS was not detected.

SB02003:

- PFOS was detected below the calculated RSL at an estimated concentration of 0.00112 mg/kg (0 to 1 ft bgs).
- PFOA was not detected.
- PFBS was not detected.

SB02004:

- PFOS was detected below the calculated RSL at an estimated concentration of 0.0007 mg/kg (0 to 1 ft bgs).

- PFOA was not detected.
- PFBS was not detected.

Physiochemical properties analysis of composite samples indicated a TOC concentration of 3,430 mg/kg, and a pH concentration of 8.51 S.U. (**Table 3.1-2**). The particle size analytical results for the 0 to 1 ft bgs composite sample was 30% fines (silt and clay), 64.1% sand (fine to coarse), and 5.9% gravel (fine). The material description for the sample was a red brown, silty sand.

3.2.2.2 Groundwater Results

Six groundwater samples (including one field duplicate) were collected from MW02001, ST-35-MW-40, ST-35-MW-42, ST-35-MW-43, and ST-35-MW-44 on 5 January 2018. PFAS results are provided in **Table 3.1-3**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.2-3** and are summarized below.

MW02001:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

ST-35-MW-40:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

ST-35-MW-42:

- PFOS was not detected.
- PFOA was detected below the USEPA HA value at a concentration of 0.0394 µg/L.
- PFOS+PFOA was calculated below the USEPA HA value at a concentration of 0.0394 µg/L.
- PFBS was detected below the USEPA Tap Water RSL at a concentration of 0.0198 µg/L.

ST-35-MW-43:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

ST-35-MW-44:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

3.2.3 Conclusions

PFOS was detected in surface soils at AFFF Release Area 2 at concentrations below the calculated RSL at shallow borings, SB02002, SB02003, and SB02004. PFOA and PFOS+PFOA detections in groundwater were below the USEPA HA value in existing well ST-35-MW-42. PFBS was detected below the USEPA Tap Water RSL in ST-35-MW-42.

3.3 AFFF RELEASE AREA 3: STORMWATER OUTFALL CANAL

The surface drainage over most of the installation is routed to the unlined Stormwater Outfall Canal located at the northern, downgradient end of the installation, then to the partially lined Tucson Diversion Channel which is classified as a tributary of the Santa Cruz River. Overland sheet flow and a system of subsurface storm drainage pipes route runoff to the Stormwater Outfall Canal. Potential runoff containing AFFF from release areas is routed into the Stormwater Outfall Canal.

3.3.1 Sample Location and Methodologies

3.3.1.1 Soil Samples

One soil boring, MW03001, was advanced upgradient of the Stormwater Outfall Canal between 13 and 16 October 2017 (**Figure 3.3-1**). Surface soil samples were collected from 0 to 1 ft bgs for PFAS analysis and composited for TOC, pH, and particle size analysis. Subsurface soil samples were collected for PFAS analysis from 300 to 301 ft bgs and composited for TOC, pH, and particle size analysis. Groundwater was encountered at 302 ft bgs during boring advancement.

3.3.1.2 Groundwater Samples

One permanent monitoring well was installed in the soil boring for MW03001 between 16 and 18 October 2017 to assess PFAS concentrations upgradient of the Stormwater Outfall Canal and downgradient of the active runway (**Figure 3.3-1**). The monitoring well was developed on 3 January 2018 and sampled on 4 January 2018.

3.3.1.3 Sediment Samples

Four sediment locations (SD03001, SD03002, SD03003, and SD03004) were sampled between 26 October 2017 and 5 January 2018 from the North Ramp Drainage Outfall, Former Fire Station No. 1 Drainage Outfall, and along the Stormwater Outfall Canal to determine the presence of residual PFAS (**Figure 3.3-1**).

3.3.2 Analytical Results

3.3.2.1 Soil Results

One surface soil and three subsurface soil samples were collected from the soil boring for MW03001 between 13 and 15 October 2017. PFAS results are provided in **Table 3.1-1**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.3-2** and are summarized below.

MW03001:

- PFOS was detected below the calculated RSL in surface soil at a concentration of 0.00172 mg/kg (0 to 1 ft bgs) and was not detected in subsurface soils.
- PFOA was not detected.
- PFBS was not detected.

Physiochemical properties analysis of composite samples indicated TOC concentrations of 67.5 mg/kg (300 to 301 ft bgs) and 5,570 mg/kg (0 to 1 ft bgs) and pH concentrations of 8.35 S.U. (0 to 1 ft bgs) and 8.9 S.U. (300 to 301 ft bgs) (**Table 3.1-2**). Particle size analysis of the composite sample collected from 0 to 1 ft bgs sample indicated 32% fines (silt and clay), 65.5% sand (fine to coarse), and 2.5% gravel (fine), and analysis of the sample collected from the subsurface indicated 10.3% fines (silt and clay), 84.1% sand (fine to coarse), and 5.6% gravel (fine). The material descriptions for the surface sample was a reddish brown, silty sand, while the subsurface sample was described as reddish brown, poorly graded sand with silt.

3.3.2.2 Groundwater Results

One groundwater sample was collected from MW03001 on 4 January 2018. PFAS results are provided in **Table 3.1-3**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.3-3** and are summarized below.

MW03001:

- PFOS was not detected.
- PFOA was not detected.
- PFOS+PFOA was not detected.
- PFBS was not detected.

3.3.2.3 Sediment Results

Five sediment samples (including one field duplicate) were collected for PFAS analysis, with the results provided in **Table 3.1-4**. PFOS, PFOA, and PFBS results are illustrated on **Figure 3.3-4** and are summarized below.

SD03001:

- PFOS was detected below the calculated RSL at a maximum estimated concentration of 0.00151 mg/kg (field duplicate).
- PFOA was not detected.
- PFBS was not detected.

SD03002:

- PFOS was detected below the calculated RSL at an estimated concentration of 0.00107 mg/kg.
- PFOA was not detected.
- PFBS was not detected.

SD03003:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

SD03004:

- PFOS was not detected.
- PFOA was not detected.
- PFBS was not detected.

3.3.3 Conclusions

PFOS was detected in surface soils at AFFF Release Area 3 at concentrations below the calculated RSL. PFAS were not detected in groundwater. PFOS was detected at concentrations below the calculated RSL in sediment. Surface water samples were not collected because water was not present due to arid conditions.

4.0 MIGRATION/EXPOSURE PATHWAYS AND TARGETS

An updated basewide conceptual site model table is provided as **Table 4.0-1**. The table provides an overview of the facility, physical, release, land use, exposure, and ecological profiles at Davis-Monthan AFB. The table has been updated to include information collected during this SI. A more detailed description of source area conditions and exposure pathways is described in the following sections.

4.1 SOIL EXPOSURE PATHWAY

4.1.1 Local Geologic Setting

The principle soil types at DMAFB consist of Tertiary to Quaternary age volcanic deposits consisting of gravel, sand, silt, and clay with minor amounts of gypsiferous and anhydrous sediments. DMAFB is in the Tucson Basin which is 1,000-square mile area in the upper Santa Cruz River drainage basin (HGL, 2015). The block-faulted mountains surrounding the Tucson Basin are composed of Precambrian through Tertiary age granitic, metamorphic, volcanic, and consolidated sedimentary rock. The basin-fill sediments form the regional aquifer have been divided into the upper and lower basin-fill units and these have been subdivided into stratigraphic units. In ascending order, the lower basin-fill unit is comprised of the Pantano formation and the lower and middle Tinaja Beds. The upper basin fill unit is comprised of the upper Tinaja Beds, the Fort Lowell Formation, and the surficial alluvial deposits, which include stream channel deposits (HGL, 2015). A Basewide geologic cross section developed from the SI well installation activities is provided on **Figure 3.0-1**.

4.1.2 Soil Exposure Pathways and Targets

PFOS and PFOA were detected in surface soil at concentrations exceeding calculated RSLs at AFFF Release Area 1. AFFF Release Areas 1 is an open, unpaved area with exposed surface soil.

Surface soil at AFFF Release Area 1 is potentially accessible by USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers. Access to source area soil is not expected to change in the future. Potential exposure routes for soil include inhalation of impacted surface soil dust particles, and ingestion of and dermal contact with impacted soil.

4.1.3 Soil Exposure Conclusions

Based on the SI results described above, potentially complete soil exposure pathway exists at AFFF Release Area 1. Potential human exposure receptors from PFOS and PFOA in surface soil include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers. Further investigation and evaluation of specific exposure conditions is required to determine if exposure pathways are complete.

4.2 SEDIMENT EXPOSURE PATHWAY

4.2.1 Sediment Exposure Pathways and Targets

PFOS was detected in sediment at AFFF Release Areas 1 at concentrations exceeding the calculated RSL. Sediment at Davis-Monthan AFB is potentially accessible by USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers. Potential exposure routes for sediment include dermal contact with submerged or exposed sediment during work activities such as maintenance of drainage features and outfalls that contain PFOS-impacted sediment.

4.2.2 Sediment Exposure Conclusions

PFOS was detected in sediments collected from AFFF Release Area 1 at concentrations exceeding the calculated RSL. Potential exposure receptors include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers that may come into contact with sediment at these AFFF Release Areas. Further investigation and evaluation of specific exposure conditions is recommended to determine if exposure pathways are complete.

4.3 GROUNDWATER MIGRATION PATHWAY

4.3.1 Local Hydrogeologic Setting

The units that form the aquifer are loosely consolidated to strongly cemented and have an estimated thickness of more than 5,000 ft. The Pantano formation is the lowest unit into which wells are screened and the top of the formation occurs at approximately 1,300 ft amsl. The Tinaja beds overlies the Pantano formation and the top of this formation occurs at approximately 2,400 ft amsl. Most of the wells at Davis-Monthan AFB are completed into the Tinaja Beds which have been subdivided into the upper, middle, and lower units (HGL, 2015). Overlaying the Tinaja beds is the Fort Lowell Formation which occurs from approximately 2,200 ft to 2,500 ft amsl. The Fort Lowell formation is overlain by surficial deposits emplaced by the present drainage system. The formations which comprise the aquifer of the Tucson Basin generally act as a single hydrologic unit.

The porosity of the Fort Lowell Formation ranges from 26 to 34 percent, with an average of 30 percent. Average specific yield is approximately 15 percent. Hydraulic conductivity, estimated from pumping tests at Tucson Water wells, ranges from 200 to 500 gallons per day per square foot (gpd/ft2). The ratio of vertical to horizontal hydraulic conductivity computed from aquifer tests for units similar to the Fort Lowell Formation commonly ranges from 1:10 to 1:100, indicating that vertical hydraulic conductivity of the Fort Lowell Formation may be in the range of 1.2 to 20 gpd/ft^2. The porosity of the upper Tinaja beds ranges from 24 to 35 percent. Horizontal and vertical hydraulic conductivities of the upper Tinaja beds were estimated ranging from 110 to 480 gpd/ft2 for horizontal hydraulic conductivity with an average of approximately 300 gpd/ft2, and ranging from 2 to 17 gpd/ft2 for vertical conductivity with an average of approximately 7 gpd/ft2. The ratio of vertical to horizontal hydraulic conductivity was approximately 1:40 (ADEQ and URS, 2015).

The Tucson Basin is drained by the Santa Cruz River, which is located approximately 4.5 miles west of the base. Major tributaries of the Santa Cruz River near DMAFB include the:

- Rillito Creek (4.5 miles north);
- Julian Wash (1 mile southwest); and,
- Pantano Wash (0.5 miles northeast).

The Pantano wash flows northwest, discharging into the Rillito Creek. The Rillito Creek flows west and the Julian wash flows northwest, with both discharging directly into the Santa Cruz River (HGL, 2015). Surface drainage from most of the installation is collected by a system of swales, dry washes, and subsurface storm drainage pipes that collect runoff along the flight line and main runway. These drainage paths route the runoff to the Stormwater Outfall Canal and then to the Tucson Diversion Channel, which is classified as a tributary of the Santa Cruz River. Low precipitation (10 inches per year) and high evaporation (65 inches per year) rates leave surface streams and rivers typically dry; only during and immediately following storm events will they convey water. Groundwater is recharged at the basin periphery and by streambed infiltration along the Santa Cruz River and its tributaries.

Although the streams in the Tucson basin are dry for long periods each year, they transport volumes of water that are significant in terms of water use, and large quantities of streamflow infiltrate the streambed alluvium. Much of the water that infiltrates the streambed alluvium is recharged to the underlying aquifer. Approximately a third of the floodwater that infiltrates the bed of the Santa Cruz River is promptly added to ground-water storage but that the remainder may take more than 6 months to reach the water table. The amount of recharge along the major streams probably is equivalent to at least 90 percent of the amount of infiltrated water, and in places where the water level is deep enough not to interfere with the infiltration rate and where the rate is great, recharge probably approaches 100 percent of the infiltration. The mean annual infiltration for 1936-1963 along the Santa Cruz River, Canada del Oro, and Pantano Wash ranged from about 80 to 480 acre-feet per mile. The mean annual infiltration along Canada del Oro, Rillito Creek, Tanque Verde Creek and parts of Sabino Creek and Agua Caliente Wash, and Rincon Creek ranged from 295 to 820 acre-feet per mile (Davidson, 1973).

More than one-third of the annual precipitation occurs during the months of July and August when moisture-bearing winds move into Arizona from the Gulf of Mexico. Summer rains occur in the form of thunderstorms, which can produce short, intense downpours, strong winds, lightning strikes, and flash floods. Tropical systems from the eastern Pacific Ocean can affect the area in the summer and fall months. Several large-scale flooding events have been associated with these systems including historic events in 1977 and 1983. During storm runoff recharge events, groundwater mounding occurs at the water table along stream channels and the direction of groundwater flow may temporarily shift toward a direction nearly perpendicular to the stream channel in localized areas. Recharge occurring along stream channels in response to storm runoff events has been shown to be highly variable (ADEQ and URS, 2015).

4.3.2 Groundwater Exposure Pathways and Targets

PFAS, once in groundwater, are highly mobile and will migrate near the same velocity as groundwater due to their high solubility and low partition coefficient value. PFAS are chemically and biologically stable in

This section provides information about private drinking water sources. It contains personal privacy or other information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

the environment and resist typical environmental degradation processes. As a result, these chemicals are extremely persistent in the environment, with a half-life greater than 41 years for PFOS and greater than 92 years for PFOA (USEPA, 2014). PFBS are generally less toxic and less bioaccumulative in wildlife and humans (USEPA, 2017b). PFOA was detected in groundwater at concentrations below the USEPA HAs for PFOS, PFOA, and/or the sum of PFOS/PFOA in ST-35-MW-42 at AFFF Release Area 2.

New and existing groundwater monitoring wells at DMAFB are screened in the Fort Lowell and Tinaja Bed formations. Groundwater flow direction at DMAFB is generally toward the north and northwest as depicted on **Figure 3.0-2**, with the depth to groundwater during this SI ranging from 282 to 350 feet bgs. MW03001 (AFFF Release Area 3) is screened within the Fort Lowell formation at a depth interval of 301 to 321 feet below ground surface (bgs). ST-35-MW-42 (AFFF Release Area 2) is screened from 318 to 368 feet bgs within the Tinaja Bed formation. MW03001 had no detections of PFOS, PFOA, or PFBS above detectable levels while ST-35-MW-42, the deeper well, had detections of PFOA and PFBS. No additional existing monitoring wells screened at deeper intervals than wells sampled during the SI are available within the base boundary.

Amec Foster Wheeler performed a desktop survey of potential private and public water supply wells within a one-mile and four-mile distance of the installation boundary to identify potential receptor pathways and down-stream and/or downgradient receptors. The desktop survey included a review of the Arizona Department of Water Resources (ADWR) Wells 55 Registry (ADWR 2018). A total of 2,256 wells were identified within a four-mile distance of the installation (**Figure 4.3-1**), 277 of which are potential drinking water wells located (b) (6) of DMAFB **(Figure 4.3-2)**. Of the 277 downgradient wells, a total of 112 wells were identified as (b) (6) and 115 were identified as municipal use wells. The remaining 50 wells were identified as other-production, reserved or use was not identified.

The City of Tucson has five production wells located within approximately a one-mile radius of ST-35-MW-42, north of the Stormwater Outfall Canal. The number and location of wells, the rates for individual wells, and the duration and schedule of pumping have changed over time. Historically, pumping regimens and recharge events would have combined to influence horizontal and vertical groundwater flow direction and gradient. Two of these supply wells, C-007A and C-014B, were sampled by the City of Tucson for PFOS and PFOA in 2017. Analytical results indicated concentrations of PFOS+PFOA above the USEPA HA value. C-007A is located downgradient of the Stormwater Outfall Canal and is screened from 266 to 380 feet with a pump intake depth of 441 feet and total depth of approximately 641 feet. C-014B is also located downgradient of the Stormwater Outfall Canal and is screened from approximately 260 to 780 feet with an approximate pump intake depth of 445 feet. Analytical results are listed below with corresponding date and PFOS+PFOA concentrations:

- C-007A
  - 0.94 µg/L (5/8/2017)
  - 3.22 µg/L (10/12/2017)

- C-014B
    - 0.079 µg/L (11/30/2016)
    - 0.133 µg/L (10/12/2017)

The Stormwater Outfall Canal within the northern boundary of DMAFB is unlined within the installation boundary, where stormwater can flow into the canal and surrounding floodplain and infiltrate the streambed alluvium, recharging the underlying aquifer. Surface flow is extremely variable, tending toward seasonal variations. Summer flows have greater velocity and transport larger quantities of suspended sediment. Winter flows have larger flow volumes and longer duration, and may extend into the Canal's floodplain (Innovative Technical Solutions, Inc. [ITS], 2012). Sediment and surface soil analytical results indicate that the Canal collects stormwater from across the installation containing PFAS. PFAS may also have reached groundwater as a result of large infiltration events such as heavy rainfalls or floods. In these cases, water infiltrating from the surface may transfer contaminants present in the soil to groundwater. Large infiltration events have occurred periodically at the installation. Additionally, heavy rainfall or flood events have been shown to cause a temporary rise in water levels. Rising water may submerge contaminated soil and further increase the mass transfer of contaminants into the groundwater. As described above, the mass transfer of contaminants to groundwater may have periodically increased following large infiltration events. Based on the analytical results and our understanding of the conceptual site model, the Stormwater Outfall Canal is a potential source area for PFAS impacts to groundwater downgradient of MW-42.

4.3.3 Groundwater Migration Pathway Conclusions

PFOA in groundwater did not exceed the USEPA HA value of 0.07 µg/L for PFOS, PFOA, and/or the sum of PFOS/PFOA, across the installation. Based on the current understanding of the conceptual site model, the higher concentrations of PFOS/PFOA detected in the Tucson Water supply wells may be attributable to the upgradient proximity of the Stormwater Outfall Canal and vertical migration within the aquifer in response to historical pumping regimes.

While the results of the SI do not necessarily indicate any migration of contaminants off base, based on the CSM and the levels of PFOS/PFOA in the Tucson Water municipal supply wells, additional investigation in the area of the Stormwater Outfall Canal is warranted. The Installation and sampling of water table and deeper aquifer monitoring wells located downgradient of the Stormwater Outfall Canal at the northern base boundary is recommended to determine if PFAS in groundwater is migrating downgradient of DMAFB and towards Tucson Water Wells C-007A and C-014B.

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5.0 SUMMARY AND CONCLUSIONS

As stated in the introduction, the objectives of this study were to:

- Determine if PFOS, PFOA, or PFBS are present in soil, groundwater and/or sediment;
- Determine if PFOS and PFOA concentrations in soil exceed the calculated RSL of 0.126 mg/kg, and if PFBS concentrations in soil exceed the USEPA RSL of 130 mg/kg;
- Determine if PFOS, PFOA, or the sum of PFOS and PFOA concentrations in groundwater exceed the USEPA HA value of 0.07 µg /L, and if PFBS concentrations in groundwater exceed the USEPA Tap Water RSL of 40 µg/L;
- Determine if concentrations of PFOS or PFOA in sediment exceed the calculated RSL of 0.126 mg/kg, and if PFBS concentrations in sediment exceed the USEPA RSL of 130 mg/kg; and,
- Identify potential receptor pathways with immediate impacts to human health (immediate impact to human health is considered consumption of drinking water with PFOS/PFOA above the HA, or PFBS above the calculated RSL).

Section 3 of this SI detailed the analytical results for PFAS at each AFFF release area. A summary table (**Table 5.0-1**) is also provided below which lists specific exceedances by area and media, fulfilling the objectives of the SI.

Table 5.0-1. Summary of Analytical Results and Screening Level Exceedances.

AFFF Release Area	Parameter	Maximum Detected Concentration	Screening Value	Units	Number of Samples*/ Number of Exceedances	Exceeds Screening Level	Potentially Complete DW Exposure Pathway	Recommendations
AFFF Release Area 1: FT-03 (Former Fire Training Area)	Surface Soil (0 to 1 feet)						No	Advance Area to RI
	PFOS	4.87	0.126	mg/kg	3/3	Yes		
	PFOA	2.26	0.126	mg/kg	3/3	Yes		
	PFBS	0.921	130	mg/kg	3/0	No		
	Subsurface Soil (29 to 351 feet)							
	PFOS	0.0582 J	0.126	mg/kg	5/0	No		
	PFOA	0.0208	0.126	mg/kg	5/0	No		
	PFBS	0.00786 J	130	mg/kg	5/0	No		
	Sediment							
	PFOS	0.332	0.126	mg/kg	1/1	Yes		
	PFOA	0.00298	0.126	mg/kg	1/0	No		
	PFBS	0.000811 J	130	mg/kg	1/0	No		
	Groundwater							
	PFOS	ND	0.07	µg/L	1/0	No		
	PFOA	ND	0.07	µg/L	1/0	No		
	PFOS+PFOA	ND	0.07	µg/L	1/0	No		
	PFBS	ND	40	µg/L	1/0	No		
AFFF Release Area 2: Airfield Crash Sites	Surface Soil (0 to 1 feet)						No	Advance Area to RI
	PFOS	0.00135 J	0.126	mg/kg	4/0	No		
	PFOA	ND	0.126	mg/kg	4/0	No		
	PFBS	ND	130	mg/kg	4/0	No		
	Subsurface Soil (29 to 171 feet)							
	PFOS	ND	0.126	mg/kg	2/0	No		
	PFOA	ND	0.126	mg/kg	2/0	No		
	PFBS	ND	130	mg/kg	2/0	No		
	Groundwater							
	PFOS	ND	0.07	µg/L	5/0	No		
	PFOA	0.0394	0.07	µg/L	5/0	No		
	PFOS+PFOA	0.0394	0.07	µg/L	5/0	No		
	PFBS	0.0198	40	µg/L	5/0	No		

Table 5.0-1. Summary of Analytical Results and Screening Level Exceedances (cont)

AFFF Release Area	Parameter	Maximum Detected Concentration	Screening Value	Units	Number of Samples*/ Number of Exceedances	Exceeds Screening Level	Potentially Complete DW Exposure Pathway	Recommendations
AFFF Release Area 3: Stormwater Outfall Canal	Surface Soil (0 to 1 feet)						Yes	Initiate Expanded SI Advance Area to RI
	PFOS	0.00172 J	0.126	mg/kg	1/0	No		
	PFOA	ND	0.126	mg/kg	1/0	No		
	PFBS	ND	130	mg/kg	1/0	No		
	Subsurface Soil (29 to 351 feet)							
	PFOS	ND	0.126	mg/kg	3/0	No		
	PFOA	ND	0.126	mg/kg	3/0	No		
	PFBS	ND	130	mg/kg	3/0	No		
	Sediment							
	PFOS	0.00151 J	0.126	mg/kg	4/0	No		
	PFOA	ND	0.126	mg/kg	4/0	No		
	PFBS	ND	130	Mg/kg	4/0	No		
	Groundwater							
	PFOS	ND	0.07	µg/L	1/0	No		
	PFOA	ND	0.07	µg/L	1/0	No		
	PFOS+PFOA	ND	0.07	µg/L	1/0	No		
	PFBS	ND	40	µg/L	1/0	No		

Notes:
*normal samples (count does not include QC samples)
AFFF – aqueous film forming foam
J – The analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample
µg/L – micrograms per liter
mg/kg – milligrams per kilogram
ND – not detected
RI – Remedial Investigation
SSI –Site Inspection

This section provides information about private drinking water sources. It contains personal privacy or other information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

Potential human health pathways were identified and detailed in Section 4 of this SIR. The potential receptors and targets vary by AFFF release area. Media-specific pathways and receptors are discussed below.

Surface and Subsurface Soil Receptors

Based on the SI results, potentially complete soil exposure pathways exist at AFFF Release Area 1. Potential human exposure receptors from PFOS and PFOA in surface soil include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers. Further investigation and evaluation of specific exposure conditions is required to determine if exposure pathways are complete.

Sediment Receptors

PFOS was detected in sediments collected from AFFF Release Area 1 at concentrations exceeding the calculated RSL. Potential exposure receptors include USAF personnel, contract personnel, grounds maintenance workers, utility workers, construction workers, visitors, and trespassers that may come into contact with sediment at these AFFF Release Areas. Further investigation and evaluation of specific exposure conditions is required to determine if exposure pathways are complete.

Groundwater Receptors

PFOA in groundwater did not exceed the USEPA HA value of 0.07 µg/L for PFOS, PFOA, and/or the sum of PFOS/PFOA, across the installation. Based on the current understanding of the conceptual site model, the higher concentrations of PFOS/PFOA detected in the Tucson Water supply wells may be attributable to the upgradient proximity of the Stormwater Outfall Canal and vertical migration within the aquifer in response to historical pumping regimes.

While the results of the SI do not necessarily indicate any migration of contaminants off base, based on the CSM and the levels of PFOS/PFOA in the Tucson Water municipal supply wells, additional investigation in the area of the Stormwater Outfall Canal is warranted. The installation and sampling of water table and deeper aquifer monitoring wells located downgradient of the Stormwater Outfall Canal at the northern base boundary is recommended to determine if PFAS in groundwater is migrating (b) (6) of DMAFB and to Tucson Water Wells C-007A and C-014B.

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FIGURES

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Notes:

Shaded = Result Exceeds Screening Level

2335.58 = January 2018 Groundwater Elevation (ft amsl)

[A] = Higher concentration observed in field duplicate sample.

Groundwater elevations in NAVD88 (feet)

J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

Q = The analyte is both B qualified because of blank detection and J qualified because of an additional QC issue.

U = The analyte was analyzed for, but was not detected above the reported limit of detection (LOD).

UJ = The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Acronyms:

AFFF = Aqueous Film Forming Foam

ft amsl = feet above mean sea level

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram

ND = Not Detected

PFAS = Per- and Polyfluorinated Alkyl Substances

PFBS = Perfluorobutanesulfonic Acid

PFOA = Perfluorooctanoic Acid

PFOS = Perfluorooctanesulfonic Acid

µg/L = Micrograms per Liter

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Air Force Civil Engineer Center 2261 Hughes Ave., Suite 163 JBSA Lackland, Texas 78236	Project: 775303101 By: EMK Date: 9/19/2018	**Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide Site Inspection Report**	**Notes and Acronyms Davis-Monthan Air Force Base Tucson, Arizona**

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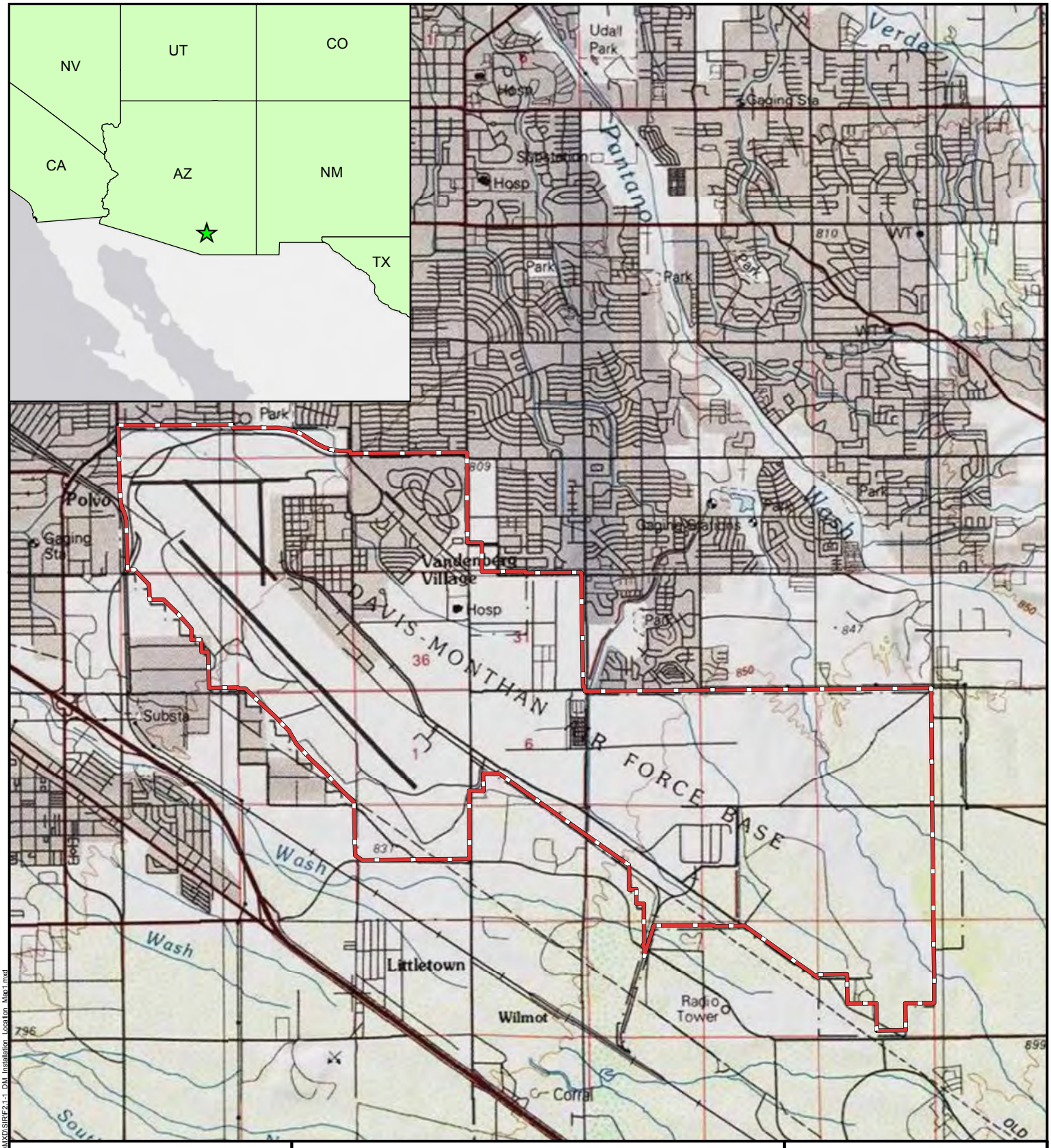

Air Force Civil Engineer Center

2261 Hughes Ave., Suite 163
JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 8/9/2018

0 3,000 6,000 Feet

Symbol Key

Davis-Monthan AFB Installation Boundary

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FIGURE 2.1-1
Installation Location
Davis-Monthan Air Force Base
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF)
Release Areas
Environmental Programs Worldwide
Site Inspection Report

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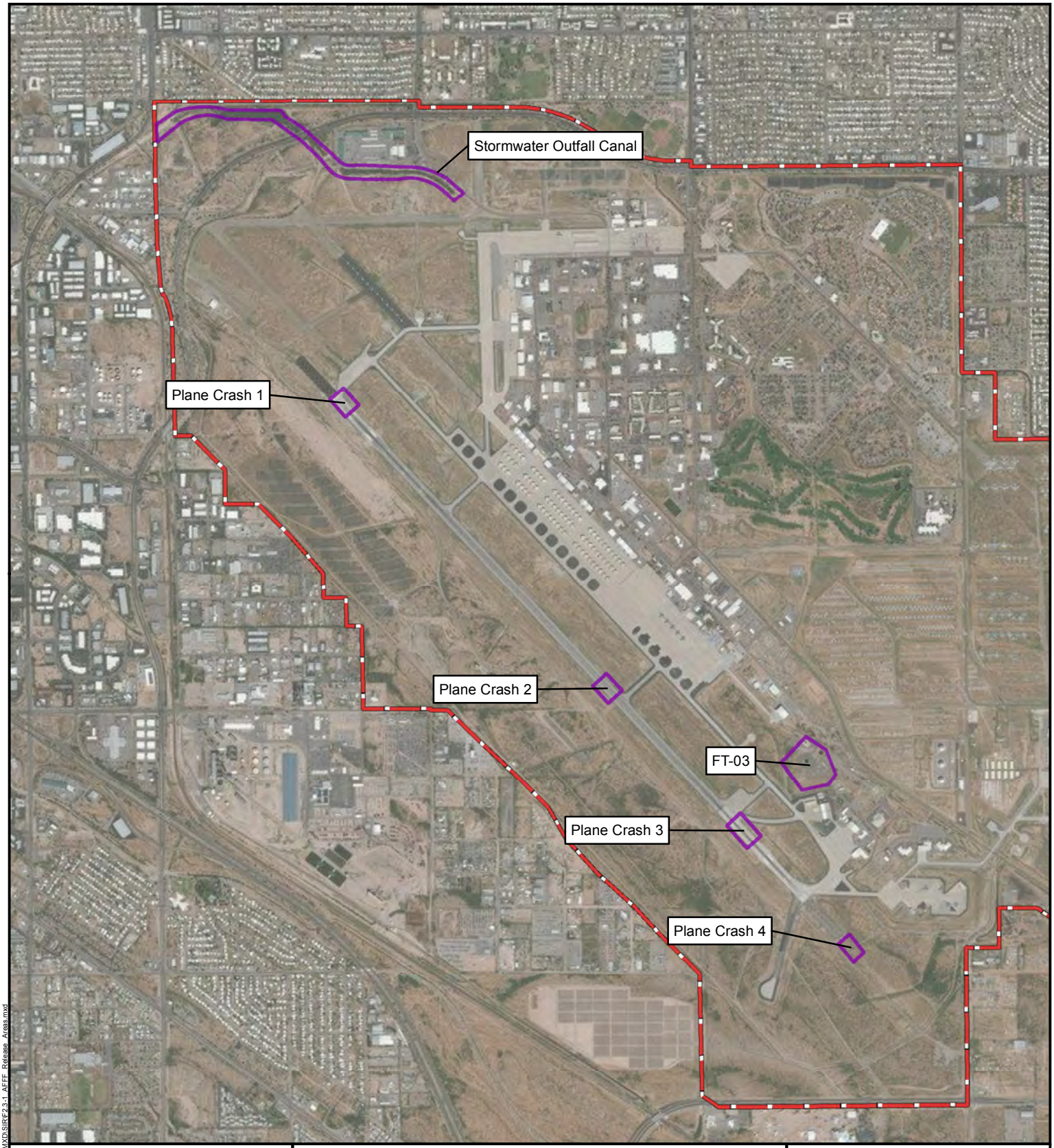

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JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 8/10/2018

0 1,300 2,600 Feet

Symbol Key

- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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

FIGURE 2.3-1
AFFF Release Areas
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF)
Release Areas
Environmental Programs Worldwide
Site Inspection Report

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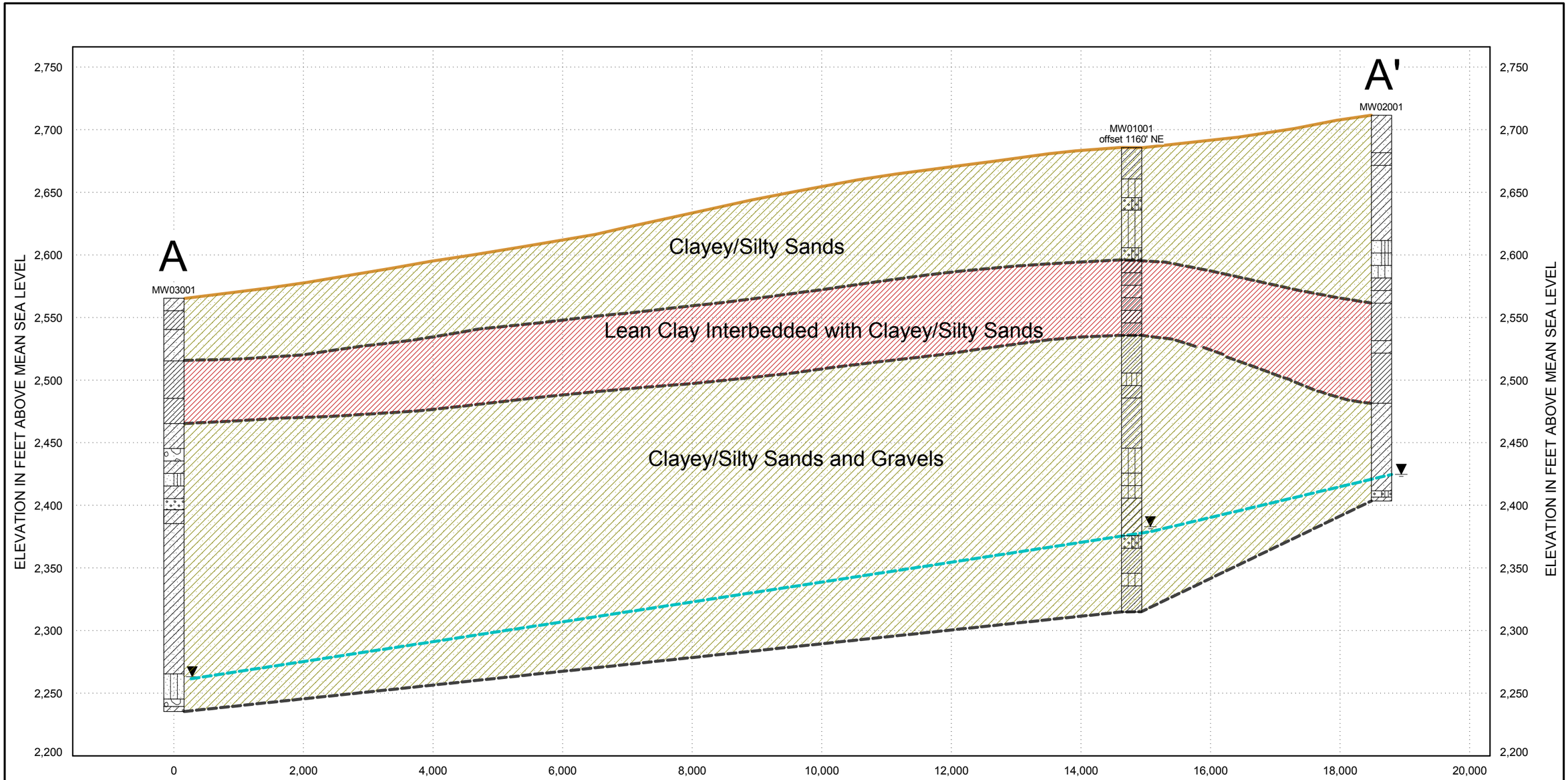

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Building 171, Suite 155
JBSA Lackland, Texas 78236
By: A. Yorke

Project: 775303101
Date: May 1, 2018

amec foster wheeler

Symbol Key

- Monitoring Well
- Water Level (January 2018)
- Approximate Ground Level
- Approximate Water Table
- Inferred Extent

amsl = above mean sea level

- Clayey Sand
- Silty Sand
- Well-graded Sand with Silt
- Poorly-graded Sand with Silt
- Silt
- Lean Clay
- Poorly-graded Gravel
- Well-graded Sand

Disclaimer: For general purposes only.

FIGURE 3.0-1
Base Cross-Section A-A'
Davis-Monthan Air Force Base
Tucson, AZ

Site Inspection of
Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

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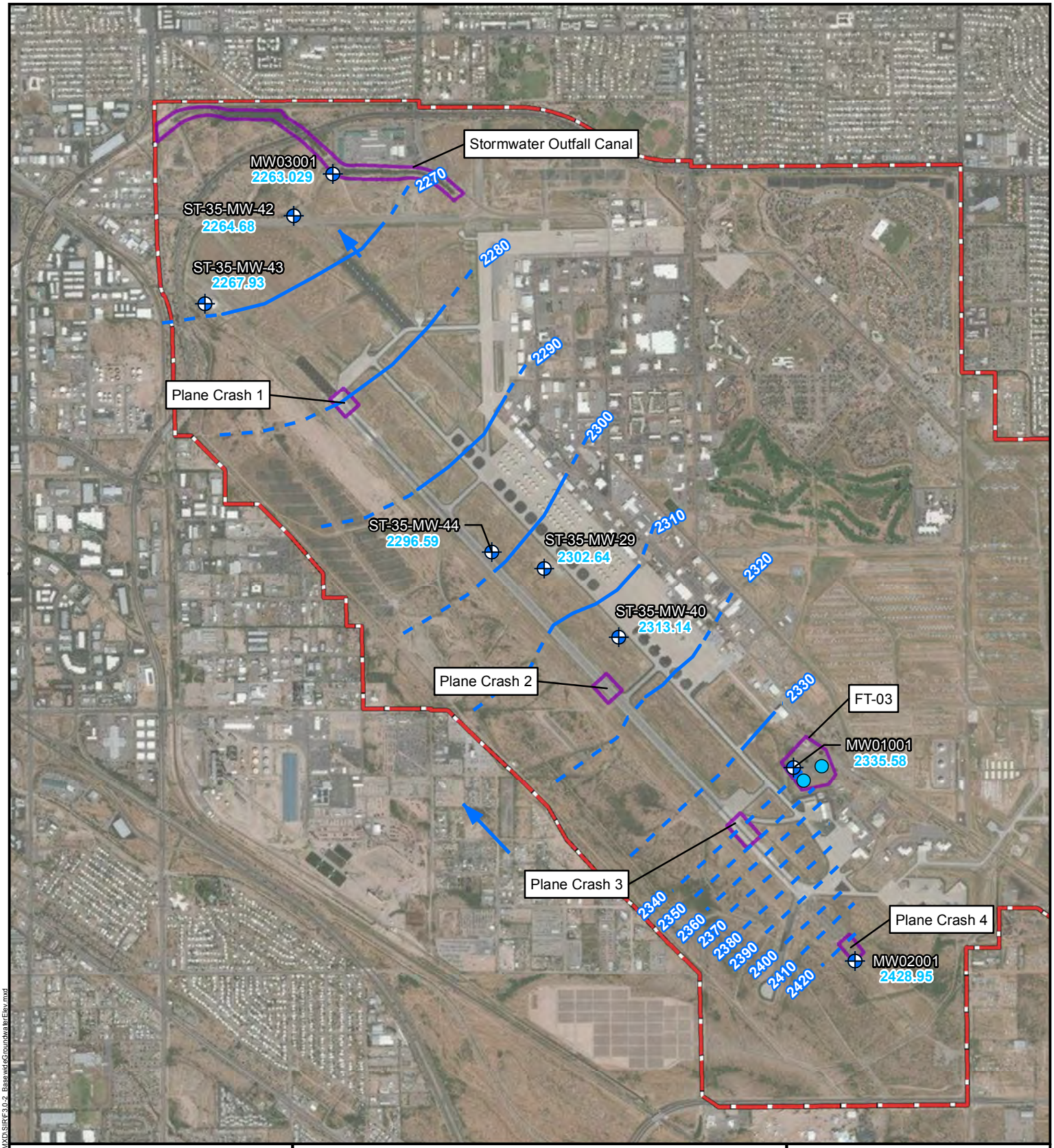

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0 1,300 2,600 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Davis-Monthan AFB Installation Boundary
- January 2018 Groundwater Contours (Dashed is Inferred)
- Approximate Groundwater Flow Direction
- AFFF Release Areas

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

FIGURE 3.0-2
Basewide Groundwater Elevations and Potentiometric Surfaces
Davis-Monthan Air Force Base (January 2018)

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide Site Inspection Report

Path: \\hrx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.0-2_Basewid eGroundwaterElev.mxd

Air Force Civil Engineer Center

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JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 8/9/2018

0 100 200 Feet

Symbol Key

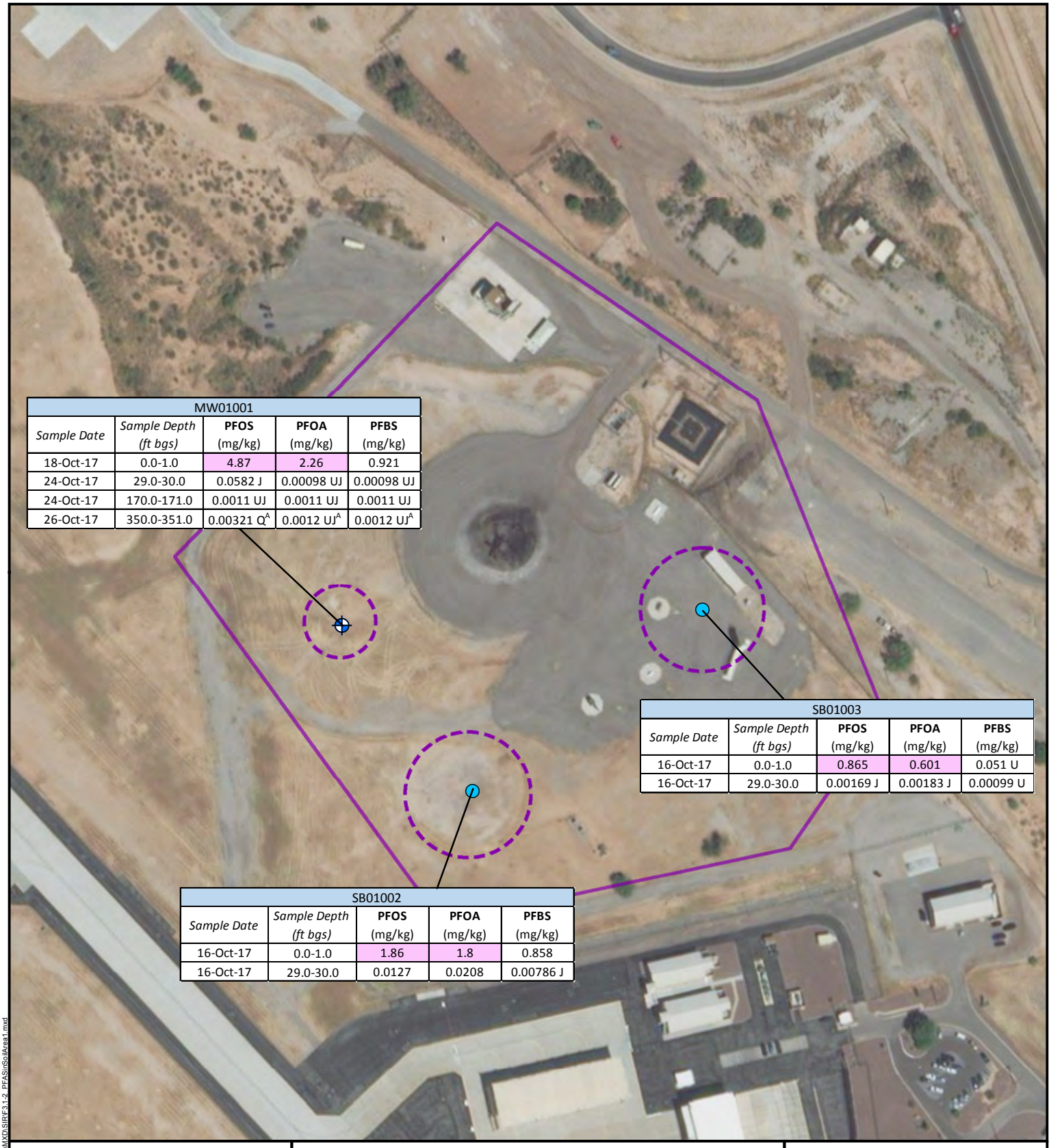
- Monitoring Well
- Soil Boring
- Sediment/Surface Water Sample
- Approximate Groundwater Flow Direction
- Fire Ring
- AFFF Release Area

Disclaimer: For general reference purposes only. This is not a survey product. DO NOT USE to determine, certify, or verify map features, scale and/or other information.

FIGURE 3.1-1
Sampling Locations and Groundwater Elevations
FT-03 (Former FTA)
AFFF Release Area 1
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\knx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIRF3.1-1_SamplingLocations_GWElev_Area1.mxd



MW01001				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
18-Oct-17	0.0-1.0	4.87	2.26	0.921
24-Oct-17	29.0-30.0	0.0582 J	0.00098 UJ	0.00098 UJ
24-Oct-17	170.0-171.0	0.0011 UJ	0.0011 UJ	0.0011 UJ
26-Oct-17	350.0-351.0	0.00321 Q[A]	0.0012 UJ[A]	0.0012 UJ[A]

SB01003				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
16-Oct-17	0.0-1.0	0.865	0.601	0.051 U
16-Oct-17	29.0-30.0	0.00169 J	0.00183 J	0.00099 U

SB01002				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
16-Oct-17	0.0-1.0	1.86	1.8	0.858
16-Oct-17	29.0-30.0	0.0127	0.0208	0.00786 J

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0 100 200 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Fire Ring
- AFFF Release Area

Disclaimer: For general reference purposes only. This is not a survey product. DO NOT USE to determine, certify, or verify map features, scale and/or other information.

FIGURE 3.1-2
PFAS in Soil
FT-03 (Former FTA)
AFFF Release Area 1
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\trx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.1-2_PFASinSoilArea1.mxd

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Project: 775303101

By: EMK | Date: 8/9/2018

0 100 200 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Approximate Groundwater Flow Direction
- Fire Ring
- AFFF Release Area

Disclaimer: For general reference purposes only. This is not a survey product. DO NOT USE to determine, certify, or verify map features, scale and/or other information.

FIGURE 3.1-3
PFAS in Groundwater
FT-03 (Former FTA)
AFFF Release Area 1
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF)
Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\tnx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.1-3_PFASinGWArea1.mxd

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Project: 775303101

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0 100 200 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Approximate Groundwater Flow Direction
- Fire Ring
- AFFF Release Area

Disclaimer: For general reference purposes only. This is not a survey product. DO NOT USE to determine, certify, or verify map features, scale and/or other information.

FIGURE 3.1-4
PFAS in Sediment
FT-03 (Former FTA)
AFFF Release Area 1
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

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Project: 775303101

By: EMK | Date: 8/9/2018

0 850 1,700 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Approximate Groundwater Flow Direction
- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

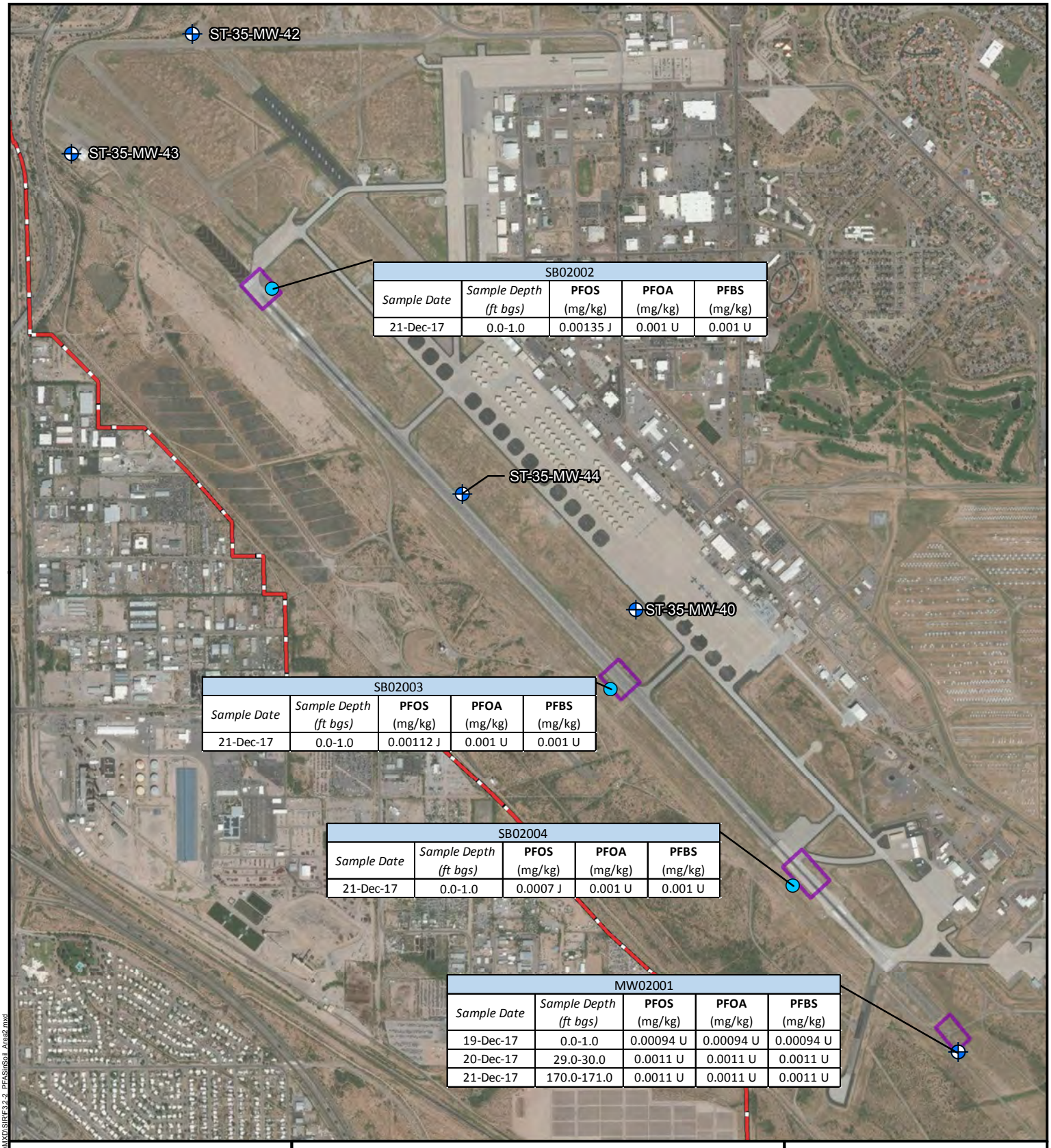
Disclaimer: For general reference purposes only. This is not a survey product. DO NOT USE to determine, certify, or verify map features, scale and/or other information.

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

FIGURE 3.2-1
Sampling Locations and Groundwater Elevations
Airfield Crash Sites
AFFF Release Area 2
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\hrx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.2-1_SamplingLocations_GWElev_Area2.mxd



SB02002				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
21-Dec-17	0.0-1.0	0.00135 J	0.001 U	0.001 U

SB02003				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
21-Dec-17	0.0-1.0	0.00112 J	0.001 U	0.001 U

SB02004				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
21-Dec-17	0.0-1.0	0.0007 J	0.001 U	0.001 U

MW02001				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
19-Dec-17	0.0-1.0	0.00094 U	0.00094 U	0.00094 U
20-Dec-17	29.0-30.0	0.0011 U	0.0011 U	0.0011 U
21-Dec-17	170.0-171.0	0.0011 U	0.0011 U	0.0011 U

Air Force Civil Engineer Center
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JBSA Lackland, Texas 78236

Project: 775303101
By: EMK | Date: 8/9/2018

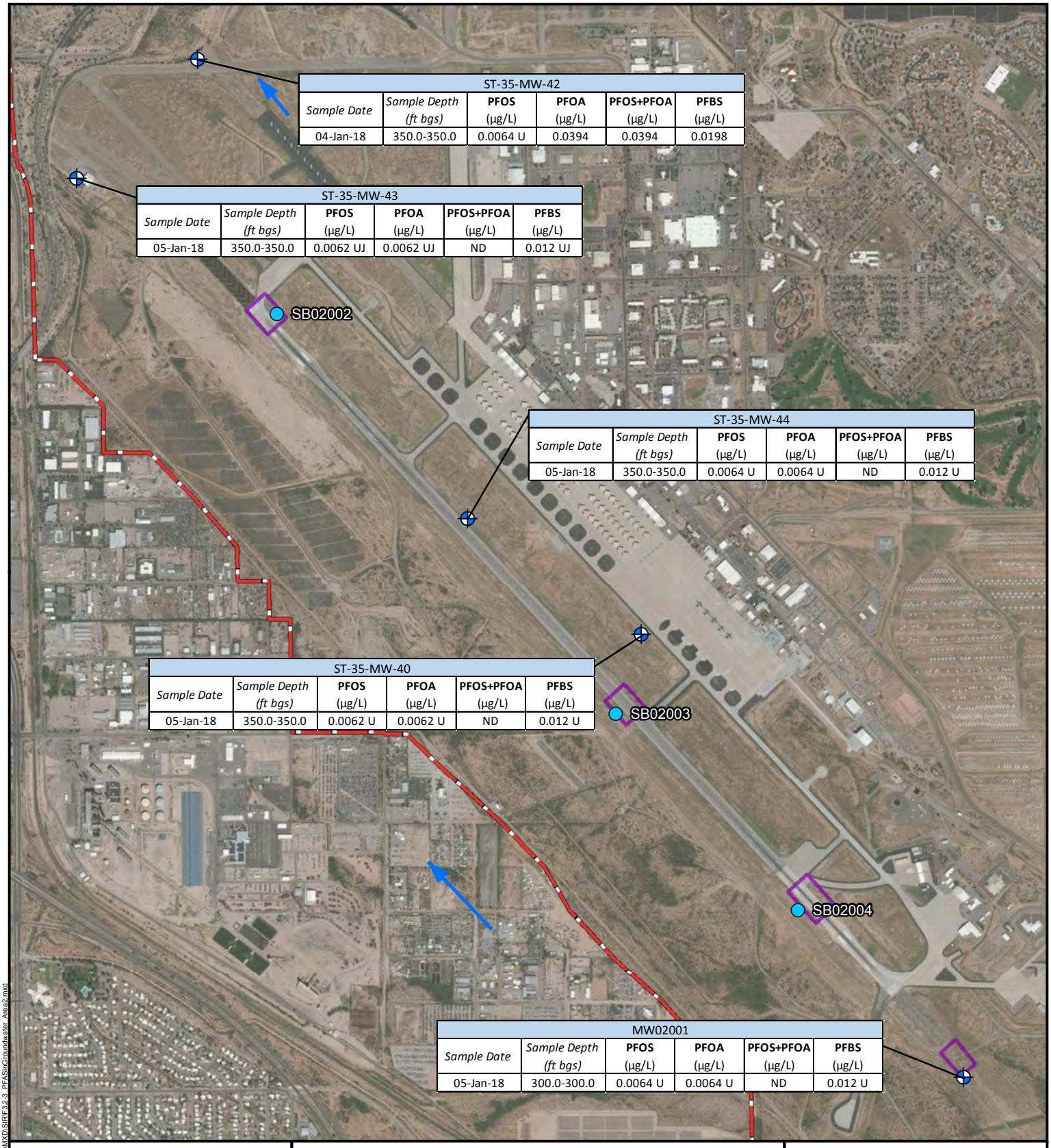
0 850 1,700 Feet

Symbol Key
- Monitoring Well
- Soil Boring
- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

FIGURE 3.2-2
PFAS in Soil
Airfield Crash Sites
AFFF Release Area 2
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\trx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.2-2_PFASinSoil_Area2.mxd



Air Force Civil Engineer Center

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JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 8/9/2018

0 850 1,700 Feet

Symbol Key

- Monitoring Well
- Soil Boring
- Approximate Groundwater Flow Direction
- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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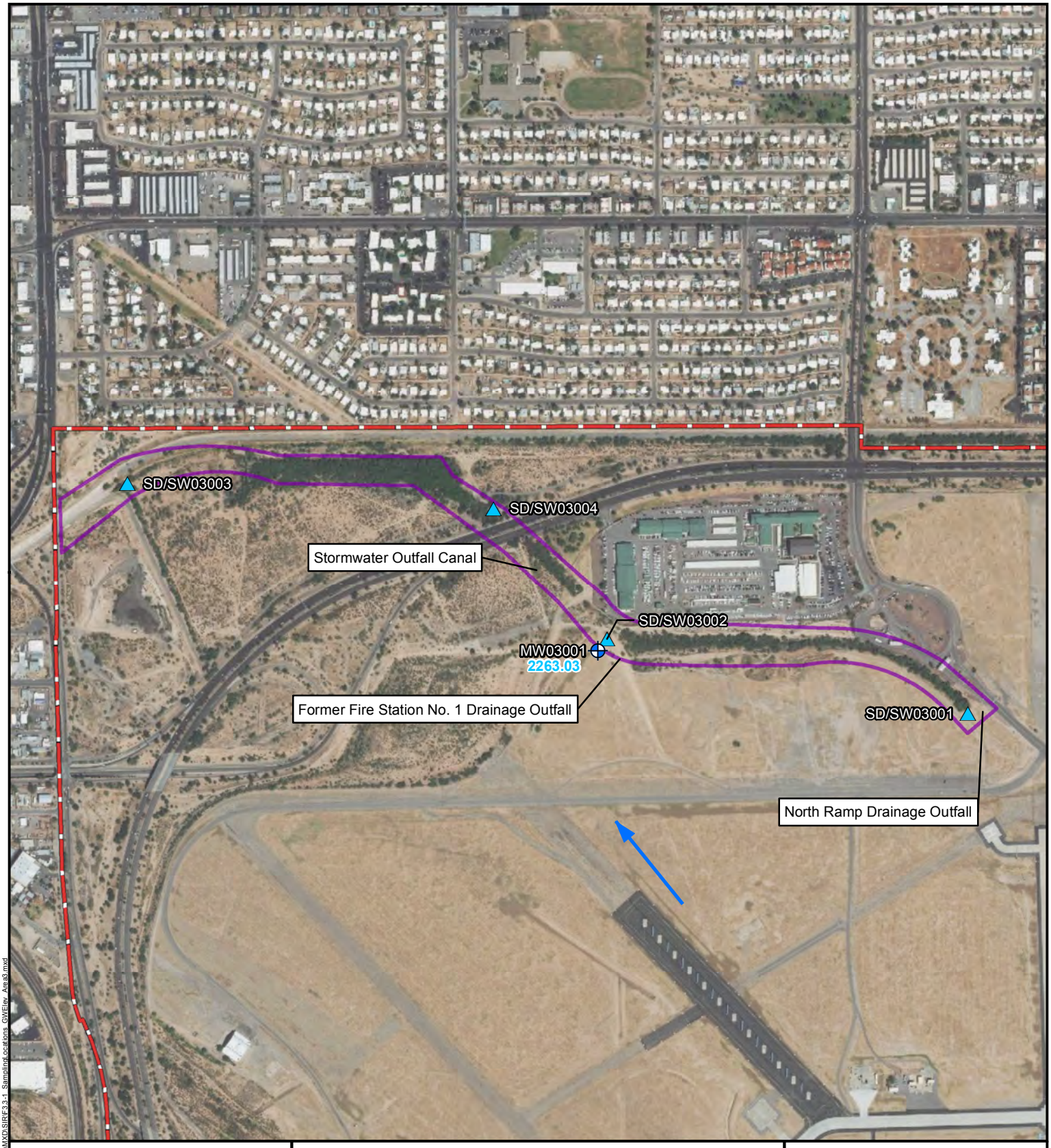
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 3.2-3
PFAS in Groundwater
Airfield Crash Sites
AFFF Release Area 2
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide Site Inspection Report

Path: \\trx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.2-3_PFASinGroundwater_Area2.mxd



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Project: 775303101

By: EMK | Date: 8/9/2018

0 425 850 Feet

Symbol Key

- Monitoring Well
- Sediment/Surface Water Sample
- Approximate Groundwater Flow Direction
- Potential AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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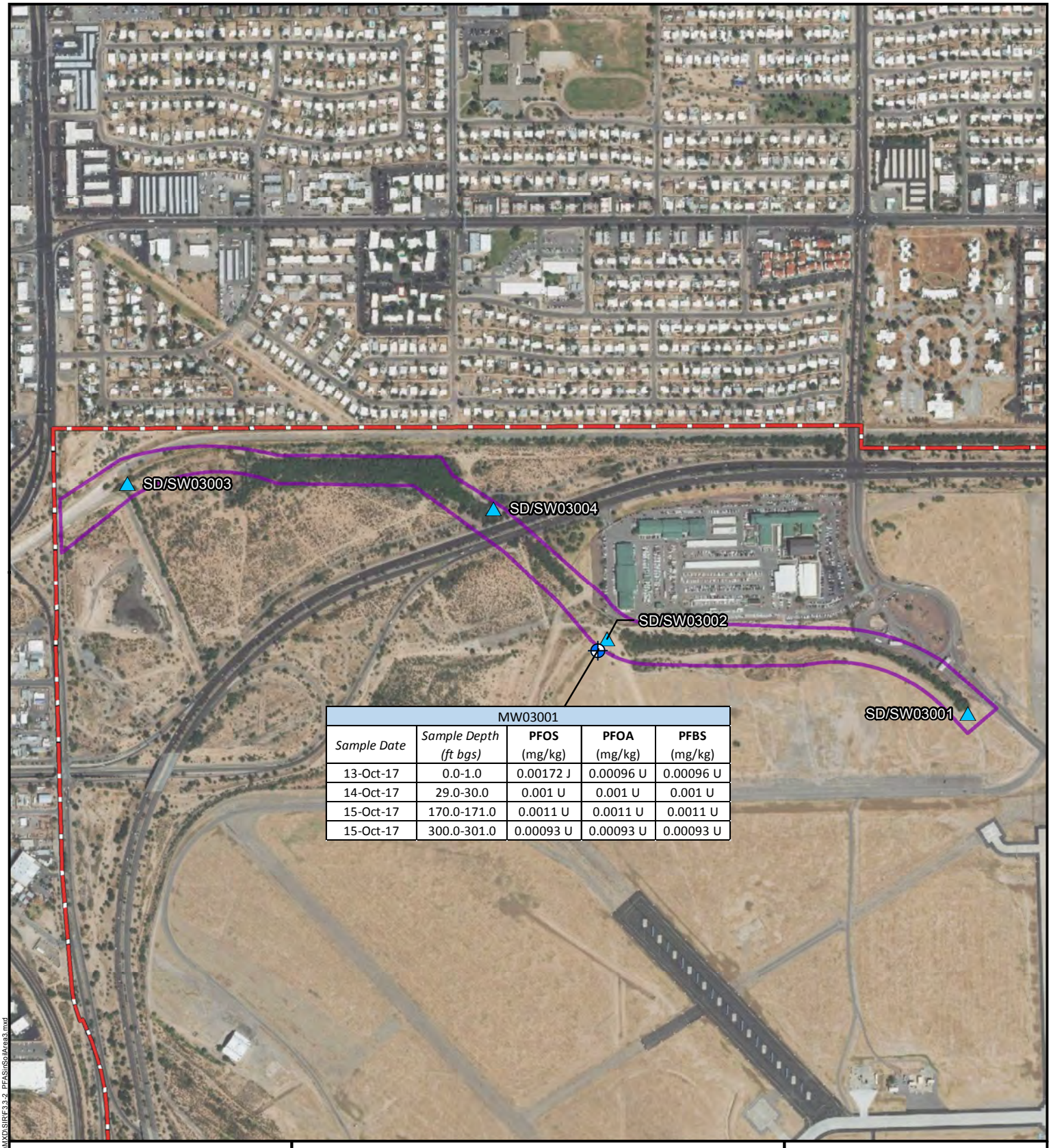
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 3.3-1
Sampling Locations and Groundwater Elevations
Stormwater Outfall Canal
AFFF Release Area 3
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\hrx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.3-1_SamplingLocations_GWElev_Area3.mxd



MW03001				
Sample Date	*Sample Depth (ft bgs)*	**PFOS** (mg/kg)	**PFOA** (mg/kg)	**PFBS** (mg/kg)
13-Oct-17	0.0-1.0	0.00172 J	0.00096 U	0.00096 U
14-Oct-17	29.0-30.0	0.001 U	0.001 U	0.001 U
15-Oct-17	170.0-171.0	0.0011 U	0.0011 U	0.0011 U
15-Oct-17	300.0-301.0	0.00093 U	0.00093 U	0.00093 U

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Project: 775303101

By: EMK | Date: 8/9/2018

0 425 850 Feet

Symbol Key

- Monitoring Well
- Sediment/Surface Water Sample
- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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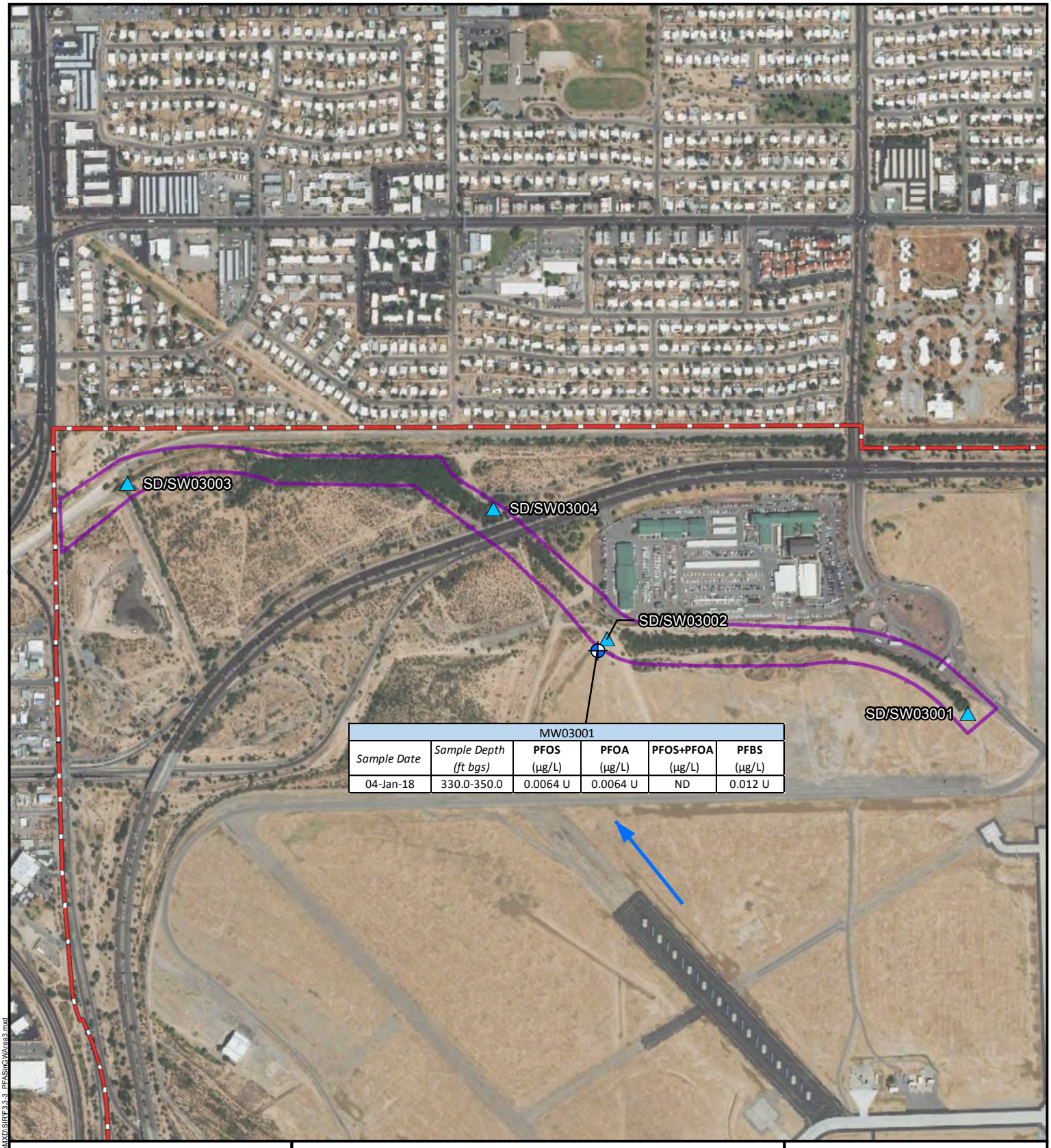
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 3.3-2
PFAS in Soil
Stormwater Outfall Canal
AFFF Release Area 3
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\hrx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.3-2_PFASinSoilArea3.mxd



MW03001					
Sample Date	*Sample Depth (ft bgs)*	**PFOS (µg/L)**	**PFOA (µg/L)**	**PFOS+PFOA (µg/L)**	**PFBS (µg/L)**
04-Jan-18	330.0-350.0	0.0064 U	0.0064 U	ND	0.012 U

Air Force Civil Engineer Center

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JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 9/19/2018

0 425 850 Feet

Symbol Key

- Monitoring Well
- Sediment/Surface Water Sample
- Approximate Groundwater Flow Direction
- AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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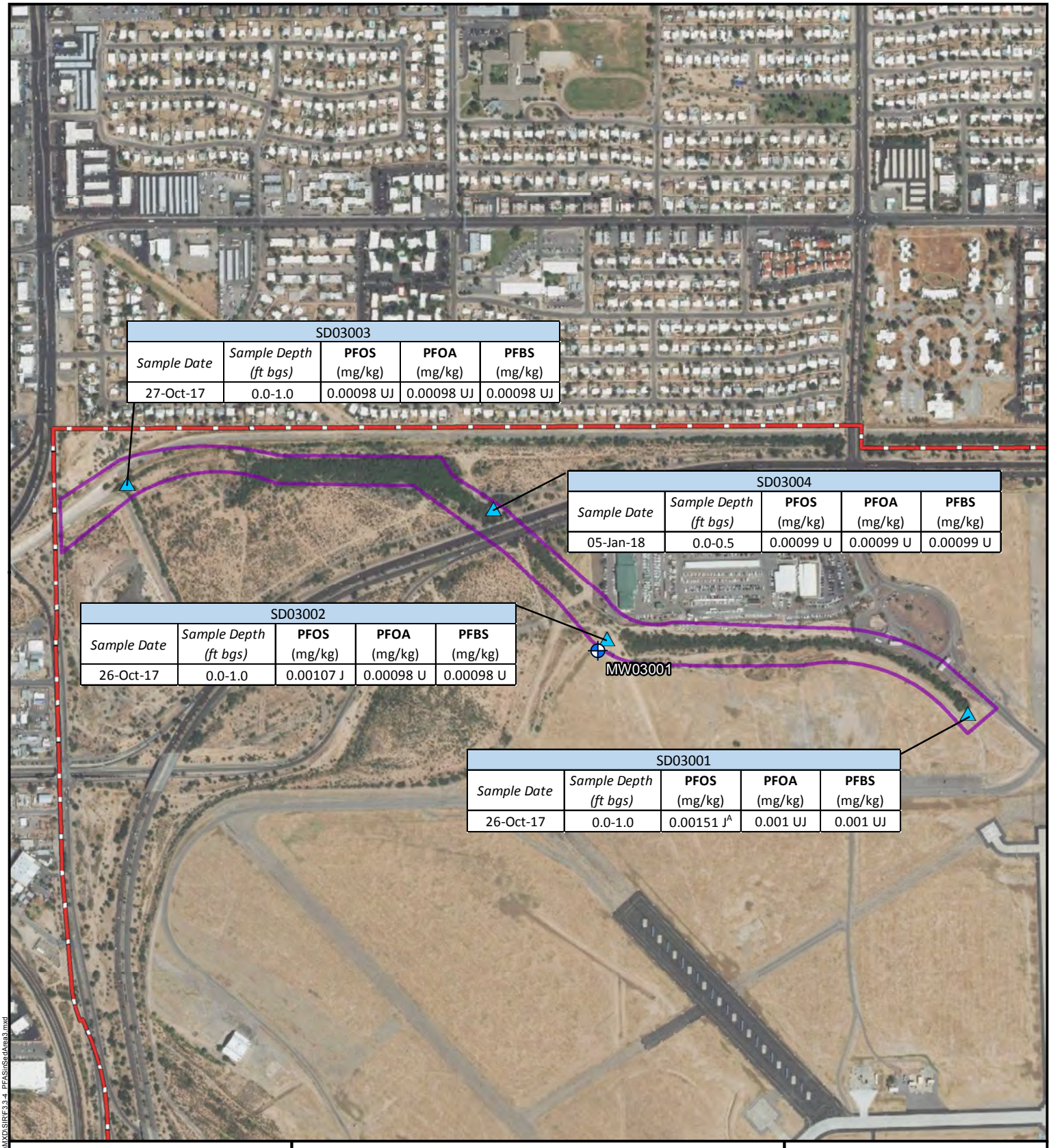
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 3.3-3
PFAS in Groundwater
Stormwater Outfall Canal
AFFF Release Area 3
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\hrx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.3-3_PFASinGWArea3.mxd



Air Force Civil Engineer Center

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JBSA Lackland, Texas 78236

Project: 775303101

By: EMK | Date: 8/10/2018

0 425 850 Feet

Symbol Key

- Monitoring Well
- Sediment/Surface Water Sample
- Potential AFFF Release Area
- Davis-Monthan AFB Installation Boundary

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

FIGURE 3.3-4
PFAS in Sediment
Stormwater Outfall Canal
AFFF Release Area 3
Davis-Monthan AFB
Tucson, Arizona

Site Inspection of
Aqueous Film Forming Foam (AFFF)
Release Areas
Environmental Programs Worldwide
Site Inspection Report

Path: \\tnx1-fs1\projects\GIS\775303101_AFCEC_PFC\Davis Monthan\MXD\SIR\F3.3-4_PFASinSedArea3.mxd

(b) (6)

Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

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(b) (6)

The Key to Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

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(b) (6)

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(b) (6)

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(b) (6)

The Key to Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

The Key to Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

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(b) (6)

The Key to Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

(b) (6)

The Key to Figure 4.3-1 4-Mile Well Inventory provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

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(b) (6)

Figure 4.3-2 4-Mile Well Inventory (Downgradient wells) provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

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(b) (6)

Key to Figure 4.3-2 4-Mile Well Inventory (Downgradient wells) provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

(b) (6)

Key to Figure 4.3-2 4-Mile Well Inventory (Downgradient wells) provides information about the type and location of off-base private sampling sources. It contains personal privacy information that is not publicly releasable under the Freedom of Information Act, 5 U.S.C. § 552, and is maintained in a separate portion of the Administrative Record that is not accessible to the public.

(b) (6)

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TABLES

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Table 3.1-1
Summary of Soil Analytical Testing Results
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis-Monthan Air Force Base, Arizona

						Analyte:	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanesulfonic acid (PFBS)	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctanesulfonamid oacetic acid (NETFOSAA)	N-Methyl perfluorooctanesulfonamid oacetic acid (NMEFOSAA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)
						Screening Level:	0.126[1]	0.126[1]	130[2]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AFFF Area	**Location**	**Sample ID**	**Sample Date**	**Sample Depth (ft.)**	**Sample Type**		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	MW01001	DAVIS01-SO-001	18-Oct-17	0.0-1.0	N		4.87	2.26	0.921	6.09	NA	0.042 U	0.042 U	0.01 U	0.01 U	0.424	9.3	3.23	0.0253	0.01 U	0.01 U	0.01 U
		DAVIS01-SO-002	24-Oct-17	29.0-30.0	N		0.0582 J	0.00098 UJ	0.00098 UJ	0.0039 UJ	0.0039 U	0.0039 U	0.0039 U	0.00098 U	0.00098 U	0.00098 UJ	0.00098 UJ	0.000673 J	0.00098 U	0.00098 U	0.00098 U	0.00098 U
		DAVIS01-SO-003	24-Oct-17	170.0-171.0	N		0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0043 UJ	0.0043 UJ	0.0043 UJ	0.0043 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ	0.0011 UJ
		DAVIS01-SO-004	26-Oct-17	350.0-351.0	N		0.00062 Q	0.0012 U	0.0012 U	0.0047 U	0.0047 U	0.0047 U	0.0047 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
		DAVIS-FD-SO-001	26-Oct-17	350.0-351.0	FD		0.00321 Q	0.0012 UJ	0.0012 UJ	0.0048 UJ	0.0048 UJ	0.0048 UJ	0.0048 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ	0.0012 UJ
	SB01002	DAVIS01-SO-005	16-Oct-17	0.0-1.0	N		1.86	1.8	0.858	4.97	0.484 J	0.042 U	0.042 U	0.011 U	0.011 U	0.557	8.8	2.93	0.0157 J	0.011 U	0.011 U	0.011 U
		DAVIS01-SO-006	16-Oct-17	29.0-30.0	N		0.0127	0.0208	0.00786 J	0.131	0.021 U	0.021 U	0.021 U	0.0052 U	0.0052 U	0.00407 J	0.0539	0.026	0.0052 U	0.0052 U	0.0052 U	0.0052 U
	SB01003	DAVIS01-SO-007	16-Oct-17	0.0-1.0	N		0.865	0.601	0.051 U	0.837	0.21 U	0.21 U	0.21 U	0.051 U	0.051 U	0.051 U	1.08	0.0586 J	0.051 U	0.051 U	0.051 U	0.051 U
		DAVIS01-SO-008	16-Oct-17	29.0-30.0	N		0.00169 J	0.00183 J	0.00099 U	0.00328 J	0.004 U	0.004 U	0.004 U	0.00099 U	0.00099 U	0.00099 U	0.00457	0.0015 J	0.00099 U	0.00099 U	0.00099 U	0.00099 U
2	MW02001	DAVIS02-SO-001	19-Dec-17	0.0-1.0	N		0.00094 U	0.00094 U	0.00094 U	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U	0.00094 U
		DAVIS-FD-SO-002	19-Dec-17	0.0-1.0	FD		0.001 U	0.001 U	0.001 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
		DAVIS02-SO-002	20-Dec-17	29.0-30.0	N		0.0011 U	0.0011 U	0.0011 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
		DAVIS02-SO-003	21-Dec-17	170.0-171.0	N		0.0011 U	0.0011 U	0.0011 U	0.0044 U	0.0044 U	0.0044 U	0.0044 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
	SB02002	DAVIS02-SO-005	21-Dec-17	0.0-1.0	N		0.00135 J	0.001 U	0.001 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
	SB02003	DAVIS02-SO-006	21-Dec-17	0.0-1.0	N		0.00112 J	0.001 U	0.001 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
	SB02004	DAVIS02-SO-007	21-Dec-17	0.0-1.0	N		0.0007 J	0.001 U	0.001 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
3	MW03001	DAVIS03-SO-001	13-Oct-17	0.0-1.0	N		0.00172 J	0.00096 U	0.00096 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U	0.00096 U
		DAVIS03-SO-002	14-Oct-17	29.0-30.0	N		0.001 U	0.001 U	0.001 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
		DAVIS03-SO-003	15-Oct-17	170.0-171.0	N		0.0011 U	0.0011 U	0.0011 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U
		DAVIS03-SO-004	15-Oct-17	300.0-301.0	N		0.00093 U	0.00093 U	0.00093 U	0.0037 U	0.0037 U	0.0037 U	0.0037 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U	0.00093 U

Notes:

PFAS analysis by Modified USEPA Method 537 using Liquid Chromatography and Tandem Mass Spectrometry

[1]Screening levels, based on a residential exposure scenario, calculated using the EPA Regional Screening Level calculator [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search]

[2]USEPA Residential Screening Levels (November 2017) [https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017]

Highlighted cells indicate concentrations exceeding the Screening Level.

AFFF = Aqueous Film Forming Foam

B = The analyte was found in an associated blank, as well as in the sample.

FD = Field Duplicate Sample

ft - feet

ID = Identification

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

mg/kg - milligrams per kilogram

N = Normal Field Sample

NA = Not applicable

Q = The analyte is both B qualified because of blank detection and J qualified because of an additional QC issue.

R - Result was rejected during data validation. Please see data validation report for more information.

U = The analyte was analyzed for, but was not detected above the reported limit of detection (LOD).

UJ = The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

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Table 3.1-2
Summary of Soil General Chemistry Analytical Testing Results
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis-Monthan Air Force Base, Arizona

					Analyte:	pH	TOC
AFFF Area	**Location**	**Sample ID**	**Sample Date**	**Sample Depth (ft.)**	**Sample Type**	SU Units	mg/kg
1	DAVIS01	DAVIS01-C-1	18-Oct-17	0.0-1.0	N	7.49	4090
		DAVIS01-C-2	26-Oct-17	350.0-351.0	N	8.64	171 J
2	DAVIS02	DAVIS02-C-1	05-Jan-18	0.0-1.0	N	8.51	3430
3	DAVIS03	DAVIS03-C-1	13-Oct-17	0.0-1.0	N	8.35	5570
		DAVIS03-C-2	15-Oct-17	300.0-301.0	N	8.9	67.5 J

Notes:
AFFF - aqueous film forming foam
ft - feet
ID - identification
J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
N - normal field sample
mg/kg - milligrams per kilogram
pH = potential of Hydrogen
S.U. - standard units
TOC - Total Organic Carbon

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Table 3.1-3
Summary of Groundwater Analytical Testing Results
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis-Monthan Air Force Base, Arizona

Analyte:						Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	PFOS+PFOA	Perfluorobutanesulfonic acid (PFBS)	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctanesulfonamidoacetic acid (NETFOSAA)	N-Methyl perfluorooctanesulfonamidoacetic acid (NMEFOSAA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)
Health Advisory:						0.07	0.07	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA RSL Tapwater[1]:						NA	NA	NA	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AFFF Area	**Location**	**Sample ID**	**Sample Date**	**Sample Depth (ft.)**	**Sample Type**	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1	MW01001	DAVIS01-GW-001	03-Jan-18	359.0-360.0	N	0.0067 U	0.0067 U	ND	0.012 U	0.033 U	0.033 U	0.033 U	0.033 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0067 U	0.012 U	0.012 U	0.012 U
2	MW02001	DAVIS02-GW-001	05-Jan-18	300.0-300.0	N	0.0064 U	0.0064 U	ND	0.012 U	0.032 U	0.032 U	0.032 U	0.032 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0064 U	0.012 U	0.012 U	0.012 U
		DAVIS-FD-GW-001	05-Jan-18	300.0-300.0	FD	0.0064 U	0.0064 U	ND	0.012 U	0.032 U	0.032 U	0.032 U	0.032 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0064 U	0.012 U	0.012 U	0.012 U
	ST-35-MW-40	DAVIS02-GW-004	05-Jan-18	350.0-350.0	N	0.0062 U	0.0062 U	ND	0.012 U	0.031 U	0.031 U	0.031 U	0.031 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0062 U	0.012 U	0.012 U	0.012 U
	ST-35-MW-42	DAVIS02-GW-002	04-Jan-18	350.0-350.0	N	0.0064 U	0.0394	0.0394	0.0198	0.032 U	0.032 U	0.032 U	0.032 U	0.012 U	0.012 U	0.0304	0.218	0.128	0.0064 U	0.012 U	0.012 U	0.012 U
	ST-35-MW-43	DAVIS02-GW-003	05-Jan-18	350.0-350.0	N	0.0062 UJ	0.0062 UJ	ND	0.012 UJ	0.031 UJ	0.031 U	0.031 U	0.031 U	0.012 U	0.012 U	0.012 UJ	0.012 UJ	0.012 UJ	0.0062 U	0.012 U	0.012 U	0.012 U
	ST-35-MW-44	DAVIS02-GW-006	05-Jan-18	350.0-350.0	N	0.0064 U	0.0064 U	ND	0.012 U	0.032 U	0.032 U	0.032 U	0.032 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0064 U	0.012 U	0.012 U	0.012 U
3	MW03001	DAVIS03-GW-001	04-Jan-18	330.0-350.0	N	0.0064 U	0.0064 U	ND	0.012 U	0.032 U	0.032 U	0.032 U	0.032 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0064 U	0.012 U	0.012 U	0.012 U

Notes:

Purple Shaded - Exceeds USEPA Health Advisory

PFAS analysis by Modified USEPA Method 537 using Liquid Chromatography and Tandem Mass Spectrometry

[1]Health Advisory from USEPA Office of Water, 2016a and 2016b, Health Advisories (HAs) for drinking water.

[2]USEPA Residential Screening Levels (November 2017) [https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017]

Underlined results indicate concentrations exceeding the USEPA Tap Water RSL

AFFF - aqueous film forming foam

FD - field duplicate sample

ft - feet

ID - identification

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

µg/L - micrograms per liter

N - normal field sample

NA - not applicable

U - The analyte was analyzed for but was not detected above the reporting limit of detection (LOD).

UJ - The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

USEPA - United States Environmental Protection Agency

PFOS+PFOA = Co-occurrence of PFOA and PFOS (PFOA + PFOS) in aqueous samples is reported using the following guidelines

1. If both PFOA and PFOS are detected at or above the detection limit (DL), then the sum of PFOA+ PFOS is reported
2. If only PFOS or only PFOA is detected at or above the DL in groundwater, then the concentration of the detected analyte only is reported
3. If neither PFOA nor PFOS is detected at or above the DL, then PFOA + PFOS is reported as "ND" representing Not Detected

Table 3.1-4
Summary of Sediment Analytical Testing Results
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis-Monthan Air Force Base, Arizona

						Analyte:	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanesulfonic acid (PFBS)	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)	N-Methyl perfluorooctanesulfonamido acetic acid (NMEFOSAA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)
						Screening Level:	0.126[1]	0.126[1]	130[2]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AFFF Area	**Location**	**Sample ID**	**Sample Date**	**Sample Depth (ft.)**	**Sample Type**		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	SD/SW01001	DAVIS01-SD-001	26-Oct-17	0.0-1.0	N		0.332	0.00298	0.000811 J	0.00865	0.694	0.004 U	0.004 U	0.0346	0.014	0.000993 J	0.0109	0.00358	0.00129 J	0.00145 J	0.0038	0.0224
3	SD/SW03001	DAVIS03-SD-001	26-Oct-17	0.0-1.0	N		0.00133 J	0.001 UJ	0.001 UJ	0.004 UJ	0.004 UJ	0.004 UJ	0.004 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
		DAVIS-FD-SD-001	26-Oct-17	0.0-1.0	FD		0.00151 J	0.001 UJ	0.001 UJ	0.004 UJ	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U
	SD/SW03002	DAVIS03-SD-002	26-Oct-17	0.0-1.0	N		0.00107 J	0.00098 U	0.00098 U	0.0039 U	0.0039 U	0.0039 U	0.0039 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U	0.00098 U
	SD/SW03003	DAVIS03-SD-003	27-Oct-17	0.0-1.0	N		0.00098 UJ	0.00098 UJ	0.00098 UJ	0.0039 UJ	0.0039 UJ	0.0039 U	0.0039 U	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ	0.00098 UJ
	SD/SW03004	DAVIS03-SD-004	05-Jan-18	0.0-0.5	N		0.00099 U	0.00099 U	0.00099 U	0.004 U	0.004 U	0.004 U	0.004 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U	0.00099 U

Notes:

Highlighted cells indicate concentrations exceeding the Screening Level.

AFFF = Aqueous Film Forming Foam

FD - Field Duplicate Sample

ft - Feet

ID - Identification

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

mg/kg - milligrams per kilogram

N - Normal Field Sample

NA - Not applicable

U - The analyte was analyzed for, but was not detected above the reported limit of detection (LOD).

UJ - The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

PFAS analysis by Modified USEPA Method 537 using Liquid Chromatography and Tandem Mass Spectrometry

[1]Screening levels calculated using the EPA Regional Screening Level calculator [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search]

[2]USEPA Regional Screening Levels (November, 2017a) [https://semspub.epa.gov/work/HQ/197025.pdf]

Table 3.0-1
Monitoring Well Construction Details
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis-Monthan AFB, Tucson, Arizona

AFFF Release Area	Location ID	Installation Date	Well Material	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Well Depth (ft bgs)	Well Diameter (in)	Screen Length (ft)	Screen Size (in)	Screen Interval (ft bgs)
1	MW01001	10/27/2017	PVC	423431.3773	1024222.800	2685.803	2686.07	369.0	4.0	20	0.02	349-369
2	MW02001	12/22/2017	PVC	419608.1853	1025438.002	2711.604	2711.44	305.0	4.0	20	0.02	285-305
	ST-35-MW-40	2/28/2006	PVC	426001.280	1020773.120	NA	2651.21	378.0	5.5	50	0.02	330-380
	ST-35-MW-42	7/21/2006	PVC	434316.240	1014359.334	2564.027	2563.9	380.0	5.5	50	0.02	318-368
	ST-35-MW-43	7/18/2006	PVC	432592.120	1012610.870	NA	2561.74	380.0	5.5	50	0.02	318-368
	ST-35-MW-44	9/29/2007	PVC	427674.487	1018266.420	NA	2624.73	380.0	5.5	50	0.02	318-368
3	MW03001	10/16/2017	PVC	435136.306	1015126.852	2565.485	2565.37	321.0	4.00	20	0.02	301-321

Notes:
AFFF - aqueous film forming foam
amsl - above mean sea level
bgs - below ground surface
ft - feet
in - inches
NA - not available
PVC - Polyvinyl Chloride
TOC - top of casing

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TABLE 4.0-1

Conceptual Site Model: Installation Wide Summary
Site Inspection Report of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis Monthan Air Force Base, Tucson, Arizona

Facility Profile	Physical Profile	Release Profile	Land Use and Exposure Profile	Ecological Profile

Installation Description/History:
• Years of operation: 1925 to Current (HGL, 2015).
• Size: Approximately 11,000 acres (URS, 2011).
• Location: Davis Monthan AFB is located within the city limits of Tucson, Pima County, Arizona (Innovative Technical Solutions, Inc., 2010).
• History: Davis Monthan AFB was established as Tucson Landing Field in 1925. The Strategic Air Command stationed two B-29 bombardment groups at DMAFB in 1946. The facility was transferred to the Tactical Air Command in 1976 (URS, 2011).
• Current Mission: The Wing's missions are to train A-10 and OA-10 pilots and to provide support and forward air control to ground forces worldwide. The 355th Wing also provides command, control, and communications countermeasures in support of tactical forces with the EC-130H aircraft (URS, 2011).
AFFF Use:
• AFFF containing PFAS was used for firefighting training activities and in extinguishing fires caused by aircraft accidents.
• Three potential AFFF release areas are recommended for SI (See **Figure 2**):
  • FT-03 (Former FTA)
  • Plane Crash Locations 1 - 4
  • Stormwater Outfall Canal
	Topography:
	• The topography of Davis Monthan AFB is relatively flat, gradually sloping downward to the north and northwest (URS, 2011).
	Vegetation:
	• The vegetation in undeveloped areas consists of grasses, cactus, and scrub indigenous to desert. Scrub species include the creosote bush, bursage, and palo verde, while cactus species primary is represented by saguaro, barrel, prickly pear, and cholla (Innovative Technical Solutions, Inc., 2010).
	• In the more developed portions of the base, the vegetation is largely imported nonnative flora, which are artificially irrigated (Innovative Technical Solutions, Inc. 2010).
	Surface Water: (URS, 2011).
	• The Surface drainage over most of the installation is collected by a system of swales and dry washes and is routed to the Stormwater Outfall Canal then to the Tucson Diversion Channel, which is classified as a tributary of the Santa Cruz River.
	• A system of subsurface storm drainage pipes collects runoff along the flightline and main runway. The drainage pipes also route the runoff to the Stormwater Outfall Canal.
	• Davis Monthan AFB also uses numerous catch basins and containment ponds to control stormwater runoff and prevent spills from leaving the installation.
	• Groundwater is recharged at the basin periphery and by streambed infiltration along the Santa Cruz River and its tributaries. The surface drainage over most of the installation is collected by a system of swales and dry washes and is routed to the Stormwater Outfall Canal then to the Tucson Diversion Channel, which is classified as a tributary of the Santa Cruz River.
	Soils:
	• Surface features at Davis Monthan AFB are composed of Mohave soils and Hantz loam. These soil types create a typical soil profile at the installation consisting of clay and sandy loam, with a high percent of calcium carbonate, or caliche (URS, 2011).
	Geology: (URS, 2011).
	• The block-faulted mountains surrounding the Tucson Basin are composed of Precambrian through Tertiary age granitic, metamorphic, volcanic, and consolidated sedimentary rock.
	• In ascending order, the lower basin-fill unit has been divided into the Pantano Formation and the lower and middle Tinaja beds, and the upper basin fill unit has been divided into the upper Tinaja beds, Fort Lowell Formation, and surficial alluvial deposits, which include stream channel deposits.
	Hydrogeology: (HGL, 2015) (James M. Montgomery, 1990)
	• The Pantano Formation is the lowest unit into which wells have been installed in the vicinity of Davis Monthan AFB. The top of this formation occurs at approximately 1,300 feet above mean sea level (amsl) (1,400 feet below ground surface [bgs]).
	• The Tinaja beds occurs at approximately 2,400 feet amsl (approximately 300 feet bgs). Most of the wells installed at Davis Monthan AFB are completed into the Tinaja Beds.
	• The Fort Lowell Formation overlies the Tinaja beds and consists of gravel near the edge of the basin, grading to silt in the center. The Fort Lowell Formation occurs from approximately 2,220 feet to 2,500 feet amsl.
	• The formations, which comprise the aquifer of the Tucson Basin, generally act, more or less, as a single hydrologic unit.
	• Groundwater enters the Tucson Basin from the south and east through the narrow gap between the Rincon and Santa Rita Mountains near Vail, Arizona. Groundwater exits the basin to the northwest through the Rillito Narrows between the Tucson and the Tortolita Mountains.
	• Aquifer transmissivities in the Tucson Basin range from 1,000 to almost 500,000 gallons per day per foot.
	• Water levels beneath Davis Monthan AFB are approximately 250 to 350 feet bgs.
	Meteorology: (URS, 2011).
	• A low precipitation rate (10 in per year) and a high evaporation rate (65 in per year) are common to the Davis Monthan AFB area.
	• The annual average temperature is approximately 68 degrees Fahrenheit (°F), with average daily maximum temperature of 81 °F, respectively. The hot season extends from April through October, with an average of 41 days annually with maximum temperatures over 100°F.
		Contaminants of Potential Concern:
		• PFAS are the contaminants of potential concern during this investigation.
		• Volatile organic compounds (VOCs), specifically tetrachloroethene (PCE) and trichloroethene (TCE) and petroleum hydrocarbons are historical site contaminants.
		Media of Potential Concern:
		• Soil, sediment, and groundwater.
		Confirmed AFFF Releases:
		• FT-03 (Former FTA): PFOS and PFOA were detected in surface soil above the USEPA RSLs. PFOS in sediment was also detected above the USEPA RSL.
		• Plane Crash Locations 1, 2, 3 and 4: No PFAS were detected above USEPA RSL or USEPA HA.
		• Stormwater Outfall Canal: No PFAS were detected above USEPA RSL or USEPA HA.
		Primary Release Pathways:
		• Release or application of AFFF to the ground at source areas.
		• Infiltration of PFAS deeper into soil column over time reaching groundwater.
		• Surface and storm water infiltration into groundwater.
		Secondary Release Pathways:
		• AFFF washed into drainage, stormwater, and sewer systems.
			Current Land Use:
			• Occupied by Davis Monthan AFB.
			Future Land Use:
			• Land use is not expected to change in the future.
			Potential Receptors: (HGL, 2015)
			• Potential receptors associated with current and future land use include USAF personnel and residents, grounds maintenance workers, utility workers, and construction workers.
			• Potential receptors associated with current land use include downgradient municipal wells owned by the City of Tucson.
				Potential Ecological Receptors: (HGL, 2015).
				• There are no sensitive environments or wetlands located within the installation boundary
				Threatened and Endangered Species: (HGL, 2015) (United States Fish and Wildlife)
				• Amphibians: Chiricahua Leopard Frog.
				• Birds: Mexican Spotted Owl, Masked bobwhite quail, American peregrine falcon, California least tern, Yellow-billed Cuckoo, Cactus Ferruginous Pygmy-Owl, Masked Bobwhite, Mountain Plover, Bald Eagle, Southwestern Willow Flycatcher.
				• Fish: Desert Pupfish, Gila (Yaqui) Topminnow, Sonora Chub and Gila chub.
				• Mammals: Sonoran Pronghorn, Lesser Long-Nosed Bat, Jaguar, and Ocelot.
				• Reptiles: Northern Mexican gartersnake and Sonoyta mud turtle.
				• Snails: Sonoran talussnail
				• Plants: Nichol's Turk's Head Cactus, Huachuca Water Umbel, Kearney's Blue-Star, Pima Pineapple Cactus, Acuna Cactus, Bartam stonecrop, Beardless chinch weed, and Canelo Hills ladies'-tresses.

Notes:

AFFF – aqueous film forming foam
AFB – Air Force Base
FTA – fire training area
HA – Health Advisory
PFAS – per- and polyfluorinated alkyl substances
PFBS - Perfluorobutanesulfonic acid
PFOA - perfluorooctanoic acid
PFOS - perfluorooctane sulfonic acid
RSL – Regional Screening Level
SI – Site Inspection

Table 3.0-2
Groundwater Elevations
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Site Inspection Report, Davis Monthan AFB, Tucson, Arizona

AFFF Release Area	Location ID	Well Depth (ft bgs)	Ground Surface Elevation (ft amsl)	TOC Elevation (ft amsl)	Date Measured	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft amsl)
1	MW01001	369.0	2685.803	2686.068	1/29/2018	350.49	2335.58
2	MW02001	305.0	2711.604	2711.435	1/29/2018	282.49	2428.95
	ST-35-MW-29	375.0	NA	2632.69	1/29/2018	330.05	2302.64
	ST-35-MW-40	378.0	NA	2651.21	1/29/2018	338.07	2313.14
	ST-35-MW-42	380.0	2564.027	2564.88	1/29/2018	300.20	2264.68
	ST-35-MW-43	380.0	NA	2561.74	1/29/2018	293.81	2267.93
	ST-35-MW-44	380.0	NA	2624.73	1/29/2018	328.14	2296.59
3	MW03001	321.0	2565.485	2565.369	1/29/2018	302.34	2263.03

Notes:
AFFF - aqueous film forming foam
amsl - above mean sea level
bgs - below ground surface
btoc - below top of casing
ID - Identification
ft - feet
NA - not available
TOC - top of casing

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APPENDIX A

PHOTOGRAPH LOGS

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10 October 2017

Photo 1:
AFFF Release Area 1-FT03 (Former FTA); West Fire Ring before MW01001 drilling

Direction of Photo:
North

10 October 2017

Photo 2:
AFFF Release Area 1-FT03 (Former FTA); South Fire Ring before SB01002 drilling

Direction of Photo:
NA

	**10 October 2017** **Photo 3:** AFFF Release Area 1-FT03 (Former FTA); East Fire Ring before SB01003 drilling
	Direction of Photo: Northeast

	**16 October 2017** **Photo 4:** AFFF Release Area 1-FT03 (Former FTA); East Fire Ring after SB01003 was backfilled.
	Direction of Photo: Southeast

29 October 2017

Photo 5:
AFFF Release Area 1-FT03 (Former FTA); Surface completion of MW01001

Direction of Photo:
North

10 July 2017

Photo 6:
AFFF Release Area 1-FT03 (Former FTA); Temporary staging area of equipment and IDW tank 01.

Direction of Photo:
North

21 December 2017

Photo 7:
AFFF Release Area 2 (Crash Sites); Crash Site 1 where SB02002 is located.

Direction of Photo:
South

21 December 2017

Photo 8:
AFFF Release Area 2 (Crash Sites); Crash Site 4 where MW02001 is located.

Direction of Photo:
Southwest

22 December 2017

Photo 9:

AFFF Release Area 2 (Crash Sites); Drilling at MW02001. Drillers are obtaining a water level from inside the drive casing.

Direction of Photo: South

20 December 2017

Photo 10:

AFFF Release Area 2 (Crash Sites); Drilling at MW02001. Drillers are attaching more drill casing.

Direction of Photo: Northwest

22 December 2017

Photo 11:

AFFF Release Area 2 (Crash Sites); Drilling at MW02001. Drillers are setting the well casing.

Direction of Photo:

Northwest

22 December 2017

Photo 12:

AFFF Release Area 2 (Crash Sites); Drilling at MW02001. Drillers are placing the filter pack.

Direction of Photo:

Northwest

06 January 2018

Photo 13:

AFFF Release Area 3 (Stormwater Outfall Canal); Surface completion of MW03001.

Direction of Photo:

Northwest

29 January 2018

Photo 14:

AFFF Release Area 3 (Stormwater Outfall Canal); Collecting water level at MW03001.

Direction of Photo:

Northwest

06 January 2017

Photo 15:
AFFF Release Area 2 (Crash Sites); Existing well MW-32 with pump.

Direction of Photo:
North

05 January 2017

Photo 16:
AFFF Release Area 2 (Crash Sites); Existing well MW-40 with pump.

Direction of Photo:
Northwest

05 January 2018

Photo 17:
AFFF Release Area 2 (Crash Sites); Existing well MW-43.

Direction of Photo:
East

30 August 2017

Photo 18:
AFFF Release Area 2 (Crash Sites); Existing well MW-43 with pump.

Direction of Photo:
North

05 January 2018

Photo 19:

AFFF Release Area 2 (Crash Sites); Sampling of MW-44, an existing well.

Direction of Photo:
East

05 January 2018

Photo 20:

AFFF Release Area 2 (Crash Sites); Sampling of MW-44, an existing well along the active runway.

Direction of Photo:
Northwest

05 January 2018

Photo 21:

AFFF Release Area 2 (Crash Sites); Sampling of MW-43, an existing well.

Direction of Photo:
Southeast

10 October 2017

Photo 22:

AFFF Release Area 3 (Stormwater Outfall Canal); Former Fire Station No.1 Drainage Outfall where SD03001 was collected.

Direction of Photo:
Northeast

10 October 2017

Photo 23:

AFFF Release Area 3 (Stormwater Outfall Canal); Stormwater Outfall Canal where SD03001 was collected

Direction of Photo:

North

10 October 2017

Photo 24:

AFFF Release Area 3 (Stormwater Outfall Canal); Stormwater Outfall Canal where SD03002 was collected.

Direction of Photo:

Northeast

	**10 October 2017** **Photo 25:** AFFF Release Area 3 (Stormwater Outfall Canal); Stormwater Outfall Canal where SD03003 was collected in the unlined portion.
	Direction of Photo: Southeast

	**5 January 2018** **Photo 26:** AFFF Release Area 3 (Stormwater Outfall Canal); Stormwater Outfall Canal where SD03004 was collected under the bridge.
	Direction of Photo: Southeast

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APPENDIX B

FIELD FORMS

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Appendix B Table of Contents

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APPENDIX B-1

FIELD ACTIVITY DAILY LOGS

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SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	Site wide
Weather:	Clear, Hot	**Date and Time:**	10/10/17 18:31
Technician(s):	Kyle Keegan, Audrey Yorke		

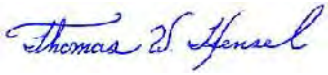
Description of Daily Activities and Events:

Time	Observation/Comment
11:30	Kyle Keegan, Alex Yiannakakis, Audrey York, Tony Valentine, Lloyd Pena and Cody Gabala on site. Getting badged for Davis Monthan
12:00	Met with Teresa Sobolewski to see where we are with getting the dig permits. Drill crew going through inspection.
12:30	Drill crew setting up at the fire training area for now. Alex spoke with the fire chief. Alex, Audrey and Kyle are looking at the drill sites.
13:00	Chad Cahill and Walter S. on site to deliver equipment
14:30	Chad and Walter off site.
14:45	Alex off site.
15:00	Kyle to FedEx to see if our coolers are in. Audrey will monitor setup and decon of equipment.
16:00	All personnel off site

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	Alex Yiannakakis
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:** Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	Site Wide
Weather:	Clear, Hot	**Date and Time:**	10/11/17 17:36
Technician(s):	Kyle Keegan, Audrey Yorke, Samantha Sargent, and Alex Yiannakakis		

Description of Daily Activities and Events:

Time	Observation/Comment
09:00	Alex Yiannakakis, Kyle Keegan, Samantha Sargent, Audrey Yorke, Sarah Schneider, Vern Christensen, Tony Valentine, Lloyd Pena and Cody Gabala on site. Vern getting badged.
09:45	All personnel at the fire station for the kick off meeting with the based leads (Sam has the full attendance list).
11:00	MPE on site with two 20 yard rolloff bins. Audrey and Kyle to escort them in. All other personnel are touring the deill locations.
12:00	MPE off site, bins set at MW03001. Baker on site with 6,000 gallon water tank (no containment was ordered.
12:30	Hurrying to drop water tank at the fire training lay down. EOD is going to do training and too hazardous to stay in the area. Drill Crew taking Lunch.
13:00	Drivers training at the Operations building. Sarah Schneider, Alex Yiannakakis and Sam Sargent review Outfall sample locations.
14:00	Rich Sims drove Kyle, Audrey and the Yellow Jacket crew to mark the new location of MW02001 and show when/how to use the radio.
15:30	Kyle to check again for coolers at FedEx since we did not get a tracking number. Drill crew deconning pipe and equipment.
17:00	All personnel off site.

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	MPE and Baker, Sarah Schneider
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	Site wide/ AFFF Release Area 03
Weather:	Clear, Hot	**Date and Time:**	10/12/17 17:31
Technician(s):	Kyle Keegan and Audrey Yorke		

Description of Daily Activities and Events:

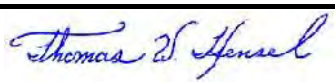
Time	Observation/Comment
09:00	Kyle Keegan, Audrey Yorke, Tony Valentine, Lloyd Pena and Cody Gabala on site
09:30	Tailgate Safety Meeting and PFAS Protocol Checklist
09:45	Drill crew moving equipment to MW03001 drill site. Still do not have permission to drill.
13:00	Kyle and Audrey checking status of the existing wells with pumps.
15:00	All personnel off site

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	Stephanie McCary
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF Release Area 03
Weather:	Clear, Hot	**Date and Time:**	10/13/17 17:40
Technician(s):	Kyle Keegan and Audrey Yorke		

Description of Daily Activities and Events:

Time	Observation/Comment
09:00	Kyle Keegan and Audrey Yorke on site
10:00	Drillers are going to Home Depot for supplies. Kyle to FedEx to pick up the sample kits. Audrey going to stores to get buckets and Distilled water.
10:50	Picked up drill permission from Teresa at the engineer office.
11:30	Tony Valentine, Lloyd Pena, and Cody Gabala
12:00	Sampled the Lab distilled water. DAVIS-FB-001
12:15	Sampled the PFAS free water from the pipe truck. DAVIS-FB-002. Water obtained from Fire Hydrant in Fire Training area
12:30	Took equipment blank on hand auger. DAVIS-EB-001 (for DAVIS03-SO-001)
12:45	Begin clearing utilities with a hand auger at MW03001. Surface sample DAVIS03-SO-001 taken 0.5-1 ft bgs and physical sample 0 to 1 ft bgs (DAVIS03-C-1).
13:30	Utilities cleared preparing to drill for conductor casing at MW03001.
14:08	Begin drilling for conductor casing at MW03001
15:15	Setting the conductor casing to 20 ft bgs at MW03001
17:00	All personnel off site.

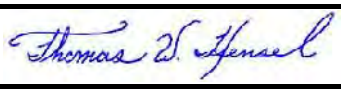
List of Samples Collected:	DAVIS-FB-001, DAVIS-FB-002, DAVIS-EB-001, DAVIS03-SO-001, DAVIS03-C-1
Deviation from Plans:	None
Visitors on Site:	None
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**



QA/QC Date: **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF Release Area 03
Weather:	Clear, Hot	**Date and Time:**	10/14/17 18:49
Technician(s):	Kyle Keegan and Audrey Yorke		

Description of Daily Activities and Events:

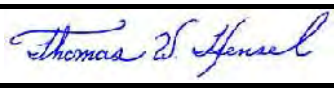
Time	Observation/Comment
06:30	Kyle Keegan, Audrey Yorke, Tony Valentine, Lloyd Pena and Cody Gabala on site
06:40	Tailgate Safety Meeting and PFAS Protocol Checklist
07:00	Deconning Pipe and prepping for drilling at MW03001.
10:00	At MW03001. Prepping the rig for drilling.
11:10	Took equipment blank of the split spoon before the 30' sample is taken. Pressure wash + 4 bucket decon was used before sampling.
12:06	Lunch. Audrey off site to fly home.
13:00	Begin drilling at MW03001 from 21 ft bgs. Soil will be dumped into Bin# DW6279 until it is full, then we will switch bins.
14:00	Split spoon sample taken at MW03001 at 30 ft bgs (DAVIS03-SO-002). There was very small recovery, so we were unable to take the MS/MSD with it. We will try to take it with the 170 ft bgs sample.
14:13	Continuing to drill from 30 ft bgs at MW03001
17:34	Drilled to 170 ft bgs at MW03001. Cleaning up site for the day. We will sample 170 ft bgs at MW03001 with a split spoon.
18:00	All personnel off site.

List of Samples Collected:	DAVIS-EB-002, DAVIS03-SO-002
Deviation from Plans:	No MS/MSD taken at 30 ft for MW03001. Very little soil recovery at that depth.
Visitors on Site:	None
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

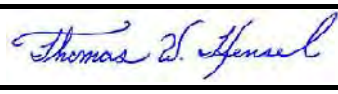
SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF Release Area 03
Weather:	Clear, Hot	**Date and Time:**	10/15/17 18:03
Technician(s):		Kyle Keegan	

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Tony Valentine, Lloyd Pena and Cody Gabala on site.
06:40	Tailgate Safety Meeting and PFAS Protocol Checklist.
07:00	Prep rig for drilling at MW03001
07:15	Split spoon deconned with pressure washer, then the 4 bucket decon before taking the equipment blank. DAVIS-EB-003
08:00	Split spoon taken at MW03001 at 170 ft bgs. DAVIS03-SO-003 with MS/MSD
08:49	Continue drilling from 170 ft bgs
12:55	Pulling drill pipe to take a split spoon sample at 290 ft bgs.
13:30	Lunch and deconning the split spoon.
14:45	Split spoon taken at 290 ft bgs at MW03001. Soil is dry no water yet.
15:00	Drilling again to 300 ft bgs to take another split spoon unless water is hit beforehand at MW03001.
16:45	Split spoon taken at MW03001 at 300 ft bgs (DAVIS03-SO-004) (DAVIS03-C-2). DAVIS-EB-003 associated with 170 and 300 foot samples.
17:00	Crew is burnt out and calling it a day. Cleaning up equipment.
17:30	All personnel off site.

List of Samples Collected:	DAVIS-EB-003, DAVIS03-SO-002, DAVIS03-SO-003, DAVIS03-C-2	**Technician Signature:**	
Deviation from Plans:	None		
Visitors on Site:	None	**Technician Name** (print)**:**	Kyle Keegan
Important Telephone Calls / Photos Taken:	None		

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0003
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF Release Area 01
Weather:	Sunny, 90s	**Date and Time:**	10/16/17 17:53
Technician(s):		Garrett Tabor	

Description of Daily Activities and Events:

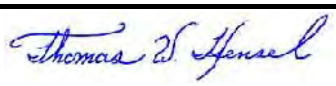
Time	Observation/Comment
05:00	Left Phoenix to Tucson
07:15	At Davis Monthan wait for YJD
09:16	Meet YJD at badging office
10:41	Going through inspection
11:06	Tailgate
11:20	Decon & rig setup
12:30	Took equipment blank from hand auger. DAVIS-EB-004
12:35	Took equipment blank from split spoon. DAVIS-EB-005
12:40	Start hand auger at SB01002
12:45	Took sample at 0-1' DAVIS01-SO-005. Save soils for composite sample.
13:05	Start drilling hand auger clear
13:08	Calibrate PID, zero-0 ppm isobutylene-100.5 ppm
14:05	Take sample @ 30' bgs (SB01002): DAVIS01-SO-006
14:07	Pull rods and Decon
14:45	Start hand auger SB01003
14:50	Take sample @ 0.5 to 1' bgs (SB01003): DAVIS01-SO-007. Save soils for composite sample
15:13	Start drilling SB01003
16:10	Take sample @ 30' bgs (SB01003): DAVIS01-SO-008
16:12	Break down pipe and Decon
16:45	Demob, pack up rig & trucks
17:30	Yellow jacket crew offsite
17:52	GT offsite

List of Samples Collected:	DAVIS01-SO-005, DAVIS01-SO-006, DAVIS01-SO-007, DAVIS01-SO-008, DAVIS-EB-005, DAVIS-EB-004
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	None

Technician Signature:

Technician Name (print)**:**

Garrett Tabor

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 03
Weather:	Clear, Hot	**Date and Time:**	10/16/17 18:58
Technician(s):		Kyle Keegan	

Description of Daily Activities and Events:

Time	Observation/Comment
06:00	Kyle Keegan on site. Calibrate PID (Cal'd good).
06:31	Tony Valentine, Lloyd Pena and Cody Gabala on site.
06:45	Tailgate Safety Meeting and PFAS Protocol Checklist.
07:00	Prep for drilling at MW03001.
07:45	Drilling from 300 ft bgs at MW03001.
08:15	Wet soil at about 305 ft bgs at MW03001. Drilling to 330 ft bgs for now.
10:00	Soil Boring Crew on site (See Garrett Tabors daily). Kickoff meeting, HASP AND QPP overview.
10:30	Helping SB crew setup at SB01002.
13:00	Tagged water at 303.11 ft bgs at MW03001. Instructed the drill crew to build the well screened from 301 to 321 ft bgs. Bottom of the well will sit 321 ft bgs.
14:00	Prepping well materials for setting the well at MW03001.
14:30	Total depth of the borehole was tagged at 328 ft bgs at MW03001.
15:01	Begin building the well at MW03001.
16:02	Setting filter pack at MW03001
18:03	Rat hole took a lot of sand to fill at MW03001. We will finish filter pack in the morning. Cleaning up.
18:30	All personnel off site.

List of Samples Collected:	None	**Technician Signature:**
Deviation from Plans:	None	
Visitors on Site:	None	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	None	Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 03
Weather:	Clear, Hot	**Date and Time:**	10/17/17 18:20
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

Time	Observation/Comment
06:20	Kyle Keegan, Tony Valentine, Lloyd Pena, Walter Saylors on site
06:30	Tailgate Safety Meeting and PFAS Protocol Checklist.
06:45	Prep rig to work area to continue adding the filter pack to MW03001.
08:30	Filter pack set to 298 ft bgs at MW03001. Swabbing the screen
09:00	Dennis Heyer on site. Sand tagged at 298 still. MPE on site to deliver bins. Dennis and Kyle escorting the bins out
10:00	Crew taking lunch while the 5 ft of chips at hydrating at MW03001. MPE off site.
10:45	Begin grouting MW03001
12:40	Todd Cahill on site to deliver more 10/20 sand for the next borehole. (Escorted by Dennis). Continuing to grout MW03001.
13:10	Todd off site.
15:40	7th batch of grout added to MW03001. Cleaning up for the day and loading trailers with equipment to take to the lay down yard. Dennis off site.
16:30	Taking equipment to the lay down yard
17:00	All personnel off site.

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:** Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 03
Weather:	Clear, Hot	**Date and Time:**	10/18/17 18:26
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

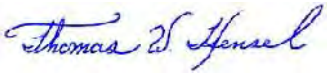
Time	Observation/Comment
06:30	Kyle Keegan, Tony Valentine, Lloyd Pena and Walter Saylors on site. Crew getting Walters pass renewed.
07:00	Tailgate Safety Meeting and PFAS Protocol Checklist
07:15	Unloading pipe at the lay down yard.
09:00	Topping off grout at MW03001.
10:00	Dennis Heyer on site. Loading up equipment at MW03001.
11:30	Drill crew lunch
12:00	Deconning pipe at the lay down yard.
12:30	Equipment blank taken off of hand auger after power washing and deconning with the 4 bucket wash. DAVIS-EB-006 for 0.5'-1' BGS at MW01001
12:45	Shallow soil sample taken at MW01001 from 0.5 to 1 ft bgs. (DAVIS01-SO-001) (DAVIS01-C-1) Began hand clearing utilities at MW01001.
15:00	Adding cement to MW03001.
16:00	Cleaning up work area and taking more equipment to the lay down.
17:00	All personnel off site.

List of Samples Collected:	DAVIS-EB-006, DAVIS01-SO-001, DAVIS01-C-1
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Hot	**Date and Time:**	10/19/17 18:33
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

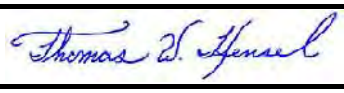
Time	Observation/Comment
06:30	Kyle Keegan, Tony Valentine, Lloyd Pena and Walter Saylors on site.
06:45	Tailgate Safety Meeting and PFAS Protocol Checklist
07:00	Preparing equipment to drill conductor casing at MW01001. Crew deconned the rig last night and is ready to drill.
07:40	Setting up at MW01001
08:45	Drilling conductor at MW01001. Logging soil every 5 ft bgs.
09:15	Setting the conductor casing at MW01001.
09:28	Cementing in the conductor casing at MW01001.
10:32	Cleaning area and maintenance done to the drill casing.
12:00	All personnel off site.

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Warm	**Date and Time:**	10/24/17 19:37
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

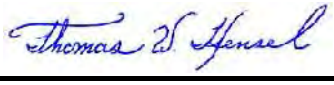
Time	Observation/Comment
08:15	Kyle Keegan, Tony Valentine, Lloyd Pena, Cody Gabala and Noel Garland on site.
08:30	Tailgate Safety Meeting and PFAS Protocol Checklist
08:45	Stabbing pipe and prepping the rig to drill at MW01001
10:15	Begin drilling from 21 ft bgs.
10:30	Equipment blank from split spoon taken after pressure washing and 4 bucket decon. DAVIS-EB-007
11:17	Teresa Sobolewski showing Kyle the landfill to store soil bins at. Crew taking the split spoon sample at 30 ft bgs. Noel will take the sample while Kyle is gone. Crew took lunch after split spoon sample.
13:00	Sampled the 30 ft split spoon at MW01001. (DAVIS01-SO-002)
16:45	Sample taken at 170 ft bgs with a split spoon at MW01001 (DAVIS01-SO-003).
17:00	Cleaning up for the day.
17:15	All personnel off site.

List of Samples Collected:	DAVIS-EB-007, DAVIS01-SO-002, DAVIS01-SO-003
Deviation from Plans:	None
Visitors on Site:	Teresa Sobolewski
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Warm, Very Windy	**Date and Time:**	10/25/17 19:24
Technician(s):	Kyle Keegan and Noel Garland		

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Noel Garland, Tony Valentine, Lloyd Pena, Cody Gabala on site.
06:45	Tailgate Safety Meeting and PFAS Protocol Checklist
07:44	Baker on site to setup the containment on the baker tank.
08:30	Baker off site. Begin drilling from 170 ft bgs at MW01001.
08:45	Alex Yiannakakis on site and showing Noel the surface sediment and water samples.
11:30	Equipment blank taken on the split spoon for MW01001. DAVIS-EB-008
12:00	Took split spoon at 250 ft bgs at MW01001. Dry soil
12:08	Lunch
14:10	Took split spoon at 260 ft bgs at MW01001. Dry soil
14:45	Drilling to 280 ft bgs at MW05001. Still very dry soils
16:00	Split spoon taken 280 ft bgs at MW01001. Moist clayey sand. Still not wet.
17:30	Split spoon taken 290 ft bgs at MW01001. Slightly moist clayey sand. Not wet yet. Clean up for the day.
18:00	All personnel off site.

List of Samples Collected:	DAVIS-EB-008, DAVIS01-SO-004
Deviation from Plans:	The samples collected were not submitted due to not bieng in the proximitiy of the water table. Refer to 10/26/17 Daily log.
Visitors on Site:	Alex Yiannakakis
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Warm	**Date and Time:**	10/26/17 19:39
Technician(s):	Kyle Keegan and Noel Garland		

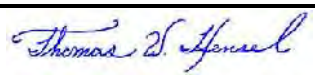
Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Noel Garland, Tony Valentine, Lloyd Pena and Cody Gabala on site.
06:45	Tailgate Safety Meeting and PFAS Protocol Checklist.
07:00	Prep for drilling at MW01001 from 290 ft bgs.
08:30	Begin drilling from 290 ft bgs at MW01001.
09:15	Equipment blank taken from split spoon at MW01001. DAVIS-EB-008 (replaced yesterday's equipment blank)
09:40	Split spoon taken from 300 ft bgs at MW01001.
11:00	Split spoon taken from 310 ft bgs at MW01001. Still dry soil. Pushing a 20 ft section of casing because we are down to our last two 10 ft sections of casing, which are needed for the filter pack.
12:30	Lunch
13:30	Split spoon taken at 330 ft bgs at MW01001. Sl. Moist to dry clayey sand.
15:00	Sediment Sampling DAVIS03-SD-001 (DAVIS-FD-SD-001)
15:30	Sediment Sampling DAVIS03-SD-002
15:45	Split spoon at 350 ft bgs at MW01001. Dry to Sl. Moist clay with sand. DAVIS01-SO-004
16:30	Sediment Sampling DAVIS01-SD-001
17:00	Pulling drill rod at 370 ft bgs at MW01001 to check for water tonight/tomorrow morning. Soil looked very moist.
17:45	Cleaning up for the day. Unofficial tag on water was 353 ft bgs. We will clean up the pipe and water in the morning and after water recovers we will tag water and asses where to put the screen.
18:00	All personnel off site.

List of Samples Collected:	DAVIS-EB-008, DAVIS01-SO-004, DAVIS03-SD-001, DAVIS03-SD-002, DAVIS-FD-SD-001, DAVIS01-SD-001
Deviation from Plans:	None
Visitors on Site:	None
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:** Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Warm	**Date and Time:**	10/27/17 17:42
Technician(s):		Kyle Keegan	

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Noel Garland, Tony Valentine, Lloyd Pena and Cody Gabala on site.
06:50	Tailgate Safety Meeting and PFAS Protocol Checklist
07:00	Setting up to clean out the casing to get an accurate tag on MW01001's borehole.
07:45	Kyle and Noel to get the Sediment sample off site SD03003. (DAVIS03-SD-003) Crew tripping in pipe for clean out.
09:30	Water tagged at MW01001 at 351.74 ft bgs.
09:45	Kyle sampling the IDW buckets from MW03001 and MW01001.(DAVIS-SOLID IDW-BIN01) (See tracker for bin numbers and their associated wells). Crew is prepping well materials
10:00	DAVIS-SOLID IDW-BIN02
10:15	DAVIS-SOLID IDW-BIN03
10:30	DAVIS-SOLID IDW-BIN04
11:30	Setting the well screened from 349 ft to 369 ft bgs at MW01001.
13:30	Adding the filter pack at MW01001.
15:00	Swabbing the screen at MW01001.
15:26	Filter pack stayed at 346 ft bgs at MW01001.
15:45	Added bentonite chips to 341 ft bgs at MW01001
16:00	Hydrated the chips. Cleaning up, crew does not want to do anything else today despite my efforts to get them to work on the pad at MW03001 or start grout since they are set up.
16:45	All personnel off site.

List of Samples Collected:	DAVIS03-SD-003, DAVIS-SOLID IDW-BIN01, DAVIS-SOLID IDW-BIN02, DAVIS-SOLID IDW-BIN03, DAVIS-SOLID IDW-BIN04	**Technician Signature:**
Deviation from Plans:	None	
Visitors on Site:	None	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01 & 03
Weather:	Clear, Warm	**Date and Time:**	10/28/17 18:10
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan and Noel Garland on site.
06:50	Tony Valentine, Lloyd Pena and Cody Gabala on site
07:00	Tailgate Safety Meeting and PFAS Protocol Checklist
07:15	Tony doing dailies while Lloyd and Cody check the rig for maintenance needed.
08:00	Begin grouting MW01001.
10:13	1st lift of grout in up to about 100 ft bgs at MW01001
10:39	Heading to MW03001 to dig out the pad and pump the bins
11:55	Tony getting tender to cut the conductor at MW03001
13:45	Vault set at MW03001. Water is pumped from the bins near MW03001.
14:00	Lunch
14:30	Continuing grout at MW01001.
17:00	10 batches of grout added. We will add cement in the morning. Cleaning up
17:30	All personnel off site.

List of Samples Collected:	None	**Technician Signature:**	
Deviation from Plans:	None		
Visitors on Site:	None	**Technician Name** (print)**:**	
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Kyle Keegan	

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01
Weather:	Clear, Warm	**Date and Time:**	10/29/17 18:02
Technician(s):	Kyle Keegan		

Description of Daily Activities and Events:

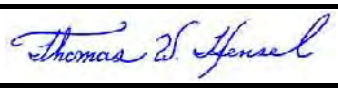
Time	Observation/Comment
06:30	Kyle Keegan on site
07:15	Tony Valentine, Lloyd Pena and Cody Gabala on site.
07:20	Tailgate Safety Meeting and PFAS Protocol Checklist
07:35	Adding cement to MW01001 from 20 ft bgs.
08:00	Kyle tagged water MW03001 at 302.91 ft btoc. TOC is 0.5 ft bgs.
08:45	Cement finished at MW01001. Crew packing equipment up and deconning.
11:00	Setting the vault and pad at MW01001. TOC 0.5 ft bgs.
14:30	Pad complete at MW01001. Kyle off site back to phoenix. Crew staying to decon and load equipment for transport. They will be back periodically the next few days to drive equipment of site.

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	None
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Cloudy-some rain	**Date and Time:**	12/18/2017 8:00
Technician(s):	Kyle Keegan, Audrey Yorke, Samantha Sargent		

Description of Daily Activities and Events:

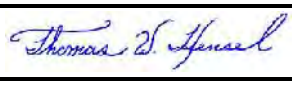
Time	Observation/Comment
7:45	On site. Dennis H. on site
8:20	Yellow Jacket on site. Checking them in for passes. John. M met at first gate.
9:15	Checked in at Fire Safety services. Went to staging area with Eric from their office to discuss moving of materials in fire training area.
10:55	At Airfield base operations to meet with Mr. Sims. Driver's training refresher conducted and walked to location to confirm staging and drill location.
10:57	Call sign: Yellow Jacket 1. Announce our presence when entering and exiting ILS critical area. We may have to do sampling along runway on Saturday.
11:00	Cleared the area for staging with Sims and John .M.
11:05	The location marked on the map is different then the GPS location. We had to confirm with all involved parties to gain clearance for drilling.
11:10	Talking with Doyle and Sims to determine any issues with locations.
12:00	Starting to mob to staging area.
12:05	We have to wait for confirmation and we can begin tomorrow. Called Sarah S. to notify her of full situation.
16:00	Sam Sargent off site
17:30	Out of controlled runway area
18:00	All personnel off site.

List of Samples Collected:	None
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	Notifying Sarah S. of issues

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear-Warm	**Date and Time:**	12/19/17 19:44
Technician(s):	Kyle Keegan, Audrey Yorke		

Description of Daily Activities and Events:

Time	Observation/Comment
07:30	Kyle Keegan and Audrey Yorke on site
08:00	Tony Valentine, Lloyd Pena, Cody Gabala and Dennis Heyer on site.
08:10	Tailgate Safety Meeting and PFAS Protocol Checklist
08:15	Sam Sargent at laydown area-signed Tailgate. Crew is breaking down the decon pad at the fire training pit to move it to the new location next to Production Well 67
08:30	Waiting on confirmation of the location of MW02001 by the Airforce.
11:00	Permission granted to drill at previously marked spot by Kyle and Audrey in October. Location already cleared for utilities and under all permits. Crew is deconning rig and pipe.
12:30	Lunch
13:00	Continuing to decon equipment.
14:00	Took equipment blank of hand auger for shallow sample (DAVIS-EB-009)
14:15	Moving rigs to the MW02001 location after requesting permission from the tower.
15:00	Begin clearing utilities with hand auger at MW02001. Sample taken from 0.5' to 1' bgs (DAVIS02-SO-001)
15:20	Begin drilling for conductor casing at MW02001 to 20' bgs
15:50	Setting the conductor casing and leveling it at MW02001
16:15	Cementing in conductor casing at MW02001. Cleaning up equipment and supplies. Tony and Audrey shuffling trucks back to the lay down.
17:10	All equipment and personnel out of MW02001. Called tower over radio to inform them. Unloading trailers at the lay down yard.
18:00	All personnel off site.

List of Samples Collected:	DAVIS-EB-009, DAVIS02-SO-001	**Technician Signature:**
Deviation from Plans:	None	
Visitors on Site:	Dennis Heyer	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/3/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear, Warm	**Date and Time:**	12/20/17 19:12
Technician(s):	Kyle Keegan, Audrey Yorke		

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Audrey Yorke, Tony Valentine, Lloyd Pena and Cody Gabala on site.
07:00	All personnel meeting at the lay down area
07:10	Tailgate Safety Meeting and PFAS Protocol Checklist.
07:20	Prepping rig and equipment to drill at MW02001
08:30	Dennis Heyer on site.
10:30	Repairs to the casing hammer's chain.
11:20	Setting up casing hammer and hoses to drill at MW02001.
11:37	Begin drilling at MW02001. Soil disposed of in soil bin #5372 at the lay down yard.
12:08	Drill crew taking Lunch.
12:50	Equipment blank taken at MW02001 for 30 ft split spoon sample (DAVIS-EB-010)
13:20	Split spoon taken at 30 ft at MW02001. (DAVIS02-SO-002)
16:11	Stop drilling to clean up work area for the night. Drilled to 130 ft bgs. Dennis off site.
17:00	Loading more pipe and prepping for tomorrow at the lay down area.
18:00	All personnel off site

List of Samples Collected:	DAVIS-EB-010, DAVIS02-SO-002
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/3/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear, Warm	**Date and Time:**	12/21/17 19:24
Technician(s):	Kyle Keegan, Audrey Yorke		

Description of Daily Activities and Events:

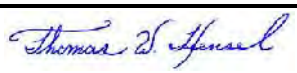
Time	Observation/Comment
06:30	Kyle Keegan, Audrey Yorke, Tony Valentine, Lloyd Pena, Cody Gabala on site. Getting badges and cones from base ops.
07:00	All personnel at the lay down yard
07:10	Tailgate Safety Meeting and PFAS Protocol Checklist
07:30	Permission granted from the tower to enter work area at MW02001.
08:13	Dennis Heyer on site. Repairs to hammers chain again
09:00	Dennis off site
09:05	Begin drilling at MW02001 from 130 ft bgs.
09:15	Equipment blank taken off the split spoon for sampling at MW02001. (LUKE-EB-011)
10:50	Split spoon taken at 170 ft bgs at MW02001 (DAVIS02-SO-003)
11:20	Mr. Sims stopped by to just update us about the planes flying close, their concerns and ours. Setup an escort from him at 14:30 to sample the soil borings near the runway.
11:50	Crew taking Lunch
12:40	Continue drilling from MW02001.
13:30	Rick Hoyt on site (Yellow Jacket Safety)
14:45	Richard Sims taking Audrey around to sample SB02002, SB02003 and SB02004
15:00	SB02004 0-1 ft bgs. DAVIS02-SO-007
15:20	SB02003 0-1 ft bgs. DAVIS02-SO-006
15:30	SB02002 0-1 ft bgs. DAVIS02-SO-005
14:00	Cleaning up for the day. Drilled to 310 ft bgs. Crew will TD tomorrow
16:40	Prepping equipment for tomorrow at the lay down area.
17:45	All personnel off site

List of Samples Collected:	DAVIS-EB-011, DAVIS02-SO-003, DAVIS02-SO-005, DAVIS02-SO-006, DAVIS02-SO-007
Deviation from Plans:	None
Visitors on Site:	Dennis Heyer, Rick Hout
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear, Warm	**Date and Time:**	12/22/17 19:13
Technician(s):	Kyle Keegan, Audrey Yorke		

Description of Daily Activities and Events:

Time	Observation/Comment
06:45	Kyle Keegan, Audrey Yorke, Tony Valentine, Lloyd Pena and Cody Gabala on site, checking in with Airfield Ops.
07:00	All personnel at the lay down
07:10	Tailgate Safety Meeting and PFAS Protocol Checklist
07:30	Moving equipment to MW02001 after getting permission from the tower to proceed.
07:40	Prepping rig for drilling at MW02001. The cold rig is taking a bit to warm up.
08:30	Blowing air on the hole at MW02001. Water coming out. Blew for 5 min and waiting 10 min for water to recover.
08:46	Blew air on MW02001 again and still producing good water. Cleaning out the pipe and water in case we are deep enough.
08:55	Tripping pipe at MW02001.
09:15	Letting water recover. Crew threading well casing together. Water tagged at ~287 ft bgs at MW02001
11:20	Water level still holding at ~287 ft bgs at MW02001
12:10	Lunch
12:40	Prepping to build the well at MW02001 screened from 285 to 305 ft bgs.
13:00	Building the well at MW02001
13:45	Adding filter pack to MW02001
15:45	Swabbing Filter Pack
16:55	Adding bentonite seal
17:45	All personnel off site

List of Samples Collected:	None	**Technician Signature:**
Deviation from Plans:	None	
Visitors on Site:	None	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/3/2018**

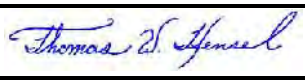
SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear, Warm	**Date and Time:**	12/23/17 20:26
Technician(s):	Kyle Keegan, Audrey Yorke		

Description of Daily Activities and Events:

Time	Observation/Comment
06:30	Kyle Keegan, Tony Valentine, Lloyd Pena and Cody Gabala on site. Checking in with field Ops.
07:00	All personnel at the lay down area
07:10	Tailgate Safety Meeting and PFAS Protocol Checklist
08:00	Moving to MW02001 after permission granted from the tower to enter the area.
08:10	Setting up to grout at MW02001.
09:10	Grouting MW02001
12:15	Lunch. Grout up to 20 ft but may fall at MW02001.
12:45	Cleaning up equipment while grout settles at MW02001.
15:10	Topping off grout at MW02001. Added 8 bags of bentonite chips because we kept losing grout into the formation.
14:12	Cleaning up and heading to the laydown yard with the rig and equipment. We left the casing puller blocking the well with lights on it. Tower was informed.
16:45	Drill Crew off site. Kyle to base Ops.
17:10	Base Ops wouldn't accept responsibility for the radio. John Maisch on his way to meet Kyle at the Civil Engineering Building in about 30 minutes.
18:00	Radio handed off to John. Kyle off site heading back to Phoenix.

List of Samples Collected:	None	**Technician Signature:** 
Deviation from Plans:	None	
Visitors on Site:	None	**Technician Name** (print)**:** Kyle Keegan
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01 and 02
Weather:	Clear, Warm	**Date and Time:**	01/02/18 17:07
Technician(s):	Kyle Keegan, Samantha Sargent		

Description of Daily Activities and Events:

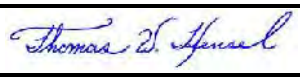
Time	Observation/Comment
08:00	On site . Waiting for Kevin to let yellow jacket into gate.
09:20	Was able to get everyone badged. Survey team is with Kyle to survey new wells.
10:00	Pump rig deconning equipment
10:15	Tailgate meeting with entire team
10:39	Setting up at MW01001
10:52	DTW=351.08' btoc
11:00	Unable to get a hold of Mr. Sims to get survey team onto the runway area. We will have to reschedule.
11:10	Begin swabbing screen of MW01001 and took field blank from pump trucks decon water. (DAVIS-FB-003)
11:43	Begin bailing
12:38	Bailed 55 gallons and started setting pump.
13:00	Decon pump and took equipment blank. (DAVIS-EB-012)
13:06	Began deploying pump in well.
13:55	Pump on, (totalizer: 2896.56)~1.6 gpm
14:25	Adjusted to ~2 gpm since there is minimal drawdown
15:13	Finished development and packed up.
15:27	Audrey and Bryan on site
15:30	Pump crew off site
16:06	Drill team worked on cementing MW02001 and deconning.
16:30	Everyone off site for day.

List of Samples Collected:	DAVIS-FB-003, DAVIS-EB-012
Deviation from Plans:	None
Visitors on Site:	Audrey and Bryan (AmecFW)
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 01, 02, and 03
Weather:	Clear, Warm, high in 70°s F	**Date and Time:**	01/03/18 17:00
Technician(s):	Kyle Keegan, Audrey Yorke, Samantha Sargent, Bryan Hansen		

Description of Daily Activities and Events:

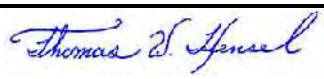
Time	Observation/Comment
06:45	Kyle on site and stopped at base operations.
07:08	Sam and pump crew at MW01001.
07:35	Pump on (totalizer: 602909) at MW01001 ~2 gpm.
8:10	DAVIS01-GW-001 collected
08:13	Pump off (totalizer: 0029160) at MW01001.
08:47	Mr. Sims stopped by and Drivers training will be in an hour. He will put a note in place for tomorrow for development of MW02001.
09:02	Pump out of well at MW01001.
09:25	Decon, dump tank, and fill water.
09:26	Drillers loading up materials in lay down area.
11:00	Drivers training for pump crew with Mr. Sims; Rick from Yellow jacket onsite (to conduct YJD health and safety audit).
11:33	Set up at MW03001 (DTW: 302.08' btoc).
11:35	Begin swabbing (screen: 301'-321').
12:03	Start bailing: 55 gallons bailed.
12:40	Finished bailing and started setting pump. Collect DAVIS-EB-013 (pump).
13:08	Sam Sargent offsite.
13:33	Pump is set at MW03001.
13:42	Begin purge at MW03001. (pump on)
14:43	Development purge complete at MW03001. Teams plans to collect sample first thing tomorrow morning.
14:55	Yellow Jacket development team offsite. Audrey, Bryan and Rick mobilize to staging area near ILS Critical area to oversee Yellow Jacket drilling team.
16:55	Yellow Jacket drilling crew is packing up equipment. AmecFW and Rick offsite.

List of Samples Collected:	DAVIS01-GW-001, DAVIS-EB-013
Deviation from Plans:	None
Visitors on Site:	Richard Hoyt
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log

Technician Signature:

Technician Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

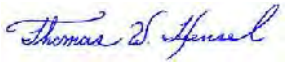
SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 03 and 02
Weather:	Clear, Warm, high 70s	**Date and Time:**	01/04/18 17:31
Technician(s):	Kyle Keegan, Audrey Yorke, Bryan Hansen		

Description of Daily Activities and Events:

Time	Observation/Comment
07:00	AmecFW and Yellow Jacket teams onsite.
07:15	Team holds daily health and safety meeting and calibrates equipment. Yellow Jacket drilling team mobilizes to staging area adjacent to ILS to continue packing up drilling equipment.
07:35	Yellow Jacket development team begins purge at MW03001.
08:20	Collect groundwater sample DAVIS03-GW-001.
08:24	YJD begins pulling pump.
09:11	Pump has been removed from MW03001. Team mobilizes to staging area to dump purge water and fill water tank.
09:23	Team checks in at base Ops.
09:33	Yellow Jacket development team dumps purge water, fills water tank and decons casing.
10:10	Team arrives at existing well MW-42. Yellow Jacket connects existing pump wiring to truck to begin purge. The pump works, team sets up water quality equipment.
11:15	Team collects GW sample DAVIS02-GW-002.
11:38	Development team mobilizes to staging area adjacent to ILS to prepare for development at MW02001.
12:42	Team enters ILS Critical area to begin development activities at MW02001.
13:19	Yellow Jacket begins swabbing/bailing.
14:22	Swabbing/bailing complete.
14:25	Blank collected (DAVIS-EB-014) from bottom of pump.
14:29	YJ installs pump into MW02001.
15:20	Begin purge at MW02001.
15:51	End purge at MW02001. The team will return tomorrow morning to collect GW sample.
16:15	YJD offsite.
16:38	AmecFW leaves ILS Critical area. Team mobilizes to vicinity of existing well MW-43 to locate well.
17:26	Team is unable to locate MW-43.
17:30	AmecFW offsite.

List of Samples Collected:	DAVIS03-GW-001, DAVIS02-GW-002, DAVIS-EB-014	**Technician Signature:** 
Deviation from Plans:	None	
Visitors on Site:	None	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF RELEASE AREA 02
Weather:	Clear, Warm, high 70s	**Date and Time:**	01/05/18 17:00
Technician(s):	Kyle Keegan, Audrey Yorke, Bryan Hansen		

Description of Daily Activities and Events:

Time	Observation/Comment
07:00	AmecFW and Yellow Jacket onsite at staging area adjacent to ILS Critical area.
07:20	Team holds tailgate health and safety meeting and calibrates equipment.
07:50	Team mobilizes to MW02001 to set up for sampling.
08:00	Begin pumping at MW02001.
08:35	Collect GW sample DAVIS02-GW-001.
08:37	Yellow Jacket development crew begins pulling pump from MW02001.
09:30	Team mobilizes to FTA to dump purge water.
10:37	Team enters infield to set up at existing well MW-40. Kyle K. mobilizes to collect sediment sample at SD/SW03004.
10:51	Begin purge at MW-40.
11:35	Collect sample DAVIS02-GW-004 at MW-40.
12:00	DAVIS02-C-1
12:02	Team mobilizes to existing well MW-44.
12:22	Begin purge at MW-44.
13:25	Collect GW sample DAVIS02-GW-006 at MW-44.
10:30	Kyle Keegan collects sediment sample DAVIS03-SD-004.
13:45	Team mobilizes to FTA to dump purge water.
14:15	Mobilize to MW-43.
14:48	Begin purge at MW-43.
15:35	Collect GW sample DAVIS02-GW-003 at MW-43.
16:05	Team has finished packing equipment and leaves site. A. Yorke brings radio back to John Maisch and checks the team out at base Ops.
16:55	A. Yorke leaves base.

List of Samples Collected:	DAVIS02-GW-001, DAVIS02-GW-004, DAVIS02-GW-006, DAVIS02-GW-003, DAVIS03-SD-004, DAVIS02-C-1	**Technician Signature:**	
Deviation from Plans:	Added additional sediment sampling, replaced MW-40 for MW-28, and MW-44 for MW-35 per Sarah S. instruction.		
Visitors on Site:	None	**Technician Name** (print)**:**	
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Audrey Yorke	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/10/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	AFFF Release Area 02
Weather:	Clear, high 70s	**Date and Time:**	01/06/18 11:25
Technician(s):	Audrey Yorke, Bryan Hansen, Kyle Keegan		

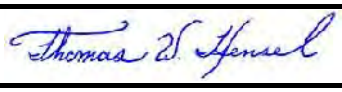
Description of Daily Activities and Events:

Time	Observation/Comment
06:43	Audrey Y. meets Yellow Jacket development crew at base Ops to check in.
07:10	Team meets B. Hansen at MW03001 to hold daily tailgate health and safety meeting.
07:20	Team sets up at existing well MW-32 and calibrates equipment. Yellow Jacket discovers that the existing pump wiring is a 3-wire connection which requires a above-ground control box. The team is unable to sample this well.
07:59	Audrey Y. calls Sarah Schneider to discuss sampling options. The team checks other existing monitoring wells in the area (including MW-50) but all pumps have the same 3-wire connection as MW-32.
09:51	Yellow Jacket packs up equipment and heads to base Ops to check out and to the FTA staging area to dump purge water. Yellow Jacket offsite.
10:06	Kyle Keegan onsite to pick up samples and equipment.
10:45	Kyle K. Offsite. Bryan and Audrey checkout at base Ops.
11:23	Bryan and Audrey offsite.

List of Samples Collected:	None
Deviation from Plans:	MW-32 has 3-wire connection and cannot be sampled with Yellow Jacket current setup
Visitors on Site:	None
Important Telephone Calls / Photos Taken:	Existing well wiring connections

Technician Signature:

Technician Name (print)**:** Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

SUMMARY OF DAILY ACTIVITIES

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Investigation Area:**	Basewide
Weather:	Warm and Windy	**Date and Time:**	1/29/2018 17:35
Technician(s):	Samantha Sargent and Garrett Tabor		

Description of Daily Activities and Events:

Time	Observation/Comment
08:00	On site.
08:05	Tailgate Safety Meeting and PFAS Protocol Checklist
08:30	Survey team at Swan gate and John M. at Craycroft gate for day passes
09:00	Met survey team at Swan gate to sponsor and CT Inc is also at the gate.
09:05	Survey team setting up base for coordinates
09:45	MW02001 survey. DTW: 282.49' btoc
10:11	Met John and CT Inc at MW03001 to move bins. DTW: 302.34' btoc
11:30	Retrieved bins at MW02001
12:00	All bins at landfill staging area by the SVE system. (southwest of the tower)
12:30	Break for lunch and got tools to make a handle for the sounder
13:45	Sampling of IDW tank (DAVIS-LIQUID IDW-TANK01) -very windy
14:10	MW01001 DTW:350.49' btoc
14:45	MW-42 DTW:300.20' btoc
15:00	MW-32 DTW: 331.06' btoc
15:30	Checking in at base ops to proceed to wells near the runways
16:13	Couldn't get the lid off of MW-28.
16:20	MW-29 (could replace the water level for MW-28) DTW: 330.05' btoc
16:25	Called Audrey to find other wells
16:30	MW-44 DTW:328.14' btoc
16:35	MW-40 DTW: 338.07' btoc
16:40	Returning to base Ops
17:10	Returned radio to John .M
17:25	MW-43 (found from Audrey's map) DTW: 293.81' btoc
17:35	All personnel off site. Drive back to Phoenix

List of Samples Collected:	DAVIS-LIQUID IDW-TANK01	**Technician Signature:**
Deviation from Plans:	None	
Visitors on Site:	Survey team and CT Inc	**Technician Name** (print)**:**
Important Telephone Calls / Photos Taken:	Pictures of tasks for photo log	Samantha Sargent

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/30/2018**

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APPENDIX B-2

DAILY PFAS PROTOCOL CHECKLISTS

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ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	Mobilization		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/10/17 14:13

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

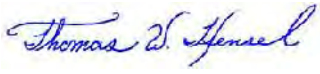
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	Lay Down Yard near Fire Training Pit		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/12/17 09:10

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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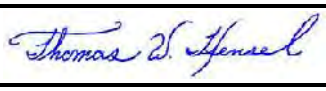
None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	MW03001		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/13/17 09:00

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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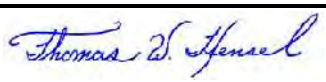
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF Area 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/14/17 07:05

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
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Sample Containers:

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Wet Weather (as applicable):

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Equipment Decontamination:

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Food Considerations:

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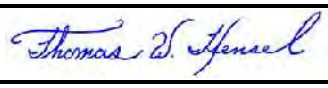
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF Release area 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/15/17 06:46

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
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Field Equipment:

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Wet Weather (as applicable):

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Equipment Decontamination:

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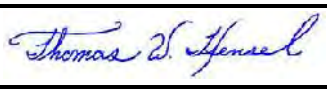
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Sunny, 90's
Site/Area Name:	FT03		
Field Manager:	Garrett Tabor - Field Lead	**Date and Time:**	10/16/17 11:20

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

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- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
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- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

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Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Garrett Tabor

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot, 90s
Site/Area Name:	AFFF RELEASE AREA 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/16/17 06:37

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

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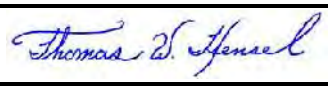
None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF Release Area 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/17/17 06:34

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

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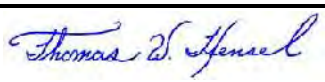
None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/18/17 06:40

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☐ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

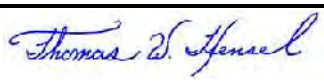
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/19/17 06:43

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☐ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

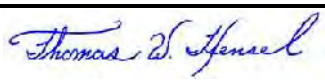
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF Release Area 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/24/17 08:36

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☐ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

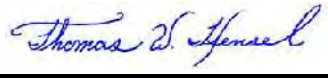
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/25/17 06:45

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

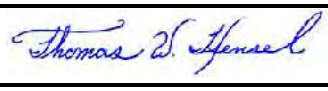
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/26/17 06:37

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

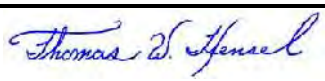
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/27/17 06:50

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

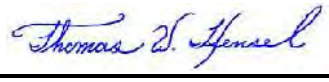
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/28/17 07:00

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

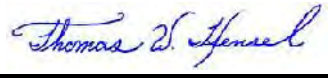
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 01		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	10/29/17 06:41

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, Hot
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	12/19/2017 7:00

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

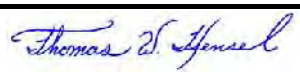
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cool
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	12/20/17 07:00

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

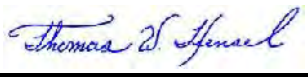
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cool
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	12/21/17 07:08

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

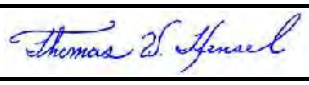
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cold
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	12/22/17 07:00

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

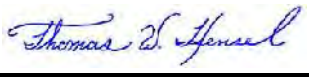
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cool
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	12/23/17 07:04

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

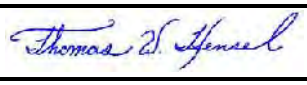
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/3/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cool
Site/Area Name:	AFFF RELEASE AREA 01 and 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	01/02/18 10:11

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Manager shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFAS sample protocols will result in the permanent removal of worker(s) from the investigation area.

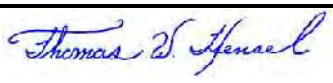
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, cool
Site/Area Name:	AFFF RELEASE AREA 01, 02, and 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	01/03/18 07:11

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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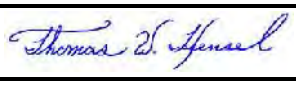
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Kyle Keegan

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, high 70s
Site/Area Name:	AFFF RELEASE AREA 02 and 03		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	01/04/18 07:20

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Audrey Yorke

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/5/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, 46°F
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	01/05/18 07:20

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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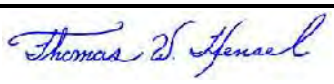
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Clear, 46°F
Site/Area Name:	AFFF RELEASE AREA 02		
Field Manager:	Kyle Keegan - Geologist	**Date and Time:**	01/06/18 07:10

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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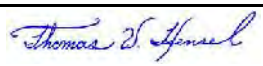
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

ATTACHMENT 1 TO SOP AFW-01
DAILY PFAS PROTOCOL CHECKLIST

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Weather (temp./precipitation):**	Warm and Windy
Site/Area Name:	Basewide		
Field Manager:	Samantha Sargent - Geologist	**Date and Time:**	1/29/2018 8:05

Field Clothing and PPE (as applicable):

- ☑ Field crew in compliance with Tables 1 and 2, SOP AFW-01
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☑ Field crew has not applied unacceptable sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-it® Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☑ Caps are lined or unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

Equipment Decontamination:

- ☑ "PFAS-free" water on-site for decontamination of sample equipment
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

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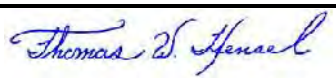
Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

None

Signature:

Name (print)**:**

Samantha Sargent

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/30/2018**

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APPENDIX B-3

TAILGATE SAFETY MEETING REPORTS

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TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/10/17 14:15
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Unscheduled Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Driving equipment on base
Action taken on previous suggestions:	Drive slowly, use spotter
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Front Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Alex Yiannakakis	AmecFW				
Audrey Yorke	AmecFW				
Chad Cahill	Yellow Jacket Drilling				
Walter Saylors	Yellow Jacket Drilling				
Lloyd Pena	Yellow Jacket Drilling				
Cody Gabala	Yellow Jacket Drilling				
Tony Valentine	Yellow Jacket Drilling				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/12/17 09:25
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Hot work
Action taken on previous suggestions:	Make sure we have 30 minute fire watch with any hot work. Have a 20 lb. fire extinguisher next to work area and if needed use the water truck to wet any nearby dry brush before beginning.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	Company and Title	Signature
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/13/17 12:04
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Over head hazards
Action taken on previous suggestions:	Check for hazard before working with any over head equipment. Wear Hard Hat along with standard PPE. Stop work and assess any hazards that come up during the daily operations
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				
Audrey Yorke	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/14/17 06:42
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Critters
Action taken on previous suggestions:	Check under equipment and supplies for critters hiding before use to prevent bites. Do not touch any of the critters.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Tony Valentine	YJD				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Audrey Yorke	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/15/17 06:46
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- [x] Site History/Site Layout
- [x] Scope of Work
- [x] Personnel Responsibilities
- [x] Medical Surveillance Requirements
- [x] Training Requirements
- [x] Safe Work Practices
- [x] Logs, Reports, Recordkeeping
- [x] Sanitation and Illumination
- [x] Air Surveillance Type and Frequency
- [x] Monitoring Instruments and Personal Monitoring
- [x] Action Levels
- [x] Accident Reporting Procedures
- [x] Site Control (visitor access, buddy system, work zones, security, communications)
- [x] Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- [x] Engineering Controls
- [x] PPE Required/PPE Used
- [x] Define PPE Levels, Donning, Doffing Procedures
- [x] Physical Hazards and Controls (e.g., overhead utility lines)
- [x] Decontamination Procedures for Personnel and Equipment
- [x] General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- [x] Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- [x] Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- [x] Hazardous Materials Spill Procedures
- [x] Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- [x] Injury/Illness Reporting Procedures
- [x] Route to Hospital and Medical Care Provider Visit Guidelines
- [x] Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- [x] Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Dust and particulates
Action taken on previous suggestions:	Wear dust masks to prevent inhalation. Wear safety glasses. If possible stay clear of dust produced by drilling and other operations.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Cody Gabala	YJD				
Lloyd Pena	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/16/17 06:37
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Heat and Sun
Action taken on previous suggestions:	Take breaks from the sun when possible. Drink water and wear PFAS FREE sun screen.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Cody Gabala	YJD				
Lloyd Pena	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/16/17 11:06
Field Manager Name:	Garrett Tabor	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
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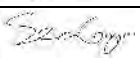
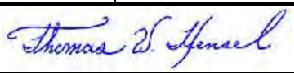
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Slips, trips, falls
Action taken on previous suggestions:	Make sure work area clear
Injuries/accidents/personnel changes since previous meeting:	NA
Observations of unsafe work practices/conditions that have developed since previous meeting:	NA
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Base OPS Building
Other Safety Topics Discussed:	NA
Additional comments:	NA

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Garrett Tabor	AmecFW				
Eric Olsen	YJD				
Wally Sailors	YJD				
Sean Cardigan	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Garrett Tabor	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel  **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/17/17 06:45
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
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- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Dust
Action taken on previous suggestions:	Wear dust masks and try to work with the wind to your back so dust is blown away from you.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Tony Valentine	YJD				
Lloyd Pena	YJD				
Walter Saylors	YJD				
Dennis Heyer	Ageiss/AFCEC				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/18/17 06:45
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
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- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
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- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Driving on base
Action taken on previous suggestions:	Use spotters and drive slowly. Watch for pedestrians and other vehicles. Take your time and drive safely.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Walte Saylors	YJD				
Lloyd Pena	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/19/17 06:44
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Flying particles from drilling.
Action taken on previous suggestions:	Stand back when clearing the hole. Wear eye protection and face when needed.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Walter Saylors	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/24/17 08:37
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Climbing the derek.
Action taken on previous suggestions:	Wear a harness that you are 100% tied off at all times while working and climbing.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				
Noel Garland	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/25/17 06:47
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Blowing dust
Action taken on previous suggestions:	Keep dust control up. Try to limit turning in dusty areas and turning up the soil. Keep drill cuttings moist for dust control when needed. Limit time near the hopper during operations.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Tony Valentine	YJD				
Cody Gabala	YJD				
Lloyd Pena	YJD				
Noel Garland	AmecFW				
Alex Yiannakakis	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/26/17 06:45
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Lifting techniques
Action taken on previous suggestions:	Lift with your legs and do not lift over your capability.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Tony Valentine	YJD				
Cody Gabala	YJD				
Lloyd Pena	YJD				
Noel Garland	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/27/17 07:00
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Heavy lifting
Action taken on previous suggestions:	Lift with your legs and use forklift where possible to move heavy materials
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Tony Valentine	YJD				
Noel Garland	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/28/17 07:15
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Dust from grout and cement
Action taken on previous suggestions:	Wear a dust mask while mixing grout and try your best to let the wind blow dust from your face.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Noel Garland	AmecFW				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	10/29/17 06:50
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
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- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Fork lift driving
Action taken on previous suggestions:	Use spotters, always check your surroundings before moving. Drive slowly and watch for pedestrians between sites.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/18/2017 10:00
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
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- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
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- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Moving equipment across base
Action taken on previous suggestions:	Use proper lifting techniques and wear hard hats around heavy equipment.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Samantha Sargent	AmecFW				
Audrey Yorke	Amec FW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel **QA/QC Date: 1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/19/17 08:30
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
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- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Moving in CMA
Action taken on previous suggestions:	Wait for permission from the tower before moving in work area. Stay within the work area.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Tony Valentine	YJD				
Samantha Sargent	AmecFW				
Dennis Heyer	AGEISS				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/20/17 07:10
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Kyle Keegan
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Stay hydrated
Action taken on previous suggestions:	Water for crew kept on site
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Wilmot Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Audrey Yorke	AmecFW				
Tony Valentine	YJD				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Kyle Keegan	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - SHSO	

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/21/17 07:09
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
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- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	FOD and working in the flight path
Action taken on previous suggestions:	Pick up all trash immediately be prepared to move off the rig if the tower needs us clear.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Tony Valentine	YJD				
Audrey Yorke	AmecFW				
Cody Gabala	YJD				
Dennis Heyer	AGEISS				
Richard Hoyt	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/22/17 07:10
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Cold weather distractions. Water consumption
Action taken on previous suggestions:	Wear warm clothes but layer down if you begin to sweat. Remember to drink water throughout the day even though its not hot.
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Audrey Yorke	AmecFW				
Lloyd Pena	YJD				
Cody Gabala	YJD				
Tony Valentine	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel **QA/QC Date: 1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	12/23/17 07:05
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Keeping your mind on the tasks at hand
Action taken on previous suggestions:	Don't think about leaving and getting home. Stay in the moment and pay attention to hazzards
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Lloyd Pena	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 1/3/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	01/02/18 10:12
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
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- ☑ Action Levels
- ☑ Accident Reporting Procedures
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- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
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- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
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- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Proper lifting techniques while cleaning up work sites
Action taken on previous suggestions:	None
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Samantha Sargent	AmecFW				
Omar Morales	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				
Jason Hostetler	YJD				
Curt Carlson	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 1/5/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	01/03/18 07:09
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
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- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
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- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Be aware of surroundings and overhead items. Watch out for hoses and hazards in work area.
Action taken on previous suggestions:	None
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Samantha Sargent	AmecFW				
Curt Carlson	YJD				
Omar Vega Morales	YJD				
Audrey Yorke	AmecFW				
Bryan Hansen	AmecFW				
John Peacock	YJD				
Cody Gabala	YJD				
Jason Hostetler	YJD				
Tony Valentine	YJD				
Richard Hoyt	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel **QA/QC Date: 1/5/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	01/04/18 07:15
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Kyle Keegan
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
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- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
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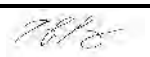
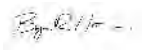
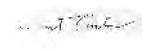
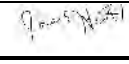
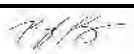
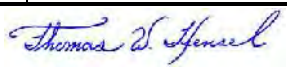
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Stay hydrated
Action taken on previous suggestions:	Water procured for team
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Audrey Yorke	AmecFW				
Bryan Hansen	AmecFW				
Omar Morales	YJD				
Curt Carlson	YJD				
Tony Valentine	YJD				
Cody Gabala	YJD				
Jason Hostetler	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel  **QA/QC Date: 1/5/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	01/05/18 07:20
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Kyle Keegan
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
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- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
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- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Wash hands to avoid cold/flu
Action taken on previous suggestions:	Wash hands frequently
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Audrey Yorke	AmecFW				
Omar V Morales	YJD				
Curt Carlson	YJD				
Bryan Hansen	AmecFW				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/10/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009.0300
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	01/06/18 07:10
Field Manager Name:	Kyle Keegan	**Site Health and Safety Officer (HSO):**	Kyle Keegan
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- [x] Site History/Site Layout
- [x] Scope of Work
- [x] Personnel Responsibilities
- [x] Medical Surveillance Requirements
- [x] Training Requirements
- [x] Safe Work Practices
- [x] Logs, Reports, Recordkeeping
- [x] Sanitation and Illumination
- [x] Air Surveillance Type and Frequency
- [x] Monitoring Instruments and Personal Monitoring
- [x] Action Levels
- [x] Accident Reporting Procedures
- [x] Site Control (visitor access, buddy system, work zones, security, communications)
- [x] Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- [x] Engineering Controls
- [x] PPE Required/PPE Used
- [x] Define PPE Levels, Donning, Doffing Procedures
- [x] Physical Hazards and Controls (e.g., overhead utility lines)
- [x] Decontamination Procedures for Personnel and Equipment
- [x] General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- [x] Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- [x] Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- [x] Hazardous Materials Spill Procedures
- [x] Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- [x] Injury/Illness Reporting Procedures
- [x] Route to Hospital and Medical Care Provider Visit Guidelines
- [x] Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- [x] Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Use sunscreen
Action taken on previous suggestions:	Use proper PPE
Injuries/accidents/personnel changes since previous meeting:	None
Observations of unsafe work practices/conditions that have developed since previous meeting:	None
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Craycroft Gate
Other Safety Topics Discussed:	NA
Additional comments:	None

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Kyle Keegan	AmecFW				
Audrey Yorke	AmecFW				
Bryan Hansen	AmecFW				
Curt Carlson	YJD				
Omar V Morales	YJD				

Meeting Conducted By (print):	**Company and Title**	**Signature**
Kyle Keegan	AmecFW - Geologist	

QA/QC'd by: Thomas W. Hensel Thomas W. Hensel **QA/QC Date: 1/10/2018**

TAILGATE SAFETY MEETING REPORT

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date and Time:**	1/29/2018 8:06
Field Manager Name:	Samantha Sargent	**Site Health and Safety Officer (HSO):**	Gwen Minnier
Safety Meeting Type:	Regular/Daily Tailgate Safety Meeting		

Order of Business

Topics Discussed (check all that apply):

- ☑ Site History/Site Layout
- ☑ Scope of Work
- ☑ Personnel Responsibilities
- ☑ Medical Surveillance Requirements
- ☑ Training Requirements
- ☑ Safe Work Practices
- ☑ Logs, Reports, Recordkeeping
- ☑ Sanitation and Illumination
- ☑ Air Surveillance Type and Frequency
- ☑ Monitoring Instruments and Personal Monitoring
- ☑ Action Levels
- ☑ Accident Reporting Procedures
- ☑ Site Control (visitor access, buddy system, work zones, security, communications)
- ☑ Discussion of previous "near misses" including work crew suggestions to correct work practices to avoid similar occurrences
- ☑ Engineering Controls
- ☑ PPE Required/PPE Used
- ☑ Define PPE Levels, Donning, Doffing Procedures
- ☑ Physical Hazards and Controls (e.g., overhead utility lines)
- ☑ Decontamination Procedures for Personnel and Equipment
- ☑ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☑ Site/Regional Emergency Procedures (e.g. earthquake response, typhoon response, etc.)
- ☑ Medical Emergency Response Procedures (e.g., exposure control precautions, location of first aid kit, etc.)
- ☑ Hazardous Materials Spill Procedures
- ☑ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☑ Injury/Illness Reporting Procedures
- ☑ Route to Hospital and Medical Care Provider Visit Guidelines
- ☑ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazards and effects)
- ☑ Review AHAs with all parties engaged in the activity (EM-385 1-1, para 01.A.13.b)

Safety suggestions by site workers:	Slips, trips, falls, and proper ladder usage
Action taken on previous suggestions:	Make sure work area is clear
Injuries/accidents/personnel changes since previous meeting:	N/A
Observations of unsafe work practices/conditions that have developed since previous meeting:	N/A
Location of (or changes in the locations of) evacuation routes/safe refuge areas:	Out Craycroft Gate
Other Safety Topics Discussed:	N/A
Additional comments:	N/A

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting.

Attendee Name (print)	Company	Signature	Attendee Name (print)	Company	Signature
Garrett Tabor	AmecFW				
Samantha Sargent	AmecFW				

Meeting Conducted By (print):	Company and Title	Signature
Samantha Sargent	Amec Foster Wheeler - Geologist	

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/30/2018**

APPENDIX B-4

SOIL BORING/MONITORING WELL RECORDS

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PROJECT: Site Inspection of AFFF Davis-Monthan AFB, Tucson, AZ	**Log of Well No. MW01001**
BORING LOCATION: N: 423433.65 E:1024225.794 (AZ State Plane)	GROUND SURFACE ELEVATION AND DATUM: 2685.80 NAD88
DRILLING CONTRACTOR: Yellow Jacket Drilling	DATE STARTED: 10/19/17 / DATE FINISHED: 10/26/17
DRILLING METHOD: Air Rotary Casing Hammer	TOTAL DEPTH (ft.): 371.0 / SCREEN INTERVAL (ft.): 349.00 - 369.00
DRILLING EQUIPMENT: 50K Arch Rig, 9 5/8" diameter casing	DEPTH TO WATER ATD (ft): 353 / CASING: 4" dia., Sch. 80 PVC
SAMPLING METHOD: Wire line core with 3" stainless steel spoon	LOGGED BY: K. Keegan
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: S. Schneider / REG. NO. PG9471

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 2685.80 NAD88	
0	DAVISO1-SO-001			0	CLAYEY SAND (SC): reddish brown (5YR 4/3), dry, ~60% fine to coarse sand (subrounded/subangular), ~40% fines	Traffic rated well box
5				123		Hand augered to 5' bgs
10				11.8	~70% sand (subrounded/subangular), ~25% fines, ~5% fine gravel	PID = MiniRae 3000 photoionization detector calibrated to 100 ppm isobutylene
15				4.8	~85% sand, ~15% fines	12" diameter steel conductor casing with cement seal
20				199	~80% sand, ~15% fines, ~5% fine to coarse gravel	
25				2.2	SILTY SAND (SM): light reddish brown (5YR 6/3), dry, ~80% fine to coarse sand (subrounded/subangular), ~20% fines	
30	DAVISO1-SO-002			3.8	~85% sand, ~15% fines	4" diameter Schedule 80 PVC Casing
35						
40				1.2	WELL-GRADED SAND WITH SILT (SW-SM): reddish brown (5YR 5/3), dry, ~90% fine to coarse sand (subrounded/subangular), ~10% fines	Cement bentonite grout
45						
50						

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
55				0.6	SILTY SAND (SM): reddish brown (5YR 5/3), dry, ~80% fine to coarse sand, ~20% fines	
60				0.7	~75% fine to medium sand, ~25% fines (some clay)	
65						
70				0.6	~65% sand, ~30% fines, ~5% fine gravel (subangular/angular)	
75						Cement bentonite grout
80				7.4	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM): reddish brown (5YR 4/3), dry, ~70% fine to coarse sand (subrounded/subangular), ~20% fine to coarse gravel (subrounded/subangular), ~10% fines	
85						
90				5.4	LEAN CLAY (CL): reddish brown (5YR 4/3), dry, ~90% fines, ~10% fine sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, firm	4" diameter Schedule 80 PVC Casing
95						
100				0.9	LEAN CLAY WITH SAND (CL): reddish brown (5YR 4/3), dry, ~85% fines, ~15% fine sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, firm	
105						
110				0.5		

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
115					CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~80% fine to coarse sand (subrounded/subangular), ~20% fines	
120				0.5	LEAN CLAY (CL): reddish brown (5YR 5/3), moist, ~90% fines, ~10% fine sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	
125						Cement bentonite grout
130				8.9	LEAN CLAY WITH SAND (CL): reddish brown (5YR 5/3), moist, ~80 fines, ~20% fine to medium sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	
135						
140				4.2	SANDY LEAN CLAY (CL): reddish brown (5YR 5/3), moist, ~65% fines, ~35% fine sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	4" diameter Schedule 80 PVC Casing
145						
150				4.9	CLAYEY SAND (SC): reddish brown (5YR 4/3), moist, ~65% fine to medium sand, ~35% fines	
155						
160				6.2	~80% fine to coarse sand, ~20% fines	
165						
170	DAVIS01-SO-003			2.9	~70% sand, ~30% fines	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
175					CLAYEY SAND (SC): continued	Cement bentonite grout
180				1.6	SANDY SILT (ML): brown (7.5YR 5/3), moist, ~65% fines, ~35% fine sand, low plasiticity, rapid dilatancy, low toughness, no dry strength	
185						
190				10.0	LEAN CLAY WITH SAND (CL): reddish brown (5YR 5/3), dry, ~85% fines, ~15% fine sand, medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	4" diameter Schedule 80 PVC Casing
195						
200				48.6	CLAYEY SAND (SC): light reddish brown (5YR 6/3), dry, ~80% fine to coarse sand (subrounded/subangular), ~20% fines	
205						
210				27.8	~70% fine to medium sand, ~30% fines	
215						
220				42.4	~65% fine sand, ~35% fines	
225						Cement bentonite grout
230				22.2	~80% fine to coarse sand (subrounded/subangular), ~20% fines	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
235					CLAYEY SAND (SC): continued	
240				23.7	SILTY SAND (SM): pinkish gray (5YR 6/2), dry, ~70% fine to medium sand, ~30% fines	4" diameter Schedule 80 PVC Casing
245						
250				2.0	~85% fine to coarse sand (subrounded/subangular), ~15% fines	
255						
260				1.0	SILTY SAND WITH GRAVEL (SM): pinkish gray (5YR 6/2), dry, ~70% fine to coarse sand, ~15% fine to coarse gravel (subrounded/subangular), ~15% fines	Cement bentonite grout
265						
270				20.4	SILTY SAND (SM): pinkish gray (5YR 6/2), dry, ~80% fine to medium sand, ~20% fines	
275						
280				0.6	CLAYEY SAND (SC): reddish brown (5YR 4/3), moist, ~80% fine to medium sand, ~20% fines	
285						
290				0.2	~70% sand, ~30% fines	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
295					CLAYEY SAND (SC): continued	
300				1.5	~55% sand, ~45% fines	
305						
310				0.9	WELL-GRADED SAND WITH SILT (SW-SM): gray (7.5YR 5/1), ~85% fine to coarse sand (subrounded/subangular), ~10% fines, ~5% fine to coarse gravel (subrounded/subangular)	
315						
320				14.6	CLAYEY SAND (SC): reddish brown (5YR 4/3), moist, ~75% fine to medium sand, ~25% fines	
325						Cement bentonite grout
330				5.5	~85% sand, ~15% fines	
335						4" diameter Schedule 80 PVC Casing
340				5.8	SILTY SAND (SM): reddish brown (5YR 5/3), dry, ~75% fine to medium sand, ~25% fines	
345						Bentonite seal Size 10/20 filter sand pack
350	DAVIS01-SO-004			5.4	CLAYEY SAND (SC): description next page	4" diameter 0.02" slot, Schedule 80 PVC Screen

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW01001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
355					CLAYEY SAND (SC): reddish brown (5YR 4/3), wet, ~65% fine to medium sand, ~35% fines, medium plasticity, no dilatancy, medium toughness, medium dry strength, firm	Size 10/20 filter sand pack
360				2.2	~75% sand, ~25% fines	4" diameter 0.02" slot, Schedule 80 PVC Screen
365						
370				1.4	~80% fine sand, ~20% fines	4.5" diameter Schedule 80 PVC end cap
					Bottom of boring at 371' bgs.	
375						
380						
385						
390						
395						
400						
405						
410						

PROJECT: Site Inspection of AFFF Davis-Monthan AFB, Tucson, AZ	**Log of Well No. MW02001**
BORING LOCATION: N: 419607.722 E: 1025439.018 (AZ State Plane)	GROUND SURFACE ELEVATION AND DATUM: 2711.60 NAD88
DRILLING CONTRACTOR: Yellow Jacket Drilling	DATE STARTED: 12/19/17 / DATE FINISHED: 12/24/17
DRILLING METHOD: Air Rotary Casing Hammer	TOTAL DEPTH (ft.): 308.0 / SCREEN INTERVAL (ft.): 285.00 - 305.00
DRILLING EQUIPMENT: 50K Arch Rig, 9 5/8" diameter casing	DEPTH TO WATER ATD (ft): 287 / CASING: 4" dia., Sch. 80 PVC
SAMPLING METHOD: Wire line core with 3" stainless steel spoon	LOGGED BY: K. Keegan
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: S. Schneider / REG. NO. PG9471

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency Surface Elevation: 2711.60 NAD88	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
0	DAVIS02-SO-001	■		0.0	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~75% fine to coarse sand (subrounded/subangular), ~25% fines	Traffic rated well box
5				0.5	~65% sand, ~35% fines	Hand augered to 5' bgs
10				0.4		PID = MiniRae 3000 photoionization detector calibrated to 100 ppm isobutylene
15				2.4		12" diameter steel conductor casing with cement seal
20				0.7	~85% fine to medium sand, ~15% fines	
25				0.6		
30	DAVIS02-SO-002	■		0.5	LEAN CLAY WTIH SAND (CL): reddish brown (5YR 5/3), moist, ~75% fines, ~25% fine to medium sand, medium plasticity, slow dilatancy, medium toughness, medium dry strength, soft	4" diameter Schedule 80 PVC Casing
35						
40				1.6	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~70% fine sand, ~30% fines	Cement bentonite grout
45						
50						

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW02001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
55				0.3	CLAYEY SAND (SC): continued ~85% fine to coarse sand, ~15% fines	
60				2.9		
65						
70				1.8	~80% sand, ~20% fines	
75						Cement bentonite grout
80				1.9	~85% sand, ~15% fines	
85						
90				4.7	~75% sand, ~15% fines, ~10% fine to coarse gravel (subrounded/subangular)	4" diameter Schedule 80 PVC Casing
95						
100				0.9	POORLY-GRADED SAND WITH SILT (SP-SM): reddish brown (5YR 5/3), moist, ~80% medium to coarse sand, ~10% fine to coarse gravel (subrounded/subangular), ~10% fines	
105						
110				0.4		

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW02001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
115					POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM): reddish brown (5YR 5/3), moist, ~60% medium to coarse sand, ~30% fine to coarse gravel (subrounded/subangular to angular), ~10% fines	
120				1.4	SILTY SAND (SM): reddish brown (5YR 5/3), moist, ~65% fine sand, ~35% fines	
125						
130				1.5	LEAN CLAY WITH SAND (CL): reddish brown (5YR 5/3), moist, ~80% fines, ~20% fine to medium sand, medium plasticity, slow dilatancy, medium toughness, medium dry strength, soft	
135						Cement bentonite grout
140				1.5	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~70% fine to coarse sand, ~25% fines, ~5% fine gravel	4" diameter Schedule 80 PVC Casing
145						
150				3.5	LEAN CLAY WITH SAND (CL): reddish brown (5YR 5/3), moist, ~80% fines, ~20% fine to medium sand, medium plasticity, slow dilatancy, medium toughness, medium dry strength, soft	
155						
160				1.2		
165						
170	DAVIS02-SO-003			0.8	~85% fines, ~15% sand	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW02001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
175					LEAN CLAY WITH SAND (CL): continued	
180				1.8	CLAYEY SAND (SC): brown (7.5YR 5/3), moist, ~70% fine sand, ~30% fines	
185						
190				2.5	LEAN CLAY WITH SAND (CL): reddish brown (5YR 5/3), ~75% fines, ~25% fine to medium sand, medium plasticity, slow dilatancy, medium toughness, medium dry strength, soft	4" diameter Schedule 80 PVC Casing
195						
200				1.7		Cement bentonite grout
205						
210				1.6		
215						
220				0.9		
225						
230				9.0	CLAYEY SAND (SC): description next page	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW02001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
235					CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~75% fine to coarse sand, ~25% fines	
240				2.7	~65% sand, ~35% fines	
245						
250				0.3	~60% fine sand, ~40% fines	
255						4" diameter Schedule 80 PVC Casing
260				0.1	~75% fine to medium sand, ~25% fines	Cement bentonite grout
265						
270				2.3	~80% fine to coarse sand, ~20% fines	
275						
280				0.9	~75% sand, ~25% fines	Bentonite seal
285						4" diameter 0.02" slot, Schedule 80 PVC Screen
290				0.8	~85% sand (subrounded/subangular), ~15% fines	Size 10/20 filter sand pack

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW02001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
295					CLAYEY SAND (SC): continued	4" diameter 0.02" slot, Schedule 80 PVC Screen
300				0.8	WELL-GRADED SAND WITH SILT (SW-SM): brown (7.5YR 5/3), moist, ~80% fine to coarse sand, ~10% fines, ~10% fine gravel (subrounded/subangular to angular)	Size 10/20 filter sand pack
305					CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~70% fine to medium sand, ~30% fines	4.5" diameter Schedule 80 PVC end cap
				1.1	Bottom of boring at 308' bgs.	
310						
315						
320						
325						
330						
335						
340						
345						
350						

PROJECT: Site Inspection of AFFF Davis-Monthan AFB, Tucson, AZ	**Log of Well No. MW03001**
BORING LOCATION: N: 435136.4 E: 1015130.153 (AZ State Plane)	GROUND SURFACE ELEVATION AND DATUM: 2565.49 NAD88
DRILLING CONTRACTOR: Yellow Jacket Drilling	DATE STARTED: 10/13/17 / DATE FINISHED: 10/16/17
DRILLING METHOD: Air Rotary Casing Hammer	TOTAL DEPTH (ft.): 330.0 / SCREEN INTERVAL (ft.): 301.00 - 321.00
DRILLING EQUIPMENT: 50K Arch Rig, 9 5/8" diameter casing	DEPTH TO WATER ATD (ft): 302 / CASING: 4" dia., Sch. 80 PVC
SAMPLING METHOD: Wire line core with 3" stainless steel spoon	LOGGED BY: K. Keegan
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: S. Schneider / REG. NO. PG9471

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 2565.49 NAD88	
0	DAVIS03-SO-001			0.0	CLAYEY SAND (SC): reddish brown (5YR 5/3), dry, ~70% fine to coarse sand, ~30% fines	Traffic rated well box
5				1.5	~55% fine to medium sand, ~40% fines, ~5% fine gravel (subrounded/subangular)	Hand augered to 5' bgs
10				2.4	SANDY LEAN CLAY (CL): reddish brown (5YR 4/3), moist, ~60% fines, ~35% fine to medium sand, ~5% fine to coarse gravel, medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	PID = MiniRae 3000 photoionization detector calibrated to 100 ppm isobutylene
15				8.3		12" diameter steel conductor casing with cement seal
20				8.2	~60% fines, ~40% fine to coarse sand (subrounded/subangular)	
25				39.2	CLAYEY SAND (SC): reddish brown (5YR 5/3), dry, ~65% fine to coarse sand (subrounded/subangular), ~30% fines, ~5% fine gravel (subrounded/subangular)	
30	DAVIS03-SO-002			6.9		4" diameter Schedule 80 PVC Casing
35						
40				3.0	~70% fine to medium sand, ~30% fines	Cement bentonite grout
45						
50						

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW03001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
55				2.1	SANDY LEAN CLAY (CL): reddish brown (5YR 4/3), moist, ~65% fines, ~30% fine to coarse sand, ~5% fine gravel (subrounded/subangular), medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	
60				13.7	~60% fines, ~40% fine to medium sand	
65						
70				38.6		
75						Cement bentonite grout
80				51.1	LEAN CLAY WITH SAND (CL): reddish brown (5YR 4/3), moist, ~70% fines, ~25% fine to coarse sand, ~5% fine gravel (subrounded/subangular), medium plasticity, no dilatancy, medium toughness, medium dry strength, soft	
85						
90				21.6	~60% fines, ~20% fine to coarse sand, ~20% fine gravel	4" diameter Schedule 80 PVC Casing
95						
100				20.4	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~70% fine to coarse sand (subrounded/subangular), ~25% fines, ~5% fine gravel (subrounded/subangular)	
105						
110				15.5	~70% sand, ~30% fines	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW03001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
115					CLAYEY SAND (SC): continued	
120				9.0	POORLY-GRADED GRAVEL WITH SAND (GP): reddish brown (5YR 5/3), moist, ~85% fine gravel (subrounded/subangular), ~15% coarse sand (subrounded/subangular)	
125						
130				9.7	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~85% fine to coarse sand (subrounded/subangular), ~15% fines	
135						Cement bentonite grout
140				8.3	WELL-GRADED SAND WITH SILT (SP-SM): reddish brown (5YR 5/3), moist, ~90% fine to coarse sand (subrounded/subangular), ~10% fines	4" diameter Schedule 80 PVC Casing
145						
150				14.3	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~65% fine to medium sand (subrounded/subangular), ~35% fines	
155						
160				8.9	WELL-GRADED SAND WITH GRAVEL (SW): reddish gray (5YR 5/2), moist, ~80% fine to coarse sand (subrounded/subangular), ~15% fine to coarse gravel (subrounded/subangular), ~5% fines	
165						
170	DAVIS03-SO-003			15.3	CLAYEY SAND WITH GRAVEL (SC): description next page	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW03001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
175					CLAYEY SAND WITH GRAVEL (SC): reddish brown (5YR 5/3), moist, ~55% fine to coarse sand (subrounded/subangular), ~30% fine to coarse gravel (subrounded/subangular to angular), ~15% fines	
180				30.6	CLAYEY SAND (SC): reddish brown (5YR 5/3), moist, ~75% fine to medium sand, ~25% fines	
185						
190				40.6	~75% fine sand, ~25% fines	4" diameter Schedule 80 PVC Casing
195						
200				243	~85% sand, ~15% fines	Cement bentonite grout
205						
210				310	~80% fine to coarse sand (subrounded/subangular), ~15% fines, ~5% fine gravel (subrounded/subangular)	
215						
220				0.3		
225						
230				0.4		

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW03001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
235					CLAYEY SAND (SC): continued	
240				4.1	~75% fine to medium sand, ~25% fines	
245						
250				9.0	~80% fine to coarse sand (subrounded/subangular), ~20% fines	
255						4" diameter Schedule 80 PVC Casing
260				167	~70% fine sand, ~30% fines	Cement bentonite grout
265						
270				160		
275						
280				18.3	~80% fine to coarse sand, ~15% fines, ~5% fine gravel	
285						
290				257	~80% sand, ~20% fines	

PROJECT: Site Inspection of AFFF
Davis-Monthan AFB, Tucson, AZ

Log of Well No. MW03001 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 Inches	PID Reading (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
295					CLAYEY SAND (SC): continued	Bentonite seal
300	DAVIS03-SO-004			0.0	SILTY SAND (SM): reddish gray (5YR 5/2), moist, ~80% fine to coarse sand (subrounded/subangular), ~20% fines	4" diameter Schedule 80 PVC Casing Size 10/20 filter sand pack
305						
310				0.0		4" diameter 0.02" slot, Schedule 80 PVC Screen
315						
320				0.0	POORLY-GRADED SAND WITH GRAVEL (GP): pinkish gray (5YR 6/2), wet, ~85% medium to coarse sand (subrounded/subangular), ~15% fine to coarse gravel (subrounded/subangular)	4.5" diameter Schedule 80 PVC end cap
325					CLAYEY SAND (SC): reddish brown (5YR 5/3), wet, ~80% fine to coarse sand (subrounded/subangular), ~20% fines	
330				261	Bottom of boring at 330' bgs.	
335						
340						
345						
350						

PROJECT: Site Inspection of AFFF Davis-Monthan AFB, Tucson, AZ	**Log of Boring No. SB01002**
BORING LOCATION: N: 423180.527 E: 1024423.416 (AZ State Plane)	ELEVATION AND DATUM: 2688.71 NAD88
DRILLING CONTRACTOR: Yellow Jacket Drilling	DATE STARTED: 10/16/17 / DATE FINISHED: 10/16/17
DRILLING METHOD: Air Rotary Casing Hammer	TOTAL DEPTH (ft.): 31.5 / MEASURING POINT: NA
DRILLING EQUIPMENT: 50K Arch Rig, 9 5/8" diameter casing	DEPTH TO WATER (ft): FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: Wire line core with 3" stainless steel spoon	LOGGED BY: G. Tabor
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: S. Schneider / REG. NO. PG9471

DEPTH (feet)	SAMPLES: Sample No.	Sample	Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	PID READING (ppm)	REMARKS
				Surface Elevation: 2688.71 NAD88		
0	DAVIS01-SO-005	■		SILTY SAND (SM): reddish brown (5YR 4/3), moist, ~65% very fine to medium sand, ~30% low plasticity fines, ~5% fine gravel	134.4	
5				SILTY SAND (SM): light reddish brown (5YR 6/4), dry, ~75% very fine to medium, ~25% nonplastic fines	1.7	Hand augered to 5' bgs
10				SILTY SAND (SM): yellowish red (5YR 5/6), dry, ~70% sand, ~30% nonplastic fines	1.4	PID = MiniRae 3000 photoionization detector calibrated to 100 ppm isobutylene
15					0.6	
20				~85% sand, ~15% fines	0.6	
25				POORLY-GRADED SAND WITH SILT (SP-SM): reddish brown (5YR 5/4), dry, ~90% very fine to medium sand, ~10% nonplastic fines	0.9	
30	DAVIS01-SO-006	■		SILTY SAND (SM): reddish brown (5YR 5/4), dry, ~75% very fine to medium sand, ~25% nonplastic fines	0.2	
35				Bottom of boring at 31.5' bgs.		

RMRK3

PROJECT: Site Inspection of AFFF Davis-Monthan AFB, Tucson, AZ	**Log of Boring No. SB01003**
BORING LOCATION: N: 423455.637 E: 1024773.282 (AZ State Plane)	ELEVATION AND DATUM: 2691.47 NAD88
DRILLING CONTRACTOR: Yellow Jacket Drilling	DATE STARTED: 10/16/17 / DATE FINISHED: 10/16/17
DRILLING METHOD: Air Rotary Casing Hammer	TOTAL DEPTH (ft.): 31.0 / MEASURING POINT: NA
DRILLING EQUIPMENT: 50K Arch Rig, 9 5/8" diameter casing	DEPTH TO WATER (ft): FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: Wire line core with 3" stainless steel spoon	LOGGED BY: G. Tabor
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: S. Schneider / REG. NO. PG9471

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plasticity, dilatancy, toughness, dry strength, consistency	PID READING (ppm)	REMARKS
				Surface Elevation: 2691.47 NAD88		
0	DAVIS01-SO-007			SILTY SAND (SM): reddish brown (5YR 4/4), moist, ~60% very fine to fine sand, ~40% low plasticity fines	1.6	
5				SILTY SAND (SM): reddish brown (5YR 5/4), dry, ~55% very fine to fine sand, ~45% nonplastic fines	0.8	Hand augered to 5' bgs
10					0.3	PID = MiniRae 3000 photoionization detector calibrated to 100 ppm isobutylene
15				CLAYEY SAND (SC): reddish brown (5YR 4/4), moist, ~65% very fine to fine sand, ~35% low to medium plasticity fines	0.5	
20				POORLY-GRADED SAND WITH SILT (SP-SM): yellowish red (5YR 6/6), ~90% very fine to medium sand, ~10% nonplastic fines	0.7	
25				~85% sand, ~10% fines, ~5% gravel	1.5	
30	DAVIS01-SO-008			Bottom of boring at 31' bgs.	0.3	
35						

RMRK3

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APPENDIX B-5

WELL CONSTRUCTION FORMS

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SCREENED WELL CONSTRUCTION FORM

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide,

Project: Contract FA8903-16-D-0027 Task Order 0004

Installation: Davis Monthan AFB

Location ID: AFFF Release Area 01

Well ID: MW01001

Drilling Subcontractor: Yellow Jacket Drilling

Installation Date: 10/27/2017

Drilling Personnel: Tony Valentine

Project Number: 775303101.0009.0300

Amec Foster Wheeler Field Representative(s): Kyle Keegan

Measurement Point (riser) Elevation (ft msl): 2686.07

Land Surface Elevation (ft): 2685.80

Approximate Diameter of Borehole (in): 10

Depth to Water (ft):
- During Drilling: 351.74
- Date: 10/27/2017
- Post Development: 351
- Date: 1/3/2018

Hydro Unit: Unknown; Aquifer; Bedrock Aquifer; Perched Aquifer; Unsaturated Zone; **Water Table Aquifer**; Confining Layer/Aquiclude; Lower/Confined Aquifer

Water added during drilling (gal): < 300

Water removed during development (gal): 177.5

Top of Bentonite Seal (ft): 341

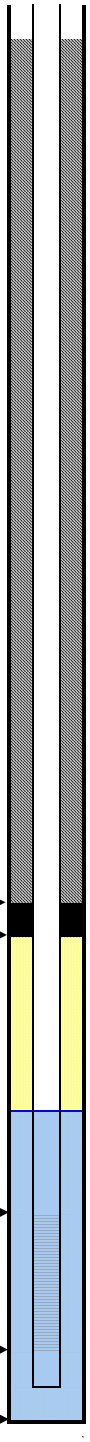
Top of Filter Pack (ft): 346

Top of Screen Interval (ft): 349

Bottom of Screened Interval (ft): 369

Bottom of Filter Pack (ft): 371

Bottom of Borehole (ft): 371



Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Protective Casing:
- Type: Flush Mount Steel Conductor Casing
- Dimensions (in): 12" Diameter
- Stickup (ft): NA
- Length (ft): 21' bgs
- Guard Post: NA

Surface Pad:
- Dimensions: 2' Diameter
- Type: Sonotube Flush Mount Well Vault

Annular Seal:
- Type: Baroid Bentonite Grout
- Installation: Gravity **Tremie** Pumped

Bentonite Seal:
- Manufacturer: Quik-Gel/Baroid Bentonite
- Type: **Chips** Pellets Slurry
- Installation: 6-in lifts One Section; Gravity **Tremie** Pumped
- Hydration time (hrs): 0.5

Filter Pack Material:
- Manufacturer: Colorado Silica
- Product Name: Sand Pack
- Size: 10/20 Sand
- Installation Type: Gravity **Tremie**
- Surging time: 30 min

Well Casing (riser):
- Manufacturer: Monoflex
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"

Well Screen:
- Manufacturer: Monoflex
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"
- Slot Size (in): 0.020"
- Slot Type: Continous **Factory slot**

Sump/End Cap: End Cap at 369'

SCREENED WELL CONSTRUCTION FORM

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide,

Project: Contract FA8903-16-D-0027 Task Order 0004

Installation: Davis Monthan AFB

Location ID: AFFF Release Area 02

Well ID: MW02001

Drilling Subcontractor: Yellow Jacket Drilling

Installation Date: 12/22/2017

Drilling Personnel: Tony Valentine

Project Number: 775303101.0009.0300

Amec Foster Wheeler Field Representative(s): Kyle Keegan, Audrey Yorke

Measurement Point (riser)
Elevation (ft msl): 2711.44

Land Surface Elevation (ft): 2711.60

Approximate Diameter of Borehole (in): 10

Depth to Water (ft):
- During Drilling: 287.30
- Date: 12/22/2017
- Post Development: 282.54
- Date: 1/5/2018

Hydro Unit:
- Unknown
- Unsaturated Zone
- Aquifer
- **Water Table Aquifer**
- Bedrock Aquifer
- Confining Layer/Aquiclude
- Perched Aquifer
- Lower/Confined Aquifer

Water added during drilling (gal): < 2000

Water removed during development (gal): 158

Top of Bentonite Seal (ft): 278

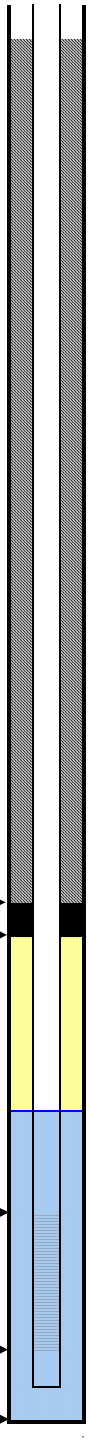
Top of Filter Pack (ft): 283

Top of Screen Interval (ft): 285

Bottom of Screened Interval (ft): 305

Bottom of Filter Pack (ft): 308

Bottom of Borehole (ft): 308



Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Protective Casing:
- Type: Flush Mount Conductor Casing
- Dimensions (in): 12" Diameter
- Stickup (ft): NA
- Length (ft): 21' bgs
- Guard Post: NA

Surface Pad:
- Dimensions: 2' Diameter
- Type: Sonotube Flush Mount Well Vault

Annular Seal:
- Type: Baroid Bentonite Grout
- Installation: **Gravity** Tremie Pumped

Bentonite Seal:
- Manufacturer: Quik-Gel/Baroid Bentonite
- Type: **Chips** Pellets Slurry
- Installation: 6-in lifts One Section
- Gravity **Tremie** Pumped
- Hydration time (hrs): 0.5

Filter Pack Material:
- Manufacturer: Colorado Silica
- Product Name: Sand Pack
- Size: 10/20 Sand
- Installation Type: Gravity **Tremie**
- Surging time: 30 min

Well Casing (riser):
- Manufacturer: Bill Johnson
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"

Well Screen:
- Manufacturer: Bill Johnson
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"
- Slot Size (in): 0.020"
- Slot Type: Continous **Factory slot**

Sump/End Cap: End Cap at 305'

SCREENED WELL CONSTRUCTION FORM

Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide,

Project: Contract FA8903-16-D-0027 Task Order 0004

Installation: Davis Monthan AFB

Location ID: AFFF Release Area 03

Well ID: MW03001

Drilling Subcontractor: Yellow Jacket Drilling

Installation Date: 10/16/2017

Drilling Personnel: Tony Valentine

Project Number: 775303101.0009.0300

Amec Foster Wheeler Field Representative(s): Kyle Keegan

Measurement Point (riser) Elevation (ft msl): 2565.37

Land Surface Elevation (ft): 2565.49

Approximate Diameter of Borehole (in): 10

Depth to Water (ft):
- During Drilling: 303.11
- Date: 10/16/2017
- Post Development: 304.26
- Date: 1/4/2018

Hydro Unit:
- Unknown
- Aquifer
- Bedrock Aquifer
- Perched Aquifer
- Unsaturated Zone
- **Water Table Aquifer**
- Confining Layer/Aquiclude
- Lower/Confined Aquifer

Water added during drilling (gal): 900

Water removed during development (gal): 182

Top of Bentonite Seal (ft): 293

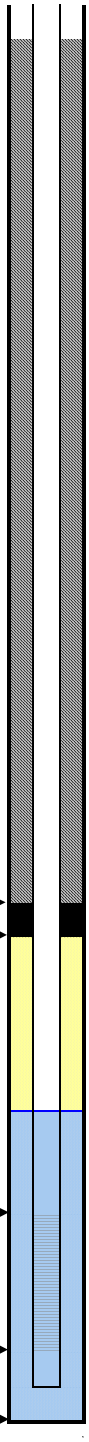
Top of Filter Pack (ft): 298

Top of Screen Interval (ft): 301

Bottom of Screened Interval (ft): 321

Bottom of Filter Pack (ft): 328

Bottom of Borehole (ft): 328



Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Protective Casing:
- Type: Flush Mount Conductor Casing
- Dimensions (in): 12" Diameter
- Stickup (ft): NA
- Length (ft): 21' bgs
- Guard Post: NA

Surface Pad:
- Dimensions: 2' Diameter
- Type: Sonotube Flush Mount Well Vault

Annular Seal:
- Type: Baroid Bentonite Grout
- Installation: Gravity **Tremie** Pumped

Bentonite Seal:
- Manufacturer: Quik-Gel/Baroid Bentonite
- Type: **Chips** Pellets Slurry
- Installation: 6-in lifts One Section
- Gravity **Tremie** Pumped
- Hydration time (hrs): 0.5

Filter Pack Material:
- Manufacturer: Colorado Silica
- Product Name: Sand Pack
- Size: 10/20 Sand
- Installation Type: Gravity **Tremie**
- Surging time: 30 min

Well Casing (riser):
- Manufacturer: Monoflex
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"

Well Screen:
- Manufacturer: Monoflex
- Type/Material: Schedule 80 PVC
- Diameter (in): 4"
- Slot Size (in): 0.020"
- Slot Type: Continous **Factory slot**

Sump/End Cap: End Cap at 321'

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APPENDIX B-6

WELL DEVELOPMENT FORMS

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WELL DEVELOPMENT LOG

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date Started/Date Completed:**	01/02/18 / 01/02/18
Well ID:	MW01001	**Initial Depth to Water (ft):**	350.9
Measuring Point:	Top of Casing	**Total Depth of Well (ft):**	369.0
Development Method:	PUMPED	**Depth to Water After Purging (ft):**	352.22
Total Volume Purged (gal):	177.5 (~55 gallons bailed)	**1 Casing Volume (gal):**	11.97
Technician(s):	Samantha Sargent	**3 Casing Volumes (gal):**	35.91

Date/Time	Intake Depth (feet)	Water Level (feet)	Rate (gpm)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Cum. Volume (gal.)	Comments/Observations During Purging (color, sediment, etc.)
01/02/18 13:53			1.6								Pumping Started
01/02/18 14:10	360	351.8	1.6	27.97	7.69	0.386	5.96	110.1	Over	19.5	Cloudy brown/orange
01/02/18 14:20	360	351.78	1.6	28.59	7.75	0.400	5.43	103.8	462	32.5	Cloudy
01/02/18 14:30	360	352.15	1.6	28.43	7.75	0.398	5.17	93.9	226	52.5	Clearing up
01/02/18 14:40	360	352.2	1.6	27.97	7.75	0.398	4.99	86.4	96.8	72.5	Clear
01/02/18 14:50	360	352.2	1.6	28.02	7.75	0.396	5.04	79.7	38.2	92.5	
01/02/18 15:00	360	352.22	1.6	28.13	7.75	0.397	5.10	73.7	15.2	112.5	
01/02/18 15:05	360	352.22	1.6	28.19	7.75	0.395	5.10	72.8	9.78	122.5	

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V = Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
=Π * (6.0 (in)/12 (in/ft))/2)^2 * 18.10 * 7.48 gal/ft^3
= 26.7 gal.

Signature:

Notes:

Water started out as a brown orange

Name (print)**:** Samantha Sargent

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/5/2018**

WELL DEVELOPMENT LOG

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date Started/Date Completed:**	01/03/18 / 01/03/18
Well ID:	MW03001	**Initial Depth to Water (ft):**	302.08
Measuring Point:	Top of casing	**Total Depth of Well (ft):**	321.0
Development Method:	PUMPED	**Depth to Water After Purging (ft):**	304.04
Total Volume Purged (gal):	182 (~55 gallons bailed)	**1 Casing Volume (gal):**	12.4
Technician(s):	Audrey Yorke, Bryan Hansen	**3 Casing Volumes (gal):**	37.2

Date/Time	Intake Depth (feet)	Water Level (feet)	Rate (gpm)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Cum. Volume (gal.)	Comments/Observations During Purging (color, sediment, etc.)
01/03/18 13:42			2.2								Pumping Started
01/03/18 13:52	311	304.04	2.2	27.24	7.85	0.466	5.51	133.5	Out of Range	22	Cloudy, brown
01/03/18 14:02	311	304.04	2.2	27.85	7.81	0.465	5.31	128.2	220	44	Cloudy
01/03/18 14:07	311	304.04	2.2	27.87	7.80	0.464	5.23	125.4	144	55	Cloudy
01/03/18 14:12	311	304.04	2.2	27.87	7.80	0.463	5.18	119.5	72.6	66	Slightly cloudy
01/03/18 14:17	311	304.04	2.2	27.91	7.80	0.463	5.20	116.3	42.2	77	Clear
01/03/18 14:22	311	304.04	2.2	27.91	7.80	0.464	5.21	112.1	23.8	88	Clear
01/03/18 14:27	311	304.04	2.2	27.84	7.79	0.463	5.17	109.1	17.0	99	Clear
01/03/18 14:32	311	304.04	2.2	27.78	7.79	0.461	5.19	106.2	9.27	110	Clear
01/03/18 14:37	311	304.04	2.2	27.76	7.79	0.461	5.13	104.2	8.99	121	Clear
01/03/18 14:42	311	304.04	2.2	27.72	7.78	0.460	5.14	103.3	8.89	132	Clear

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V = Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
=Π * (4.0 (in)/12 (in/ft))/2)^2 * 18.92 * 7.48 gal/ft^3
= 12.4 gal.

Signature:

Notes:

None

Name (print)**:** Audrey Yorke

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/5/2018**

WELL DEVELOPMENT LOG

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date Started/Date Completed:**	01/04/18 / 01/04/18
Well ID:	MW02001	**Initial Depth to Water (ft):**	282.53
Measuring Point:	Top of Casing	**Total Depth of Well (ft):**	305.0
Development Method:	PUMPED	**Depth to Water After Purging (ft):**	282.94
Total Volume Purged (gal):	~158 gallons (~55 gallons bailed)	**1 Casing Volume (gal):**	14.7
Technician(s):	Audrey Yorke, Bryan Hansen, Kyle Keegan	**3 Casing Volumes (gal):**	44.2

Date/Time	Intake Depth (feet)	Water Level (feet)	Rate (gpm)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Cum. Volume (gal.)	Comments/Observations During Purging (color, sediment, etc.)
01/04/18 15:20			3.6								Pumping Started
01/04/18 15:25	300	282.91	3.6	26.49	7.97	0.468	7.10	92.7	13.1	18	Clear
01/04/18 15:30	300	282.93	3.6	26.81	7.80	0.467	6.08	84.4	2.79	36	Clear
01/04/18 15:35	300	282.93	3.6	26.79	7.78	0.465	6.01	82.6	1.33	54	Clear
01/04/18 15:40	300	282.94	3.6	26.85	7.76	0.464	5.98	79.9	1.04	72	Clear
01/04/18 15:45	300	282.94	3.6	26.87	7.74	0.465	5.94	78.9	0.66	90	Clear
01/04/18 15:50	300	282.94	3.6	26.73	7.75	0.465	5.90	78.4	0.60	108	Clear

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V = Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
=Π * (4.0 (in)/12 (in/ft))/2)^2 * 22.47 * 7.48 gal/ft^3
= 14.7 gal.

Signature:

Notes:

None

Name (print):

Audrey Yorke

QA/QC'd by: Thomas W. Hensel — **QA/QC Date:** 1/5/2018

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APPENDIX B-7

WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORMS

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WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORM

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027 **Task Order:** 0004	**Date:**	01/02/18
Installation:	DAVIS - Davis-Monthan AFB	**Calibration Start Time:**	10:59
Sample Technician(s):	Samantha Sargent	**Calibration End Time:**	11:24

Readings Before Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/02/18	10:59	14	3.99	10.4	1.428	112	NA	239.8	766.83	None
			7.02	20.4						
			10.01	101						
				815						

Readings After Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/02/18	11:23	15	4.01	10	1.413	100.7	NA	240.0	766.85	None
			7.00	20						
			10.00	100						
				800						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	7GF303	06/01/19
pH (7)	7GG488	07/05/19
pH (10)	7GG543	07/01/19

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	7GH561	08/01/18
Salinity	NA	01/02/18
D.O.	NA	01/02/18
ORP	HI7021	03/05/22

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6209	01/05/18
20	A6287	01/05/18
100	A6286	01/05/18
800	A6287	01/05/18

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	13916
Turbidity Meter:	Hach 2100Q	30257

Calibrated Within Acceptance Criteria (Y/N): Yes

If No, Provide Explanation: NA

Notes:

None

Signature:

Name (print): Samantha Sargent

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/5/2018**

WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORM

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027 **Task Order:** 0004	**Date:**	01/03/18
Installation:	DAVIS - Davis-Monthan AFB	**Calibration Start Time:**	07:20
Sample Technician(s):	Samantha Sargent	**Calibration End Time:**	07:33

Readings Before Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/03/18	07:20	13	4.00	10.5	1.377	10.7	NA	242.0	765.56	None
			7.07	21.5						
			10.02	101						
				835						

Readings After Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/03/18	07:33	14	4.00	10	1.413	10.1	NA	240.0	766.58	None
			7.00	20						
			10.00	100						
				800						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	7GF303	06/01/19
pH (7)	7GG488	07/05/19
pH (10)	7GG543	07/01/19

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	7GH561	08/01/18
Salinity	NA	01/03/18
D.O.	NA	01/03/18
ORP	1720	06/05/22

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6209	01/05/18
20	A6287	01/05/18
100	A6286	01/05/18
800	A6287	01/05/18

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	13916
Turbidity Meter:	Hach 2100Q	30257

Calibrated Within Acceptance Criteria (Y/N): Yes

If No, Provide Explanation: NA

Notes:

None

Signature:

Name (print): Samantha Sargent

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/5/2018**

WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORM

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027 **Task Order:** 0004	**Date:**	01/04/18
Installation:	DAVIS - Davis-Monthan AFB	**Calibration Start Time:**	07:16
Sample Technician(s):	Kyle Keegan, Bryan Hansen, Audrey Yorke	**Calibration End Time:**	07:25

Readings Before Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/04/18	07:16	NA	3.98	9.49	1.409	10.05	NA	239.6	764.54	None
			6.89	19.8						
			9.97	98.4						
				799						

Readings After Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/04/18	07:25	NA	4.01	10	1.412	9.98	NA	240.0	764.56	None
			7.02	20						
			10.00	100						
				800						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	7GF303	06/01/19
pH (7)	7GG488	07/05/19
pH (10)	7GG543	07/01/19

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	7GH561	08/01/18
Salinity	NA	01/04/18
D.O.	NA	01/04/18
ORP	HI7021	03/05/22

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6209	01/05/18
20	A6287	01/05/18
100	A6286	01/05/18
800	A6287	01/05/18

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	13916
Turbidity Meter:	Hach 2100Q	30257

Calibrated Within Acceptance Criteria (Y/N): Yes

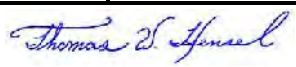
If No, Provide Explanation: NA

Notes:

None

Signature:

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORM

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027 **Task Order:** 0004	**Date:**	01/05/18
Installation:	DAVIS - Davis-Monthan AFB	**Calibration Start Time:**	07:13
Sample Technician(s):	Kyle Keegan, Bryan Hansen, Audrey Yorke	**Calibration End Time:**	07:27

Readings Before Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/05/18	07:13	NA	3.98	9.98	1.398	NA	NA	239.6	764.54	None
			6.89	20.1						
			9.97	101						
				812						

Readings After Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/05/18	07:27	NA	4.01	10	1.413	11.64	NA	240.1	NA	None
			7.03	20						
			10.01	100						
				800						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	7GF303	06/01/19
pH (7)	7GG488	07/05/19
pH (10)	7GG543	07/01/19

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	7GH561	08/01/18
Salinity	NA	01/05/18
D.O.	NA	01/05/18
ORP	HI7021	03/05/22

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6209	01/05/18
20	A6287	01/05/18
100	A6286	01/05/18
800	A6287	01/05/18

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	13916
Turbidity Meter:	Hach 2100Q	30257

Calibrated Within Acceptance Criteria (Y/N): Yes

If No, Provide Explanation: NA

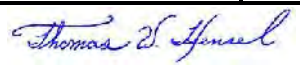
Notes:

None

Signature:

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**



QA/QC Date: **1/10/2018**

WATER QUALITY SAMPLING INSTRUMENT CALIBRATION FORM

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027 **Task Order:** 0004	**Date:**	01/06/18
Installation:	DAVIS - Davis-Monthan AFB	**Calibration Start Time:**	07:31
Sample Technician(s):	Kyle Keegan, Bryan Hansen, Audrey Yorke	**Calibration End Time:**	07:44

Readings Before Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/06/18	07:31	NA	3.97	10.3	1.398	NA	NA	241.3	764.54	None
			6.89	20.1						
			9.99	102						
				808						

Readings After Calibration

Date	Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (mg/L)	Salinity (%)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
01/06/18	07:44	NA	4.00	10	1.413	11.38	NA	240.0	764.54	None
			7.01	20						
			10.00	100						
				800						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	7GF303	06/01/19
pH (7)	7GG488	07/05/19
pH (10)	7GG543	07/01/19

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	7GH561	08/01/18
Salinity	NA	01/06/18
D.O.	NA	01/06/18
ORP	HI7021	03/05/22

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6209	01/05/18
20	A6287	01/05/18
100	A6286	01/05/18
800	A6287	01/05/18

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	13916
Turbidity Meter:	Hach 2100Q	30257

Calibrated Within Acceptance Criteria (Y/N): Yes

If No, Provide Explanation: NA

Notes:

None

Signature:

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **1/10/2018**

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APPENDIX B-8

GROUNDWATER SAMPLING COLLECTION LOGS

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GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Samantha Sargent
Well ID:	MW01001	**Date:**	01/03/18
Initial Depth to Water (ft):	351.0	**Well Diameter (in):**	4.0
Total Depth of Well (ft):	369.0	**1 Casing Volume (gal):**	11.97
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	35.91
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	360

Time	Water Level (feet)	Flow Rate (gpm)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
Stabilization Criteria				±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
07:33		2.1								Pumping/Purging Started
07:40	352.3	2.1	14.7	25.43	7.72	0.397	5.27	163.3	94.8	Clear
07:45	352.3	2.1	24.9	26.33	7.78	0.398	5.19	195.3	94.3	
07:55	352.3	2.1	45.9	26.82	7.82	0.395	5.08	199.5	29.8	
08:00	352.3	2.1	56.9	26.66	7.82	0.394	5.08	195.3	13.6	
08:05	352.31	2.1	67.0	26.41	7.81	0.393	4.95	189.4	5.00	
08:10	352.31	2.1	77.1	26.41	7.81	0.393	4.88	185.4	2.67	

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

	Final Values:	26.41	7.81	0.393	4.88	185.4	2.67	

Sample ID:	DAVIS01-GW-001	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	No	**Sample Date:**	01/03/18
Duplicate ID:	NA	**Sample Collection Time:**	08:10
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	77.1
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	360
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	352.21

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
= Π * (6.0 (in)/12 (in/ft))/2)^2 * -82.00 * 7.48 gal/ft^3
= -121.0 gal.

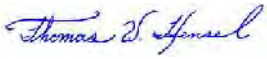
Signature:

Notes:

None

Name (print):

Samantha Sargent

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/5/2018**

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Kyle Keegan, Bryan Hansen
Well ID:	MW-42	**Date:**	01/04/18
Initial Depth to Water (ft):	300.16	**Well Diameter (in):**	5.0
Total Depth of Well (ft):	350.0	**1 Casing Volume (gal):**	51.1
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	153.3
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	317

Time	Water Level (feet)	Flow Rate (gpm)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
Stabilization Criteria				±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
10:34		3.8								Pumping/Purging Started
10:39	302.22	3.8	19	26.44	7.97	0.737	4.88	-41.1	49.5	Clear
10:44	302.06	3.8	38	26.07	7.88	0.700	5.02	1.9	27.7	Clear
10:49	302.04	3.8	57	26.03	7.87	0.689	4.90	8.8	22.5	Clear
10:54	302.04	3.8	76	26.27	7.87	0.670	4.97	24.5	19.1	Clear
10:59	302.04	3.8	95	26.97	7.87	0.608	5.08	31.4	7.70	Clear
11:04	302.04	3.8	114	27.21	7.86	0.595	5.25	41.1	3.84	Clear
11:09	302.04	3.8	133	27.37	7.87	0.592	5.19	45.2	3.20	Clear
11:14	302.04	3.8	152	27.32	7.86	0.589	5.18	47.1	2.45	Clear

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

	Final Values:	27.32	7.86	0.589	5.18	47.1	2.45	

Sample ID:	DAVIS02-GW-002	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	No	**Sample Date:**	01/04/18
Duplicate ID:	NA	**Sample Collection Time:**	11:15
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	152
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	317
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	302.04

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
= Π * (5.0 (in)/12 (in/ft))/2)^2 * 49.84 * 7.48 gal/ft^3
= 51.1 gal.

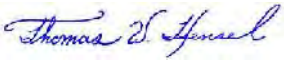
Signature:

Notes:

Existing pump depth was unknown, team tags top of pump at approximately 316 ft bgs, sample depth will be noted as 317 ft bgs

Name (print):

Audrey Yorke

QA/QC'd by: Thomas W. Hensel  **QA/QC Date:** 1/5/2018

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Kyle Keegan, Bryan Hansen
Well ID:	MW03001	**Date:**	01/04/18
Initial Depth to Water (ft):	304.26	**Well Diameter (in):**	4.0
Total Depth of Well (ft):	321.0	**1 Casing Volume (gal):**	11.0
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	32.9
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	311

Time	Water Level (feet)	Flow Rate (gpm)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
Stabilization Criteria				±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
07:55		2.8								Pumping/Purging Started
07:56	304.36	2.8	2.8	23.99	7.76	0.450	6.32	175.1	45.2	
08:01	304.44	2.8	16.8	27.24	7.83	0.444	6.56	191.1	12.5	
08:06	304.50	2.8	30.8	27.46	7.84	0.442	6.55	204.2	9.23	Clear, no odor
08:11	304.53	2.8	44.8	27.50	7.85	0.440	6.48	215.7	5.73	
08:16	304.55	2.8	58.8	27.53	7.85	0.439	6.65	221.2	6.97	Clear, no odor

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

Final Values:	**27.53**	**7.85**	**0.439**	**6.65**	**221.2**	**6.97**	

Sample ID:	DAVIS03-GW-001	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	Yes, MS/MSD	**Sample Date:**	01/04/18
Duplicate ID:	NA	**Sample Collection Time:**	08:20
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	72.8
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	311
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	304.56

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
= Π * (4.0 (in)/12 (in/ft))/2)^2 * 16.74 * 7.48 gal/ft^3
= 11.0 gal.

Signature:

Notes:

None

Name (print):

Audrey Yorke

QA/QC'd by: Thomas W. Hensel — **QA/QC Date:** 1/5/2018

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Kyle Keegan, Bryan Hansen
Well ID:	MW-43	**Date:**	01/05/18
Initial Depth to Water (ft):	293.91	**Well Diameter (in):**	5.0
Total Depth of Well (ft):	368.0	**1 Casing Volume (gal):**	75.6
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	226.7
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	Unknown

Time	Water Level (feet)	Flow Rate (GPM)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
		Stabilization Criteria		±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
14:48		4.3								Pumping/Purging Started
14:53	309.01	4.3	21.5	26.08	9.40	0.206	2.24	-63.3	90.3	Clear
14:58	312.31	4.3	43	26.72	8.83	0.387	4.42	68.3	122	Clear
15:03	313.62	4.3	64.5	27.32	8.11	0.420	4.64	-24.0	21.1	Clear
15:08	313.62	4.3	86	27.93	7.84	0.426	4.58	11.6	2.75	Clear
15:13	313.62	4.3	107.5	27.38	7.78	0.425	4.56	23.5	1.44	Clear
15:18	313.62	4.3	129	27.17	7.75	0.425	4.45	38.1	0.87	Clear
15:23	313.62	4.3	150.5	28.52	7.30	0.428	5.72	44.8	0.95	Clear
15:28	313.62	4.3	172	28.58	7.25	0.427	5.63	46.5	1.14	Clear
15:33	313.62	4.3	193.5	28.55	7.15	0.428	5.42	46.9	1.09	Clear

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

	Final Values:	28.55	7.15	0.428	5.42	46.9	1.09	

Sample ID:	DAVIS02-GW-003	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	No	**Sample Date:**	01/05/18
Duplicate ID:	NA	**Sample Collection Time:**	15:35
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	224
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	Unknown
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	313.62

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

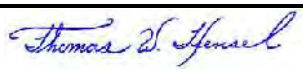
V= Π(R^2)H*7.48 gal/ft^3
= Π * (5.0 (in)/12 (in/ft))/2)^2 * 56.09 * 7.48 gal/ft^3
= 57.5 gal.

Signature:

Notes:

Pump intake depth unknown

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Bryan Hansen
Well ID:	MW-40	**Date:**	01/05/18
Initial Depth to Water (ft):	338.9	**Well Diameter (in):**	5.0
Total Depth of Well (ft):	368.0	**1 Casing Volume (gal):**	29.7
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	89.0
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	Unknown

Time	Water Level (feet)	Flow Rate (GPM)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
		Stabilization Criteria		±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
10:51		2.9								Pumping/Purging Started
10:56	340.28	2.9	14.5	25.26	9.69	0.155	0.50	-188.5	35.6	Clear
11:01	340.19	2.9	29	25.28	9.82	0.164	0.29	-262.0	65.2	Clear
11:06	340.19	2.9	43.5	27.02	8.12	0.381	4.98	-164.2	14.6	Clear
11:11	340.19	2.9	58	27.72	8.12	0.384	5.10	-117.5	10.1	Clear
11:16	340.19	2.9	72.5	27.89	7.88	0.384	5.32	-85.1	16.7	Clear
11:21	340.19	2.9	87	28.08	7.85	0.384	5.56	-67.0	6.34	Clear
11:26	340.19	2.9	101.5	28.10	7.83	0.383	5.47	-65.2	3.24	Clear
11:31	340.19	2.9	116	28.17	7.82	0.382	5.46	-68.2	2.51	Clear

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

Final Values:	**28.17**	**7.82**	**0.382**	**5.46**	**-68.2**	**2.51**	

Sample ID:	DAVIS02-GW-004	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	No	**Sample Date:**	01/05/18
Duplicate ID:	NA	**Sample Collection Time:**	11:35
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	128
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	Unknown
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	340.19

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

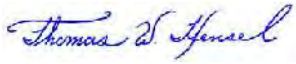
V= Π(R^2)H*7.48 gal/ft^3
= Π * (5.0 (in)/12 (in/ft))/2)^2 * 11.10 * 7.48 gal/ft^3
= 11.4 gal.

Signature:

Notes:

Pump depth unknown. Replaced MW-28.

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Bryan Hansen
Well ID:	MW-44	**Date:**	01/05/18
Initial Depth to Water (ft):	328.42	**Well Diameter (in):**	5.0
Total Depth of Well (ft):	380.0	**1 Casing Volume (gal):**	52.6
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	157.8
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	Unknown

Time	Water Level (feet)	Flow Rate (GPM)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
Stabilization Criteria				±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
12:22		2.3								Pumping/Purging Started
12:27	334.30	2.3	11.5	26.35	10.00	0.208	0.17	-243.2	99.1	Cloudy
12:32	336.17	2.3	23.0	28.12	8.22	0.416	0.93	-116.3	20.6	Clear
12:37	335.97	1.2	29.0	28.49	8.03	0.435	1.23	-96.3	12.5	Clear
12:42	335.60	1.2	35.0	28.81	7.90	0.432	1.29	-71.1	8.33	Clear
12:47	335.43	1.2	41.0	28.89	7.87	0.430	1.32	-60.2	5.21	Clear
12:52	335.34	1.2	47.0	29.27	7.85	0.425	1.64	-51.3	3.77	Clear
12:57	335.24	1.2	53.0	29.40	7.84	0.419	2.24	-36.6	3.00	Clear
13:02	335.22	1.2	59.0	29.82	7.83	0.418	3.27	-19.6	2.41	Clear
13:07	335.22	1.2	65.0	29.88	7.83	0.413	3.26	-14.2	1.93	Clear
13:12	335.19	1.2	71.0	30.05	7.82	0.411	3.44	-4.3	1.87	Clear
13:17	335.19	1.2	77.0	30.16	7.82	0.411	3.51	-4.0	1.29	Clear
13:22	335.19	1.2	83.0	30.19	7.81	0.411	3.75	-3.8	1.55	Clear

Stability Reached (Y/N): Yes — If No, Provide Explanation: NA

Final Values:	**30.19**	**7.81**	**0.411**	**3.75**	**-3.8**	**1.55**	

Sample ID:	DAVIS02-GW-006	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	No	**Sample Date:**	01/05/18
Duplicate ID:	NA	**Sample Collection Time:**	13:25
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	85.4
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	Unknown
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	335.19

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes — Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

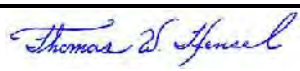
V= Π(R^2)H*7.48 gal/ft^3
= Π * (5.0 (in)/12 (in/ft))/2)^2 * 21.58 * 7.48 gal/ft^3
= 22.1 gal.

Signature:

Notes:

Total depth and pump intake depth unknown. Replaced MW-35.

Name (print): Audrey Yorke

QA/QC'd by: **Thomas W. Hensel**  **QA/QC Date:** **1/10/2018**

GROUNDWATER SAMPLING RECORD

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Technician(s):**	Audrey Yorke, Kyle Keegan, Bryan Hansen
Well ID:	MW02001	**Date:**	01/05/18
Initial Depth to Water (ft):	282.54	**Well Diameter (in):**	4.0
Total Depth of Well (ft):	305.0	**1 Casing Volume (gal):**	14.7
Method of Purging:	Grundfos pump	**3 Casing Volumes (gal):**	44.2
Measuring Point (toc, tor, etc.):	Top of Casing	**Pump Intake Depth (feet):**	300

Time	Water Level (feet)	Flow Rate (GPM)	Cum. Volume (gal.)	Temp. (°C)	pH (SU)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, odor, etc.)
		Stabilization Criteria		±0.5°C	±0.1	±3%	±10%	±10%	±10% and <10 NTU	
08:00		2.8								Pumping/Purging Started
08:05	282.93	2.8	14.0	25.19	7.65	0.462	6.37	175.0	4.38	Clear, no odor
08:10	282.93	2.8	28.0	25.33	7.66	0.462	6.37	174.0	2.39	Clear, no odor
08:15	282.93	2.8	42.0	25.35	7.66	0.461	6.28	170.5	1.47	Clear, no odor
08:20	282.93	2.8	56.0	25.33	7.66	0.460	6.23	164.8	0.66	Clear, no odor
08:25	282.93	2.8	70.0	25.29	7.65	0.460	6.27	161.6	0.92	Clear, no odor
08:30	282.93	2.8	84.0	25.30	7.65	0.459	6.40	158.2	0.79	Clear, no odor
Stability Reached (Y/N):				Yes		If No, Provide Explanation				NA
			Final Values:	**25.30**	**7.65**	**0.459**	**6.40**	**158.2**	**0.79**	

Sample ID:	MW02001	**Method of Sampling:**	Grundfos pump
QA/QC Samples (Yes/No):	Yes, DUP, MS/MSD	**Sample Date:**	01/05/18
Duplicate ID:	DAVIS-FD-GW-001	**Sample Collection Time:**	08:35
Sample Container Type(s):	2 x 125 mL HDPE	**Total Volume Purged (gal):**	103.60
Preservative(s):	Ice (4 °C)	**Sample Depth (ft):**	300
Analysis/Method(s):	PFAS (EPA 537-modified)	**Depth to Water After Sampling (ft):**	282.93

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): Yes Calibrated Within Criteria (Y/N): Yes

Turbidity Meter, Water Quality Meter, Water Level Meter, Grundfos Pump
Hach 2100Q 30257, YSI 556 MPS 13916

Calculations:

Saturated well casing volume: V= Π(R^2)H*7.48 gal/ft^3

V=Volume (gal/ft)
Π = 3.14
R = well radius (ft) = (well diameter (in)/12 (in/ft))/2)
H = height of water column (ft)

V= Π(R^2)H*7.48 gal/ft^3
= Π * (4.0 (in)/12 (in/ft))/2)^2 * 22.46 * 7.48 gal/ft^3
= 14.7 gal.

Signature:

Notes:

None

Name (print)**:** Audrey Yorke

QA/QC'd by: **Thomas W. Hensel** **QA/QC Date:** **1/10/2018**

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APPENDIX B-9

SEDIMENT – SURFACE WATER SAMPLING COLLECTION LOGS

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SAMPLE COLLECTION LOG
SEDIMENT / SURFACE SOIL / SURFACE WATER

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date:**	10/26/17
Location ID:	SD01001	**Northing/Easting:**	Not Collected
Technician(s):	Noel Garland		

SEDIMENT SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

Well graded Sand-SW- 10YR 5/2 grayish brown, dry, 80% Sand 10% fines and 5% gravel, medium grained, non plastic, soft consistency

Sample Depth (ft):	0 - 0.5	**Sample ID:**	DAVIS01-SD-001
MS/MSD Collected:	No	**Sample Date:**	10/26/17
Duplicate ID:	NA	**Sample Collection Time:**	16:30
Sample Container Type(s):	4 oz HDPE	**Sample Collection Methods:**	Grab
Preservative(s):	Ice (4 °C)	**Analysis/Method(s):**	PFAS (EPA 537-modified) + FTS List

SURFACE SOIL SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

NA

Sample Depth (ft):	NA	**Sample ID:**	NA
MS/MSD Collected:	NA	**Sample Date:**	NA
Duplicate ID:	NA	**Sample Collection Time:**	NA
Sample Container Type(s):	NA	**Sample Collection Methods:**	NA
Preservative(s):	NA	**Analysis/Method(s):**	NA

SURFACE WATER SAMPLE

Time	Intake Depth (in)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, etc.)
NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Depth (ft):	NA	**Sample Date:**	NA
Sample ID:	NA	**Sample Collection Time:**	NA
MS/MSD Collected:	NA	**Sample Collection Methods:**	NA
Duplicate ID:	NA	**Surface Water Depth (ft):**	NA
Sample Container Type(s):	NA	**Water Body and Water Quality Characteristics:**	
Preservative(s):	NA	NA	
Analysis/Method(s):	NA		

Location Image:

Caption: AFFF Release Area 1.

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): NA

Calibrated Within Criteria (Y/N): NA

Other(s): Sample collected by hand wearing nitrile gloves.

Notes: None

Signature:

Name (print): Noel Garland

QA/QC'd by: Thomas W. Hensel **QA/QC Date:** 2/23/2018

SAMPLE COLLECTION LOG
SEDIMENT / SURFACE SOIL / SURFACE WATER

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date:**	10/26/17
Location ID:	SD03001	**Northing/Easting:**	Not Collected
Technician(s):	Noel Garland		

SEDIMENT SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

Well graded Sand with gravel - SW- 10YR 5/2 Grayish Brown, dry, 70% Sand and 30% gravel, coarse grained, non plastic, soft consistency

Sample Depth (ft):	0 - 0.5	**Sample ID:**	DAVIS03-SD-001
MS/MSD Collected:	No	**Sample Date:**	10/26/17
Duplicate ID:	DAVIS-FD-SD-001	**Sample Collection Time:**	15:00
Sample Container Type(s):	4 oz HDPE	**Sample Collection Methods:**	Grab
Preservative(s):	Ice (4 °C)	**Analysis/Method(s):**	PFAS (EPA 537-modified) + FTS List

SURFACE SOIL SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

NA

Sample Depth (ft):	NA	**Sample ID:**	NA
MS/MSD Collected:	NA	**Sample Date:**	NA
Duplicate ID:	NA	**Sample Collection Time:**	NA
Sample Container Type(s):	NA	**Sample Collection Methods:**	NA
Preservative(s):	NA	**Analysis/Method(s):**	NA

SURFACE WATER SAMPLE

Time	Intake Depth (in)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, etc.)
NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Depth (ft):	NA	**Sample Date:**	NA
Sample ID:	NA	**Sample Collection Time:**	NA
MS/MSD Collected:	NA	**Sample Collection Methods:**	NA
Duplicate ID:	NA	**Surface Water Depth (ft):**	NA
Sample Container Type(s):	NA	**Water Body and Water Quality Characteristics:**	
Preservative(s):	NA	NA	
Analysis/Method(s):	NA		

Location Image:

Caption: North Ramp drainage outfall

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): NA

Calibrated Within Criteria (Y/N): NA

Other(s): No instruments used. Collected by hand wearing nitrile gloves

Notes:

None

Signature:

Name (print)**:** Noel Garland

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SAMPLE COLLECTION LOG
SEDIMENT / SURFACE SOIL / SURFACE WATER

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date:**	10/26/17
Location ID:	SD03002	**Northing/Easting:**	Not Collected
Technician(s):	Noel Garland		

SEDIMENT SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

Well graded Sand with gravel-SW-10YR 5/3 Brown, dry, coarse grained Sand, 80% sand and 20% gravel, non plastic, soft consistency

Sample Depth (ft):	0 - 0.5	**Sample ID:**	DAVIS03-SD-002
MS/MSD Collected:	Yes	**Sample Date:**	10/26/17
Duplicate ID:	NA	**Sample Collection Time:**	15:30
Sample Container Type(s):	4 oz. HDPE	**Sample Collection Methods:**	Grab
Preservative(s):	Ice (4 °C)	**Analysis/Method(s):**	PFAS (EPA 537-Modified) + FTS List

SURFACE SOIL SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

NA

Sample Depth (ft):	NA	**Sample ID:**	NA
MS/MSD Collected:	NA	**Sample Date:**	NA
Duplicate ID:	NA	**Sample Collection Time:**	NA
Sample Container Type(s):	NA	**Sample Collection Methods:**	NA
Preservative(s):	NA	**Analysis/Method(s):**	NA

SURFACE WATER SAMPLE

Time	Intake Depth (in)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, etc.)
NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Depth (ft):	NA	**Sample Date:**	NA
Sample ID:	NA	**Sample Collection Time:**	NA
MS/MSD Collected:	NA	**Sample Collection Methods:**	NA
Duplicate ID:	NA	**Surface Water Depth (ft):**	NA
Sample Container Type(s):	NA	**Water Body and Water Quality Characteristics:**	
Preservative(s):	NA	NA	
Analysis/Method(s):	NA		

Location Image:

Caption: Former Fire station No. 1 Drainage outfall

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): NA

Calibrated Within Criteria (Y/N): NA

Other(s): Sample collected by hand wearing nitrile gloves

Notes:

None

Signature:

Name (print)**:** Noel Garland

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SAMPLE COLLECTION LOG
SEDIMENT / SURFACE SOIL / SURFACE WATER

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date:**	10/27/17
Location ID:	SD03003	**Northing/Easting:**	Not Collected
Technician(s):	Noel Garland		

SEDIMENT SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

Well graded sand with gravel-SW-10YR 6/3 pale brown, dry, 75% sand and 25% gravel, coarse grained sand, non plastic, soft consistency

Sample Depth (ft):	0 - 0.5	**Sample ID:**	DAVIS03-SD-003
MS/MSD Collected:	No	**Sample Date:**	10/27/17
Duplicate ID:	NA	**Sample Collection Time:**	07:45
Sample Container Type(s):	4 oz HDPE	**Sample Collection Methods:**	Grab
Preservative(s):	Ice (4 °C)	**Analysis/Method(s):**	PFAS (EPA 537-modified) + FTS List

SURFACE SOIL SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

NA

Sample Depth (ft):	NA	**Sample ID:**	NA
MS/MSD Collected:	NA	**Sample Date:**	NA
Duplicate ID:	NA	**Sample Collection Time:**	NA
Sample Container Type(s):	NA	**Sample Collection Methods:**	NA
Preservative(s):	NA	**Analysis/Method(s):**	NA

SURFACE WATER SAMPLE

Time	Intake Depth (in)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, etc.)
NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Depth (ft):	NA	**Sample Date:**	NA
Sample ID:	NA	**Sample Collection Time:**	NA
MS/MSD Collected:	NA	**Sample Collection Methods:**	NA
Duplicate ID:	NA	**Surface Water Depth (ft):**	NA
Sample Container Type(s):	NA	**Water Body and Water Quality Characteristics:**	
Preservative(s):	NA	NA	
Analysis/Method(s):	NA		

Location Image:

Caption: Storm water outfall canal

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): NA

Calibrated Within Criteria (Y/N): NA

Other(s): Collected by hand wearing nitrile gloves.m

,

Notes:

None

Signature:

Name (print)**:** Noel Garland

QA/QC'd by: **Thomas W. Hensel** Thomas W. Hensel **QA/QC Date:** **2/23/2018**

SAMPLE COLLECTION LOG
SEDIMENT / SURFACE SOIL / SURFACE WATER

Project Name:	Site Inspection of AFFF Release Areas Environmental Programs Worldwide	**Project Number:**	775303101.0009
Contract:	FA8903-16-D-0027	**Task Order:**	0004
Installation:	DAVIS - Davis-Monthan AFB	**Date:**	01/05/18
Location ID:	SD03004	**Northing/Easting:**	Not Collected
Technician(s):	Kyle Keegan		

SEDIMENT SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

NA

Sample Depth (ft):	NA	**Sample ID:**	NA
MS/MSD Collected:	NA	**Sample Date:**	NA
Duplicate ID:	NA	**Sample Collection Time:**	NA
Sample Container Type(s):	NA	**Sample Collection Methods:**	NA
Preservative(s):	NA	**Analysis/Method(s):**	NA

SURFACE SOIL SAMPLE

Description

NAME (USCS Symbol): color, moisture, % by wt, plasticity, dilatancy, toughness, dry strength,consistency

Well graded sand with silt (SW-SM), 7.5 YR 6/1 (Gray), 90% F-C-GR Sand SR, 10% Fines

Sample Depth (ft):	0 - 0.5	**Sample ID:**	DAVIS03-SD-004
MS/MSD Collected:	No	**Sample Date:**	01/05/18
Duplicate ID:	NA	**Sample Collection Time:**	10:30
Sample Container Type(s):	4 oz HDPE	**Sample Collection Methods:**	Grab
Preservative(s):	Ice (4 °C)	**Analysis/Method(s):**	PFAS (EPA 537-modified)

SURFACE WATER SAMPLE

Time	Intake Depth (in)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments/Observations During Purging (color, sediment, etc.)
NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Depth (ft):	NA	**Sample Date:**	NA
Sample ID:	NA	**Sample Collection Time:**	NA
MS/MSD Collected:	NA	**Sample Collection Methods:**	NA
Duplicate ID:	NA	**Surface Water Depth (ft):**	NA
Sample Container Type(s):	NA	**Water Body and Water Quality Characteristics:**	
Preservative(s):	NA	NA	
Analysis/Method(s):	NA		

Location Sketch:

Instruments (Manufacturer, Model, and Serial No.):

Equipment Calibrated (Y/N): NA

Calibrated Within Criteria (Y/N): NA

Other(s): Nitrile Gloves

,

Notes:

Sample taken under the Aviation Bikeway bridge just north of Golf Links Rd.

Signature:

Name (print)**:** Kyle Keegan

QA/QC'd by: Thomas W. Hensel **QA/QC Date:** 1/10/2018

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APPENDIX C

LABORATORY ANALYTICAL REPORTS (DVD)

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APPENDIX D

DATA VALIDATION REPORT

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DATA VALIDATION REPORT

SITE INSPECTION OF AQUEOUS FILM FORMING FOAM (AFFF) RELEASE AREAS

ENVIRONMENTAL PROGRAMS WORLDWIDE

DAVIS-MONTHAN AIR FORCE BASE

Samples Collected Between 13 October and 5 January 2018

Prepared for:

Air Force Civil Engineer Center

Joint Base San Antonio – Lackland, Texas

Prepared by:

Contract FA8903-16-D-0027

Task Order 0004

February 2018

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TABLE OF CONTENTS

LIST OF TABLES

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ACRONYMS AND ABBREVIATIONS

µg/L	Micrograms Per Liter
%	Percent
6:2 FTS	6:2 Fluorotelomer Sulfonate
8:2 FTS	8:2 Fluorotelomer Sulfonate
AFFF	Aqueous Film Forming Foam
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CCV	Continuing Calibration Verification
CLP	Contract Laboratory Program
COC	Chain Of Custody
DL	Detection Limit
DoD	Department Of Defense
EPA	United States Environmental Protection Agency
EtFOSAA	Ethylperfluorooctane Sulfonamidoacetic Acid
ICV	Initial Calibration Verification
ID	Identification
IDW	Investigation Derived Waste
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOQ	Limit Of Quantification
MeFOSAA	Methylperfluorooctane Sulfonamidoacetic Acid
mg/kg	milligrams per kilogram
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PFASs	Per- And Polyfluoroalkyl Substances
PFBS	Perfluorobutanesulfonic Acid
PFDA	Perfluorodecanoic Acid
PFDoA	Perfluorododecanoic Acid
PFHpA	Perfluoroheptanoic Acid

PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFTeDA	Perfluorotetradecanoic Acid
PFTrDA	Perfluorotridecanoic Acid
PFUnA	Perfluoroundecanoic Acid
QC	Quality Control
QPP	Quality Program Plan
RPD	Relative Percent Difference
SGS	SGS Accutest

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) collected 20 soil samples (including 2 field duplicates), 6 sediment samples (including 1 field duplicate), and 25 water samples (including 1 field duplicate, 14 equipment blanks, and 3 field blanks) between 13 October 2017 and 5 January 2018, from Davis-Monthan Air Force Base, located in Tucson, Arizona. Amec Foster Wheeler submitted the samples to SGS Accutest (SGS), located in Orlando, Florida, where they were received between 18 October 2017 and 9 January 2018. SGS assigned the samples to sample delivery groups FA48525, FA48619, FA48866, FA50519, FA50630, and FA50736, and analyzed the samples for per- and polyfluoroalkyl substances (PFASs) by Modified United States Environmental Protection Agency (EPA) Method 537, using the modifications to EPA Method 537 specified in the laboratory's analytical standard operating procedure MS014.3. Additionally, 4 investigation derived waste (IDW) samples were collected associated with SDG FA48866. The results from the IDW samples were not validated. A list of these samples by field sample identification (ID), sample collection date, sample matrix, and laboratory sample ID is presented in Table 1.

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2.0 DATA VALIDATION METHODOLOGY

Amec Foster Wheeler performed EPA Stage 4 validation on 10 percent (%) of the samples and EPA Stage 2B validation on the remaining samples associated with this sampling event as indicated on Table 1. IDW sample results were not validated. The Stage 4 validation includes review of the quality control (QC) results in the laboratory's analytical report and reported on QC summary forms as well as recalculation checks and review of the instrument raw data outputs. The Stage 2B validation includes review of the QC results in the laboratory's analytical report and reported on QC summary forms with no review of the associated raw data. Data from equipment and field blanks did not undergo validation because results from these samples are only used to assess data usability for field samples. This data validation has been performed in general accordance with:

- Amec Foster Wheeler, 2017. Working Copy Final (Revision 1), Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas, Environmental Programs Worldwide, Quality Program Plan (QPP), Contract FA8903-16-D-0027, Task Order 0004, December 2017.
- Department of Defense (DoD), 2013. DoD Quality Systems Manual for Environmental Laboratories, Version 5.0. July 2013.
- EPA, 2009. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry, Version 1.1, September 2009. EPA Document #: EPA/600/R-08/092.
- EPA, 2014. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-014-002.

The CLP guideline was written specifically for the CLP, and has been modified for the purposes of this data review where it differs from method-specific, QPP-specified, and laboratory-specified QC requirements.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Laboratory case narrative review;
- Chain of custody (COC) compliance;
- Holding time compliance;
- QC sample frequency;
- Initial calibration, initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method-specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;

- Accuracy and bias as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples;
- Internal standard recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates or MS/MS duplicate (MSD);
- Sampling and analytical precision as RPD of analyte concentration between field duplicates;
- Assessment of field contamination as demonstrated by field and equipment blanks;
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs and LCS duplicates (LCSDs) are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Field blanks are prepared by pouring an aliquot of analyte-free water into a sample container in the field. Field blanks are analyzed for the analytical suite required for the project. Field blanks are used to monitor for possible sample contamination originating from the water used for equipment decontamination.

Laboratory, equipment, and field blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in the associated samples less than 10 times the concentration detected in the blank will be B qualified.

3.4 LABORATORY AND FIELD DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

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4.0 DEFINITIONS OF QUALIFIERS THAT MAY BE USED DURING DATA VALIDATION

B The analyte was detected in the sample and an associated blank and the concentration detected in the sample was less than 10 times the concentration detected in the blank.

U The analyte was analyzed for, but was not detected.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Q The analyte is both B qualified because of blank detection and J qualified because of an additional QC issue.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

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5.0 QUALIFICATION REASON CODES

Amec Foster Wheeler applied the following reason code to the data during validation:

EBG The analyte was detected in an equipment blank at a concentration greater than the limit of quantification (LOQ) and the concentration detected in the sample is less than ten times the concentration detected in the blank.

FDD Imprecision between field duplicate results.

SGL Low surrogate recovery. Result may be biased low.

TR Detected concentration is less than the LOQ.

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6.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratory under proper COC, intact, properly preserved, and at temperatures less than the QPP-specified maximum of 10 degrees Celsius.

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7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 0.

7.1 PER- AND POLYFLUOROALKYL SUBSTANCES BY MODIFIED EPA METHOD 537

PFAS results generated by SGS are usable with the limitations described in Sections 7.1.1 through 7.1.12.

7.1.1 Holding Times

The aqueous samples were extracted for PFASs within the QPP-specified maximum holding time of 14 days from sample collection and the extracts were analyzed within the QPP-specified maximum hold time of 28 days from extraction. The solid samples were extracted for PFASs within the method-recommended maximum holding time of 60 days from sample collection and the extracts were analyzed within the method-recommended 30 days from extraction.

7.1.2 Initial Calibrations

The ICALs associated with the analysis of these samples met the QPP-specified criteria of correlation coefficients greater than 0.99 and the calibration standards calculating to 75 to 125% of its true concentrations.

7.1.3 Initial Calibration Verification

ICV recoveries were within the QPP-specified 75% to 125% limits.

7.1.4 Continuing Calibration Verification

CCV recoveries were within the QPP specified 75% to 125% limits.

7.1.5 Laboratory Blanks

PFASs were not detected in the laboratory blanks associated with these samples, with the following exception.

- Perfluorohexanesulfonic acid (PFHxS) and perfluorooctanesulfonic acid (PFOS) were detected at concentrations of 0.0119 micrograms per liter (µg/L) and 0.0124 µg/L, respectively, in the laboratory blank associated with the analysis of equipment blanks DAVIS-EB-001, DAVIS-EB-002, DAVIS-EB-003, DAVIS-EB-004, and DAVIS-EB-005; and field blanks DAVIS-FB-001 and DAVIS-FB-002. Amec Foster Wheeler does not qualify equipment and field blank results and overall data usability is not adversely affected by the blank detections.
- PFOS was detected at a concentration of 0.00489 µg/L in the laboratory blank associated with the analysis of equipment blanks DAVIS-EB-007 and DAVIS-EB-008. Amec Foster Wheeler does not qualify equipment blank results and overall data usability is not adversely affected by the blank detections.

7.1.6 Field and Equipment Blanks

PFASs were not detected in the field and equipment blanks associated with these samples, with the following exceptions:

- PFOS was detected at a concentration of 0.0196 µg/L, equivalent to 0.00235 milligrams per kilogram (mg/kg), in equipment blank DAVIS-EB-004, associated with samples DAVIS01-SO-005 and DAVIS01-SO-007. PFOS was detected in these samples at concentrations greater than ten times the concentration detected in the blank and data usability is not adversely affected.
- PFOS was detected at a concentration of 0.0151 µg/L, equivalent to 0.00181 mg/kg, in equipment blank DAVIS-EB-007, associated with samples DAVIS01-SO-002 and DAVIS01-SO-003. PFOS was detected in sample DAVIS01-SO-002 at a concentration greater than ten times the concentration detected in the blank and PFOS was not detected in sample DAVIS01-SO-003. Data usability is not adversely affected.
- PFOS was detected at a concentration of 0.0545 µg/L, equivalent to 0.00654 mg/kg, in equipment blank DAVIS-EB-008, associated with samples DAVIS01-SO-004 and DAVIS-FD-SO-001. Amec Foster Wheeler B qualified the detected PFOS results from samples DAVIS01-SO-004 and DAVIS-FD-SO-001 beca8use the detected results were less than ten times the concentration detected in the blank. (Qualifier and reason code: B-EBG)
- PFOS was detected at a concentration of 0.00663 µg/L, equivalent to 0.000796 mg/kg, in equipment blank DAVIS-EB-009, associated with samples DAVIS02-SO-001 and DAVIS-FD-SO-002. PFOS was not detected in these samples and data usability is not adversely affected.
- PFOS was detected at a concentration of 0.0500 µg/L in equipment blank DAVIS-EB-013, associated with sample DAVIS03-GW-001. PFOS was not detected in this sample and data usability is not adversely affected.

7.1.7 Laboratory Control Sample Accuracy

LCS recoveries were within QPP-specified 70 to 130% limits, with the following exception:

- Methylperfluorooctane sulfonamidoacetic acid (MeFOSAA) and 6:2 fluorotelomer sulfonate (6:2 FTS) recoveries were high at 131% and 133%, respectively, in the LCS associated with the analysis of equipment blanks DAVIS-EB-009, DAVIS-EB-010, and DAVIS-EB-011. Amec Foster Wheeler does not qualify equipment blank results and overall data usability is not adversely affected by the potentially high analytical bias.

7.1.8 Matrix Spikes/ Matrix Spike Duplicates

SGS performed MS and/or MSD analyses on samples DAVIS03-SD-002, DAVIS-FD-SO-002, and DAVIS02-GW-001 and an MS on sample DAVIS01-GW-001. Recoveries were within the QPP-specified 70 to 130% limits and RPDs between MS and MSD results were less than the QPP-specified maximum of 30%.

7.1.9 Laboratory Duplicate

SGS performed a duplicate analysis on sample DAVIS-EB-003. RPDs between primary and duplicate results were less than 30% or differences between primary and duplicate results were less than the LOQ.

7.1.10 Surrogate Recoveries

Surrogate recoveries were within the QPP-specified 70 to 130% limits for field samples analyzed at dilutions up to five-fold, with the following exception:

- Surrogate compounds were not recovered in the 10-fold dilutions performed on samples DAVIS01-SO-001 and DAVIS01-SD-001; the 50-fold dilution performed on sample DAVIS01-SO-007; and the 100-fold dilutions performed on samples DAVIS01-SO-005 and DAVIS01-SO-001. These samples were diluted past the instrument's ability to accurately resolve the surrogate compounds and it is not possible to evaluate data usability based on surrogate recoveries for these analyses.
- Recoveries of the surrogate compound $^{13}C_2$-perfluorohexanoic acid (PFHxA) were low in the analysis of samples DAVIS01-SO-002 (62%), DAVIS-FD-SD-001 (67%), and DAVIS02-GW-003 (66%). These recoveries were within laboratory-specified limits and SGS did not re-extract or re-analyze these samples. Amec Foster Wheeler J qualified the detected and UJ qualified the non-detected PFHxA, perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), PFHxS, PFOS, and 6:2 FTS results from these samples because of the potential low analytical bias. (Qualifier and reason code: J/UJ-SGL)
- Recoveries of the surrogate compounds $^{13}C_2$-PFHxA, $^{13}C_2$-perfluorodecanoic acid (PFDA), and d5-ethylperfluorooctane sulfonamidoacetic acid (EtFOSAA) were low in the analysis of samples DAVIS01-SO-003 (62%, 66%, 68%, respectively), DAVIS03-SD-001 (62%, 67%, 68%, respectively), and DAVIS-FD-SO-001 (62%, 64%, 63%, respectively). These recoveries were within laboratory-specified limits and SGS did not re-extract or reanalyze this sample. Data limitations are summarized below.
  - The detected PFOS result from sample DAVIS-FD-SO-001 was previously B qualified because of a detection in the associated equipment blank and it is not possible to apply combined qualifiers on this project. Amec Foster Wheeler Q qualified this result to indicate that the result should be both B qualified and J qualified because of the potential low analytical bias. (Qualifier and reason code: Q-SGL)
  - Amec Foster Wheeler J qualified the remaining detected and UJ qualified the non-detected PFAS results from these samples because of the potential low analytical bias. (Qualifier and reason code: UJ-SGL)
- Recoveries of the surrogate compounds $^{13}C_2$-PFHxA and $^{13}C_2$-PFDA were low at 68% and 69%, respectively, in the analysis of sample DAVIS03-SD-003. These recoveries were within laboratory-specified limits and SGS did not re-extract or reanalyze this sample. Amec Foster Wheeler UJ qualified the non-detected PFHxA, PFHpA, PFOA, perfluorononanoic acid (PFNA), PFDA, perfluoroundecanoic

acid (PFUnA), perfluorododecanoic acid (PFDoA), perfluorotridecanoic acid (PFTrDA), perfluorotetradecanoic acid (PFTeDA), PFBS, PFHxS, PFOS, 6:2 FTS, and 8:2 fluorotelomer sulfonate (8:2 FTS) results from this sample because of the potential low analytical bias. (Qualifier and reason code: UJ-SGL)

7.1.11 Internal Standard Recoveries

Internal standard areas were within the QPP-specified limits of 50 to 150% of the average area counts measured during the initial calibration, with the following exception:

- Recoveries of the internal standard $^{13}C_2$-6:2 FTS were high at 189% and 210% in the 10-fold dilutions performed on samples DAVIS01-SO-005 and DAVIS01-SO-001, respectively. 6:2 FTS and 8:2 FTS were reported from the 100-fold dilutions performed on these samples and data usability is not adversely affected.

7.1.12 Data Reporting and Analytical Procedures

SGS J qualified analytes with concentrations between the detection limit (DL) and the LOQ. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has J qualified these results. (Qualifier and reason code: J-TR)

SGS calibrates their instrument using both linear and branched isomers, when available, but the solution used for calibration verification and spiking contains linear isomers only. The analytical software is unable to correctly auto-integrate analytes when peaks for both linear and branched isomers are present, so the calibration standards, CCVs, and samples containing both linear and branched isomers require manual integration.

8.0 FIELD DUPLICATE RESULTS

Amec Foster Wheeler collected a field duplicate with samples:

- DAVIS03-SD-001 (DAVIS-FD-SD-001)
- DAVIS01-SO-004 (DAVIS-FD-SO-001)
- DAVIS02-SO-001 (DAVIS-FD-SO-002)
- DAVIS02-GW-001 (DAVIS-FD-GW-001)

Detected results and RPDs for the field duplicate are summarized in Table 2. Precision values were within the QPP-specified limits of less than 30% RPD or the difference between analytical results less than the LOQ, with the following exception:

- The RPD between PFOS results from sample DAVIS01-SO-004 and its field duplicate DAVIS-FD-SO-001 was high at 135%. These results were previously B qualified because of a target analyte detection in an associated equipment blank and it is not possible to apply combined qualifiers on this project. Amec Foster Wheeler Q qualified these results to indicate that the results should be both B qualified and J qualified because of the potential sampling or analytical imprecision. (Qualifier and reason code: Q-FDD)

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9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler evaluated a total of 544 data records from field samples during the validation. Amec Foster Wheeler J or UJ qualified 100 records (18.4%) as estimated values because of low surrogate recoveries, analyte concentrations between the DL and the LOQ, and/or field duplicate imprecision. Amec Foster Wheeler also Q qualified 2 records (0.4%) because of target analyte detections in associated equipment blanks and 100% of the data should be considered usable, meeting the QPP-specified 90% completeness goal. Qualified data are summarized in Table 3.

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REFERENCES

Amec Foster Wheeler, 2017. Working Copy Final (Revision 1), Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas, Environmental Programs Worldwide, Quality Program Plan (QPP), Contract FA8903-16-D-0027, Task Order 0004, December 2017.

Department of Defense (DOD), 2017. DoD Quality Systems Manual for Environmental Laboratories, Version 5.1. January 2017.

EPA, 2009. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), Version 1.1, September 2009. EPA Document #: EPA/600/R-08/092.

EPA, 2014. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-014-002.

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TABLES

Table 1
Field Samples Submitted to SGS Accutest
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Arnold Air Force Base, Tennessee

Sample Identification	Collection Date	Sample Matrix	Laboratory Sample Identification	Notes
DAVIS03-SO-001	10/13/2017	Soil	FA48525-1	
DAVIS03-SO-002	10/14/2017	Soil	FA48525-2	
DAVIS03-SO-003	10/15/2017	Soil	FA48525-3	
DAVIS03-SO-004	10/15/2017	Soil	FA48525-4	
DAVIS-EB-001	10/13/2017	QC Water	FA48525-5	Equipment Blank
DAVIS-EB-002	10/14/2017	QC Water	FA48525-6	Equipment Blank
DAVIS-EB-003	10/15/2017	QC Water	FA48525-7	Equipment Blank, Laboratory Duplicate
DAVIS-EB-004	10/16/2017	QC Water	FA48525-8	Equipment Blank
DAVIS-FB-001	10/13/2017	QC Water	FA48525-9	Field Blank
DAVIS-FB-002	10/13/2017	QC Water	FA48525-10	Field Blank
DAVIS01-SO-005	10/16/2017	Soil	FA48525-11	Stage 4
DAVIS01-SO-006	10/16/2017	Soil	FA48525-12	Stage 4
DAVIS01-SO-007	10/16/2017	Soil	FA48525-13	
DAVIS01-SO-008	10/16/2017	Soil	FA48525-14	
DAVIS-EB-005	10/16/2017	QC Water	FA48525-15	Equipment Blank
DAVIS01-SO-001	10/18/2017	Soil	FA48619-1	
DAVIS-EB-006	10/18/2017	QC Water	FA48619-2	Equipment Blank
DAVIS01-SD-001	10/26/2017	Sediment	FA48866-1	Stage 4
DAVIS01-SO-002	10/24/2017	Soil	FA48866-2	
DAVIS01-SO-003	10/24/2017	Soil	FA48866-3	
DAVIS01-SO-004	10/26/2017	Soil	FA48866-4	
DAVIS03-SD-001	10/26/2017	Sediment	FA48866-5	
DAVIS03-SD-002	10/26/2017	Sediment	FA48866-6	MS/MSD
DAVIS03-SD-003	10/27/2017	Sediment	FA48866-7	
DAVIS-EB-007	10/24/2017	QC Water	FA48866-8	Equipment Blank
DAVIS-EB-008	10/26/2017	QC Water	FA48866-9	Equipment Blank
DAVIS-FD-SD-001	10/26/2017	Sediment	FA48866-10	Field Duplicate of DAVIS03-SD-001
DAVIS-FD-SO-001	10/26/2017	Soil	FA48866-11	Field Duplicate of DAVIS01-SO-004
DAVIS-SOLIDS IDW-BIN	10/27/2017	IDW	FA48866-12	IDW - Not Validated
DAVIS-SOLIDS IDW-BIN	10/27/2017	IDW	FA48866-13	IDW - Not Validated
DAVIS-SOLIDS IDW-BIN	10/27/2017	IDW	FA48866-14	IDW - Not Validated
DAVIS-SOLIDS IDW-BIN	10/27/2017	IDW	FA48866-15	IDW - Not Validated
DAVIS02-SO-001	12/19/2017	Soil	FA50519-1	
DAVIS02-SO-002	12/20/2017	Soil	FA50519-2	
DAVIS02-SO-003	12/21/2017	Soil	FA50519-3	
DAVIS02-SO-005	12/21/2017	Soil	FA50519-4	
DAVIS02-SO-006	12/21/2017	Soil	FA50519-5	
DAVIS02-SO-007	12/21/2017	Soil	FA50519-6	
DAVIS-EB-009	12/19/2017	QC Water	FA50519-7	Equipment Blank
DAVIS-EB-010	12/20/2017	QC Water	FA50519-8	Equipment Blank
DAVIS-EB-011	12/21/2017	QC Water	FA50519-9	Equipment Blank
DAVIS-FD-SO-002	12/19/2017	Soil	FA50519-10	Field Duplicate of DAVIS02-SO-001, MS/MSD
DAVIS01-GW-001	1/3/2018	Ground Water	FA50630-1	MS
DAVIS-EB-012	1/2/2018	QC Water	FA50630-2	Equipment Blank
DAVIS-EB-013	1/3/2018	QC Water	FA50630-3	Equipment Blank

Table 1
Field Samples Submitted to SGS Accutest
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Arnold Air Force Base, Tennessee

Sample Identification	Collection Date	Sample Matrix	Laboratory Sample Identification	Notes
DAVIS-FB-003	1/2/2018	QC Water	FA50630-4	Field Blank
DAVIS02-GW-002	1/4/2018	Ground Water	FA50736-1	Stage 4
DAVIS03-GW-001	1/4/2018	Ground Water	FA50736-2	
DAVIS-EB-014	1/4/2018	QC Water	FA50736-3	Equipment Blank
DAVIS02-GW-001	1/5/2018	Ground Water	FA50736-4	MS/MSD
DAVIS-FD-GW-001	1/5/2018	Ground Water	FA50736-5	Field Duplicate of DAVIS02-GW-001
DAVIS02-GW-004	1/5/2018	Ground Water	FA50736-6	
DAVIS02-GW-003	1/5/2018	Ground Water	FA50736-7	
DAVIS02-GW-006	1/5/2018	Ground Water	FA50736-8	
DAVIS03-SD-004	1/5/2018	Sediment	FA50736-9	

Notes:
IDW = Investigation Derived Waste
MS = Matrix Spike
MSD = Matrix Spike Duplicate

Table 2
Field Duplicate Detections
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Davis-Monthan Air Force Base, Arizona

Analyte	Average LOQ	Primary Sample	Field Duplicate	Units	RPD	Notes
Samples DAVIS03-SD-001 and DAVIS-FD-SD-001						
PFOS	0.0020	0.00133 J	0.00151 J	mg/kg	13%	
Samples DAVIS01-SO-004 and DAVIS-FD-SO-001						
PFOS	0.0024	0.000620	0.00321	mg/kg	135%	J-FDD
Samples DAVIS02-SO-001 and DAVIS-FD-SO-002						
No Target Analyte Detections						
Samples DAVIS02-GW-001 and DAVIS-FD-GW-001						
No Target Analyte Detections						

Notes:
LOQ = limit of quantification
mg/kg = milligrams per kilogram
NC = not calculable
PFOS = perfluorooctanesulfonic acid
RPD = relative percent difference

Qualifier Definitions:
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported limit of detection.

Reason Codes:
± LOQ = The difference between analyte concentrations is less than the LOQ, indicating acceptable analytical precision.
FDD = Imprecision between field duplicate results.

Table 3
Qualifiers Added During Validation
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Davis-Monthan Air Force Base, Arizona

Sample Identification	Analyte	Results	Validation Qualifiers and Reason Codes
DAVIS01-SD-001	PFBS	0.000811 mg/kg	J TR
DAVIS01-SD-001	PFHpA	0.000993 mg/kg	J TR
DAVIS01-SD-001	PFNA	0.00129 mg/kg	J TR
DAVIS01-SD-001	PFTeDA	0.00145 mg/kg	J TR
DAVIS01-SO-002	6:2 FTS	0.0039 mg/kg	UJ SGL
DAVIS01-SO-002	PFBS	0.00098 mg/kg	UJ SGL
DAVIS01-SO-002	PFHpA	0.00098 mg/kg	UJ SGL
DAVIS01-SO-002	PFHxA	0.000673 mg/kg	J SGL, TR
DAVIS01-SO-002	PFHxS	0.00098 mg/kg	UJ SGL
DAVIS01-SO-002	PFOA	0.00098 mg/kg	UJ SGL
DAVIS01-SO-002	PFOS	0.0582 mg/kg	J SGL
DAVIS01-SO-003	6:2 FTS	0.0043 mg/kg	UJ SGL
DAVIS01-SO-003	8:2 FTS	0.0043 mg/kg	UJ SGL
DAVIS01-SO-003	EtFOSAA	0.0043 mg/kg	UJ SGL
DAVIS01-SO-003	MeFOSAA	0.0043 mg/kg	UJ SGL
DAVIS01-SO-003	PFBS	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFDA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFDoA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFHpA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFHxA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFHxS	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFNA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFOA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFOS	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFTeDA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFTrDA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-003	PFUnA	0.0011 mg/kg	UJ SGL
DAVIS01-SO-004	PFOS	0.00062 mg/kg	Q EBG, FDD
DAVIS01-SO-005	8:2 FTS	0.484 mg/kg	J TR
DAVIS01-SO-005	PFNA	0.0157 mg/kg	J TR
DAVIS01-SO-006	PFBS	0.00786 mg/kg	J TR
DAVIS01-SO-006	PFHpA	0.00407 mg/kg	J TR
DAVIS01-SO-007	PFHxA	0.0586 mg/kg	J TR
DAVIS01-SO-008	6:2 FTS	0.00328 mg/kg	J TR
DAVIS01-SO-008	PFHxA	0.0015 mg/kg	J TR
DAVIS01-SO-008	PFOA	0.00183 mg/kg	J TR
DAVIS01-SO-008	PFOS	0.00169 mg/kg	J TR
DAVIS02-GW-003	6:2 FTS	0.031 µg/L	UJ SGL
DAVIS02-GW-003	PFBS	0.012 µg/L	UJ SGL
DAVIS02-GW-003	PFHpA	0.012 µg/L	UJ SGL
DAVIS02-GW-003	PFHxA	0.012 µg/L	UJ SGL
DAVIS02-GW-003	PFHxS	0.012 µg/L	UJ SGL
DAVIS02-GW-003	PFOA	0.0062 µg/L	UJ SGL
DAVIS02-GW-003	PFOS	0.0062 µg/L	UJ SGL

Table 3
Qualifiers Added During Validation
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Davis-Monthan Air Force Base, Arizona

Sample Identification	Analyte	Results	Validation Qualifiers and Reason Codes
DAVIS02-SO-005	PFOS	0.00135 mg/kg	J TR
DAVIS02-SO-006	PFOS	0.00112 mg/kg	J TR
DAVIS02-SO-007	PFOS	0.0007 mg/kg	J TR
DAVIS03-SD-001	6:2 FTS	0.0043 mg/kg	UJ SGL
DAVIS03-SD-001	8:2 FTS	0.0043 mg/kg	UJ SGL
DAVIS03-SD-001	EtFOSAA	0.0043 mg/kg	UJ SGL
DAVIS03-SD-001	MeFOSAA	0.0043 mg/kg	UJ SGL
DAVIS03-SD-001	PFBS	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFDA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFDoA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFHpA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFHxA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFHxS	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFNA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFOA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFOS	0.00133 mg/kg	J SGL, TR
DAVIS03-SD-001	PFTeDA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFTrDA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-001	PFUnA	0.0011 mg/kg	UJ SGL
DAVIS03-SD-002	PFOS	0.00107 mg/kg	J TR
DAVIS03-SD-003	6:2 FTS	0.0039 mg/kg	UJ SGL
DAVIS03-SD-003	8:2 FTS	0.0039 mg/kg	UJ SGL
DAVIS03-SD-003	PFBS	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFDA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFDoA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFHpA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFHxA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFHxS	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFNA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFOA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFOS	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFTeDA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFTrDA	0.00098 mg/kg	UJ SGL
DAVIS03-SD-003	PFUnA	0.00098 mg/kg	UJ SGL
DAVIS03-SO-001	PFOS	0.00172 mg/kg	J TR
DAVIS-FD-SD-001	6:2 FTS	0.004 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFBS	0.001 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFHpA	0.001 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFHxA	0.001 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFHxS	0.001 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFOA	0.001 mg/kg	UJ SGL
DAVIS-FD-SD-001	PFOS	0.00151 mg/kg	J SGL, TR

Table 3
Qualifiers Added During Validation
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Davis-Monthan Air Force Base, Arizona

Sample Identification	Analyte	Results	Validation Qualifiers and Reason Codes
DAVIS-FD-SO-001	6:2 FTS	0.0048 mg/kg	UJ SGL
DAVIS-FD-SO-001	8:2 FTS	0.0048 mg/kg	UJ SGL
DAVIS-FD-SO-001	EtFOSAA	0.0048 mg/kg	UJ SGL
DAVIS-FD-SO-001	MeFOSAA	0.0048 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFBS	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFDA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFDoA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFHpA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFHxA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFHxS	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFNA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFOA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFOS	0.00321 mg/kg	Q EBG, SGL, FDD
DAVIS-FD-SO-001	PFTeDA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFTrDA	0.0012 mg/kg	UJ SGL
DAVIS-FD-SO-001	PFUnA	0.0012 mg/kg	UJ SGL

Notes:
µg/L = micrograms per liter
mg/kg = milligrams per kilogram
6:2 FTS = 6:2 fluorotelomer sulfonate
8:2 FTS = 8:2 fluorotelomer sulfonate
EtFOSAA = ethylperfluorooctane sulfonamidoacetic acid
MeFOSAA = methylperfluorooctane sulfonamidoacetic acid
PFBS = perfluorobutanesulfonic acid
PFDA = perfluorodecanoic acid
PFDoA = perfluorododecanoic acid
PFHpA = perfluoroheptanoic acid
PFHxA = perfluorohexanoic acid
PFHxS = perfluorohexanesulfonic acid
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctanesulfonic acid
PFTeDA = perfluorotetradecanoic acid
PFTrDA = perfluorotridecanoic acid
PFUnA = perfluoroundecanoic acid

Qualifier Definitions:
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Q = The analyte is both B qualified because of blank detection and J qualified because of an additional quality control issue.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Table 3
Qualifiers Added During Validation
Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas
Environmental Programs Worldwide
Davis-Monthan Air Force Base, Arizona

Reason Codes:

EBG = The analyte was detected in an equipment blank at a concentration greater than the limit of quantification (LOQ) and the concentration detected in the sample is less than 10 times the concentration detected in the blank.

FDD = Imprecision between field duplicate results.

SGL = Low surrogate recovery. Result may be biased low.

TR = Detected concentration is less than the LOQ.

APPENDIX E

SURVEY REPORT

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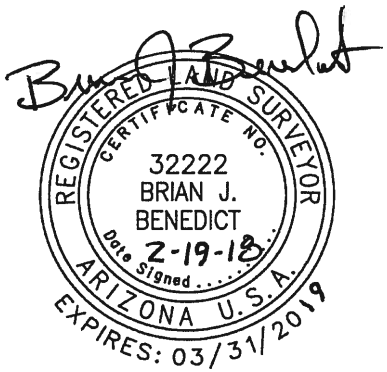
Survey Report
Davis Monthan AFB
Project No. 775303101

POINT	NORTHING	EASTING	ELEVATION	LATTITUDE	LONGITUDE	WELL ID	DESCRIPTION
20000	435136.93	1015128.81	2565.88	32d11'31.82691"	-110d53'52.68712"	MW 03001	RIM
20001	435137.18	1015128.88	2565.37	32d11'31.82938"	-110d53'52.68622"	MW 03001	N EDGE PVC
20002	435136.40	1015130.15	2565.49	32d11'31.82158"	-110d53'52.67152"	MW 03001	GROUND
20003	423432.06	1024224.95	2686.33	32d09'35.14757"	-110d52'08.17210"	MW 01001	RIM
20004	423433.65	1024225.79	2685.80	32d09'35.16325"	-110d52'08.16211"	MW 01001	GROUND
20005	423432.22	1024224.85	2686.07	32d09'35.14924"	-110d52'08.17327"	MW 01001	N EDGE PVC
20006	423180.53	1024423.42	2688.71	32d09'32.63967"	-110d52'05.89211"	SB 01002	GROUND
20007	423455.64	1024773.28	2691.47	32d09'35.32804"	-110d52'01.79140"	SB 01003	GROUND
20008	434317.17	1014361.30	2564.56	32d11'23.78758"	-110d54'01.70791"	MW 42	RIM
20009	434317.23	1014363.67	2564.03	32d11'23.78799"	-110d54'01.68035"	MW 42	GROUND
20010	434317.11	1014361.36	2563.90	32d11'23.78697"	-110d54'01.70720"	MW 42	N EDGE PVC EXST
20011	419607.72	1025439.02	2711.60	32d08'57.19026"	-110d51'54.48498"	MW 02001	GROUND
20012	419609.03	1025440.05	2711.44	32d08'57.20305"	-110d51'54.47280"	MW 02001	N EDGE PVC
20013	419608.85	1025440.00	2711.72	32d08'57.20137"	-110d51'54.47344"	MW 02001	RIM

DATUM
NAD83 (2011) ARIZONA STATE PLANE COORDINATES
CENTRAL ZONE 0202, INTERNATIONAL FEET
NAVD88 ELEVATION

This survey was performed under my direct supervision.
Field work was completed on January 29, 2018.



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APPENDIX F

IDW DOCUMENTATION

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WASTE MANAGEMENT

EZ Profile™

Requested Facility: Pen-Rob Landfill (Painted Desert),Northwest Regional Landfill,Gray ☐ Unsure Profile Number: 443739AZ
☐ Multiple Generator Locations (Attach Locations) ☑ Request Certificate of Disposal ☐ Renewal? Original Profile Number:

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: Davis Monthan AFB
2. Site Address: 3775 S Fifth St
   (City, State, ZIP) DMAFB, AZ, 85707
3. County: Pima County
4. Contact Name: Stephanie McCary
5. Email: stephanie.mccary@us.af.mil
6. Phone: 702-652-9365 7. Fax:
8. Generator EPA ID: AZ4570024055 ☐ N/A
9. State ID: ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: DNT ENVIRONMENTAL SERVICES INC
2. Billing Address: 650 FAIRBURN ROAD SW
   (City, State, ZIP) ATLANTA GA 30331
3. Contact Name: JOHN TEAGUE
4. Email: JOHN@DNTENVIRONMENTAL.COM
5. Phone: (770) 739-5600 6. Fax: (770) 739-8002
7. WM Hauled? ☐ Yes ☑ No
8. P.O. Number:
9. Payment Method: ☑ Credit Account ☐ Cash ☐ Credit Card

C. MATERIAL INFORMATION

1. Common Name: IDW SOILS
   Describe Process Generating Material: ☐ See Attached
   Investigation Derived Waste from soil/groundwater investigation drilling
2. Material Composition and Contaminants: ☐ See Attached

1. SOIL	100 %
2.	
3.	
4.	
Total comp. must be equal to or greater than 100%	≥100%

3. State Waste Codes: ☑ N/A
4. Color: various
5. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Other:
6. Free Liquid Range Percentage: to ☑ N/A
7. pH: 5 to 8 ☐ N/A
8. Strong Odor: ☐ Yes ☑ No Describe:
9. Flash Point: ☐ <140°F ☐ 140°–199°F ☐ ≥200° ☑ N/A

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code:
2. State Hazardous Waste? ☐ Yes ☑ No
   Code:
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. From an industry regulated under Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☑ Yes
   Please identify applicable samples and/or lab reports:
   Lab Report: FA48866 Lab Report: FA50735 DAVIS-SOLID IDW-BIN01 DAVIS-SOLID IDW-BIN03 DAVIS-SOLID IDW-BIN05 DAVIS-SOLID IDW-BIN02 DAVIS-SOLID IDW-BIN04 DAVIS-SOLID IDW-BIN06
2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☑ One-Time Event ☐ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 150
   ☐ Tons ☑ Yards ☐ Drums ☐ Gallons ☐ Other:
3. Container Type and Size: 20 YARD ROLLOFF
4. USDOT Proper Shipping Name: ☐ N/A
   NON-REGULATED MATERIAL, NON-HAZARDOUS

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e. changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Stephanie McCary Date: 15 May 2018

Title: Remedial Project Manager

Company: U.S. Air Force

Certification Signature

MCCARY.STEPHANIE.D.1363619165

Digitally signed by MCCARY.STEPHANIE.D.1363619165
Date: 2018.05.15 15:09:46 -07'00'

THINK GREEN.

QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

WASTE MANAGEMENT

EZ Profile™

Requested Facility: Pen-Rob Landfill (Painted Desert),Northwest Regional Landfill,Gray ☐ Unsure Profile Number: 443743AZ
☐ Multiple Generator Locations (Attach Locations) ☑ Request Certificate of Disposal ☐ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: DAVIS MONTHAN AIR FORCE BASE
2. Site Address: 3775 S Fifth St
   (City, State, ZIP) DMAFB, AZ, 85707
3. County: Pima County
4. Contact Name: Stephanie McCary
5. Email: stephanie.mccary@us.af.mil
6. Phone: 702-652-9365 7. Fax: _____
8. Generator EPA ID: AZ4570024055 ☐ N/A
9. State ID: _____ ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: DNT ENVIRONMENTAL SERVICES INC
2. Billing Address: 650 FAIRBURN ROAD SW
   (City, State, ZIP) ATLANTA GA 30331
3. Contact Name: JOHN TEAGUE
4. Email: JOHN@DNTENVIRONMENTAL.COM
5. Phone: (770) 739-5600 6. Fax: (770) 739-8002
7. WM Hauled? ☐ Yes ☑ No
8. P.O. Number: _____
9. Payment Method: ☑ Credit Account ☐ Cash ☐ Credit Card

C. MATERIAL INFORMATION

1. Common Name: IDW Water
   Describe Process Generating Material: ☐ See Attached
   Investigation Derived Waste from soil/groundwater investigation drilling
2. Material Composition and Contaminants: ☐ See Attached

1. water	100 %
2.	
3.	
4.	
Total comp. must be equal to or greater than 100%	≥100%

3. State Waste Codes: _____ ☑ N/A
4. Color: Various/Dark
5. Physical State at 70°F: ☐ Solid ☑ Liquid ☐ Other: _____
6. Free Liquid Range Percentage: 98 to 100 ☐ N/A
7. pH: 5 to 8 ☐ N/A
8. Strong Odor: ☐ Yes ☑ No Describe: _____
9. Flash Point: ☐ <140°F ☐ 140°–199°F ☑ ≥200° ☐ N/A

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code: _____
2. State Hazardous Waste? ☐ Yes ☑ No
   Code: _____
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. From an industry regulated under Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☑ Yes
   Please identify applicable samples and/or lab reports:
   FA51451-1 01/29/18 13:45 01/31/18 AQ Water DAVIS-LIQUID IDW-TANK01
2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☑ One-Time Event ☐ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 1500
   ☐ Tons ☐ Yards ☐ Drums ☑ Gallons ☐ Other: _____
3. Container Type and Size: TBD
4. USDOT Proper Shipping Name: ☐ N/A
   Non-Regulated Material Non-Hazardous

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 – Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Stephanie McCary Date: 15 May 2018
Title: Remedial Project Manager
Company: U.S. Air Force

Certification Signature

MCCARY.STEPHANIE.D.1363619165
Digitally signed by MCCARY.STEPHANIE.D.1363619165
Date: 2018.05.15 15:19:55 -07'00'

THINK GREEN.®

QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

WASTE MANAGEMENT

EZ Profile™

Requested Facility: Pen-Rob Landfill (Painted Desert),Northwest Regional Landfill,Gray ☐ Unsure Profile Number: 443739AZ
☐ Multiple Generator Locations (Attach Locations) ☑ Request Certificate of Disposal ☐ Renewal? Original Profile Number:

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: Davis Monthan AFB
2. Site Address: 355 CES/CEIE, 3775 S. 5th Street
   (City, State, ZIP) Davis-Monthan AFB, AZ 85707
3. County: Pima
4. Contact Name: John R. Maisch
5. Email: john.maisch@us.af.mil
6. Phone: 520.228.4774 7. Fax:
8. Generator EPA ID: AZ4570024055 ☐ N/A
9. State ID: ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: DNT ENVIRONMENTAL SERVICES INC
2. Billing Address: 650 FAIRBURN ROAD SW
   (City, State, ZIP) ATLANTA GA 30331
3. Contact Name: JOHN TEAGUE
4. Email: JOHN@DNTENVIRONMENTAL.COM
5. Phone: (770) 739-5600 6. Fax: (770) 739-8002
7. WM Hauled? ☐ Yes ☑ No
8. P.O. Number:
9. Payment Method: ☑ Credit Account ☐ Cash ☐ Credit Card

C. MATERIAL INFORMATION

1. Common Name: IDW SOILS
   Describe Process Generating Material: ☐ See Attached

INVESTIGATION DERIVED WASTE FROM MONITORING WELLS

2. Material Composition and Contaminants: ☐ See Attached

1. SOIL	0 - 100 %
2. Absorbents contaminated with diesel fuel	0 - 100 %
3. Ancilliary Debris	0 - 100 %
4.	
Total comp. must be equal to or greater than 100%	≥100%

3. State Waste Codes: ☑ N/A
4. Color: various
5. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Other:
6. Free Liquid Range Percentage: to ☑ N/A
7. pH: to ☑ N/A
8. Strong Odor: ☐ Yes ☑ No Describe:
9. Flash Point: ☐ <140°F ☐ 140°–199°F ☐ ≥200° ☑ N/A

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code:
2. State Hazardous Waste? ☐ Yes ☑ No
   Code:
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. From an industry regulated under Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☐ Yes
   Please identify applicable samples and/or lab reports:

Lab Report: FA48866		*Lab Report: FA50735*
DAVIS-SOLID IDW-BIN01	DAVIS-SOLID IDW-BIN03	DAVIS-SOLID IDW-BIN05
DAVIS-SOLID IDW-BIN02	DAVIS-SOLID IDW-BIN04	DAVIS-SOLID IDW-BIN06

2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☐ One-Time Event ☑ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 150
   ☐ Tons ☑ Yards ☐ Drums ☐ Gallons ☐ Other:
3. Container Type and Size: 20 YARD ROLLOFF
4. USDOT Proper Shipping Name: ☐ N/A
   NON-REGULATED MATERIAL, NON-HAZARDOUS

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): John R. Maisch Date: 07/05/2018
Title: Water Manager
Company: 355 CES DMAFB

Certification Signature

MAISCH.JOHN.ROBERT.1196491534 Digitally signed by MAISCH.JOHN.ROBERT.1196491534 Date: 2018.07.05 11:38:50 -07'00'

John R. Maisch

THINK GREEN.

QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

Revised June 30, 2015

NON-HAZARDOUS WASTE MANIFEST

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No. Manifest Doc No. A Z 4 5 7 0 0 2 4 0 5 5	2. Page 1 of 1	

GENERATOR

3. Generator's Name and Mailing Address: DAVIS MONTHAN AIRFORCE BASE, 3775 S FIFTH STREET, DMAFB AZ 85707 **4. Generator's Phone:** **702-652-9365** **ATTN: STEPHANIE MCCARY**	A. Manifest Number B. State Generator's ID
5. Transporter 1 Company Name **MP ENVIRONMENTAL**	**6. US EPA ID Number** **CAT000624247** C. State Transporter's ID D. Transporter's Phone 602-278-6233
7. Transporter 2 Company Name	**8. US EPA ID Number** E. State Transporter's ID F. Transporter's Phone
9. Designated Facility Name and Site Address WM – BUTTERFIELD STATION LANDFILL 40404 99th Ave, Maricopa, AZ 85139	**10. US EPA ID Number** G. State Facility ID H. State Facility Phone (866) 909-4458

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
N O N - R E G U L A T E D M A T E R I A L , N O N - H A Z A R D O U S **APPROVAL: 443743AZ**		TT		G	
c.					
d.					

J. Additional Descriptions for Materials Listed Above	K. Disposal Location			
11A: IDW WATERS	Cell		Level	
	Grid			

15. Special Handling Instructions and Additional Information

Purchase Order # EMERGENCY CONTACT / PHONE NO.: 602-717-7163

16. GENERATOR'S CERTIFICATE:

I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year

FACILITY

19. Certificate of Final Treatment/Disposal

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
John R. Maisch	John R. Maisch	07	05	2018

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY Blue- GENERATOR #2 COPY Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY Gold- TRANSPORTER #1 COPY

NON-HAZARDOUS WASTE MANIFEST

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No. A Z 4 5 7 0 0 2 4 0 5 5	Manifest Doc No.	2. Page 1 of 1	

3. Generator's Name and Mailing Address:
DAVIS MONTHAN AIRFORCE BASE, 3775 S FIFTH STREET, DMAFB AZ 85707

4. Generator's Phone:
702-652-9365

ATTN: STEPHANIE MCCARY

A. Manifest Number

B. State Generator's ID

5. Transporter 1 Company Name	6. US EPA ID Number	C. State Transporter's ID
MP ENVIRONMENTAL	**CAT000624247**	D. Transporter's Phone
7. Transporter 2 Company Name	**8. US EPA ID Number**	E. State Transporter's ID
		F. Transporter's Phone 602-278-6233

9. Designated Facility Name and Site Address	10. US EPA ID Number	G. State Facility ID
WM – MARANA REGIONAL LANDFILL 14508 WEST AVRA VALLEY ROAD MARANA AZ 85653		H. State Facility Phone (866) 909-4458

GENERATOR

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
N O N - R E G U L A T E D M A T E R I A L , N O N - H A Z A R D O U S **APPROVAL: 443739AZ**		**CM**		**T**	
c.					
d.					

J. Additional Descriptions for Materials Listed Above
11A: IDW SOILS

K. Disposal Location

Cell		Level	
Grid			

15. Special Handling Instructions and Additional Information

Purchase Order # EMERGENCY CONTACT / PHONE NO.: 602-717-7163

16. GENERATOR'S CERTIFICATE:

I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year

FACILITY

19. Certificate of Final Treatment/Disposal

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
John R. Maisch	John R. Maisch	07	05	2018

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY Blue- GENERATOR #2 COPY Yellow- GENERATOR #1 COPY

Pink- FACILITY USE ONLY Gold- TRANSPORTER #1 COPY

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29 January 2018

Photo 1:
Landfill 01 (LF-01); The location of soil bin storage at Davis Monthan Air Force Base

Direction of Photo:
Southwest

29 January 2018

Photo 2:
Landfill 01 (LF-01); The location of soil bin storage at Davis Monthan Air Force Base. Bins with proper Non-Hazardous labels.

Direction of Photo:
Northeast

30 August 2017

Photo 3:
Landfill 01 (LF-01); Bins with proper Non-Hazardous labels.

Direction of Photo:
Northeast

29 January 2018

Photo 4:
AFFF Release Area 1 (FT-03 (Former FTA)); Liquid IDW tank storage.

Direction of Photo:
Northeast

29 January 2018

Photo 5:

AFFF Release Area 02; Staging of soil bins for MW02001 drilling before 29 January 2018

Direction of Photo:

East

29 January 2018

Photo 6:

AFFF Release Area 02; Moving bins from the temporary staging area near MW02001.

Direction of Photo:

East

29 January 2018

Photo 7:

AFFF Release Area 03; Staging of soil bins for MW03001 drilling before 29 January 2018.

Direction of Photo: Northwest

29 January 2018

Photo 8:

AFFF Release Area 03; Moving bins from the temporary staging area near MW03001.

Direction of Photo: Northwest

	**29 January 2018** **Photo 9:** Staging of soil bins and at Davis Monthan Air Force Base-Landfill (LF-01)
	Direction of Photo: Southeast

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