# FINAL
# Site Inspection Report
# Camp Blanding Joint Training Center, Florida

Site Inspection for Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorohexanesulfonic acid (PFHxS), Perfluorononanoic acid (PFNA), Hexafluoropropylene oxide dimer acid (HFPO-DA), and Perfluorobutanesulfonic acid (PFBS) at ARNG Installations, Nationwide

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# Acronyms and Abbreviations

| | |
|---|---|
| % | percent |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| µg/kg | micrograms per kilogram |
| AECOM | AECOM Technical Services, Inc. |
| AFFF | aqueous film-forming foam |
| amsl | above mean sea level |
| AOI | Area of Interest |
| ARNG | Army National Guard |
| bgs | below ground surface |
| CBJTC | Camp Blanding Joint Training Center |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CoC | chain of custody |
| CSM | conceptual site model |
| DA | Department of the Army |
| DoD | Department of Defense |
| DPT | direct push technology |
| DQO | data quality objective |
| DUA | data usability assessment |
| EDR™ | Environmental Data Resources, Inc.™ |
| ELAP | Environmental Laboratory Accreditation Program |
| EM | Engineer Manual |
| FLARNG | Florida Army National Guard |
| FDEP | Florida Department of Environmental Protection |
| FedEx | Federal Express |
| GPS | Global positioning system |
| GRPS | Ground Penetrating Radar Systems |
| HDPE | high-density polyethylene |
| HFPO-DA | hexafluoropropylene oxide dimer acid |
| IDW | investigation-derived waste |
| ITRC | Interstate Technology Regulatory Council |
| LC/MS/MS | liquid chromatography with tandem mass spectrometry |
| MIL-SPEC | military specification |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| NELAP | National Environmental Laboratory Accreditation Program |
| NAS JAX | Naval Air Station Jacksonville |
| ng/L | nanograms per liter |
| NOAA | National Oceanic and Atmospheric Administration |
| OSD | Office of the Secretary of Defense |
| PA | Preliminary Assessment |
| PFAS | per- and polyfluoroalkyl substances |
| PFBS | perfluorobutanesulfonic acid |

| | |
|---|---|
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |
| PID | photoionization detector |
| PQAPP | Programmatic UFP-QAPP |
| PVC | polyvinyl chloride |
| QA | quality assurance |
| QAPP | Quality Assurance Project Plan |
| QC | quality control |
| QSM | Quality Systems Manual |
| SES | SpecPro Environmental Services, LLC |
| SI | Site Inspection |
| SL | screening level |
| SOP | standard operating procedure |
| TOC | total organic carbon |
| TPP | Technical Project Planning |
| UFP | Uniform Federal Policy |
| US | United States |
| USACE | United States Army Corps of Engineers |
| USACHPPM | United States Army Center for Health Promotion and Preventive Medicine |
| USCS | Unified Soil Classification System |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| WWTP | Wastewater Treatment Plant |

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# Executive Summary

The Army National Guard (ARNG) G-9 is performing Preliminary Assessments (PAs) and Site Inspections (SIs) on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 (Assistant Secretary of Defense, 2022). The six compounds listed in the OSD memorandum include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), hexafluoropropylene oxide dimer acid (HFPO-DA)[1], and perfluorobutanesulfonic acid (PFBS). These compounds are collectively referred to as "relevant compounds" throughout the document and the applicable screening levels (SLs) are provided in **Table ES-1**.

The PA identified four Areas of Interest (AOIs) where PFAS-containing materials may have been used, stored, disposed, or released historically (see **Table ES-2** for AOI locations). The objective of the SI is to identify whether there has been a release to the environment from the AOIs identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on SLs for relevant compounds. This SI was completed at the Camp Blanding Joint Training Center (CBJTC) in Starke, Florida and determined further evaluation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is warranted for AOI 3: Building 3010 and AOI 4: Wastewater Treatment Plant (WWTP); no further evaluation is warranted for AOI 1 and AOI 2 at this time. The CBJTC will also be referred to as the "facility" throughout this document.

CBJTC occupies 73,824 acres of land in Starke, Florida, in Clay and Bradford Counties, approximately 40 miles southwest of Jacksonville and 2 miles north of Keystone Heights. Florida State Road 16 bisects the north and south areas of CBJTC. The central portion of CBJTC includes the recreationally used Kingsley Lake. Private properties (off-facility) surround the northern and western sides of Kingsley Lake (Clay County Property Appraiser's Office, 2018). CBJTC is owned and operated on behalf of the Florida Army National Guard (FLARNG) by the State of Florida Armory Board and serves as a major FLARNG training site.

The PA identified four AOIs for investigation during the SI phase. SI sampling results from the four AOIs were compared to OSD SLs. **Table ES-2** summarizes the SI results for each AOI. Based on the results of this SI, further evaluation under CERCLA is warranted in a Remedial Investigation (RI) for AOI 3 and AOI 4; no further evaluation is warranted for AOI 1 and AOI 2 at this time. Given the level of uncertainty at AOI 1, additional sampling may be considered at this AOI during future sampling RI sampling.

[1] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

## Table ES-1: Screening Levels (Soil and Groundwater)

| Analyte[b] | Residential (Soil) (µg/kg)[a] 0-2 feet bgs | Industrial/ Commercial Composite Worker (Soil) (µg/kg)[a] 2-15 feet bgs | Tap Water (Groundwater) (ng/L)[a] |
|---|---|---|---|
| **PFOA** | 19 | 250 | 6 |
| **PFOS** | 13 | 160 | 4 |
| **PFBS** | 1,900 | 25,000 | 601 |
| **PFHxS** | 130 | 1,600 | 39 |
| **PFNA** | 19 | 250 | 6 |

**Notes:**
bgs = below ground surface; µg/kg = micrograms per kilogram; ng/L = nanograms per liter

a.) Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.

b.) Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

## Table ES-2: Summary of Site Inspection Findings and Recommendations

| AOI | Potential Release Area | Soil – Source Area | Groundwater – Source Area | Future Action |
|---|---|---|---|---|
| 1 | Skid Strip | ◐ | ◐ | No further action at this time |
| 2 | Anderson Bartlett Airfield | ◐ | ○ | No further action |
| 3 | Building 3010 | ◐ | ● | Proceed to RI |
| 4 | WWTP | ○ | ● | Proceed to RI |

**Legend:**
● = detected; exceedance of the screening levels
◐ = detected; no exceedance of the screening levels
○ = not detected

# 1. Introduction

## 1.1 Project Authorization

The Army National Guard (ARNG) G-9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 (Assistant Secretary of Defense, 2022). The six compounds listed in the OSD memorandum will be referred to as "relevant compounds" throughout this document and include perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA)[1], and perfluorobutanesulfonic acid (PFBS) at ARNG facilities nationwide. The ARNG performed this SI at the Camp Blanding Joint Training Center (CBJTC) in Starke, Florida. The CBJTC is also referred to as the "facility" throughout this document.

The SI project elements were performed in compliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; United States [US] Environmental Protection Agency [USEPA], 1980), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300; USEPA, 1994), and in compliance with US Department of the Army (DA) requirements and guidance for field investigations.

## 1.2 SI Purpose

A PA was performed at CBJTC (AECOM Technical Services, Inc. [AECOM], 2018c) that identified four Areas of Interest (AOIs) where PFAS-containing materials may have been used, stored, disposed, or released historically. The objective of the SI is to identify whether there has been a release to the environment from the AOIs identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on screening levels (SLs) for the relevant compounds.

[1] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

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# 2. Facility Background

## 2.1 Facility Location and Description

CBJTC occupies 73,824 acres of land near Starke, Florida, in Clay and Bradford Counties, approximately 40 miles southwest of Jacksonville and 2 miles north of Keystone Heights (**Figure 2-1**). Florida State Road 16 bisects the north and south areas of CBJTC. The central portion of CBJTC includes the recreationally used Kingsley Lake. Private properties (off-facility) surround the northern and western sides of Kingsley Lake (Clay County Property Appraiser's Office, 2018).

The facility's operational range area of 69,082 acres consists of 172 training ranges. The remaining 4,742 acres comprise a cantonment area (i.e., non-operational use area) located in the central portion of CBJTC (CBJTC, 2018).

The facility was established in 1939 as a camp and training site for the Florida ARNG (FLARNG). During World War II, the facility was leased by the US Army and used as an infantry replacement-training center and included a cantonment-type camp, a large hospital, and a prisoner-of-war camp. After the war, the land was placed under the ownership of the Florida Armory Board. Today CBJTC is owned and operated on behalf of the FLARNG by the State of Florida Armory Board and serves as a major FLARNG training site.

Additionally, out-of-state ARNG units and Navy units have historically conducted training events at CBJTC. These non-FLARNG units were not tenants during their usage of the CBJTC airfields, and documentation of their training events was not recorded at CBJTC. The Skid Strip and Anderson Bartlett Airfield, specifically, have been used by Jacksonville Naval Air Station (NAS JAX) for training exercises. NAS JAX and out-of-state ARNG units provided their own fire and rescue response.

Approximately 10,000 acres along the western boundary are leased for mining heavy minerals (ilmenite) from sand deposits. The land use adjacent to the facility includes woodlands, residential areas, and Mike Roess Gold Head Branch State Park (US Army Corps of Engineers [USACE], 2014).

## 2.2 Facility Environmental Setting

CBJTC lies within the Trail Ridge physiographic region of the state. The Trail Ridge is an ancient coastal terrace that is part of the oldest terrestrial formation in Florida. The topography at CBJTC is flat to gently rolling, with several creeks and karst lakes; the steepest slopes are in the southern portion of CBJTC. The elevations at the facility range from approximately 40 feet above mean sea level (amsl) to 250 feet amsl **(Figure 2-2**). The lowest elevations generally occur along creek channels, and elevations of 200 feet amsl or greater are found southeast of Kingsley Lake (FLARNG, 2014).

### 2.2.1 Geology

CBJTC is underlain mostly by the Trail Ridge sands, which are Pleistocene in age. These sands outcrop along the western edge of the facility and are mined for their heavy mineral content. The Trail Ridge sands were part of an ancient shoreline, initially forming a barrier island, beach ridge, and inland dunes; since a lowering of sea level, the sands have been reworked by wind (Elsner, 1997). The Trail Ridge sands are siliciclastics composed of light gray, tan, brown to black, unconsolidated to poorly consolidated, clean to clayey, silty, unfossiliferous, variably organic-bearing sands, to blue-green to olive-green, poorly to moderately consolidated, sandy, silty clays, and can be up to 65 feet thick (Scott et al., 2001). The Cypresshead Formation, Pliocene in age,

underlies the Trail Ridge sands, although it is near the surface in some areas and may outcrop along CBJTC's southern and eastern boundaries. The Cypresshead Formation is a shallow marine, near-shore deposit composed of unconsolidated to poorly consolidated reddish brown to reddish orange, fine to very coarse grained, clean to clayey sands, which can be up to 200 feet in thickness (Scott, 2001; Scott et al., 2001). The Hawthorn Group, which lies 100 to 300 feet below ground surface (bgs), underlies the Cypresshead sands and consists of discontinuous, Miocene age lenses of clay, quartz sand, carbonates, and phosphates. The Oligocene Suwannee Limestone and Eocene Ocala Limestone Formations are below the Hawthorn Formation in western Clay County, and the Ocala Formation is part of the Floridan Aquifer (FLARNG, 2014). The carbonate minerals and limestone formations make up a carbonate reef platform whose interaction with groundwater has contributed to the karst landscape, which is marked by sinkholes and caves, at the facility.

SI soil borings were drilled to depths between 10 and 15 feet bgs. The geological data collected from the boreholes indicate that the dominant lithology of the unconsolidated material underlying the facility is composed of fine- to medium-grained silty sand. Boring logs showed varying percentages of fines (silt and clay) within the sand matrix, but no defined silt or clay beds were observed in the boreholes that would indicate the presence of widespread impermeable units. The soils observed at the facility have a high hydraulic conductivity. Boring logs are presented in **Appendix E**.

### 2.2.2 Hydrogeology

The principal aquifers underlying CBJTC consist of surficial, intermediate, and Floridan. Recharge to the surficial aquifer is through direct rainfall. The surficial aquifer is easily infiltrated by precipitation because of the unconsolidated sandy units that underlie the facility (Schreuder, 2002). The Surficial Aquifer System typically consists of an unconfined water table roughly 30 ft thick composed of sand, shell, and clay (Clark et al. 1964). The surficial sands and Floridan aquifer are separated by the intermediate aquifer, comprised of a sequence of sands, carbonates, and clays. The Intermediate Aquifer System consists of the confining unit of the Floridan aquifer and is mainly composed of clays as well as thin, water-bearing zones of sand, shell, and limestone (Clark et al. 1964). The individual water-bearing zones in the intermediate aquifer are typically only several feet thick and are separated by the interspersed, semi-permeable confining clay beds (US Army Center for Health Promotion and Preventive Medicine [USACHPPM], 2007). The Floridan aquifer system is approximately 1,900 feet thick, with two permeable zones (Upper and Lower Floridan aquifers) separated by a middle confining unit (Connect Connecting, Inc., 2009; Merritt, 2001). The top of the Upper Floridan aquifer is typically about 200 feet bgs (Merritt, 2001). Recharge of the Floridan aquifer occurs at rates of 0 to 12 inches per year through vertical leakage from the surficial aquifer and breaches in the surface above (e.g., sinkholes) (Schreuder, 2002). The Floridian aquifer system is the primary source of drinking water in north Florida, which includes CBJTC (SES, 2014).

A groundwater investigation at the former Combined Support Maintenance Shop at the facility identified three distinct but interconnected groundwater flow zones separated by densely compacted sand layers. The groundwater flow zones are part of the surficial aquifer: shallow (ground surface to 20 feet bgs), intermediate (20 to 60 feet bgs), and deep (60 to 100 feet bgs). Groundwater flow through the denser, partially cemented zones is restricted compared to the loose, more permeable zones (SpecPro Environmental Services, LLC [SES], 2012). The recharge rate has been estimated based on isotropic studies of groundwater and is between 4 and 12 inches per year (SES, 2012).

The majority of the water underlying CBJTC moves laterally within the system before discharging into a surface waterbody; however, some water does percolate downward into the Floridan aquifer in some areas. At CBJTC, groundwater discharges into Kingsley Lake, which produces some

outward surficial flow northeast as the headwaters for the North Fork Black Creek (SES, 2014). The Kingsley Lake Watershed, as well as other local watersheds are shown on **Figure 2-3**. Within Clay County, groundwater generally flows to the east toward the St. Johns River and ultimately the Atlantic Ocean.

Synoptic groundwater measurements were recorded from temporary monitoring wells installed at the SI boring locations. The depth to groundwater across the facility ranged between approximately 2.32 to 9.71 feet bgs. Measured depths to groundwater were generally most shallow at AOI 3 (2.48 to 3.88 feet bgs) in the cantonment area near Kingsley Lake.

In the North Post portion of the facility (north of Florida State Road 16), groundwater depth was measured at AOI 1 and AOI 2. At AOI 1, groundwater was observed in temporary wells between 2.32 to 9.23 feet bgs. Groundwater elevation contours based on the depths to water at AOI 1 indicate groundwater flows northeast. At AOI 2, groundwater was observed in temporary wells between 2.51 and 5.52 feet bgs, and groundwater elevation contours indicate groundwater flows east by northeast. However, due to the distances between temporary wells at both AOIs 1 and 2, there is uncertainty regarding local flow directions at the two AOIs. At AOI 1, the temporary wells are located on each end of the runway approximately 0.5 miles apart. At AOI 2, the temporary wells are located at opposite ends of the runway approximately 0.8 miles apart. As a result, the groundwater flow direction at these AOIs is considered inferred. In the cantonment area, groundwater depth was measured at AOI 3 and AOI 4. At AOI 3, depth to groundwater was observed in temporary wells between 2.49 and 3.88 feet bgs. Although groundwater elevation contours indicate groundwater flows northeast at AOI 3, the temporary wells' linear positioning results in some uncertainty regarding groundwater flow. At AOI 4, groundwater was only measured at one temporary well location, and it was measured at 9.71 feet bgs. Based on groundwater elevation at AOI 4 in relation to groundwater elevations at AOI 3 (the nearest AOI), the inferred groundwater flow direction is southeast; however, the approximately 2.5-mile distance between AOI 3 and AOI 4 results in uncertainty regarding the groundwater flow direction at AOI 4. The observed groundwater elevations and inferred flow directions at each AOI are shown on **Figure 2-4**.

There are five active wells serving up to 2,500 people in the cantonment area of CBJTC: CBJTC #2 (Pump House 03290), CBJTC #4 (Pump House 05560), CBJTC #5 (Pump House 05615), CBJTC #6 (Pump House 03890), and CBJTC #11/#12 (Pump House 04795). These wells range in depth from 580 to 719 feet bgs and tap into the Floridan aquifer system. There are also 12 wells identified from the Florida Department of Health well registry north of Kingsley Lake in the CBJTC cantonment area. Seven of these wells are listed as potable, and four are active. Only one of the active potable wells has an associated depth (Well AAE0152; 615 feet bgs). Two private potable water wells were also identified from the Florida Department of Environmental Protection (FDEP) Generalized Well Information System on the southwestern side of Kingsley Lake (FDEP, 2021). The wells are identified as well 3960 and 3961 and have total depths of 150 and 126 feet bgs, respectively. These wells are listed as private drinking water wells (FDEP, 2016). Wells CBJTC #2 (Pump House 03290), CBJTC #5 (Pump House 05615), CBJTC #6 (Pump House 03890), and CBJTC #11/#12 (Pump House 04795) were sampled for PFAS during the ARNG sampling event in 2017, as described in **Section 2.4**. It is unknown whether any of the other wells described above have been sampled for PFAS. Additionally, a potable well is present at the Skid Strip in the North Post area. The well has a total depth of 176 feet, with a static water level of approximately 50 feet bgs. FLARNG believes the well has not been sampled for PFAS.

### 2.2.3 Hydrology

Surface water at the CBJTC investigation area (cantonment area and North Post) drains via three watersheds: Kingsley Lake Watershed, Lower South Fork of Black Creek Watershed, and Upper South Fork of Black Creek Watershed (**Figure 2-3**). Kingsley Lake Watershed drains the majority

of the North Post area at CBJTC. The North Fork Black Creek dissects the northern portion of the facility, with its headwaters fed by springs and seeps at the Kingsley Lake shoreline, a groundwater-fed water body. Kingsley Lake is located in the west-central part of CBJTC, and it is the largest lake on the facility, encompassing approximately 1,620 acres. Kingsley Lake produces some outward flow in surface water to the northeast. As a karstic lake, Kingsley Lake may also receive water by inflow from nearby streams and lose water to groundwater seepage. The lake readily conveys excess flood waters from the lake to the North Fork Black Creek, which prevents extremely high lake stages. The lakes on and near the facility were formed by sinkholes due to karst terrain and may interact with the Floridan aquifer system. North Fork Black Creek drains into the St. Johns River approximately 25 miles downstream from the CBJTC property.

The Upper and Lower South Fork of Black Creek Watersheds drains the central and northern portions of CBJTC into South Fork Black Creek, which flows eastward within the boundaries of the facility (USACE, 2014). South Fork Black Creek has been observed to have steady perennial flow at its exit from CBJTC at Blanding Boulevard (State Road 21). Also, in the Upper South Fork of Black Creek Watershed, a tributary of Ates Creek flows eastward from CBJTC, and upon reaching its confluence with Ates Creek, continues northward until joining South Fork Black Creek. South Fork Black Creek flows north until it reaches its confluence with North Fork Black Creek, west of the city of Middleburg, approximately 12 miles downstream (FDEP, 2021).

The southern portion of CBJTC is drained by the Lake Geneva Watershed, which includes a number of surface water bodies that connect to Alligator Creek. Alligator Creek's headwaters are north of Blue Pond, in a ravine fed by groundwater seepage (Merritt, 2001; Schreuder, 2002). The creek flows from Blue Pond into Lowry Lake then into Magnolia Lake. Lowry Lake receives water from Alligator Creek and another stream with three tributaries that extend as far as 1.3 miles north to ravines 30 to 40 feet deep. These tributaries receive water from the surficial aquifer via three springs (Merritt, 2001). Lowry Lake also receives water from the surficial aquifer directly via seepage (Schreuder, 2002). Alligator Creek flows off CBJTC into Lake Brooklyn, Keystone Lake, and Lake Geneva.

### 2.2.4 Climate

Data from Starke, Florida, indicate that the mean annual temperature between 1970 and 2010 was 67.5 degrees Fahrenheit (ºF) (National Oceanic and Atmospheric Administration [NOAA], 2022). The warmest months are July and August, with average daily temperatures of 83.3ºF and 82.9ºF, respectively. January is the coldest month, with an average daily temperature of 56.8ºF. Average annual precipitation measured from 1991 to 2020 in Starke, Florida was 53.35 inches. Rainfall is heaviest during the months of June through September, averaging between 5 and 8 inches per month. Winter is the driest season. Average monthly precipitation ranges from 2.27 inches in November to 8.17 inches in June (NOAA, 2022). Afternoon and evening thunderstorms in the summer account for about 40 percent (%) of annual rainfall. Summer thunderstorms can produce heavy rainfall of 2 to 3 inches in a few hours (FLARNG, 2014). Tropical storms are possible between June and November but typically do not generate hurricane-force winds at CBJTC due to its inland location (Weatherspoon et al., 1989).

### 2.2.5 Current and Future Land Use

CBJTC is the major training area for the Florida National Guard and is home to ARNG and Air National Guard units as well as the Florida Youth Challenge Academy, the 211th Regiment Florida Regional Training Institute, and other military and civilian operations. The facility has been used for more than 50 years for a variety of military training activities. CBJTC provides personnel, training, logistical and administrative support, and it serves as a training base for improving individual solider skills, collective training, overall unit readiness, and other essential needs to valued customers. Future use of CBJTC is anticipated to remain the same.

Training lands on CBJTC are defined using the following land use categories: improved, semi-improved, and unimproved grounds. Improved grounds are developed areas that have either an impervious surface (e.g., sidewalks, buildings) or landscape plantings that require intensive maintenance and upkeep. Improved grounds include the developed portions of CBJTC, which are primarily located within the central cantonment area. However, a few scattered areas of development, which are associated with transportation and utility corridors and the range complex, are found outside this area. Improved grounds make up less than 5% of the facility. Semi-improved grounds are where periodic grading or maintenance is performed for operational reasons (e.g., landing zones, wildlife food plots). Semi-improved lands on CBJTC (or 29% of the land) include areas that require periodic management or maintenance; they include tree plantations, agricultural lands, previously mined lands, and trails. Unimproved grounds receive little to no grounds maintenance (e.g., streams, wetlands, forests) and make up the remainder of CBJTC (or 66% of the land); they are used for military training, forestry, wildlife management, and recreation. Unimproved grounds include forests, shrubland, streams, lakes, and wetlands (FLARNG, 2014).

Private properties (off-facility) surround the northern and western sides of Kingsley Lake. Additionally, imported mining materials from multiple locations are processed at a DuPont-owned facility along the western boundary of the facility. Land use adjacent to CBJTC includes woodlands, residential areas, and Mike Roess Gold Head Branch State Park (USACE, 2014). Keystone Heights Airport is a public use airport located adjacent to CBJTC on the southwestern border.

### 2.2.6 Sensitive Habitat and Threatened/ Endangered Species

The following birds, plants, mammals, clams, insects, and reptiles are federally endangered, threatened, proposed, and/ or are listed as candidate species in Clay County, Florida (US Fish and Wildlife Service [USFWS], 2022).

- **Birds:** Red-cockaded woodpecker, *Picoides borealis* (endangered); Red knot, *Calidris canutus rufa* (threatened); Florida scrub-jay, Aphelocoma coerulescens (threatened); Wood stork, *Mycteria americana* (threatened), Eastern Black rail, *Laterallus jamaicensis ssp. Jamaicensis* (threatened);
- **Mammals**: West Indian Manatee, *Trichechus manatus* (threatened); Tricolored bat, *Perimyotis subflavus* (under review);
- **Clams:** Oval pigtoe, *Pleurobema pyriforme* (endangered); Suwannee moccasinshell, *Medionidus walkeri* (threatened);
- **Flowering plants:** Chapman rhododendron, *Rhododendron chapmanii* (endangered); Blackbract pipewort, *Eriocaulon nigrobracteatum* (under review)
- **Reptiles:** Suwannee alligator snapping turtle, *Macrochelys suwanniensis* (proposed threatened); Gopher tortoise, *Gopherus polyphemus* (candidate); Eastern indigo snake, *Drymarchon couperi* (threatened); Eastern diamondback rattlesnake, *Crotalus adamanteus* (under review);
- **Insects**: Westfall's clubtail, *Gomphus westfalli* (under review).

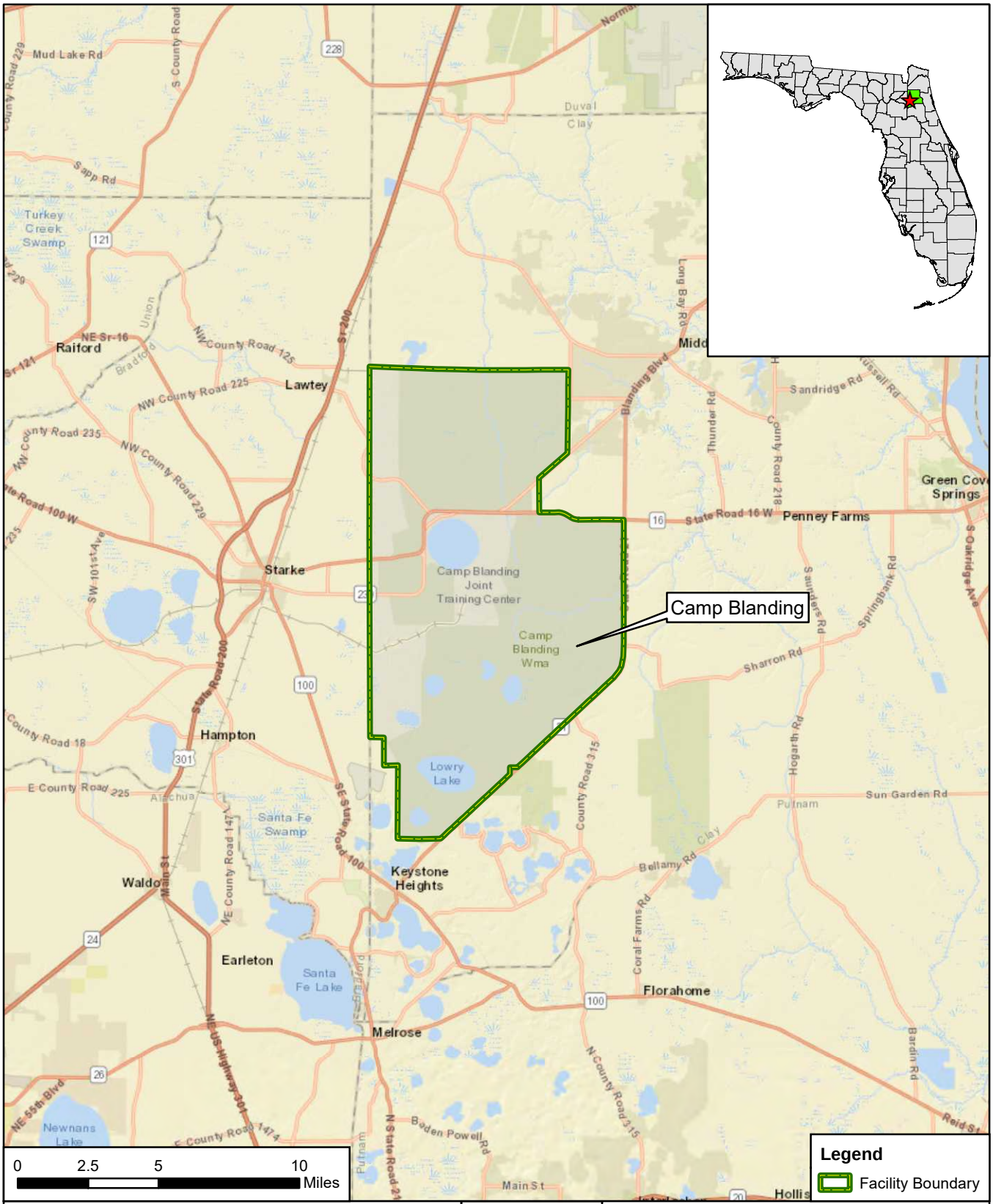
## 2.3 History of PFAS Use

Four potential release areas were identified at Camp Blanding during the PA where AFFF may have been used or released historically (AECOM, 2018c). AOI 1, the Skid Strip, and AOI 2, Anderson Bartlett Airfield, have no confirmed releases, but potential AFFF releases to soil by NAS

JAX or other state ARNG units may have occurred during historical training activities at these AOIs. AOI 3, Building 3010, has no confirmed releases, but potential AFFF releases may have occurred at this AOI as a result of storage and maintenance of a crash/fire rescue truck that contained AFFF at the AOI. AOI 4 is the Wastewater Treatment Plant (WWTP), which accepts and treats wastewater from various facilities at CBJTC prior to discharge to the South Fork of Black Creek. The WWTP is a potential secondary source if an AFFF release historically occurred at Building 3010 and were transported to the WWTP.

## 2.4 Other PFAS Investigations

Sampling of domestic water sources at CBJTC for a subset of PFAS compounds was conducted by the ARNG in April 2017. Estimated detections of Perfluorododecanoic acid (0.505 nanograms per liter [ng/L]), Perfluorotetradecanoic acid (1.00 ng/L), and Perfluorotridecanoic acid (0.633 ng/L) were reported for a composite sample collected from eyewash stations at pump houses for CBJTC Wells Two, Five, Six, and Eleven/Twelve. An estimated detection of Perfluorotetradecanoic acid (0.392 ng/L) was reported in a domestic water sample collected from domestic CBJTC Well Two. No other PFAS detections were reported in the sample results. April 2017 ARNG PFAS sampling locations are shown on **Figure 2-3**.

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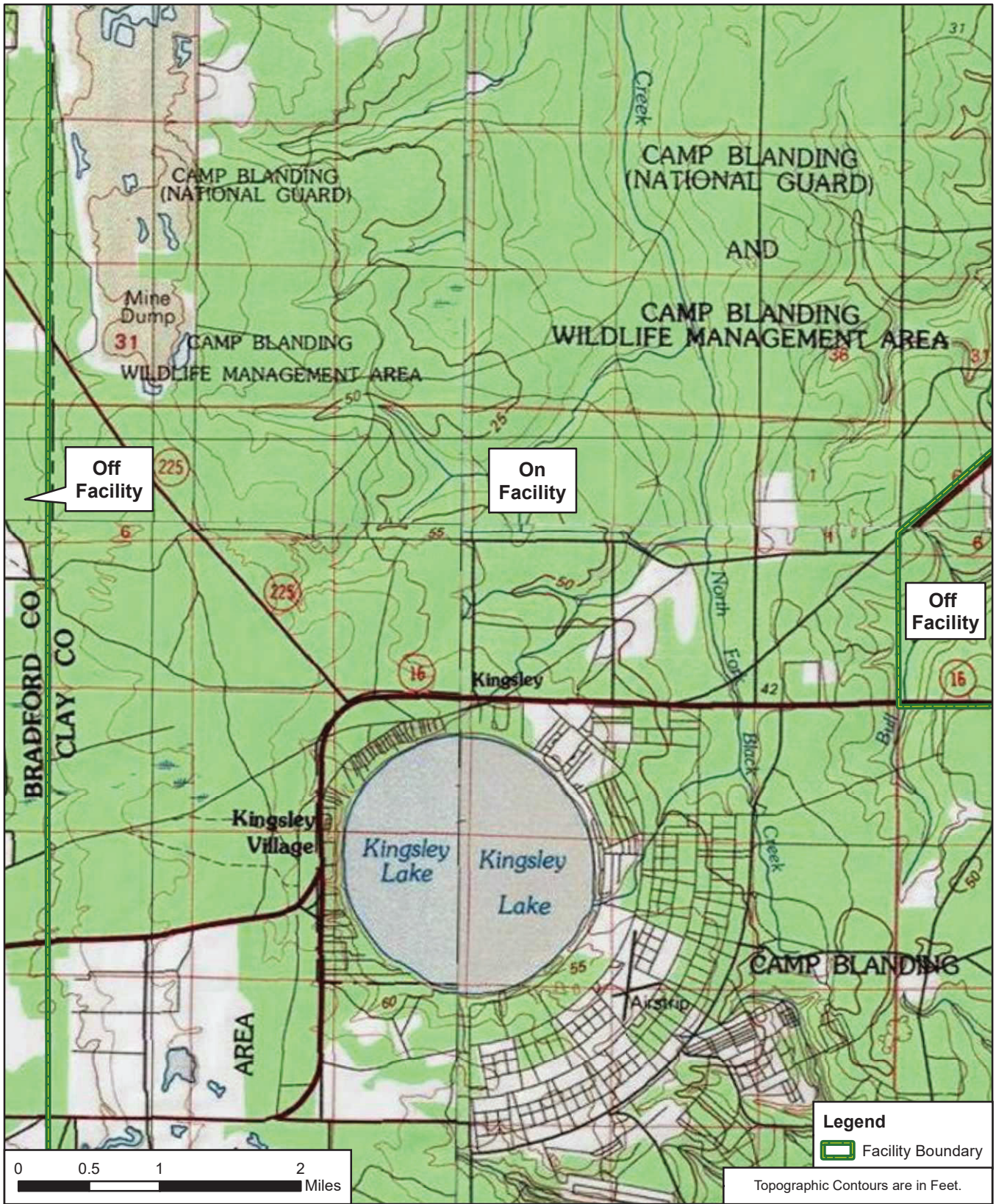
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 8/9/2022 | GIS BY | MS | 8/9/2022 |
| SCALE | 1:316,800 | CHK BY | JW | 8/9/2022 |
| Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, | | PM | CM | 8/9/2022 |

N

**Camp Blanding Facility Location**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-1**

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|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 11/2/2022 | GIS BY | MS | 11/2/2022 |
| SCALE | 1:63,360 | CHK BY | JW | 11/2/2022 |
| Base Map: Copyright:© 2013 National Geographic Society, i-cubed | | PM | CM | 11/2/2022 |

**Facility Topography**

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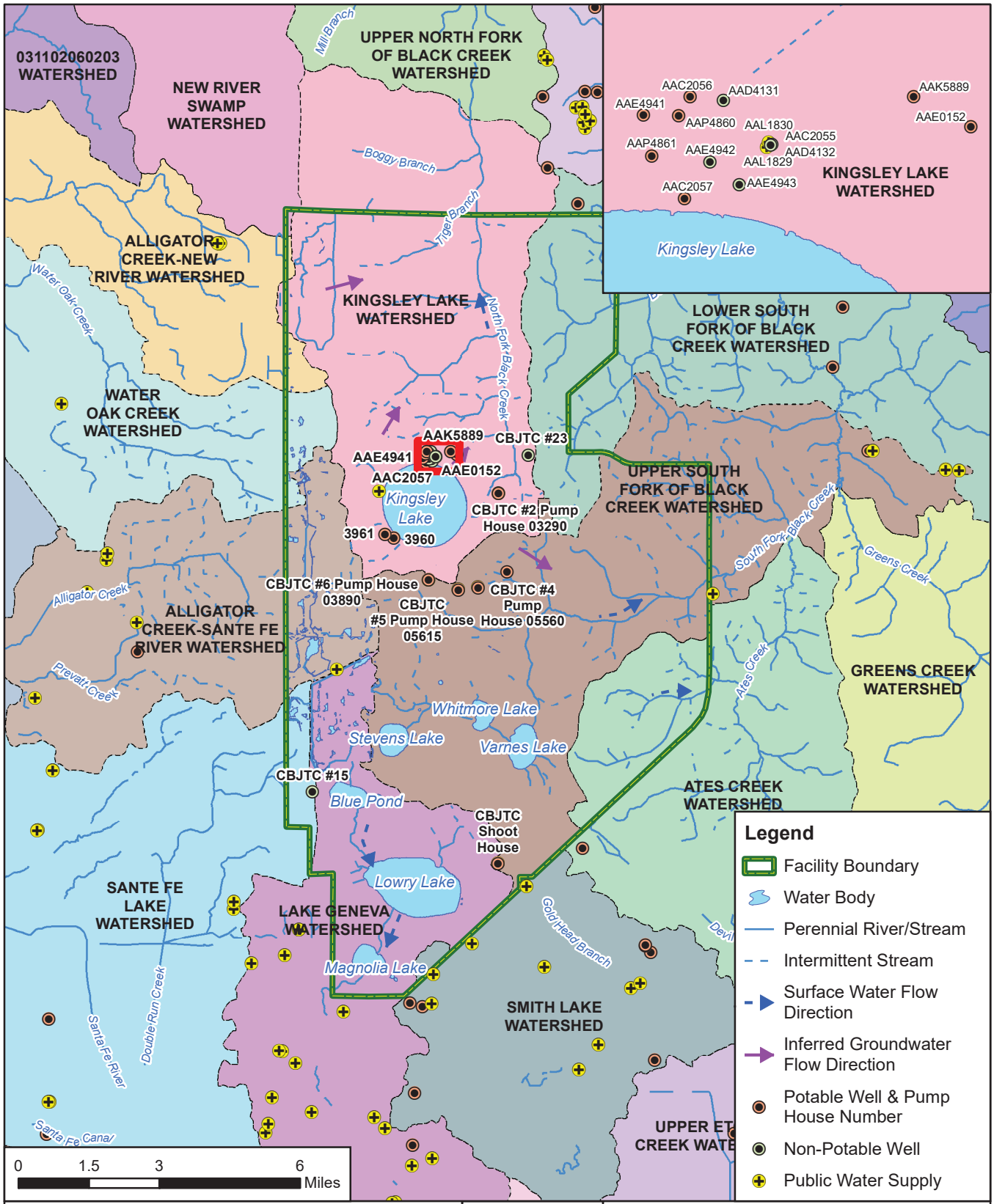
Germantown, MD 20876

**Figure 2-2**

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| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/9/2023 | GIS BY | MS | 2/9/2023 |
| SCALE | 1:190,080 | CHK BY | JW | 2/9/2023 |
| | | PM | CM | 2/9/2023 |

**Camp Blanding Surface Water and Groundwater Features**

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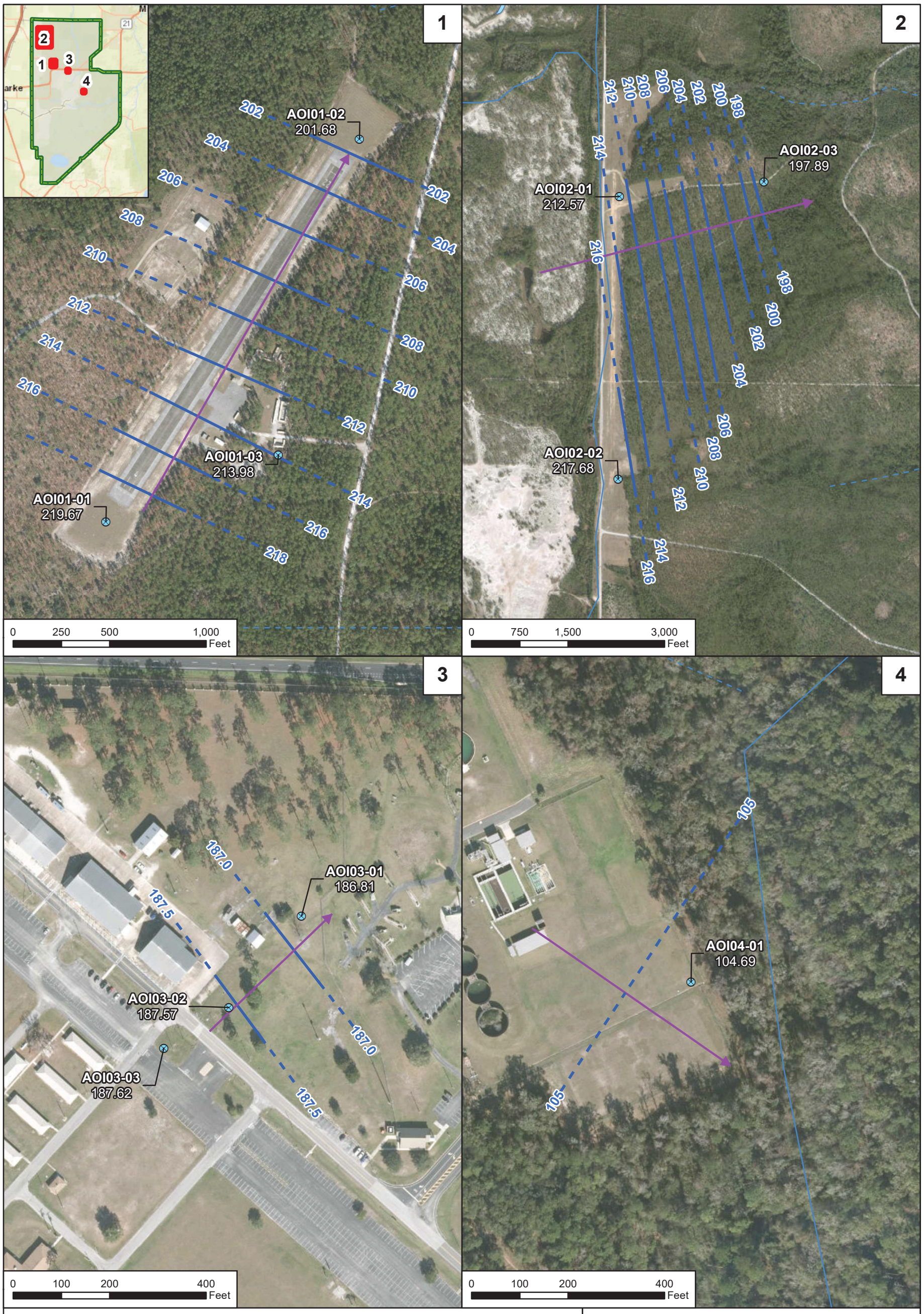
Germantown, MD 20876

**Figure 2-3**




## Legend

- DPT Boring
- Facility Boundary
- Perennial River/Stream
- Intermittent Stream
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- Inferred Groundwater Flow Direction

Groundwater elevations in ft NAVD88.

N

# Groundwater Elevations, January 2022

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/9/2023 | GIS BY | MS | 2/9/2023 |
| SCALE | 1:625,325 | CHK BY | JW | 2/9/2023 |
| Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong | | PM | CM | 2/9/2023 |

AECOM 12420 Milestone Center Drive Germantown, MD 20876

**Figure 2-4**

# 3. Summary of Areas of Interest

The PA evaluated areas where PFAS-containing materials may have been used, stored, disposed, or released historically. Based on the PA findings, four potential release areas were identified at CBJTC and grouped into four AOIs (AECOM, 2018c). The potential release areas are shown on **Figure 3-1**.

## 3.1 AOI 1 Skid Strip

AOI 1 is the Skid Strip, which has historically been used as an airfield by FLARNG and NAS JAX. NAS JAX brought their own crash/fire rescue truck and provided their own rescue response during NAS JAX operations at the Skid Strip. Although no releases have been confirmed, potential AFFF releases to soil by NAS JAX or other state ARNG units may have occurred during historical training activities at AOI 1.

Freshwater forested/shrub wetlands lie less than 0.1 miles north and south of the Skid Strip. At CBJTC, infiltrating precipitation typically enters the shallow groundwater system and discharges to adjacent surface water bodies. As such, potential AFFF releases may migrate from shallow groundwater into tributaries of the North Fork of Black Creek, located within 0.5 miles of the Skid Strip. AOI 1 is isolated on the North Post portion of the facility.

CBJTC staff stated during SI planning that FLARNG is in the process of opening a new potable well on the east side of the Skid Strip. Additional drinking water supply wells are present on-facility at CBJTC, but they are located cross-gradient of the Skid Strip. A non-potable well exists downgradient of AOI 1.

## 3.2 AOI 2 Anderson Bartlett Airfield

AOI 2 is Anderson Bartlett Airfield, which has historically been used by FLARNG and NAS JAX for training events. In addition to FLARNG and NAS JAX usage, Anderson Bartlett Airfield has also been used as an airfield by out-of-state ARNG units for C-130 dirt strip landing training. Although no releases have been confirmed, potential AFFF releases to soil by NAS JAX or other state ARNG units may have occurred during historical training activities at AOI 2.

A riparian wetland flows adjacent to the western border of Anderson Bartlett Airfield; however, an earthen berm separates the wetland from the airfield and prevents overland flow in that direction. A freshwater forested/shrub wetland lies less than 0.1 mile west of the southern end of the airstrip, and similar water bodies exist elsewhere near the airstrip. Kingsley Lake is located approximately 3.5 miles southeast of AOI 2. AOI 2, like AOI 1, is isolated on the North Post portion of the facility. No drinking water supply wells are present on North Post near the Anderson Bartlett Airfield.

## 3.3 AOI 3 Building 3010

AOI 3 is Building 3010, the former Fire Station at CBJTC. Building 3010 is a World War II-era structure located in the cantonment area that was used as the volunteer fire department at Camp Blanding until 1996. Clay County Fire Department began operating as the CBJTC fire department in 1996, and the crash and rescue truck containing AFFF was soon after transported off-facility. Building 2239 was constructed for use as the facility Fire Station in 2002; however, Clay County Fire Department has never used or stored AFFF at Building 2239. The exact date that the crash and rescue fire truck was removed is unknown but it is believed to have occurred between 1996 and 2002. Building 3010 no longer operates as the facility Fire Station nor does it store crash and rescue trucks. Although no known releases have been confirmed, potential AFFF releases to soil

may have occurred as a result of storage and maintenance of a crash/fire rescue truck that contained AFFF at AOI 3.

Building 3010 run-off previously combined with stormwater flow to the WWTP until the WWTP was redesigned in 2004. Runoff at Building 3010 no longer flows to the WWTP; it is directed via runoff channelizing structures to the southeast and east towards the North Fork Black Creek. At CBJTC, Kingsley Lake influences a radial outward flow on groundwater to the east and northeast. Infiltrating precipitation at Building 3010 may flow outward away from Kingsley Lake, northeast towards North Fork Black Creek.

Drinking water supply wells are also present on-facility at CBJTC within 0.2 miles northwest, 0.8 miles west, and 1.3 miles southeast of AOI 3. AOI 3 is located near Kingsley Lake, which is used for recreational purposes; however, based on surface water and groundwater flow direction, releases at AOI 3 are not anticipated to migrate towards Kingsley Lake.

## 3.4 AOI 4 WWTP

AOI 4 is the WWTP, which accepts and treats wastewater from various facilities at CBJTC prior to discharge to the South Fork of Black Creek. The WWTP is a potential secondary source if an AFFF release historically occurred at Building 3010 and were transported to the WWTP. Subsequent discharge of WWTP effluent to surface water may also have occurred. The WWTP effluent is conveyed via sub-terrain clay pipe to a discharge point on the South Fork of Black Creek, approximately 1.2 miles southeast of the WWTP. A freshwater forested/shrub wetland and riparian wetland is also present adjacent to the WWTP and flows south to the South Fork of Black Creek. Historical aerial imagery shows sludge containment structures present at the WWTP until approximately 1999. FLARNG staff stated that the sludge containment structures were removed in 2000 during a WWTP renovation. All sludge was reported to have been historically disposed of appropriately at an offsite facility prior to and during the renovation.

If AFFF releases occurred at Building 3010, which formerly drained to the WWTP, it is possible that AFFF conveyed from the WWTP to nearby surface water. If residual AFFF were ever present within sludge in the sludge containment structures, it is also possible that it infiltrated soil and groundwater beneath the sludge containment structures.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| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/9/2023 | GIS BY | MS | 2/9/2023 |
| SCALE | 1:63,360 | CHK BY | JW | 2/9/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/9/2023 |

N

# Areas of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 3-1**

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# 4. Project Data Quality Objectives

As identified during the Data Quality Objective (DQO) process and outlined in the SI Quality Assurance Project Plan (QAPP) Addendum (AECOM, 2021a), the objective of the SI is to identify whether there has been a release to the environment at the AOIs identified in the PA. For each AOI, ARNG determines if further investigation is warranted, a removal action is required to address immediate threats, or whether no further action is warranted. This SI evaluated groundwater and soil for presence or absence of relevant compounds at each of the sampled AOIs.

## 4.1 Problem Statement

ARNG will recommend an AOI for Remedial Investigation (RI) if related soil and groundwater samples have concentrations of the relevant compounds above the OSD risk-based SLs. The SLs are presented in **Section 6.1** of this report.

## 4.2 Information Inputs

Primary information inputs included:

- The PA for CBJTC (AECOM, 2018c);
- Analytical data collected as part of April 2017 ARNG potable well sampling efforts around the facility (AECOM, 2018c);
- Analytical data from groundwater and soil samples collected as part of this SI in accordance with the site-specific Uniform Federal Policy (UFP)-QAPP Addendum (AECOM, 2021); and
- Field data collected during the SI, including groundwater elevation and water quality parameters measured at the time of sampling.

## 4.3 Study Boundaries

The scope of the SI was bounded by the property limits of the facility (**Figure 2-2**). Off-facility sampling was not included in the scope of this SI. If future off-facility sampling is required, the proper stakeholders will be notified, and necessary rights of entry will be obtained by ARNG with property owner(s). There is not much seasonable variability at the facility, thus temporal boundaries did not limit the scope of the SI. The SI was conducted in January and the results reflect conditions at the facility at that time. There was no severe weather event just before or during field activities.

## 4.4 Analytical Approach

Samples were analyzed by Pace Analytical Gulf Coast, accredited under the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP; Accreditation Number 74960) and the National Environmental Laboratory Accreditation Program (NELAP; Certificate Number 01955). Data were compared to applicable SLs within this document and decision rules as defined in the SI QAPP Addendum (AECOM, 2021a).

## 4.5 Data Usability Assessment

The Data Usability Assessment (DUA), which is provided in **Appendix A**, is an evaluation at the conclusion of data collection activities that uses the results of both data verification and validation in the context of the overall project decisions or objectives. Using both quantitative and qualitative

methods, the assessment determines whether project execution and the resulting data have met installation-specific DQOs. Both sampling and analytical activities are considered to assess whether the collected data are of the right type, quality, and quantity to support the decision-making (DoD, 2019a; DoD, 2019b; USEPA, 2017).

Based on the DUA, the environmental data collected during the SI were found to be acceptable and usable for this SI evaluation with the qualifications documented in the DUA and its associated data validation reports. These data are of sufficient quality to meet the objectives and requirements of the SI QAPP Addendum (AECOM, 2021).

# 5. Site Inspection Activities

This section describes the environmental investigation and sampling activities that occurred as part of the SI. The SI sampling approach was based on the findings of the PA and implemented in accordance with the following approved documents:

- *Final Site Inspection Programmatic Uniform Federal Policy-Quality Assurance Project Plan (PQAPP)* dated March 2018 (AECOM, 2018a);
- *Final Programmatic Accident Prevention Plan* dated July 2018 (AECOM, 2018b);
- *Final Preliminary Assessment Report, Camp Blanding Joint Training Center, Florida* dated October 2018 (AECOM, 2018c);
- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Camp Blanding Joint Training Center, Florida* dated September 2021 (AECOM, 2021); and
- *Final Site Safety and Health Plan, Camp Blanding Joint Training Center, Florida* dated January 2022 (AECOM, 2022).

The SI field activities were conducted from 18 to 20 January 2022 and consisted of utility clearance, direct push boring, soil sample collection, temporary monitoring well installation, grab groundwater sample collection, and land surveying. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021), except as noted in **Section 5.8**.

The following samples were collected during the SI and analyzed for a subset of 18 compounds by liquid chromatography with tandem mass spectrometry (LC/MS/MS) compliant with Quality Systems Manual (QSM) 5.3 Table B-15 to fulfill the project DQOs:

- Twenty-two (22) soil samples from nine borings;
- Ten (10) grab groundwater samples from 10 temporary wells;
- Eighteen (18) quality assurance (QA)/quality control (QC) samples.

**Figure 5-1** provides the sample locations for all media across the facility. **Table 5-1** presents the list of samples collected for each media. Field documentation is provided in **Appendix B**. A Log of Daily Notice of Field Activity was completed throughout the SI field activities, which is provided in **Appendix B1**. Sampling forms are provided in **Appendix B2**, Field Change Requests are provided in **Appendix B3**, land survey data are provided in **Appendix B4**, and investigation-derived waste (IDW) polygons are provided in **Appendix B5**. Additionally, a photographic log of field activities is provided in **Appendix C**.

## 5.1 Pre-Investigation Activities

In preparation for the SI field activities, project team members participated in Technical Project Planning (TPP) meetings, performed utility clearance, and sampled decontamination source water. Details for each of these activities are presented below.

### 5.1.1 Technical Project Planning

The USACE TPP Process, Engineer Manual (EM) 200-1-2 (USACE, 2016) defines four phases to project planning: 1.) defining the project phase; 2.) determining data needs; 3.) developing data collection strategies; and 4.) finalizing the data collection plan. The process encourages stakeholder involvement in the SI, beginning with defining overall project objectives, including DQOs, and formulating a sampling approach to address the AOIs identified in the PA.

A combined TPP Meeting 1 and 2 was held on 9 September 2021, prior to SI field activities. The combined TPP Meeting 1 and 2 was conducted in general accordance with EM 200-1-2. The stakeholders for this SI include the ARNG G-9, FLARNG, USACE, and FDEP. Stakeholders were provided the opportunity to make comments on the technical sampling approach and methods at the combined TPP Meeting 1 and 2. The outcome of the combined TPP Meeting 1 and 2 was memorialized in the SI QAPP Addendum (AECOM, 2021).

A TPP Meeting 3 was held [date TBD] after the field event to discuss the results of the SI. Meeting minutes for TPP 3 are included in **Appendix D** of this report. Future TPP meetings will provide an opportunity to discuss the results and findings, and future actions, where warranted.

### 5.1.2 Utility Clearance

AECOM placed a ticket with the Sunshine 811, Florida's utility clearance provider, to notify them of intrusive work on 14 January 2022. Additionally, AECOM contracted Ground Penetrating Radar Systems (GPRS), a private utility location service, to perform utility clearance. GPRS performed utility clearance of the proposed boring locations on 13 January 2022 with input from the AECOM field team and CBJTC facility staff. Industry standard methods and ground-penetrating radar were used to complete the clearance. Additionally, the first 5 feet of each boring were pre-cleared using a hand auger to verify utility clearance in shallow subsurface where utilities would typically be encountered.

### 5.1.3 Source Water and Sampling Equipment Acceptability

Two potable water sources at CBJTC were sampled on 18 November 2021 to assess usability for decontamination of drilling equipment. Results of the samples collected at the wash rack spigot (CBJTC-DECON-01) and a spigot in the cantonment area (CBJTC-DECON-02) confirmed the sources to be acceptable for use in this investigation. The samples were analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15. The results of the decontamination water samples used during the SI are provided in **Appendix F**. A discussion of the results is presented in the DUA (**Appendix A**).

Materials that were used within the sampling zone were confirmed as acceptable for use in the sampling environment. The checklist of acceptable materials for use in the sampling environment was provided in the Standard Operating Procedures (SOPs) appendix to the SI QAPP Addendum (AECOM, 2021). Prior to the start of field work each day, a Sampling Checklist was completed as an additional layer of control. The checklist served as a daily reminder to each field team member regarding the allowable materials within the sampling environment.

## 5.2 Soil Borings and Soil Sampling

Borings were installed in grass areas to avoid disturbing concrete or asphalt surfaces. Soil samples were collected via direct push technology (DPT), in accordance with the SI QAPP Addendum (AECOM, 2021). A GeoProbe® 7822DT dual-tube sampling system was used to collect continuous soil cores to the target depth. A hand auger was used to collect soil from the top 5 feet of the boring, in accordance with AECOM utility clearance procedures. The soil boring locations are shown on **Figure 5-1**, and depths are provided **Table 5-1**. Several boring locations were adjusted to allow for drill rig access and utility avoidance. These changes are described in **Section 5.8**.

At AOI 1, three DPT borings were installed: one boring at the southwestern end of the Skid Strip (AOI01-01), one boring at the northeastern end of the Skid Strip (AOI01-02), and one boring in the anticipated downgradient direction of the runway's midpoint to the east (AOI01-03).These

borings were intended to assess the areas where emergency response equipment may have been staged during airfield use, as well as the downgradient direction.

At AOI 2, three DPT borings were installed: one boring at the northern end of the airfield (AOI02-01), one boring at the southern end of the airfield (AOI02-02), and one boring downgradient of the runway to the northeast (AOI02-03). These borings were intended to assess the areas where emergency response equipment may have been staged during airfield use, as well as the downgradient direction.

At AOI 3, three DPT borings were installed: one boring downgradient of the potential crash/fire rescue truck maintenance area (AOI03-01), one boring in the grassy area adjacent to the former bay doors facing southeast (AOI03-02), and one boring in the grassy swale adjacent to the road in front of the building (AOI03-03). These borings were intended to assess potential release areas associated with former crash/fire rescue truck maintenance and storage.

At AOI 4, One DPT boring was installed at the downgradient corner of the former sludge containment structure area (AOI04-01). This boring was intended to assess potential releases via the former sludge beds and downgradient migration from the general WWTP area.

In general, three discrete soil samples were collected from the vadose zone for chemical analysis from each soil boring: one surface soil sample (0 to 2 feet bgs), one subsurface soil sample approximately 2 feet above the observed groundwater table, and one subsurface soil sample at the mid-point between the surface and the groundwater table. Shallow groundwater prevented the collection of some subsurface soil samples at soil boring locations AOI01-03, AOI02-01, AOI03-01, and AOI03-02, as described in **Section 5.8**. Additionally, no soil samples were collected at soil boring location AOI02-03, in accordance with the SI QAPP Addendum, because the location is not considered a potential source area (AECOM, 2021).

The soil cores were continuously logged for lithological descriptions by an AECOM field geologist using the Unified Soil Classification System (USCS). A photoionization detector (PID) was used to screen the breathing zone during boring activities as part of personal safety requirements. Observations and measurements were recorded on boring logs (**Appendix E**) and in a non-treated field logbook (i.e., composition notebook). Depth interval, recovery thickness, PID concentrations, moisture, relative density, color (using a Munsell soil color chart), and texture (using the USCS) were recorded. The boring logs are provided in **Appendix E**.

Soil borings were drilled to depths between 10 and 15 feet bgs. The geological data collected from the boreholes indicate that the dominant lithology of the unconsolidated material underlying the facility is comprised of fine- to medium-grained, silty sand. Boring logs showed varying percentages of fines (silt and clay) within the sand matrix. No defined silt or clay beds were observed in the boreholes that would indicate the presence of impermeable zones within the shallow subsurface. The soils observed at the facility have a high hydraulic conductivity. These observations are consistent with the understood beach depositional environment of the Trail Ridge Sands prevalent in the region.

Each soil sample was collected into laboratory-supplied PFAS-free high-density polyethylene (HDPE) bottles and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via Federal Express (FedEx) under standard chain of custody (CoC) procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15, total organic carbon (TOC) (USEPA Method 9060A), and pH (USEPA Method 9045D), in accordance with the SI QAPP Addendum (AECOM, 2021). Grain size analysis was not performed, in accordance with the SI QAPP Addendum, because extensive horizontal and vertical clay units were not encountered in the field (AECOM, 2021).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. Matrix spike (MS)/MS duplicates (MSDs) were collected at a rate

of 5% and analyzed for the same parameters as the accompanying samples. In instances when non-dedicated sampling equipment was used, such as a hand auger for the shallow soil samples, equipment rinsate blanks were collected at a rate of 5% and analyzed for the same parameters as the soil samples. A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6 degrees Celsius (°C) during shipment.

DPT borings were converted to temporary wells, which were subsequently abandoned in accordance with the SI QAPP Addendum (AECOM, 2021) using bentonite chips at completion of sampling activities. Borings were installed in grass areas to avoid disturbing concrete or asphalt surfaces.

## 5.3 Temporary Well Installation and Groundwater Grab Sampling

Temporary wells were installed using a GeoProbe® 7822DT dual-tube sampling system. Once the borehole was advanced to the desired depth, a temporary well was constructed of a 5-foot section of 1-inch Schedule 40 poly-vinyl chloride (PVC) screen with sufficient casing to reach ground surface. New PVC pipe and screen were used to avoid cross contamination between locations. The screen intervals for the temporary wells are provided in **Table 5-2**.

Groundwater samples were collected after a period of time following well installation to allow groundwater to infiltrate and recharge the temporary well screen intervals. After the recharge period, groundwater samples were collected using a peristaltic pump with PFAS-free HDPE tubing. The temporary wells were purged at a rate determined in the field to reduce turbidity and draw down prior to sampling. Water quality parameters (e.g., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were measured using a water quality meter and recorded on the field sampling form (**Appendix B2**) before each grab sample was collected. Additionally, a subsample of each groundwater sample was collected in a separate container, and a shaker test was completed to identify if there were any foaming. No foaming was noted in any of the groundwater samples.

Each sample was collected into laboratory-supplied PFAS-free HDPE bottles and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via FedEx under standard CoC procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15 in accordance with the SI QAPP Addendum (AECOM, 2021).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. MS/MSDs were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. One field reagent blank was collected in accordance with the PQAPP (AECOM, 2018a). A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6 °C during shipment.

Following well surveying (described below in **Section 5.5**), temporary wells were abandoned in accordance with the SI QAPP Addendum (AECOM, 2021) by removing the PVC and backfilling the hole with bentonite chips.

## 5.4 Synoptic Water Level Measurements

A synoptic groundwater gauging event was performed on 20 January 2022. Groundwater level measurements were collected from the 10 new temporary monitoring wells. Water level measurements were taken from the northern side of the well casing. The depth to groundwater across the facility ranged between approximately 2.32 to 9.71 feet bgs. A groundwater flow contour map is provided in **Figure 2-4**. Groundwater elevation data are provided in **Table 5-2**.

A description of groundwater elevation observations is included in **Section 2.2.2**. Groundwater elevation contours based on the depths to water at AOI 1 indicate groundwater flows northeast.

At AOI 2, groundwater elevation contours indicate groundwater flows east by northeast. However, due to the distances between temporary wells at AOI 1 and 2, there is uncertainty regarding local flow direction within the respective AOIs. As a result, the groundwater flow direction at these AOIs is considered inferred. At AOI 3, groundwater elevation contours indicate groundwater flows northeast; however, the temporary wells' linear positioning results in some uncertainty regarding groundwater flow. At AOI 4, groundwater was only measured at one temporary well. Based on groundwater elevation at AOI 4 in relation to groundwater elevations at AOI 3 (the nearest AOI), the inferred groundwater flow direction is southeast; however, the approximately 2.5-mile distance between AOI 3 and AOI 4 results in uncertainty regarding the groundwater flow direction at AOI 4.

## 5.5 Surveying

The northern side of each well casing was surveyed by Florida-licensed land surveyors following guidelines provided in the SOPs included with the SI QAPP Addendum (AECOM, 2021). Survey data from the newly installed wells were collected on 20 January 2022 in the applicable Universal Transverse Mercator zone projection with World Geodetic System 84 datum (horizontal) and North American Vertical Datum 1988 (vertical). The surveyed well data are provided in **Appendix B4**.

## 5.6 Investigation-Derived Waste

As of the date of this report, the disposal of IDW is not regulated federally. IDW generated during the SI is considered non-hazardous waste and was managed in accordance with the SI QAPP Addendum (AECOM, 2021) and with the DA Guidance for Addressing Releases of PFAS, Q18 (DA, 2018).

Soil IDW (i.e., soil cuttings) generated during the SI activities were left in place at the point of the source. The soil cuttings were distributed on the ground surface on the downgradient side of the boring. The soil IDW was not sampled and assumes the characteristics of the associated soil samples collected from that source location.

Liquid IDW generated during SI activities (i.e., purge water, development water, and decontamination fluids) were discharged directly to the ground surface slightly downgradient of the source. The liquid IDW was not sampled and assumes the characteristics of the associated groundwater samples collected from that source location.

Geographic coordinates were collected using a global positioning system (GPS) around each location where IDW was placed (i.e., an IDW polygon). The IDW polygons are displayed on the figure in **Appendix B5**.

Other solids such as spent personal protective equipment, plastic sheeting, tubing, rope, unused monitoring well construction materials, and other environmental media generated during the field activities were disposed of at a licensed solid waste landfill.

## 5.7 Laboratory Analytical Methods

Samples were analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15 at Pace Analytical Gulf Coast in Baton Rouge, Louisiana, a DoD ELAP and NELAP certified laboratory. Soil samples were also analyzed for TOC using USEPA Method 9060A and pH by USEPA Method 9045D.

## 5.8 Deviations from SI QAPP Addendum

Two deviations from the SI QAPP Addendum were identified during review of the field documentation. The deviations are noted below and documented in Field Change Request Forms (**Appendix B3**):

- During pre-drilling activities, the locations of several temporary monitoring wells (AOI02-03, AOI03-03, and AOI04-01) were adjusted due to accessibility issues. At AOI02-03, the ground at the original location was saturated to the point of being unsafe for vehicle access. The proposed locations for AOI03-03 and AOI04-01 were near subsurface utilities identified during the pre-drilling mark-out. Each location was adjusted in the field to allow for safe drilling on dry surface and away from subsurface utilities. These actions were documented in a Field Change Request provided in **Appendix B3**.
- During DPT drilling activities, shallow groundwater prevented the collection of soil samples from three separate intervals at the following soil boring locations: AOI01-03, AOI02-01, AOI03-01, and AOI03-02. Soil samples were collected at each of the above locations to the extent practicable, depending on the length of the unsaturated soil interval. At AOI01-03, AOI02-01, and AOI03-02, two soil samples were collected, one from 0-2 feet bgs and one from 1 foot above the observed groundwater table. At AOI03-01, groundwater was present at approximately 3 feet bgs, and only one sample was able to be collected from 0-2 feet bgs. These actions were documented in a Field Change Request provided in **Appendix B3**.

**Table 5-1**
**Site Inspection Samples by Medium**
**Site Inspection Report, Camp Blanding Joint Training Center, Florida**

| Sample Identification | Sample Collection Date/Time | Sample Depth (feet bgs) | LC/MS/MS compliant with QSM 5.3 Table B-15 | TOC + pH (EPA 9060A/9045D) | Comments |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| AOI01-01-[0-2] | 1/18/2022 9:20 | 0 - 2 | X | | |
| AOI01-01-[0-2]-D | 1/18/2022 9:20 | 0 - 2 | X | | FD |
| AOI01-01-[5-6] | 1/18/2022 9:30 | 5 - 6 | X | | |
| AOI01-01-[8-9] | 1/18/2022 9:40 | 8 - 9 | X | | |
| AOI01-02-[0-2] | 1/18/2022 9:20 | 0 - 2 | X | X | |
| AOI01-02-[0-2]-D | 1/18/2022 9:20 | 0 - 2 | | X | FD |
| AOI01-02-[0-2]-MS | 1/18/2022 9:20 | 0 - 2 | | X | MS |
| AOI01-02-[0-2]-MSD | 1/18/2022 9:20 | 0 - 2 | | X | MSD |
| AOI01-02-[2-3] | 1/18/2022 10:14 | 2 - 3 | X | | |
| AOI01-02-[3-4] | 1/18/2022 10:15 | 3 - 4 | X | | |
| AOI01-02-[3-4]-MS | 1/18/2022 10:15 | 3 - 4 | X | | MS |
| AOI01-02-[3-4]-MSD | 1/18/2022 10:15 | 3 - 4 | X | | MSD |
| AOI01-03-[0-2] | 1/18/2022 11:08 | 0 - 2 | X | | |
| AOI01-03-[2-3] | 1/18/2022 11:10 | 2 - 3 | X | | |
| AOI02-01-[0-2] | 1/18/2022 12:35 | 0 - 2 | X | X | |
| AOI02-01-[0-2]-D | 1/18/2022 12:35 | 0 - 2 | | X | FD |
| AOI02-01-[2-3] | 1/18/2022 12:38 | 2 - 3 | X | | |
| AOI02-02-[0-2] | 1/18/2022 12:32 | 0 - 2 | X | | |
| AOI02-02-[2-3] | 1/18/2022 14:06 | 2 - 3 | X | | |
| AOI02-02-[2-3]-D | 1/18/2022 14:06 | 2 - 3 | X | | FD |
| AOI02-02-[3-4] | 1/18/2022 14:10 | 3 - 4 | X | | |
| AOI03-01-[0-2] | 1/19/2022 12:20 | 0 - 2 | X | | |
| AOI03-02-[0-2] | 1/19/2022 9:17 | 0 - 2 | X | | |
| AOI03-02-[0-2]-MS | 1/19/2022 9:17 | 0 - 2 | X | | MS |
| AOI03-02-[0-2]-MSD | 1/19/2022 9:17 | 0 - 2 | X | | MSD |
| AOI03-02-[2-3] | 1/19/2022 9:25 | 2 - 3 | X | X | |
| AOI03-02-[2-3]-D | 1/19/2022 9:25 | 2 - 3 | X | X | FD |
| AOI03-03-[0-2] | 1/19/2022 9:17 | 0 - 2 | X | X | |
| AOI03-03-[2-3] | 1/19/2022 9:10 | 2 - 3 | X | | |
| AOI03-03-[3-4] | 1/19/2022 9:25 | 3 - 4 | X | | |
| AOI04-01-[0-2] | 1/19/2022 15:48 | 0 - 2 | X | | |
| AOI04-01-[2-3] | 1/19/2022 15:52 | 2 - 3 | X | | |
| AOI04-01-[3-4] | 1/19/2022 15:55 | 3 - 4 | X | X | |
| AOI04-01-[3-4]-D | 1/19/2022 15:55 | 3 - 4 | | X | FD |

**Table 5-1**
**Site Inspection Samples by Medium**
**Site Inspection Report, Camp Blanding Joint Training Center, Florida**

| Sample Identification | Sample Collection Date/Time | Sample Depth (feet bgs) | LC/MS/MS compliant with QSM 5.3 Table B-15 | TOC + pH (EPA 9060A/9045D) | Comments |
|---|---|---|---|---|---|
| **Groundwater Samples** | | | | | |
| AOI01-01-GW | 1/18/2022 11:38 | NA | X | | |
| AOI01-01-GW-D | 1/18/2022 11:38 | NA | X | | FD |
| AOI01-02-GW | 1/18/2022 13:01 | NA | X | | |
| AOI01-03-GW | 1/18/2022 14:22 | NA | X | | |
| AOI02-01-GW | 1/19/2022 10:45 | NA | X | | |
| AOI02-02-GW | 1/19/2022 12:10 | NA | X | | |
| AOI02-03-GW | 1/18/2022 15:53 | NA | X | | |
| AOI03-01-GW | 1/19/2022 15:20 | NA | X | | |
| AOI03-02-GW | 1/19/2022 13:55 | NA | X | | |
| AOI03-03-GW | 1/20/2022 12:20 | NA | X | | |
| AOI03-03-GW-MS | 1/20/2022 12:20 | NA | X | | MS |
| AOI03-03-GW-MSD | 1/20/2022 12:20 | NA | X | | MSD |
| AOI04-01-GW | 1/20/2022 15:28 | NA | X | | |
| **Quality Control Samples** | | | | | |
| CBJTC-ERB-01 | 1/18/2022 11:50 | NA | X | | Collected from hand auger |
| CBJTC-ERB-02 | 1/18/2022 16:45 | NA | X | | Collected from drill tooling |
| CBJTC-ERB-03 | 1/19/2022 12:15 | NA | X | | Collected from water level meter |
| CBJTC-ERB-04 | 1/19/2022 13:15 | NA | X | | Collected from drill tooling |
| CBJTC-Decon-01 | 11/18/2021 11:05 | NA | X | | Collected from Wash Rack spigot |
| CBJTC-Decon-02 | 11/18/2021 11:35 | NA | X | | Collected from Cantonment spigot |
| CBJTC-Decon-03 | 1/18/2022 16:50 | NA | X | | Collected from water tank |
| CBJTC-FRB-01 | 1/19/2022 15:10 | NA | X | | |
| | | | | | |

**Notes:**
AOI = area of interest
ASTM = American Society for Testing and Materials
bgs = below ground surface
CBJTC = Camp Blanding Joint Training Center
Decon = decontamination
ERB = equipment rinsate blank
FD = field duplicate
FRB = field reagent blank
GW = groundwater
LC/MS/MS = Liquid Chromatography Mass Spectrometry
NA = not applicable
MS/MSD = matrix spike/ matrix spike duplicate
pH = potential of hydrogen; quantitative measure of the acidity or basicity of aqueous or other liquid solutions
QSM = Quality Systems Manual
SB = soil boring
TOC = total organic carbon
USEPA = United States Environmental Protection Agency

**Table 5-2**
**Soil Boring Depths, Temporary Well Screen Intervals, and Groundwater Elevations**
**Site Inspection Report, Camp Blanding Joint Training Center, Florida**

| Area of Interest | Boring Location | Soil Boring Depth (feet bgs) | Temporary Well Screen Interval (feet bgs) | Top of Casing Elevation (feet NAVD88) | Ground Surface Elevation (feet NAVD88) | Depth to Water (feet btoc) | Depth to Water (feet bgs) | Groundwater Elevation (feet NAVD88) |
|---|---|---|---|---|---|---|---|---|
| 1 | AOI01-01 | 15 | 10 - 15 | 230.03 | 228.90 | 10.36 | 9.23 | 219.67 |
| | AOI01-02 | 10 | 5 - 10 | 207.71 | 206.50 | 6.03 | 4.82 | 201.68 |
| | AOI01-03 | 10 | 5 - 10 | 219.43 | 216.30 | 5.45 | 2.32 | 213.98 |
| 2 | AOI02-01 | 10 | 5 - 10 | 218.40 | 215.40 | 5.83 | 2.83 | 212.57 |
| | AOI02-02 | 10 | 5 - 10 | 224.16 | 223.20 | 6.48 | 5.52 | 217.68 |
| | AOI02-03 | 10 | 5 - 10 | 203.31 | 200.40 | 5.42 | 2.51 | 197.89 |
| 3 | AOI03-01 | 10 | 5 - 10 | 193.07 | 189.30 | 6.26 | 2.49 | 186.81 |
| | AOI03-02 | 10 | 5 - 10 | 194.07 | 191.10 | 6.5 | 3.53 | 187.57 |
| | AOI03-03 | 10 | 5 - 10 | 193.47 | 191.50 | 5.85 | 3.88 | 187.62 |
| 4 | AOI04-01 | 15 | 5 - 15 | 114.63 | 114.40 | 9.94 | 9.71 | 104.69 |

**Notes:**
AOI = area of interest
bgs = below ground surface
btoc = below top of casing
CBJTC = Camp Blanding Joint Training Center
NA = not applicable
NAVD88 = North American Vertical Datum 1988

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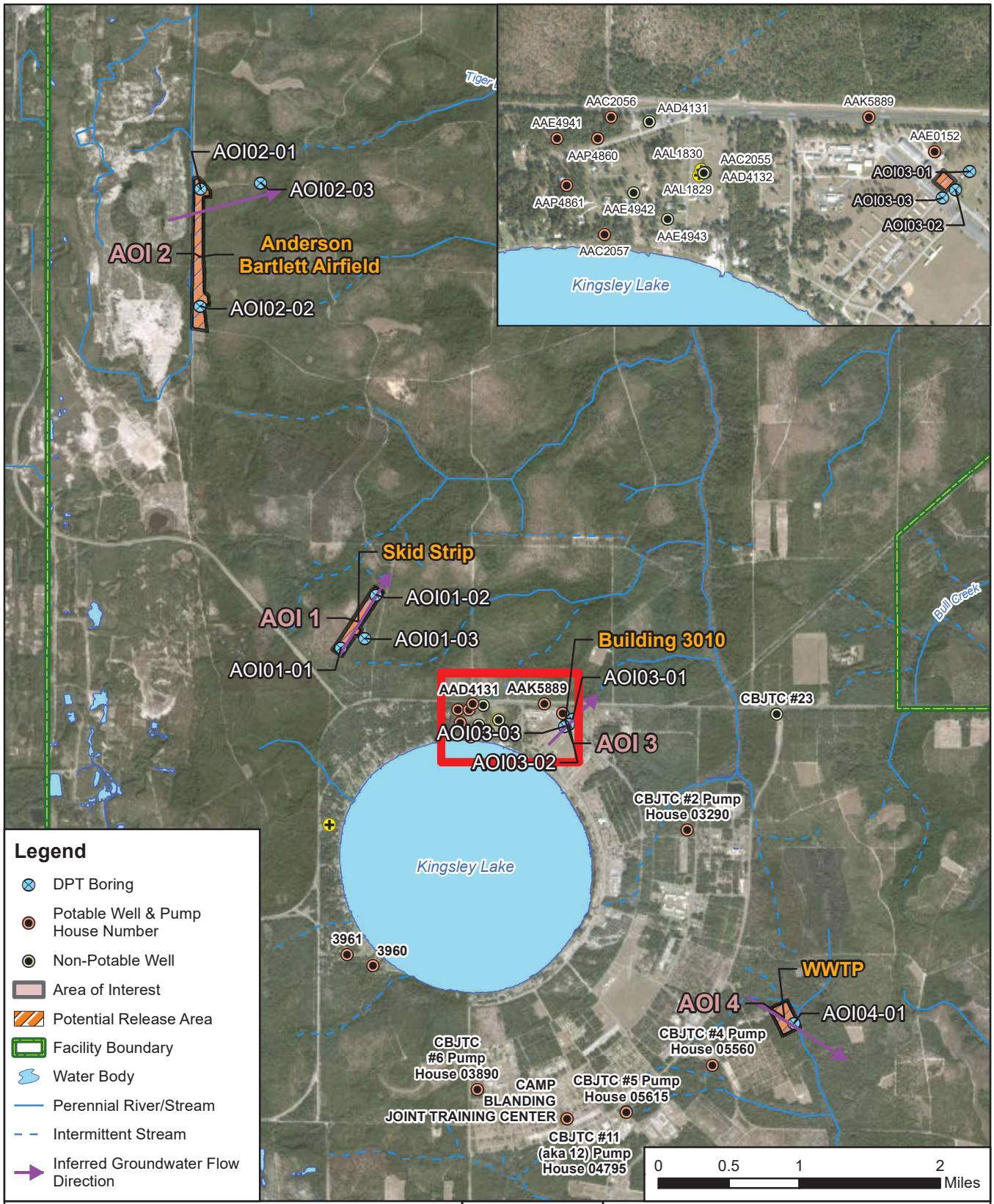


| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/10/2023 | GIS BY | MS | 2/10/2023 |
| SCALE | 1:63,360 | CHK BY | JW | 2/10/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/10/2023 |

N

# Site Inspection Sample Locations

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 5-1**

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# 6. Site Inspection Results

This section presents the analytical results of the SI. The SLs used in this evaluation are presented in **Section 6.1**. A discussion of the results for each AOI is provided in **Section 6.3** through **Section 6.6**. **Table 6-2** through **Table 6-4** present results in soil or groundwater for the relevant compounds. Tables that contain all results are provided in **Appendix F**, and the laboratory reports are provided in **Appendix G**.

## 6.1 Screening Levels

The DoD has adopted a policy to retain facilities in the CERCLA process based on risk-based SLs for soil and groundwater, as described in a memorandum from the OSD dated 6 July 2022 (Assistant Secretary of Defense, 2022). The ARNG program under which this SI was performed follows this DoD policy. Should the maximum site concentration for sampled media exceed the SLs established in the OSD memorandum, the AOI will proceed to the next phase under CERCLA. The SLs established in the OSD memorandum apply to the five compounds presented on **Table 6-1** below.

**Table 6-1: Screening Levels (Soil and Groundwater)**

| Analyte[b] | Residential (Soil) (µg/kg)[a] 0-2 feet bgs | Industrial/ Commercial Composite Worker (Soil) (µg/kg)[a] 2-15 feet bgs | Tap Water (Groundwater) (ng/L)[a] |
|---|---|---|---|
| **PFOA** | 19 | 250 | 6 |
| **PFOS** | 13 | 160 | 4 |
| **PFBS** | 1,900 | 25,000 | 601 |
| **PFHxS** | 130 | 1,600 | 39 |
| **PFNA** | 19 | 250 | 6 |

**Notes:**
bgs = below ground surface; µg/kg = micrograms per kilogram; ng/L = nanograms per liter

a.) Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.

b.) Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

The data in the subsequent sections are compared to the SLs presented in **Table 6-1**. The SLs for groundwater are based on direct ingestion. The SLs for soil are based on incidental ingestion and are applied to the depth intervals reasonably anticipated to be encountered by the receptors identified at the facility: the residential scenario is applied to surface soil results (0 to 2 feet bgs) and the industrial/commercial worker scenario is applied to shallow subsurface soil results (2 to 15 feet bgs). The SLs are not applied to deep subsurface soil results (>15 feet bgs) because 15 feet is the anticipated limit of construction activities.

## 6.2 Soil Physicochemical Analyses

To provide basic soil parameter information, soil samples were analyzed for TOC and pH, which are important for evaluating transport through the soil medium. **Appendix F** contains the results of the TOC and pH sampling.

The data collected in this investigation will be used in subsequent investigations, where appropriate, to assess fate and transport. According to the Interstate Technology Regulatory Council (ITRC), several important partitioning mechanisms include hydrophobic and lipophobic effects, electrostatic interactions, and interfacial behaviors. At relevant environmental pH values, certain PFAS are present as organic anions and are therefore relatively mobile in groundwater (Xiao et al., 2015), but tend to associate with the organic carbon fraction that may be present in soil or sediment (Higgins and Luthy, 2006; Guelfo and Higgins, 2013). When sufficient organic carbon is present, organic carbon normalized distribution coefficients ($K_{oc}$ values) can help in evaluating transport potential, though other geochemical factors (for example, pH and presence of polyvalent cations) may also affect PFAS sorption to solid phases (ITRC, 2018).

## 6.3 AOI 1

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 1: Skid Strip. The soil and groundwater results are summarized on **Table 6-2** through **Table 6-4**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

### 6.3.1 AOI 1 Soil Analytical Results

**Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** through **Table 6-3** summarize the soil results.

Surface soil was sampled from 0 to 2 feet bgs at all boring locations (AOI01-01 through AOI01-03). Soil was also sampled in several 1-foot shallow subsurface intervals (2 to 9 feet bgs) from all boring locations. In surface soil, PFOA, PFOS, PFHxS, and PFNA were detected at concentrations below their respective SLs; PFBS was not detected. PFOA was detected at one of the three locations at a concentration of 0.098 J micrograms per kilogram (µg/kg). PFOS was detected at all three locations, with a maximum concentration of 0.132 J (estimated) µg/kg. PFHxS was detected at one location at a concentration of 0.049 J µg/kg. PFNA was detected at two locations, with a maximum concentration of 0.032 J µg/kg.

In shallow subsurface soil, PFOS was detected below the SL at one location, with a concentration of 0.060 J µg/kg. PFOA, PFBS, PFHxS, and PFNA were not detected in shallow subsurface soil.

### 6.3.2 AOI 1 Groundwater Analytical Results

**Figure 6-6** and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-4** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI01-01 through AOI01-03. PFOA, PFOS, and PFHxS were detected below their SLs; PFBS and PFNA were not detected in groundwater. PFOA was detected in wells AOI01-02 and AOI01-03, with a maximum concentration of 5.75 ng/L at AOI01-03. PFOS was detected in wells AOI01-02 and AOI01-03, with a maximum concentration of 2.64 J ng/L at AOI01-03. PFHxS was detected only in well AOI01-03, at a concentration of 5.18 ng/L.

### 6.3.3 AOI 1 Conclusions

Based on the results of the SI, PFOA, PFOS, PFHxS, and PFNA were detected in soil below their respective SLs, and PFBS was not detected in soil. PFOA, PFOS, and PFHxS were detected in groundwater at concentrations below their respective SLs; PFBS and PFNA were not detected in groundwater. Therefore, further evaluation at AOI 1 is not warranted.

## 6.4 AOI 2

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 2: Anderson Bartlett Airfield. The results in soil and groundwater are summarized on **Table 6-2** through **Table 6-4**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

### 6.4.1 AOI 2 Soil Analytical Results

**Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** through **Table 6-3** summarize the soil results.

Surface soil was sampled from 0 to 2 feet bgs at boring locations AOI02-01 and AOI02-02. Soil was also sampled in 1-foot shallow subsurface intervals (2 to 4 feet bgs) from the same boring locations. PFBS was detected below the SL in surface soil at one location, AOI02-02, with a concentration of 0.039 J µg/kg. PFOA, PFOS, PFHxS, and PFNA were not detected in surface soil.

In shallow subsurface soil, PFOA and PFBS were detected at location AOI02-02 at concentrations below their SLs: 0.121 J µg/kg and 0.037 J µg/kg, respectively. PFOS, PFHxS, and PFNA were not detected.

### 6.4.2 AOI 2 Groundwater Analytical Results

**Figure 6-6** and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-4** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI02-01 through AOI02-03. PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in any groundwater samples at AOI 2.

### 6.4.3 AOI 2 Conclusions

Based on the results of the SI, PFOA and PFBS were detected in soil at concentrations below their respective SLs; PFOS, PFHxS, and PFNA were not detected in soil. PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in groundwater. Therefore, further evaluation at AOI 2 is not warranted.

## 6.5 AOI 3

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 3: Building 3010. The results in soil and groundwater are presented in **Table 6-2** through **Table 6-4**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

### 6.5.1 AOI 3 Soil Analytical Results

**Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** through **Table 6-3** summarize the soil results.

Surface soil was sampled from 0 to 2 feet bgs at boring locations AOI03-01 through AOI03-03. Soil was also sampled in several 1-foot shallow subsurface intervals (2 to 4 feet bgs) at boring locations AOI03-02 and AOI03-03. Shallow subsurface soil was not sampled from boring location AOI03-01 due to shallow groundwater, as described in **Section 5.8**. In surface soil, PFOS and PFNA were detected at concentrations below their SLs; PFOA, PFBS, and PFHxS were not detected. PFOS was detected at one location, AOI03-03, with a concentration of 0.996 J µg/kg. PFNA was detected at two locations, AOI03-02 and AOI03-03, with a maximum concentration of 0.063 µg/kg.

In shallow subsurface soil, PFOS and PFNA were detected at AOI03-03 with maximum concentrations below their SLs: 2.26 µg/kg and 0.052 µg/kg, respectively. PFOA, PFBS, and PFHxS were not detected.

### 6.5.2 AOI 3 Groundwater Analytical Results

**Figure 6-6** and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-4** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI03-01 through AOI03-03. PFOS was detected above the SL of 4 ng/L at all three locations, with concentrations ranging from 7.36 to 67.0 ng/L. PFOA, PFBS, PFHxS, and PFNA were detected at AOI 3 below their SLs. PFOA was detected at all three well locations, with a maximum concentration of 5.94 ng/L. PFBS was detected at two of the three locations, AOI03-01 and AOI03-02, with a maximum concentration of 2.30 ng/L. PFHxS was detected at all three locations, with a maximum concentration of 8.80 ng/L. PFNA was detected at two of the three locations, AOI03-02 and AOI03-03, with a maximum concentration of 2.81 J ng/L.

### 6.5.3 AOI 3 Conclusions

Based on the results of the SI, PFOS and PFNA were detected in soil below their SLs. PFOS was detected in groundwater, at concentrations that exceeded the SL, and PFOA, PFBS, PFHxS, and PFNA were detected in groundwater, at concentrations below their SLs. Based on the exceedances of the PFOS SL in groundwater, further evaluation at AOI 3 is warranted.

## 6.6 AOI 4

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 4: WWTP. The results in soil and groundwater are presented in **Table 6-2** through **Table 6-4**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

### 6.6.1 AOI 4 Soil Analytical Results

**Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** through **Table 6-3** summarize the soil results.

A single borehole was drilled at AOI 4. Surface soil was sampled from 0 to 2 feet bgs and shallow subsurface soil was collected in two 1-foot intervals between 2 to 4 feet bgs. PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in either sample.

### 6.6.2 AOI 4 Groundwater Analytical Results

**Figure 6-6** and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-4** summarizes the groundwater results.

Groundwater was sampled from one temporary monitoring well, AOI04-01. PFOA and PFOS were detected above their respective SLs of 6 ng/L and 4 ng/L, at concentrations of 22.1 ng/L for PFOA and 9.92 ng/L for PFOS. PFBS and PFHxS were detected in groundwater below their SLs, at concentrations of 0.683 J ng/L and 3.90 J ng/L, respectively. PFNA was not detected in groundwater at AOI 4.

### 6.6.3 AOI 4 Conclusions

Based on the results of the SI, PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in soil at AOI 4. PFOA and PFOS were detected in groundwater at concentrations above their SLs. PFBS and PFHxS were also detected in groundwater, but at concentrations below their SLs. Based on the exceedances of the SLs in groundwater, further evaluation at AOI 4 is warranted.

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**Table 6-2**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil**
**Site Inspection Report, Camp Blanding Joint Training Center**

| Area of Interest | | AOI01 | | | | | | | | AOI02 | | | | AOI03 | | | | | | AOI04 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI01-01-[0-2] | | AOI01-01-[0-2]-D | | AOI01-02-[0-2] | | AOI01-03-[0-2] | | AOI02-01-[0-2] | | AOI02-02-[0-2] | | AOI03-01-[0-2] | | AOI03-02-[0-2] | | AOI03-03-[0-2] | | AOI04-01-[0-2] | |
| Sample Date | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/19/2022 | | 01/19/2022 | | 01/19/2022 | | 01/18/2022 | |
| Depth | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | |
| Analyte | OSD Screening Level [a] | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | | | | | | | | | | | |
| PFBS | 1900 | ND | U | ND | U | ND | U | ND | U | ND | U | 0.039 | J | ND | U | ND | U | ND | U | ND | U |
| PFHxS | 130 | ND | U | ND | U | ND | U | 0.049 | J | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFNA | 19 | ND | UJ | 0.023 | J | ND | U | 0.032 | J | ND | U | ND | U | ND | U | 0.055 | J | 0.063 | J | ND | U |
| PFOA | 19 | ND | U | ND | U | ND | U | 0.098 | J | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOS | 13 | 0.054 | J | ND | UJ | 0.068 | J | 0.132 | J | ND | U | ND | U | ND | U | ND | U | 0.996 | J | ND | U |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022. Soil screening levels based on residential scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration

U = The analyte was not detected at a level greater than or equal to the adjusted DL

UJ = The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.

Chemical Abbreviations

| | |
|---|---|
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| D | duplicate |
| DL | detection limit |
| ft | feet |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| SB | soil boring |
| USEPA | United States Environmental Protection Agency |
| µg/kg | micrograms per kilogram |

**Table 6-3**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil**
**Site Inspection Report, Camp Blanding Joint Training Center**

| Area of Interest | | AOI01 | | | | | | | | | | AOI02 | | | | | | | | AOI03 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI01-01-[5-6] | | AOI01-01-[8-9] | | AOI01-02-[2-3] | | AOI01-02-[3-4] | | AOI01-03-[2-3] | | AOI02-01-[2-3] | | AOI02-02-[2-3] | | AOI02-02-[2-3]-D | | AOI02-02-[3-4] | | AOI03-02-[2-3] | |
| Sample Date | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/19/2022 | |
| Depth | | 5-6 ft | | 8-9 ft | | 2-3 ft | | 3-4 ft | | 2-3 ft | | 2-3 ft | | 2-3 ft | | 2-3 ft | | 3-4 ft | | 2-3 ft | |
| **Analyte** | **OSD Screening Level [a]** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | | | | | | | | | | | |
| PFBS | 25000 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.037 | J | 0.037 | J | ND | U | ND | U |
| PFHxS | 1600 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFNA | 250 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOA | 250 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | UJ | 0.121 | J | ND | U | ND | U |
| PFOS | 160 | ND | U | ND | U | 0.060 | J | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022. Soil screening levels based on industrial/commercial composite worker scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration

U = The analyte was not detected at a level greater than or equal to the adjusted DL

UJ = The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.

Chemical Abbreviations

| | |
|---|---|
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| D | duplicate |
| DL | detection limit |
| ft | feet |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| SB | soil boring |
| USEPA | United States Environmental Protection Agency |
| µg/kg | micrograms per kilogram |

**Table 6-3**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil**
**Site Inspection Report, Camp Blanding Joint Training Center**

| Area of Interest | | AOI03 | | | | | | AOI04 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI03-02-[2-3]-D | | AOI03-03-[2-3] | | AOI03-03-[3-4] | | AOI04-01-[2-3] | | AOI04-01-[3-4] | |
| Sample Date | | 01/19/2022 | | 01/19/2022 | | 01/19/2022 | | 01/18/2022 | | 01/18/2022 | |
| Depth | | 2-3 ft | | 2-3 ft | | 3-4 ft | | 2-3 ft | | 3-4 ft | |
| **Analyte** | **OSD Screening Level [a]** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | |
| PFBS | 25000 | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFHxS | 1600 | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFNA | 250 | ND | U | 0.045 | J | 0.052 | J | ND | U | ND | U |
| PFOA | 250 | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOS | 160 | ND | U | 0.841 | J | 2.26 | | ND | U | ND | U |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022. Soil screening levels based on industrial/commercial composite worker scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration

U = The analyte was not detected at a level greater than or equal to the adjusted DL

UJ = The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.

Chemical Abbreviations

| | |
|---|---|
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| D | duplicate |
| DL | detection limit |
| ft | feet |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| SB | soil boring |
| USEPA | United States Environmental Protection Agency |
| µg/kg | micrograms per kilogram |

**Table 6-4**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater**
**Site Inspection Report, Camp Blanding Joint Training Center**

| | x | AOI01 | | | | | | | | AOI02 | | | | | | AOI03 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample ID | AOI01-01-GW | | AOI01-01-GW-D | | AOI01-02-GW | | AOI01-03-GW | | AOI02-01-GW | | AOI02-02-GW | | AOI02-03-GW | | AOI03-01-GW | | AOI03-02-GW | |
| | Sample Date | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/18/2022 | | 01/19/2022 | | 01/19/2022 | | 01/18/2022 | | 01/19/2022 | | 01/19/2022 | |
| Analyte | OSD Screening Level [a] | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Water, LCMSMS compliant with QSM 5.3 Table B-15 (ng/l)** | | | | | | | | | | | | | | | | | | | |
| PFBS | 601 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.962 | J | 2.30 | J |
| PFHxS | 39 | ND | U | ND | U | ND | U | 5.18 | | ND | U | ND | U | ND | U | 2.16 | J | 8.80 | |
| PFNA | 6 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 2.81 | J |
| PFOA | 6 | ND | U | ND | U | 1.53 | J | 5.75 | | ND | U | ND | U | ND | U | 2.03 | J | 5.94 | |
| PFOS | 4 | ND | U | ND | U | 2.10 | J | 2.64 | J | ND | U | ND | U | ND | U | 7.36 | | 30.4 | |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022 Groundwater screening levels based on residential scenario for direct ingestion of groundwater.

Interpreted Qualifiers

J = Estimated concentration

U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

| | |
|---|---|
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| D | duplicate |
| DL | detection limit |
| GW | groundwater |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| USEPA | United States Environmental Protection Agency |
| ng/l | nanogram per liter |

**Table 6-4**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater**
**Site Inspection Report, Camp Blanding Joint Training Center**

| | Area of Interest | AOI03 | | AOI04 | |
|---|---|---|---|---|---|
| | Sample ID | AOI03-03-GW | | AOI04-01-GW | |
| | Sample Date | 01/20/2022 | | 01/20/2022 | |
| Analyte | OSD Screening Level [a] | Result | Qual | Result | Qual |
| **Water, LCMSMS compliant with QSM 5.3 Table B-15 (ng/l)** | | | | | |
| PFBS | 601 | ND | U | 0.683 | J |
| PFHxS | 39 | 1.27 | J | 3.90 | J |
| PFNA | 6 | 1.62 | J | ND | U |
| PFOA | 6 | 1.56 | J | 22.1 | |
| PFOS | 4 | 67.0 | | 9.92 | |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022 Groundwater screening levels based on residential scenario for direct ingestion of groundwater.

Interpreted Qualifiers

J = Estimated concentration

U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

| | |
|---|---|
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| D | duplicate |
| DL | detection limit |
| GW | groundwater |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| USEPA | United States Environmental Protection Agency |
| ng/l | nanogram per liter |

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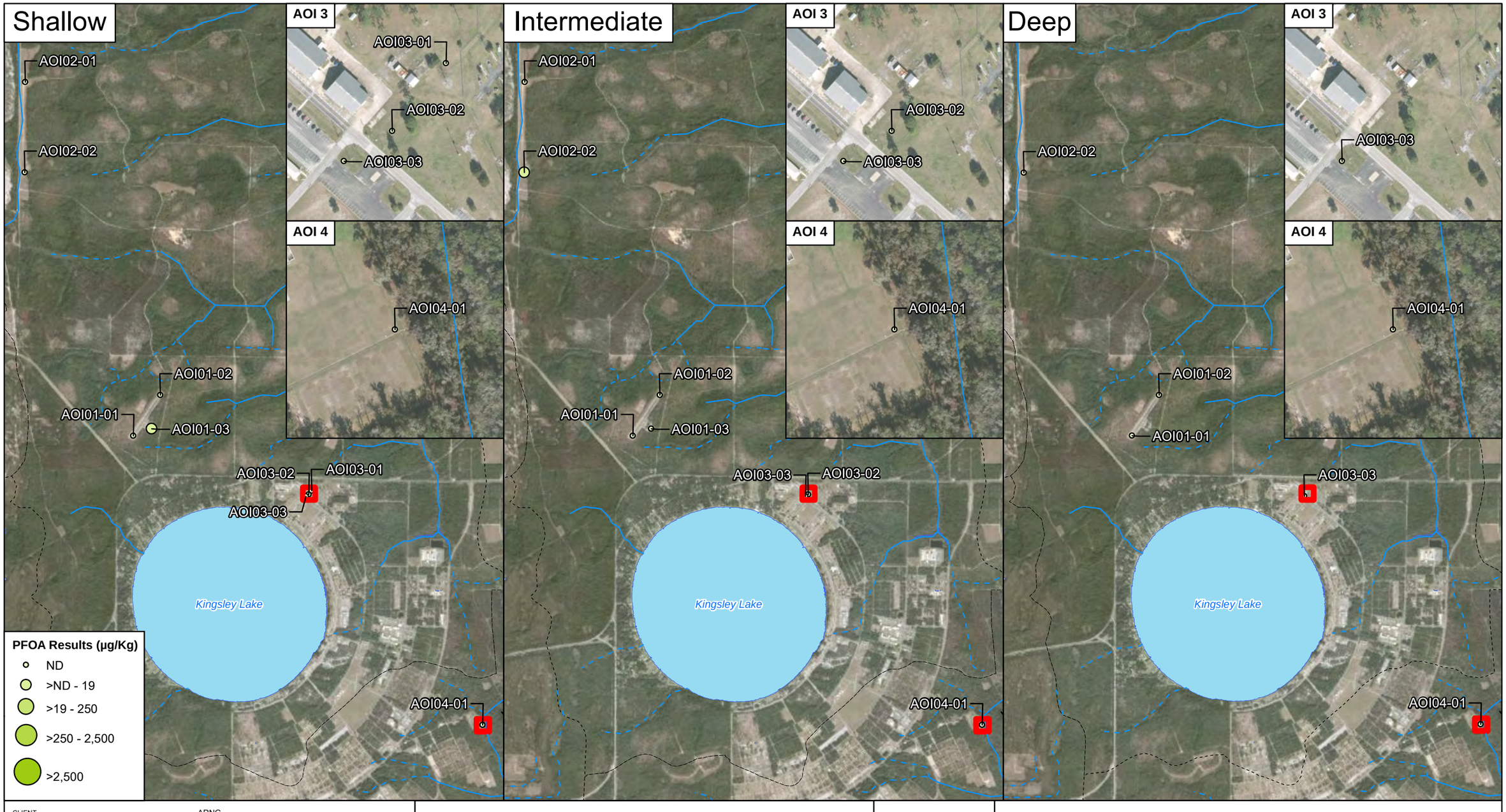



| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/8/2023 | GIS BY | MS | 2/8/2023 |
| SCALE | 1:56,509 | CHK BY | JW | 2/8/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/8/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream

0 2,350 4,700 9,400 Feet

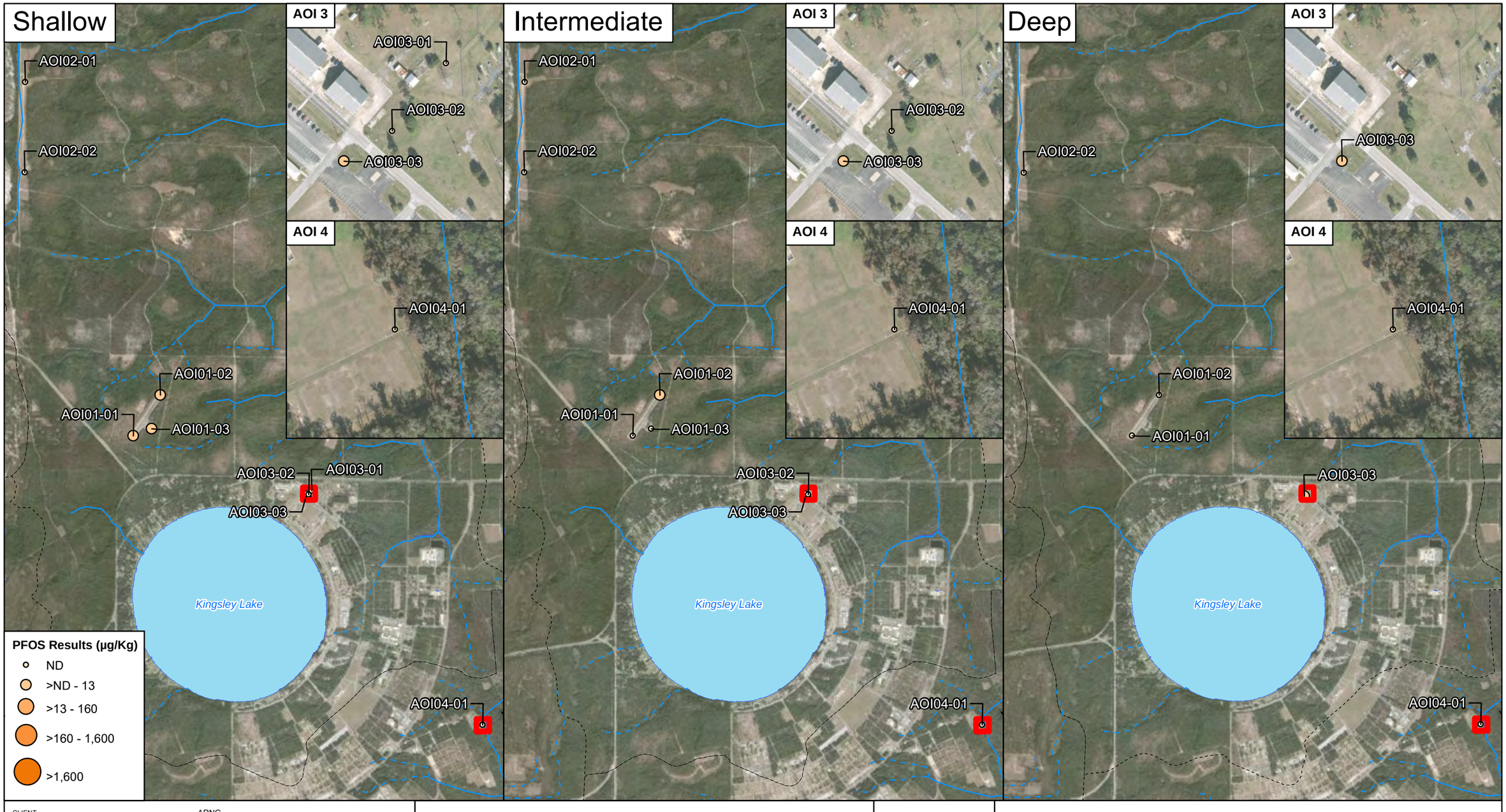
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

**PFOA Detections in Soil**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-1**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/8/2023 | GIS BY | MS | 2/8/2023 |
| SCALE | 1:56,509 | CHK BY | JW | 2/8/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/8/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream

0 2,350 4,700 9,400 Feet

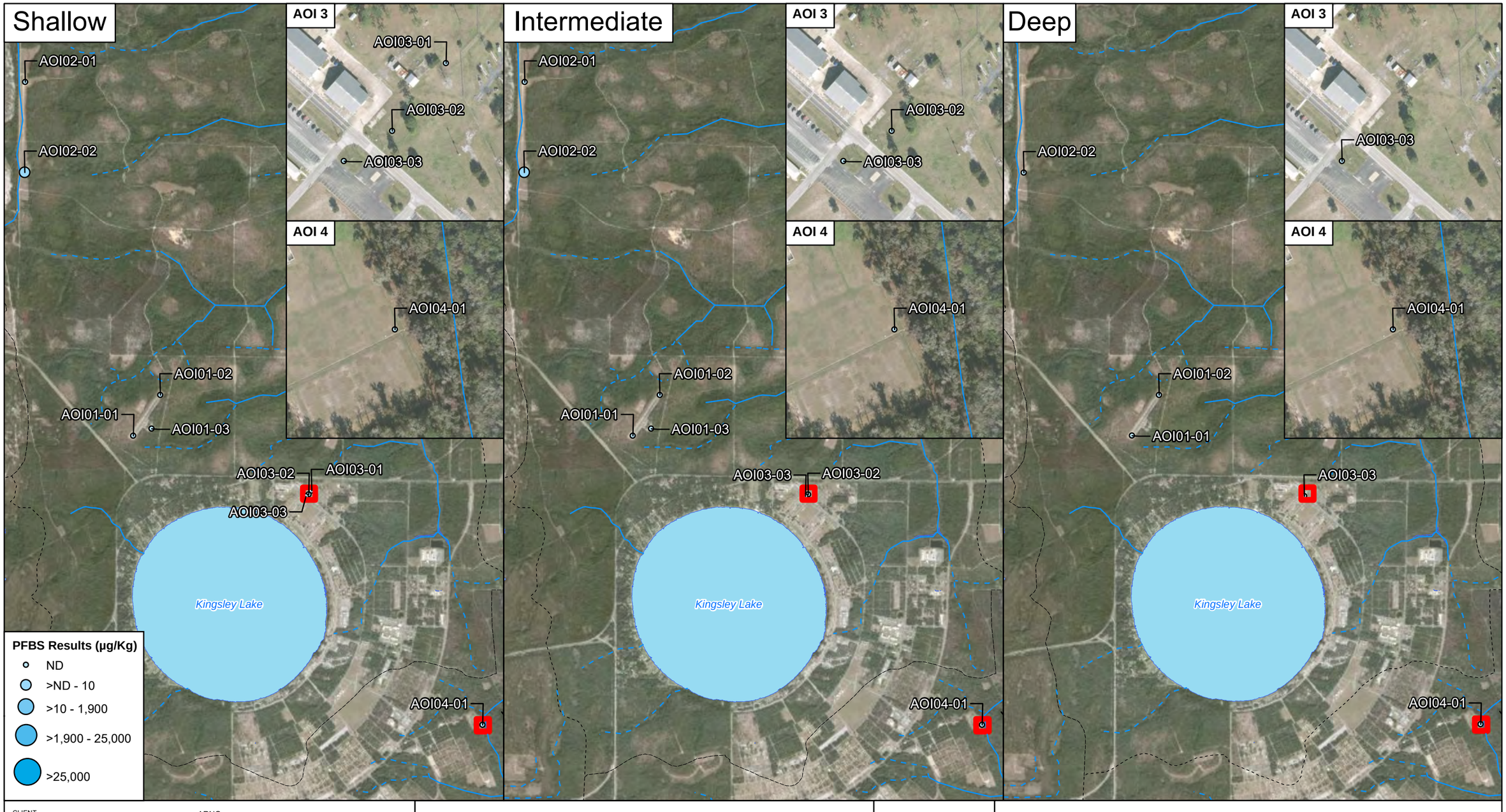
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

# PFOS Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-2**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/8/2023 | GIS BY | MS | 2/8/2023 |
| SCALE | 1:56,509 | CHK BY | JW | 2/8/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/8/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream

0 2,350 4,700 9,400 Feet

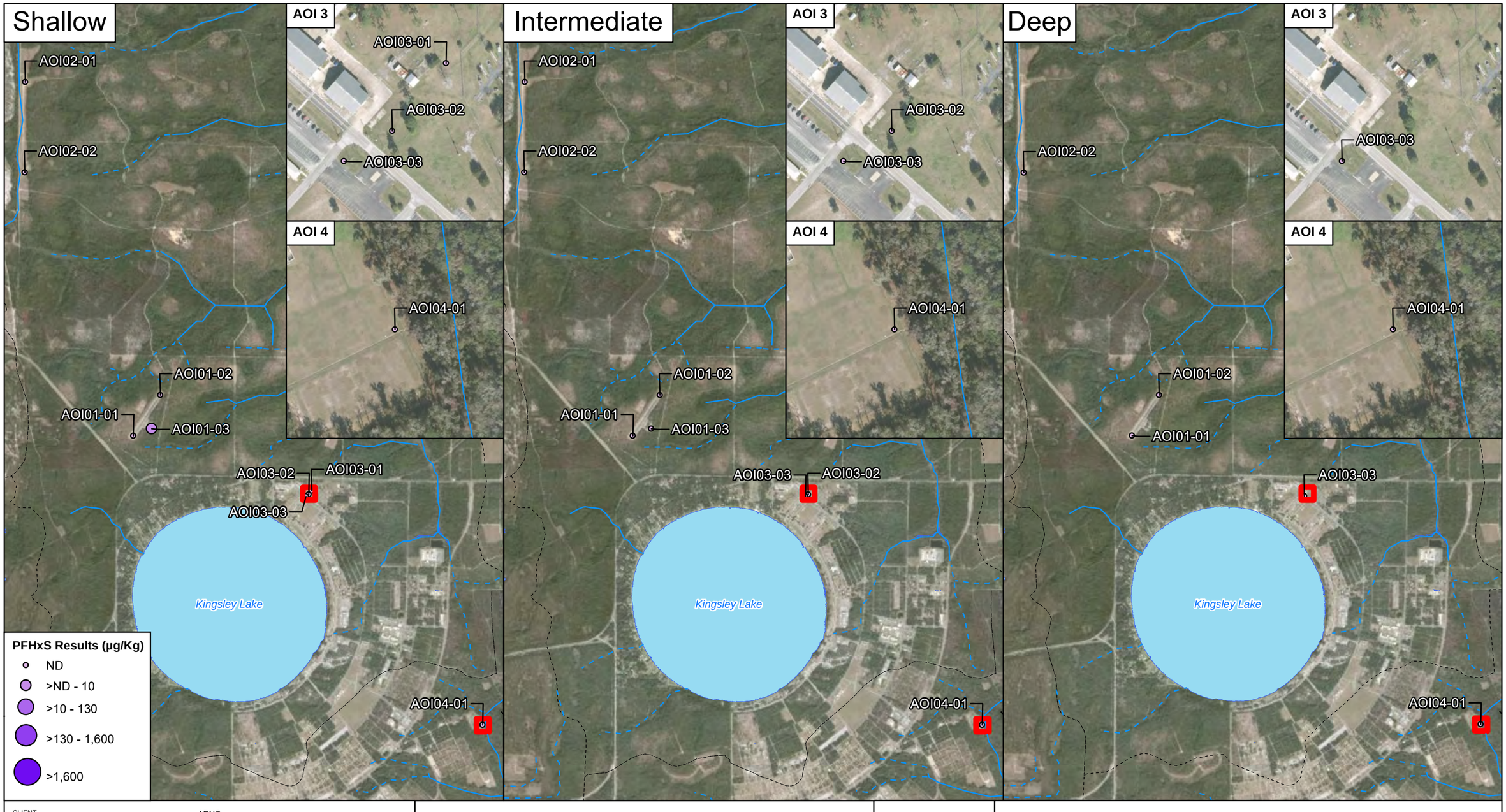
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

# PFBS Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-3**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/8/2023 | GIS BY | MS | 2/8/2023 |
| SCALE | 1:56,509 | CHK BY | JW | 2/8/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/8/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream

0 2,350 4,700 9,400 Feet

Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

**PFHxS Detections in Soil**

AECOM 12420 Milestone Center Drive Germantown, MD 20876

**Figure 6-4**

Shallow

AOI 3

AOI 4

AOI02-01
AOI02-02
AOI03-01
AOI03-02
AOI03-03
AOI04-01
AOI01-01
AOI01-02
AOI01-03

Intermediate

AOI 3

AOI 4

AOI02-01
AOI02-02
AOI03-02
AOI03-03
AOI04-01
AOI01-01
AOI01-02
AOI01-03

Deep

AOI 3

AOI 4

AOI02-02
AOI03-03
AOI04-01
AOI01-01
AOI01-02

Kingsley Lake

**PFNA Results (µg/Kg)**

- ND
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/8/2023 | GIS BY | MS | 2/8/2023 |
| SCALE | 1:56,509 | CHK BY | JW | 2/8/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/8/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream

0 2,350 4,700 9,400 Feet

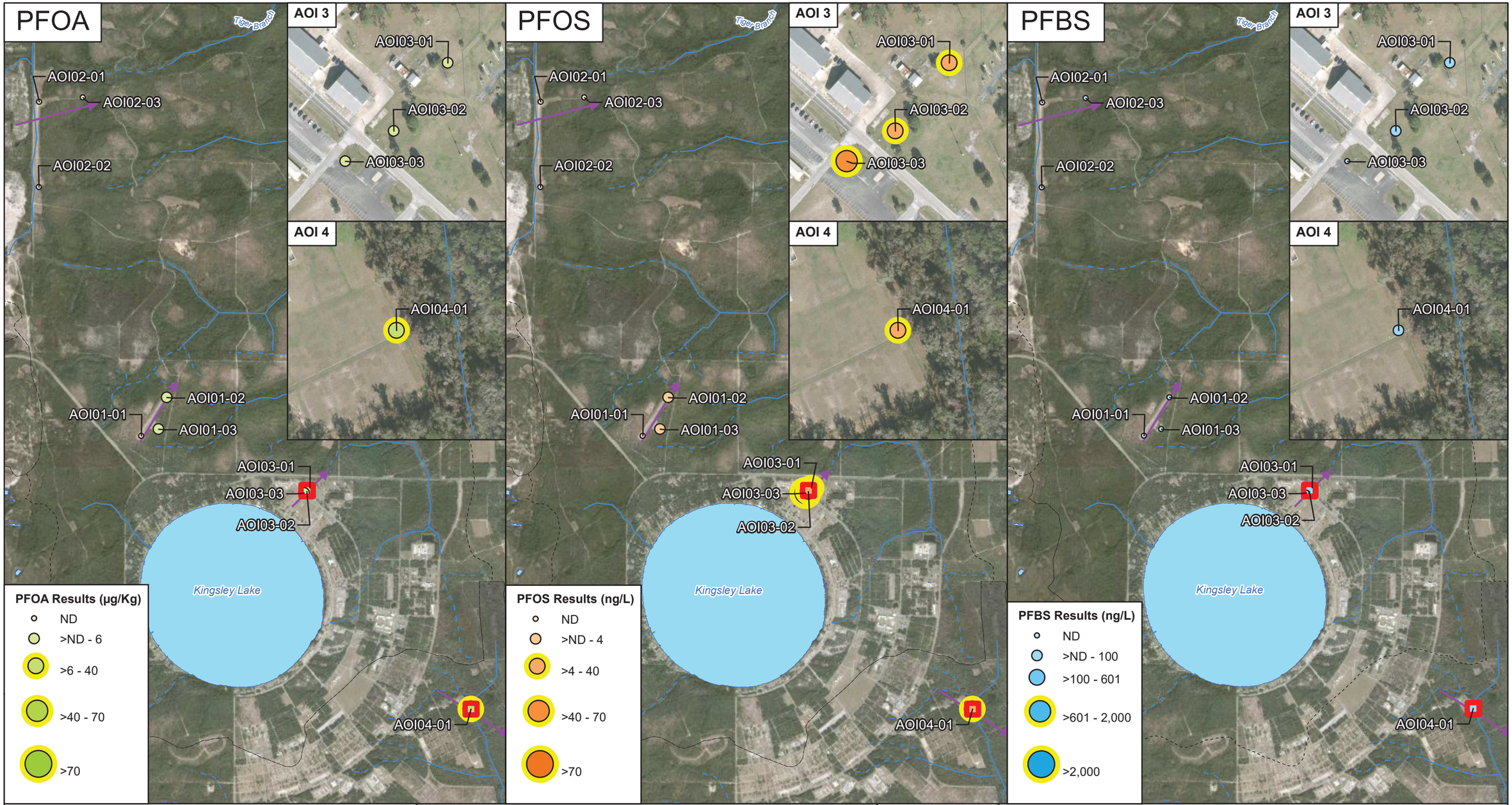
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

**PFNA Detections in Soil**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-5**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/9/2023 | GIS BY | MS | 2/9/2023 |
| SCALE | 1:60,116 | CHK BY | JW | 2/9/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/9/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream
Inferred Groundwater Flow Direction

0 2,500 5,000 10,000 Feet

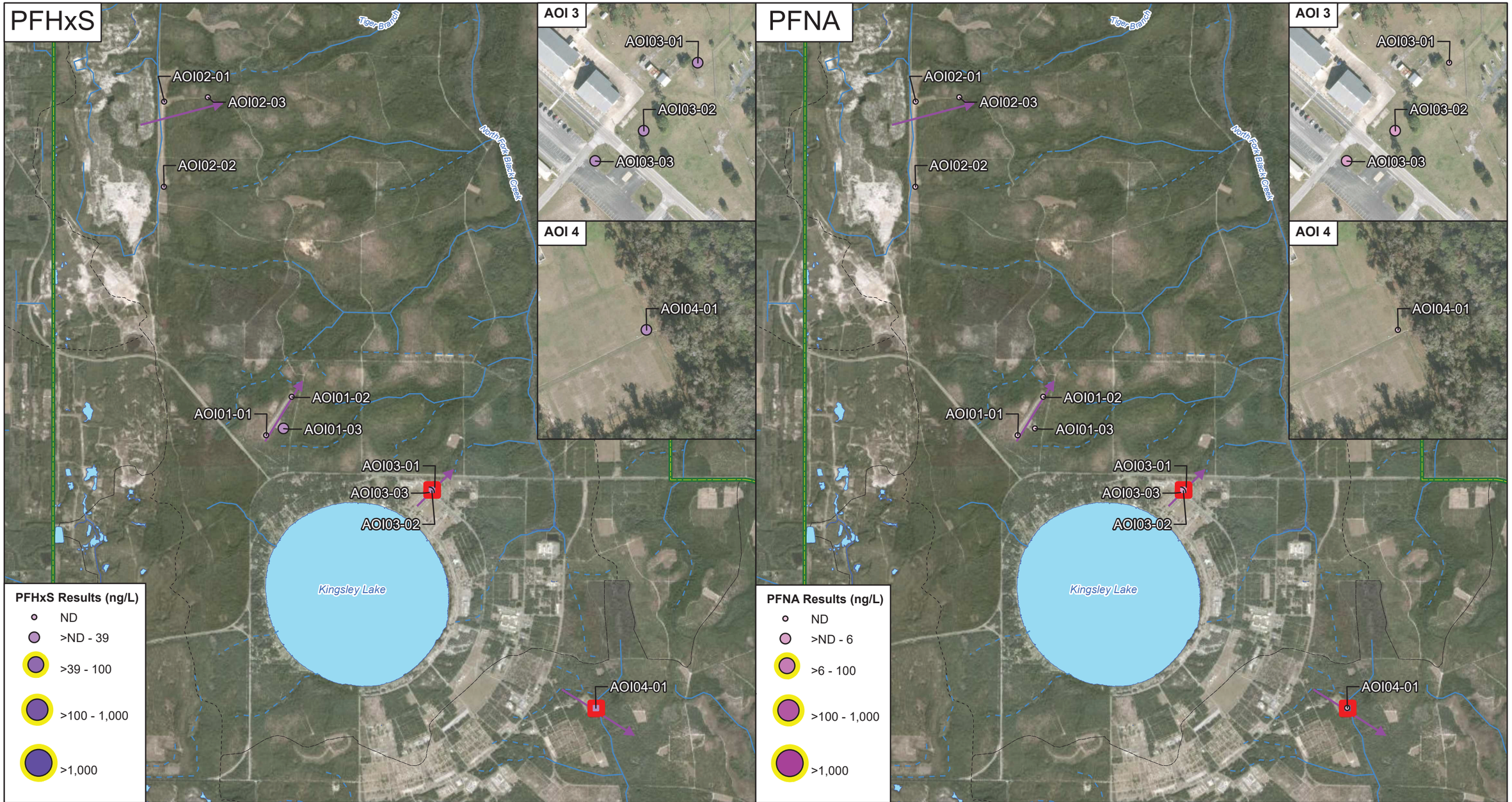
Exceedances of the OSD SL are depicted with a yellow halo.

N

# PFOA, PFOS, and PFBS Detections in Groundwater

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-6**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Camp Blanding, FL | | | |
| REVISED | 2/9/2023 | GIS BY | MS | 2/9/2023 |
| SCALE | 1:60,000 | CHK BY | JW | 2/9/2023 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 2/9/2023 |

Facility Boundary
Water Body
Perennial River/Stream
Intermittent Stream
Inferred Groundwater Flow Direction

0 2,500 5,000 10,000 Feet

Exceedances of the OSD SL are depicted with a yellow halo.

N

**PFHxS and PFNA Detections in Groundwater**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-7**

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# 7. Exposure Pathways

The conceptual site models (CSMs) for each AOI, revised based on the SI findings, are presented on **Figure 7-1** through **Figure 7-4**. Please note that while the CSM discussion assists in determining if a receptor may be impacted, the decision to move from SI to Remedial Investigation (RI) or interim action is determined based upon exceedances of the SLs for the relevant compounds and whether the release is more than likely attributable to the DoD. A CSM presents the current understanding of the site conditions with respect to known and suspected sources, potential transport mechanisms and migration pathways, and potentially exposed human receptors. A human exposure pathway is considered potentially complete when the following conditions are present:

1. Contaminant source;
2. Environmental fate and transport;
3. Exposure point;
4. Exposure route; and
5. Potentially exposed populations.

If any of these elements are missing, the pathway is incomplete. The CSM figures use an empty circle symbol to represent an incomplete exposure pathway. Areas with an incomplete pathway generally warrant no further action. However, the pathway is considered potentially complete if the relevant compounds are detected, in which case the CSM figure uses a half-filled circle symbol to represent a potentially complete exposure pathway. Additionally, a completely filled circle symbol is used to indicate when a potentially complete exposure pathway has detections of relevant compounds above the SLs. Areas with an identified potentially complete pathway that have detections of the relevant compounds above the SLs may warrant further investigation. Although the CSMs indicate whether potentially complete exposure pathways may exist, the recommendation for future study in an RI or no action at this time is based on the comparison of the SI analytical results for the relevant compounds to the SLs.

In general, the potential routes of exposure to the relevant compounds are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of toxicological study. The receptors evaluated are consistent with those listed in USEPA guidance for risk screening (USEPA, 2001). Receptors at the facility include site workers (e.g., facility staff and visiting soldiers), construction workers, trespassers, residents outside the facility boundary, and recreational users outside of the facility boundary.

## 7.1 Soil Exposure Pathway

The SI results in soil were used to determine whether a potentially complete pathway exists between the source and potential receptors at AOI 1, AOI 2, AOI 3, and AOI 4 based on the aforementioned criteria.

### 7.1.1 AOI 1

AOI 1 is the Skid Strip, which has historically been used as an airfield by FLARNG and NAS JAX. NAS JAX brought their own crash/fire rescue truck and provided their own rescue response during their operations at the Skid Strip. Although no releases have been confirmed, potential AFFF

releases to soil by NAS JAX or other state ARNG units may have occurred during historical training activities at AOI 1.

PFOA, PFOS, PFHxS, and PFNA were detected in surface soil at AOI 1, at concentrations below the SLs. Site workers and construction workers could contact constituents in surface soil via incidental ingestion and inhalation of dust. No construction was observed at AOI 1 during the SI; however, FLARNG plans to open a potable well at the Skid Strip, which may require construction activities in the near future. Therefore, the surface soil exposure pathway for future site workers and construction workers are potentially complete. PFOS was also detected in subsurface soil at AOI 1. Construction workers could contact constituents in subsurface soil via incidental ingestion; therefore, the subsurface soil exposure pathway for future construction workers is potentially complete. No residents, recreators, or trespassers are anticipated to be present at AOI 1 and so the surface soil exposure pathway to these receptors is considered incomplete. The CSM for AOI 1 is presented on **Figure 7-1**.

### 7.1.2 AOI 2

AOI 2 is Anderson Bartlett Airfield, which has historically been used by FLARNG and NAS JAX for training events. In addition to FLARNG and NAS JAX usage, Anderson Bartlett Airfield has also been used as an airfield by out-of-state ARNG units for C-130 dirt strip landing training. Although no releases have been confirmed, potential AFFF releases to soil by NAS JAX or other state ARNG units may have occurred during historical training activities at AOI 2.

PFBS was detected in surface soil at AOI 2, at a concentration below the SL. Site workers and construction workers could contact constituents in surface soil via incidental ingestion and inhalation of dust. No construction was observed at AOI 2 during the SI, and no known construction is planned. Therefore, the surface soil exposure pathway for current and future site workers and potential future construction workers are potentially complete. PFOA and PFBS were also detected below their SLs in subsurface soil at AOI 2. Construction workers could contact constituents in subsurface soil via incidental ingestion; therefore, the subsurface soil exposure pathway for potential future construction workers is potentially complete. No residents, recreators, or trespassers are anticipated to be present at AOI 2; therefore, the surface and subsurface soil exposure pathway to these receptors is considered incomplete. The CSM for AOI 2 is presented on **Figure 7-2**.

### 7.1.3 AOI 3

AOI 3 is Building 3010, the former Fire Station at CBJTC. Building 3010 was used as the volunteer fire department at Camp Blanding until 1996. Although no known releases have been confirmed, potential AFFF releases to soil may have occurred as a result of storage and maintenance of a crash/fire rescue truck that contained AFFF.

PFOS and PFNA were detected in surface soil at AOI 3 at concentrations below their SLs. Site workers and future construction workers could contact constituents in surface soil via incidental ingestion and inhalation of dust. Nearby residents, recreational users of Kingsley Lake, and trespassers may also be exposed to constituents in airborne soil particles. Therefore, the surface soil exposure pathway for nearby residents and recreational users/trespassers via inhalation of dust are potentially complete. PFOS and PFNA were also detected in subsurface soil at AOI 3. Construction workers could contact constituents in subsurface soil via incidental ingestion; therefore, the subsurface soil exposure pathway for potential future construction workers is potentially complete. The CSM for AOI 3 is presented on **Figure 7-3**.

### 7.1.4 AOI 4

AOI 4 is the facility WWTP, which accepts and treats wastewater from various facilities at CBJTC prior to discharge to the South Fork of Black Creek. The WWTP is a potential secondary source area if AFFF released historically at Building 3010 were transported to the WWTP. Sludge containment structures were present at the WWTP until renovation in 2004. If releases at Building 3010 conveyed AFFF to the WWTP and subsequently into sludge treated at the WWTP, secondary releases to the subsurface at the former containment structures is possible.

PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in surface or subsurface soil at AOI 4. Therefore, the surface soil and subsurface soil exposure pathways for all receptors are considered incomplete. The CSM for AOI 3 is presented on **Figure 7-4**.

## 7.2 Groundwater Exposure Pathway

The SI results in groundwater were used to determine whether a potentially complete pathway exists between the source and potential receptors based on the aforementioned criteria.

### 7.2.1 AOI 1

PFOA, PFOS, and PFHxS were detected in groundwater samples collected at AOI 1, at concentrations below their SLs. FLARNG installed a potable well on the east side of the Skid Strip in recent years, which could potentially be downgradient of location AOI01-03, where PFOA, PFOS, and PFHxS were detected. Additional drinking water supply wells are present on facility at CBJTC, but they are located cross-gradient of the Skid Strip and are unlikely to be affected by potential releases at AOI 1. A non-potable well exists downgradient of AOI 1. Due to potential site and construction worker use of the potable well at the Skid Strip, the pathway for exposure to current and future site workers and construction workers is potentially complete. No residents, recreators, or trespassers are anticipated to use the wells near AOI 1; therefore, the pathway to these receptors is considered incomplete. There are no downgradient potable wells within 4 miles of the AOI. Depths to water measured at AOI 1 in January 2022 during the SI ranged from 2.32 to 9.23 feet bgs. Therefore, the ingestion exposure pathway for potential future construction workers is considered potentially complete. The CSM for AOI 1 is presented on **Figure 7-1**.

### 7.2.2 AOI 2

PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in groundwater samples collected at AOI 2. Additionally, no drinking water supply wells are present on North Post, near the Anderson Bartlett Airfield. Therefore, the pathway for exposure to all receptors via ingestion of groundwater is considered incomplete. Depths to water measured in January 2022 during the SI ranged from 2.51 to 5.52 feet bgs. The CSM for AOI 2 is presented on **Figure 7-2**.

### 7.2.3 AOI 3

PFOS was detected above its SL in groundwater samples collected at AOI 3. Additionally, PFOA, PFBS, PFHxS, and PFNA were detected below their SLs in groundwater samples collected at AOI 3. Drinking water supply wells are present on-facility, near AOI 3, at CBJTC. Additional potable public wells are present to the northeast, off-facility, in the downgradient direction; however, the wells are more than 6 miles away. Due to the presence of drinking water supply wells at CBJTC near AOI 3, the pathway for exposure via ingestion of groundwater is considered potentially complete for site workers, potential future construction workers, and on-facility residents. Depths to water measured in January 2022 during the SI ranged from 2.49 and 3.88 feet bgs. Therefore, the ingestion exposure pathway for potential future construction workers is considered potentially complete. The CSM for AOI 3 is presented on **Figure 7-3**.

### 7.2.4 AOI 4

PFOA and PFOS were detected in groundwater samples collected at AOI 4, at concentrations above their SLs. Additionally, PFBS and PFHxS were detected below their SLs in groundwater samples collected at AOI 4. Drinking water supply wells are present on-facility at CBJTC, near AOI 4, in the side-gradient direction; however, a public supply well is also present in the downgradient direction, approximately 4 miles southeast, near the CBJTC facility boundary. Due to the presence of drinking water supply wells at CBJTC near AOI 4 and in the downgradient direction off-facility, the pathway for exposure via ingestion of groundwater is considered potentially complete for site workers, potential future construction workers, and off-facility residents. Depth to water measured in January 2022 during the SI was 9.71 feet bgs. Therefore, the ingestion exposure pathway for potential future construction workers is also considered potentially complete. The CSM for AOI 4 is presented on **Figure 7-4**.

## 7.3 Surface Water and Sediment Exposure Pathway

The SI results in soil and groundwater, in combination with knowledge of the fate and transport properties of PFAS, were used to determine whether a potentially complete pathway exists between the source and potential receptors.

### 7.3.1 AOI 1

PFAS are water soluble and can migrate readily from soil to surface water via leaching and run-off. PFOA, PFOS, PFHxS, and PFNA were detected in soil and groundwater at AOI 1; therefore, it is possible that those compounds may have migrated from soil and shallow groundwater discharge to the forested/shrub wetlands that exist less than 0.1 miles to the north and south of the Skid Strip via groundwater discharge or surface runoff. The wetlands are considered tributaries of the North Fork of Black Creek. Therefore, the surface water and sediment ingestion exposure pathway for site workers and potential future construction workers is considered potentially complete. The exposure pathway for residential receptors is considered incomplete because releases at AOI 1 are not anticipated to migrate in the direction of residential areas to the northeast or south. Because AOI 1 is isolated on the North Post portion of the facility, the exposure route for recreational users and trespassers via surface water and sediment ingestion is also considered incomplete. The CSM for AOI 1 is presented on **Figure 7-1**.

### 7.3.2 AOI 2

PFOA and PFBS were detected in soil at AOI 2; therefore, it is possible that those compounds may have migrated from soil to the forested/shrub wetlands surrounding the airstrip. Therefore, the surface water and sediment ingestion exposure pathway for site workers and potential future construction workers is considered potentially complete. Because AOI 2 is isolated on the North Post portion of the facility, the exposure route for recreational users and trespassers is also considered incomplete. The CSM for AOI 2 is presented on **Figure 7-2**.

### 7.3.3 AOI 3

Because PFOA, PFOS, PFBS, PFHxS, and PFNA were detected in soil and groundwater at AOI 3, it is possible that those compounds may have migrated from soil to stormwater channelizing structures, or via shallow groundwater discharge, to the North Fork Black Creek. Surface run-off at Building 3010 previously combined with stormwater flow to the WWTP until the WWTP was redesigned in 2004. As a result, it is possible that potential releases at AOI 3 may have migrated via surface water and runoff to the WWTP. Therefore, the surface water and sediment ingestion exposure pathway for site workers and potential future construction workers is considered

potentially complete. It is also conservatively assumed, based on proximity, that migration into Kingsley Lake via shallow groundwater discharge is possible. As such, the surface water and sediment ingestion exposure pathway for residents, trespassers, and recreational users of Kingsley Lake is also considered potentially complete. The CSM for AOI 3 is presented on **Figure 7-3**.

### 7.3.4 AOI 4

Because PFOA, PFOS, PFBS, and PFHxS were detected in groundwater at AOI 4, it is possible that those compounds may have migrated via shallow groundwater discharge to the wetland adjacent to the eastern edge of the WWTP area, which discharges to the South Fork of Black Creek. Additionally, the WWTP effluent is conveyed via sub-terrain clay pipe to a discharge point on the South Fork of Black Creek, approximately 1.2 miles to the southeast. Therefore, the surface water and sediment ingestion exposure pathway for site workers and potential future construction workers is considered potentially complete. Surface water and sediment flow southeast from AOI 4, towards isolated range areas, where residents, trespassers, and recreators are not anticipated. As a result, the surface water and sediment ingestion exposure pathway for those receptors is considered incomplete. The CSM for AOI 4 is presented on **Figure 7-4.**

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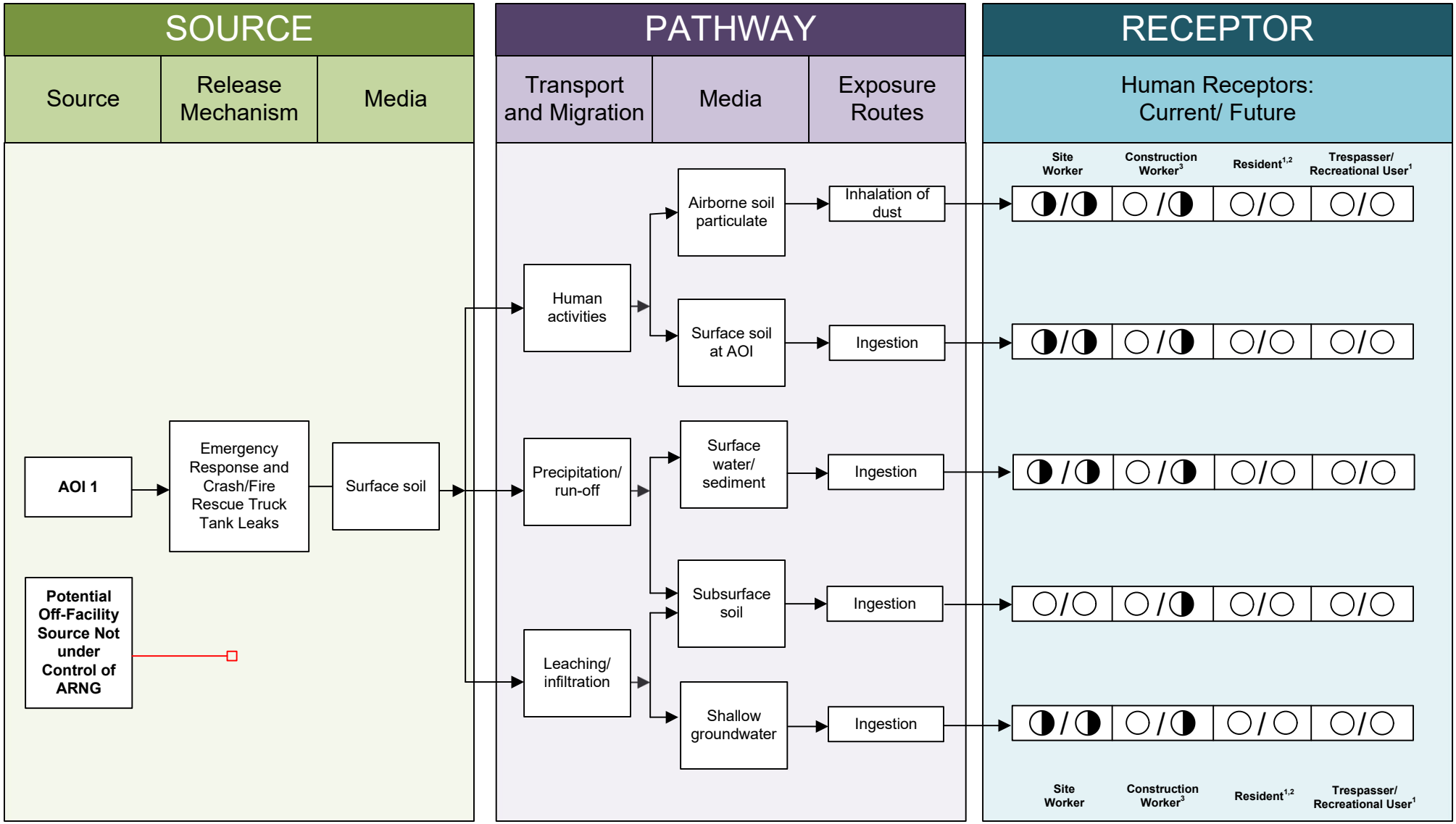


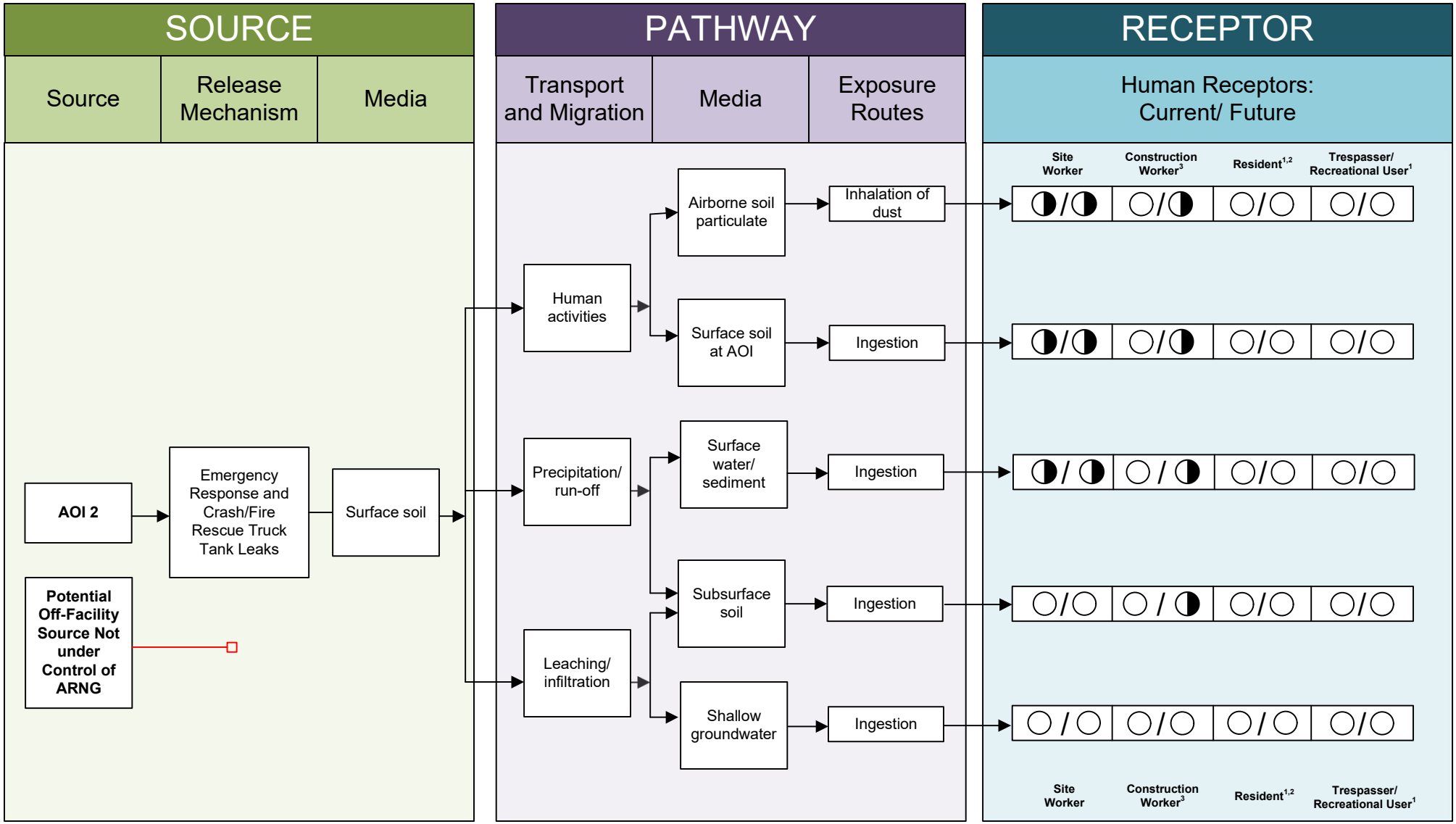

**LEGEND**

- Flow-Chart Stops
- Flow-Chart Continues
- Partial/ Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of SL

**Notes:**

1. The resident and recreational users refer to off-site receptors because no residents or on-facility recreators are anticipated to be on North Post.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. No current active construction at the AOI.

**Figure 7-1**
Conceptual Site Model, AOI 1
Camp Blanding Joint Training Center, Florida



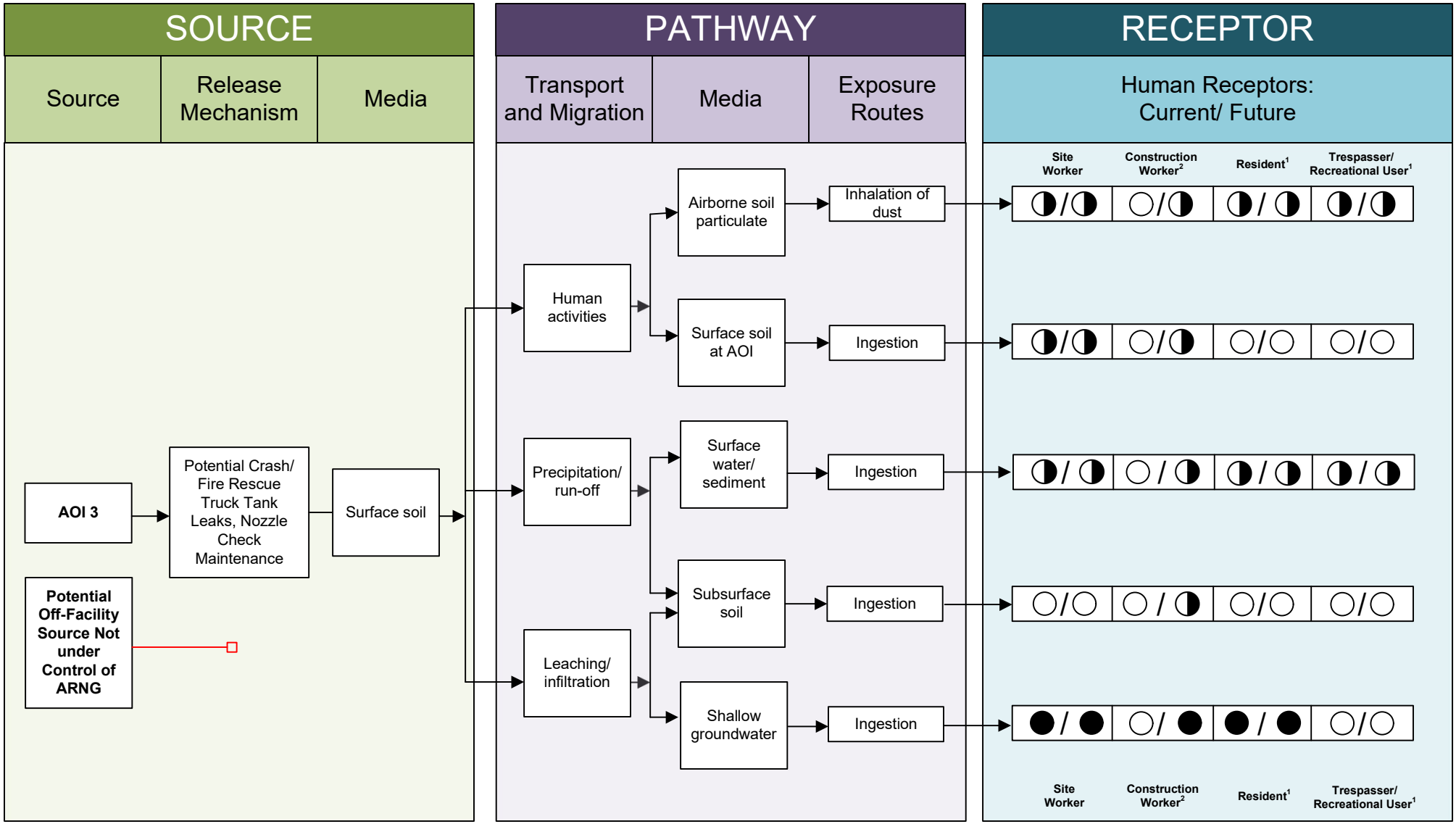

**LEGEND**

- Flow-Chart Stops
- Flow-Chart Continues
- Partial/ Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of SL

**Notes:**

1. The resident and recreational users refer to off-site receptors because no residents or on-facility recreators are anticipated to be on North Post.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. No current active construction at the AOI.

**Figure 7-2**
Conceptual Site Model, AOI 2
Camp Blanding Joint Training Center, Florida



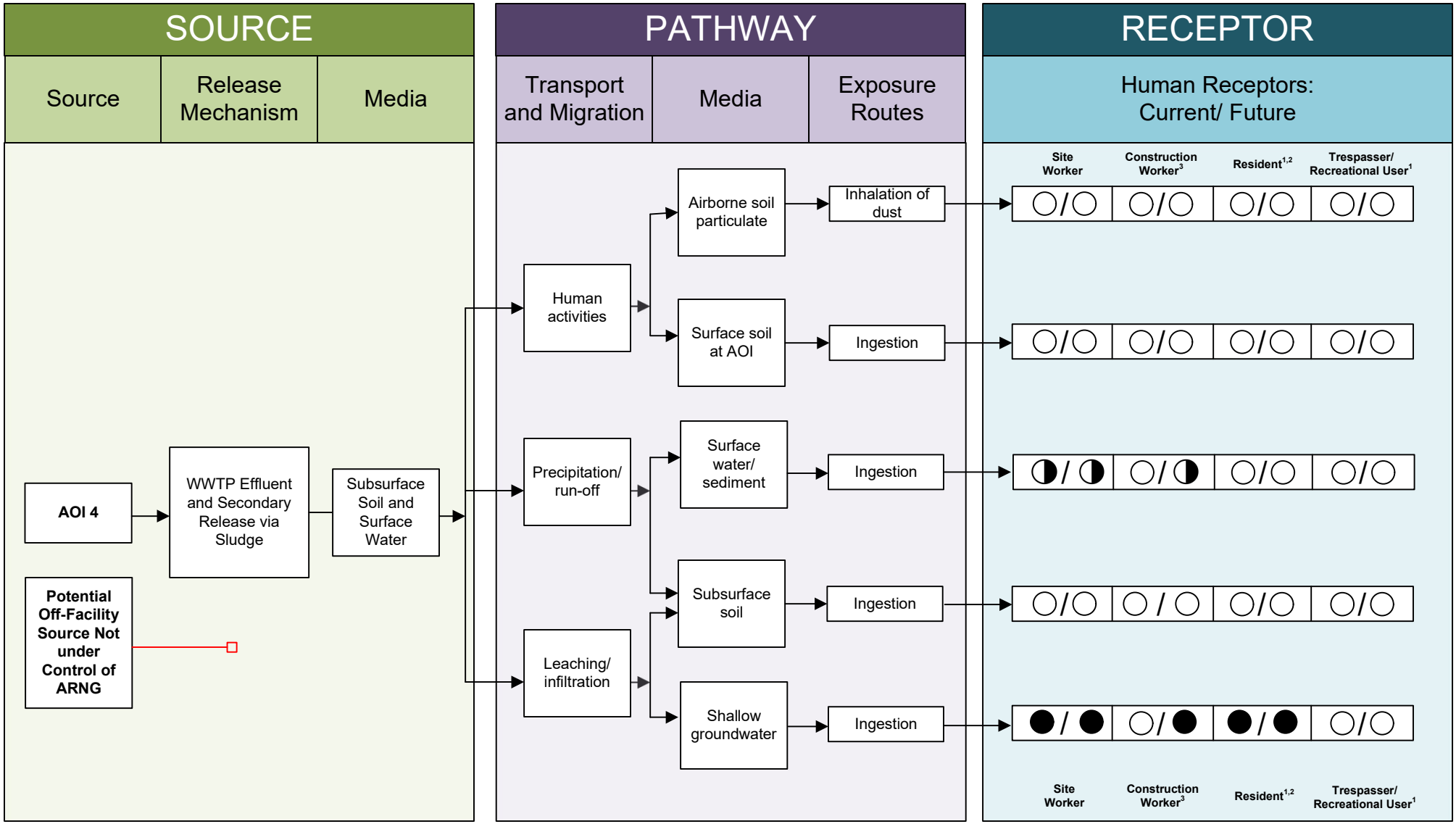

**LEGEND**

- Flow-Chart Stops
- Flow-Chart Continues
- Partial/ Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of SL

**Notes:**

1. The resident and recreational users refer to both on-facility and off-facility receptors due to residential use of facility lodging and recreational use of Kingsley Lake.
2. No current active construction at the AOI.

**Figure 7-3**
Conceptual Site Model, AOI 3
Camp Blanding Joint Training Center, Florida




**LEGEND**

- Flow-Chart Stops
- Flow-Chart Continues
- Partial/ Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of SL

**Notes:**

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. No current active construction at the AOI.

**Figure 7-4**
Conceptual Site Model, AOI 4
Camp Blanding Joint Training Center, Florida

# 8. Summary and Outcome

This section summarizes SI activities and findings. The most significant findings are summarized in this section and are reproduced directly or abstracted from information contained in this report. The outcome provides general and comparative interpretations of the findings relative to the SLs.

## 8.1 SI Activities

The SI field activities were conducted from 18 to 20 January 2022 and consisted of utility clearance, direct push boring, soil sample collection, temporary monitoring well installation, grab groundwater sample collection, and land surveying. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021), except as previously noted in **Section 5.8**.

To fulfill the project DQOs set forth in the approved SI QAPP Addendum (AECOM, 2021), samples were collected and analyzed for a subset of 18 compounds by LC/MS/MS compliant with QSM 5.3 Table B-15 as follows.

- Twenty-two (22) soil samples from nine borings;
- Ten (10) grab groundwater samples from 10 temporary wells;
- Eighteen (18) QA/QC samples.

An SI is conducted when the PA determines an AOI exists based on probable use, storage, and/or disposal of PFAS-containing materials. The SI includes multi-media sampling at AOIs to determine whether or not a release has occurred. The SI may conclude further investigation is warranted, a removal action is required to address immediate threats, or no further action is required. Additionally, the CSMs were refined to assess whether a potentially complete pathway exists between the source and potential receptors for potential exposure at the AOIs, which are described in **Section 7**.

## 8.2 Outcome

Based on the results of this SI, further evaluation is warranted under CERCLA in an RI for AOI 3 and AOI 4; no further evaluation is warranted for AOI 1 and AOI 2 at this time. Based on the CSMs developed and revised in light of the SI findings, the pathway for exposure to drinking water receptors from historical DoD activities at AOI 3 and AOI 4 is potentially complete. Sample analytical concentrations collected during the SI were compared to the project SLs in soil and groundwater, as described in **Table 6-1**. A summary of the results of the SI data relative to the SLs is as follows:

- At AOI 1:
    - The detected concentrations of PFOA, PFOS, PFHxS, and PFNA in soil at AOI 1 were below their SLs.
    - The detected concentrations of PFOA, PFOS, and PFHxS in groundwater at AOI 1 were below their SLs; PFBS and PFNA were not detected. Based on the results of the SI, no further evaluation of AOI 1 is warranted in an RI.
- At AOI 2:
    - The detected concentrations of PFOA and PFBS in soil at AOI 2 were below their SLs; PFOS, PFHxS, and PFNA were not detected.

    - PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in groundwater at AOI 2. Based on the results of the SI, no further evaluation of AOI 2 is warranted.

- At AOI 3:
    - The detected concentrations of PFOS and PFNA in soil at AOI 3 were below their SLs; PFOA, PFBS, and PFHxS were not detected.
    - PFOS in groundwater exceeded its SL at AOI 2. PFOS exceeded the SL of 4 ng/L at three locations, with a maximum concentration of 67.0 ng/L at AOI03-03. PFOA, PFBS, PFHxS, and PFNA were detected below their SLs in groundwater at AOI 3. Based on the results of the SI, further evaluation of AOI 3 is warranted in an RI.
- At AOI 4:
    - PFOA, PFOS, PFBS, PFHxS, and PFNA were not detected in soil at AOI 4.
    - PFOA and PFOS in groundwater exceeded their SLs at AOI 4. PFOA exceeded the SL of 6 ng/L, with a maximum concentration of 22.1 ng/L at AOI04-01. PFOS exceeded the SL of 4 ng/L, with a maximum concentration of 9.92 ng/L at AOI04-01. PFBS and PFHxS were detected below their SLs in groundwater at AOI 4; PFNA was not detected. Based on the results of the SI, further evaluation of AOI 4 is warranted in an RI.

Due to the inferred groundwater flow, and concentrations of PFOA, PFOS, and PFHxS at the side-gradient AOI01-03 location compared to the samples at AOI01-01 and AOI01-02, there is uncertainty regarding the potential source area at AOI 1. The FLARNG also installed a potable well with a total depth of 176 feet bgs on the east side of the Skid Strip in recent years, which creates a potentially complete pathway for current and future site workers to be exposed to groundwater at AOI 1. All sample concentration data at AOI 1 are below the respective SLs; however, due to the uncertainty regarding the potential source area and presence of a potable well, additional sampling may be considered during future RI sampling efforts. For that reason, this AOI is recommended for no further action at this time, with consideration for additional sampling during future CERCLA phase.

Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

**Table 8-1** summarizes the SI results for soil and groundwater used to determine if an AOI should be considered for further investigation under CERCLA and undergo an RI.

## Table 8-1: Summary of Site Inspection Findings and Recommendations

| AOI | Potential Release Area | Soil – Source Area | Groundwater – Source Area | Future Action |
|---|---|---|---|---|
| 1 | Skid Strip | ◐ | ◐ | No further action at this time |
| 2 | Anderson Bartlett Airfield | ◐ | ○ | No further action |
| 3 | Building 3010 | ◐ | ● | Proceed to RI |
| 4 | WWTP | ○ | ● | Proceed to RI |

**Legend:**

● = detected; exceedance of the screening levels

◐ = detected; no exceedance of the screening levels

○ = not detected

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