



**Biak Training Center Brett Hall  
Powell Butte, Oregon  
Site Inspection  
Oregon Army National Guard**

**Technical Project Planning (TPP) Meeting 3**

**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**

**13 June 2023**



# Agenda

- Introductions
- Safety Moment
- TPP Meeting Goals
- ARNG CERCLA Process Overview
- Preliminary Assessment (PA) Overview
- SI Results
- Next Steps
- Questions and Open Discussion



# Introductions

## **ARNG G-9**

- Jennifer Solomon, PFAS Program Manager
- Bonnie Packer, Nationwide Technical Lead
- Joe Davis, ARNG Project Manager

## **USACE**

- Emily Cline, Nationwide Program Manager
- Taylor Roberts, Project Manager, Seattle District
- Ben McKenna, Hydrogeologist, Seattle District
- Ted Repasky, Hydrogeologist, Seattle District
- Kiera Hearn, Chemist, Baltimore District

## **Oregon Army National Guard (ORARNG)**

- Kelly Toynton, Cleanup Program Manager

## **Oregon Department of Environmental Quality (ORDEQ)**

- Sarah Van Glubt, Project Manager
- Dan Hafley, NW Region Cleanup Program
- Ann Farris, DEQ Project Manager

## **AECOM Technical Services, Inc.**

- Anthony Palmieri, SI Task Manager and Senior Lead
- Matt Costakis, Senior Geologist
- Emma Belanger, Staff Geologist



# Safety Moment

## Hearing Protection

- According to the CDC, an estimated 14% of all workers (22 million) are exposed to potentially damaging noise at work annually
- OSHA requires hearing protection for workers exposed to 85 dBs
- Signs that noise levels at work are too high:
  - Ringing or humming in your ear(s) after work
  - Shouting to speak to a coworker who is 2 feet away
  - Experiencing temporary hearing loss outside of work
- Loud noise exposure is bad for your health:
  - Leads to increase cortisol levels (stress hormone), brain inflammation, decreased focus, disrupts sleep
  - Wear ear plugs at live music concerts, personal hobbies using power tools, limit volume on earbuds or headphones

<https://www.cdc.gov/niosh/topics/ohl/overall.html>

<https://www.healthline.com/health-news/loud-noises-bad-for-your-health>





# Meeting Goals

## TPP 1/2 Review

- Provide an overview of ARNG PA/SI Program
- Define objectives for SI data collection
- Encourage stakeholder involvement
- Review project schedule
- Capture action items
- Discuss proposed SI approach

## TPP 3

- ARNG CERCLA program overview
- Revisit the PA findings
- Present SI Results and revised conceptual site model (CSM)
- Resolve comments/concerns and gain concurrence on presentation of findings in Draft Final SI Report
- Discuss future actions at the site



# ARNG PA/SI Overview

## Work Phases



Notes: \*Current stage of activity

- Follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Process
- An interim removal action can be conducted or a No Further Action determination can be made at any phase



# ARNG CERCLA Status Overview

- PA for Biak Training Center Brett Hall has been completed by ARNG
- SI fieldwork completed in June 2022
- Draft Final SI Report provided to ORDEQ; results presented today



# PA – Summary of Findings

- Potential Source Areas: 2 identified during the PA, one identified during the SI and grouped into 3 AOIs
- PFAS releases attributed to United States Forest Service (USFS) and Federal Bureau of Investigation (FBI) trainings, and accidental release



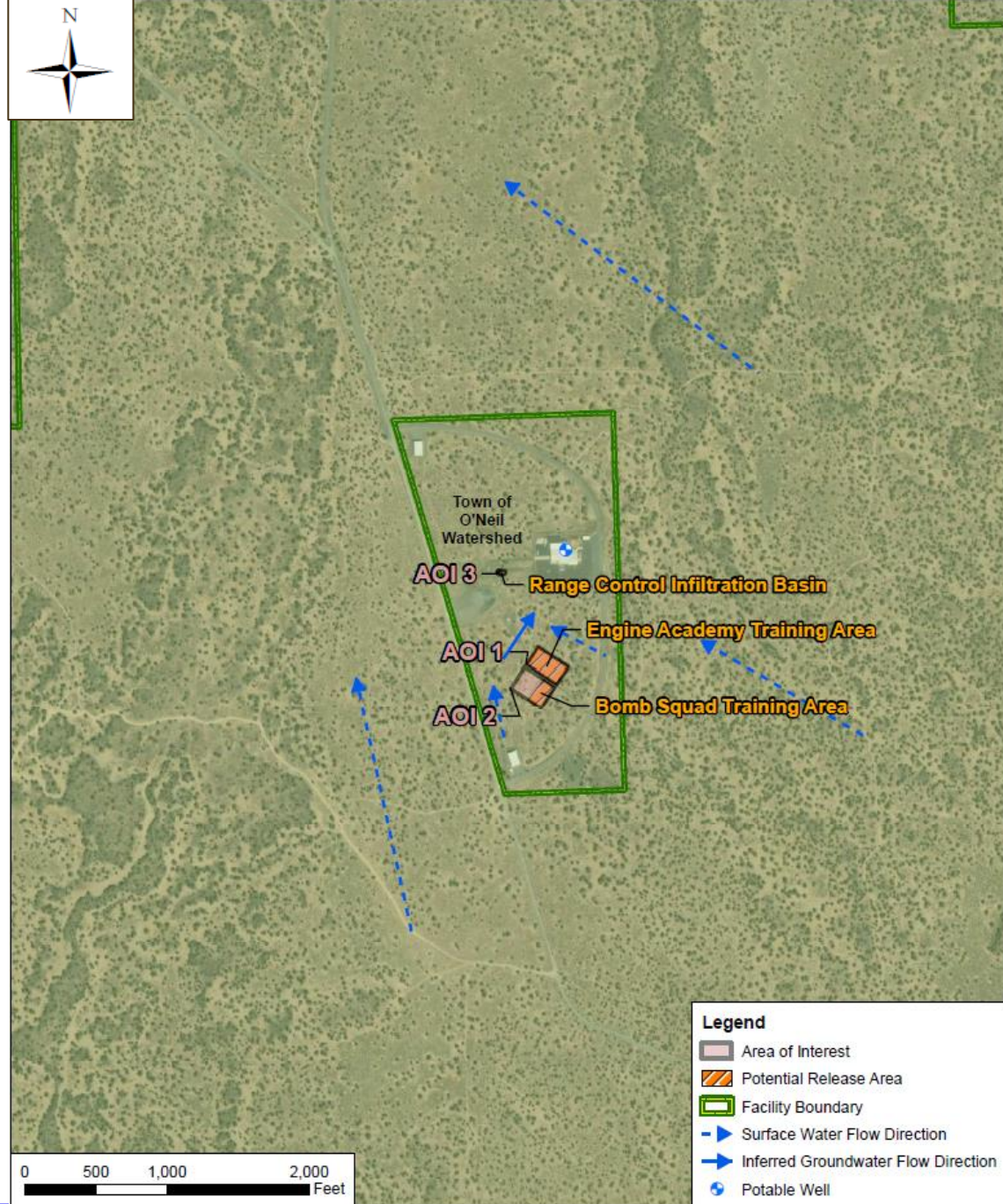
# PA – Summary of Findings

- AOI 1 – Engine Academy Training Area
  - Releases by the USFS Engine Academy occurred between 2000-2011, where aqueous film-forming foam (AFFF) was used for training exercises. Concentrations and amount of AFFF used are unknown
- AOI 2 – Bomb Squad Training Area
  - Between 2016 and 2017, the FBI conducted training events where AFFF was used during bomb squad training exercises. Concentrations and amount of AFFF used are unknown
- AOI 3 – Range Control Infiltration Basin
  - AFFF was inadvertently introduced to a water tank truck and later rinsed out onto the paved area at Range Control, which drains to the Infiltration Basin



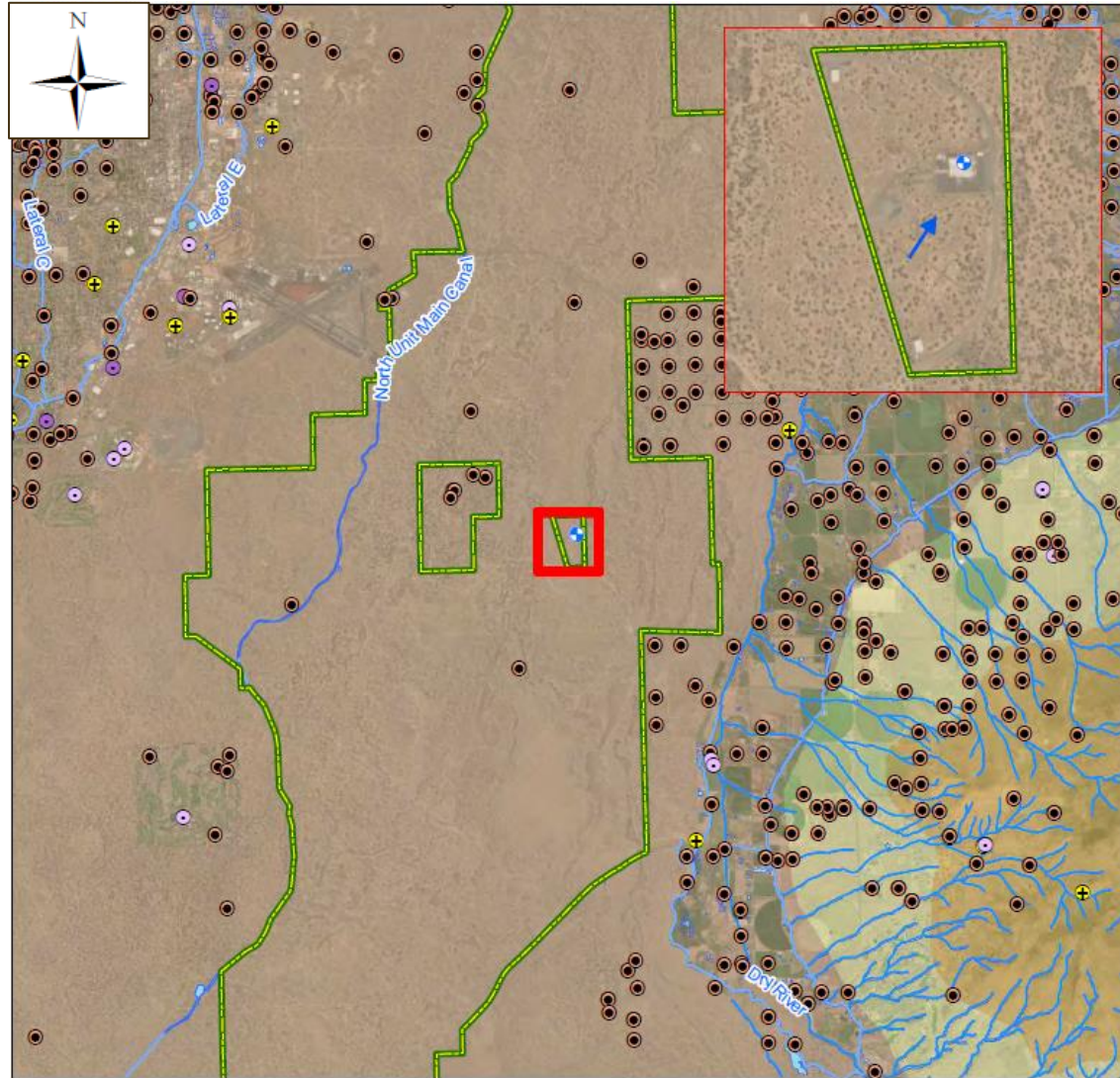
# PA – Summary of Findings

- Potential PFAS release areas grouped into 3 AOIs





# CSM – Groundwater Features



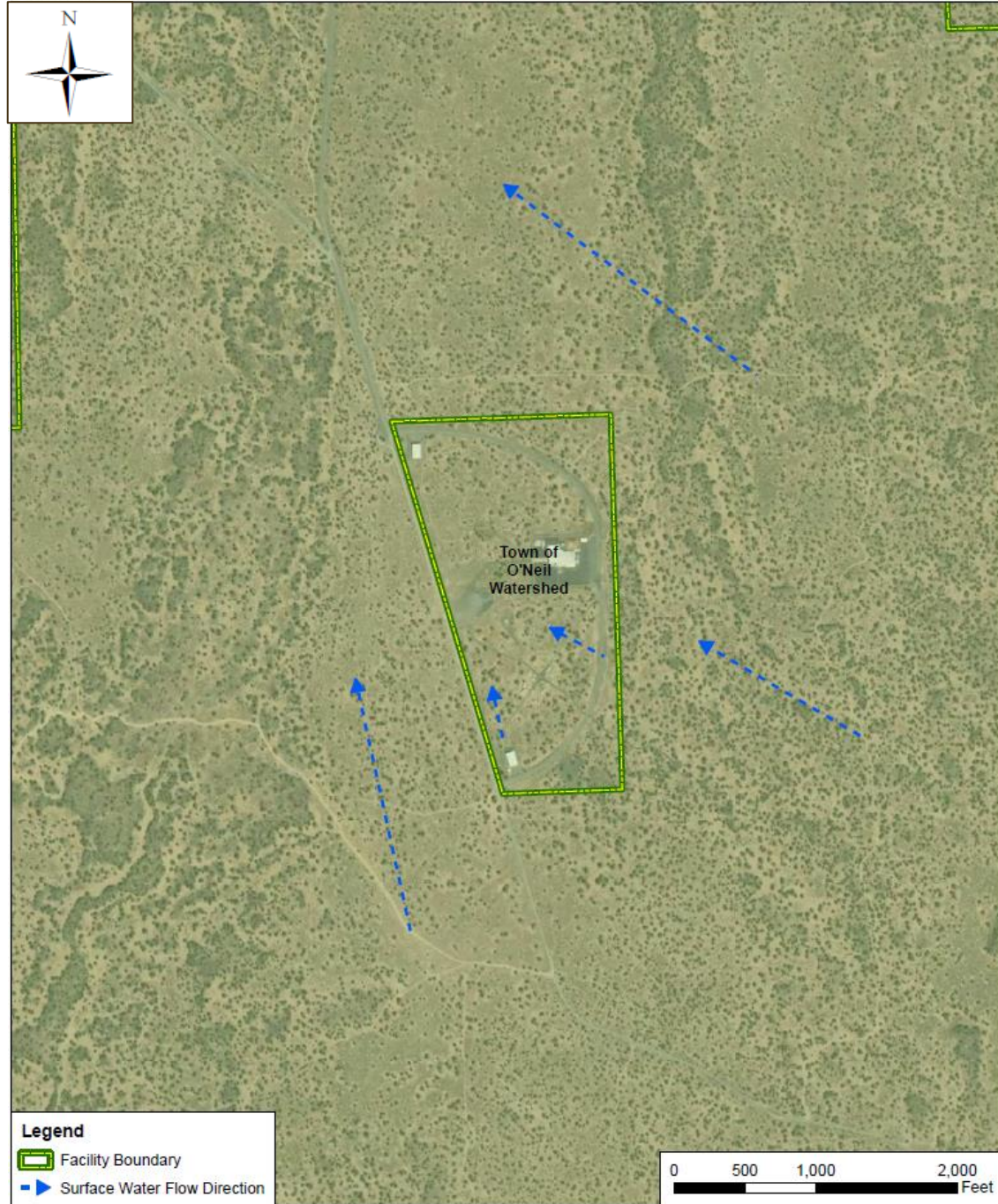
## Legend

- |                                     |                |                 |
|-------------------------------------|----------------|-----------------|
| Facility Boundary                   | <b>Geology</b> | <b>Well</b>     |
| Water Body                          | alluvial fan   | Domestic Well   |
| Wetland                             | Basalt         | Industrial Well |
| River/Stream                        | rhyolite       | Irrigation Well |
| Canal/Ditch                         |                | Community Well  |
| Inferred Groundwater Flow Direction |                | Potable Well    |

0 0.75 1.5 3  
Miles



# CSM – Surface Water Features





# SI – Data Quality Objectives

- Primary SI DQOs
  - Confirm the presence/absence of a release at a potential source area
  - Gather data for refinement of conceptual site model (CSM):
    - Source-Pathway-Receptor relationships
- Extended SI DQOs
  - Determine the presence/absence at facility boundary
  - Check for alternate sources
  - Measure PFAS at/near receptor, if warranted



# SI – Screening Levels

- Results compared to Office of the Secretary of Defense (OSD) Screening Levels (SLs) for soil and groundwater
  - Memorandum from the OSD dated 6 July 2022
  - SLs for groundwater based on direct ingestion
  - SLs for soil based on incidental ingestion; 0-2 ft compared to Residential SL, 2-15 ft compared to Industrial SL, >15 ft not compared to either SL
- AOIs exceeding OSD SLs will proceed to the next phase under CERCLA (i.e., Remedial Investigation)

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

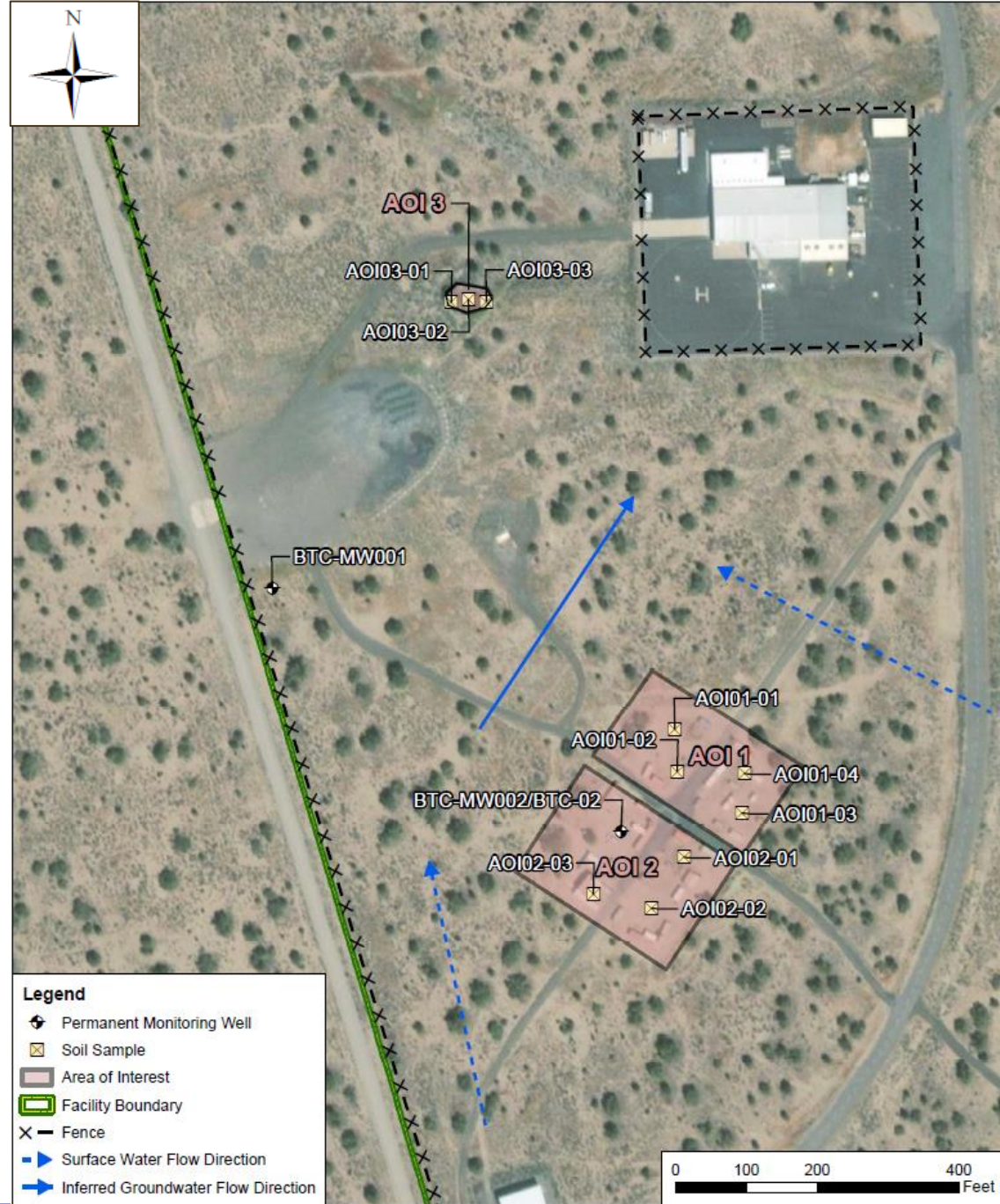


# SI – Summary of Approach

- Approach
  - In general, three soil samples were collected from each boring location: one at surface (0 to 2 feet below ground surface [bgs]), one at the bedrock interface (~5 feet bgs), and one at mid-point between the surface and bedrock interface
  - Additional samples were collected from sedimentary interbeds at borings BTC-MW001 and BTC-02/BTC-MW002, depths ranging from 47 to 226 feet bgs.
  - Two soil borings, BTC-MW001 and BTC-02/BTC-MW002 were converted to permanent monitoring wells for groundwater samples (446 ft bgs deep)
- Total Samples
  - 31 soil grab samples from 12 boring locations and 3 hand auger locations
  - 2 groundwater samples from 2 newly-installed permanent wells



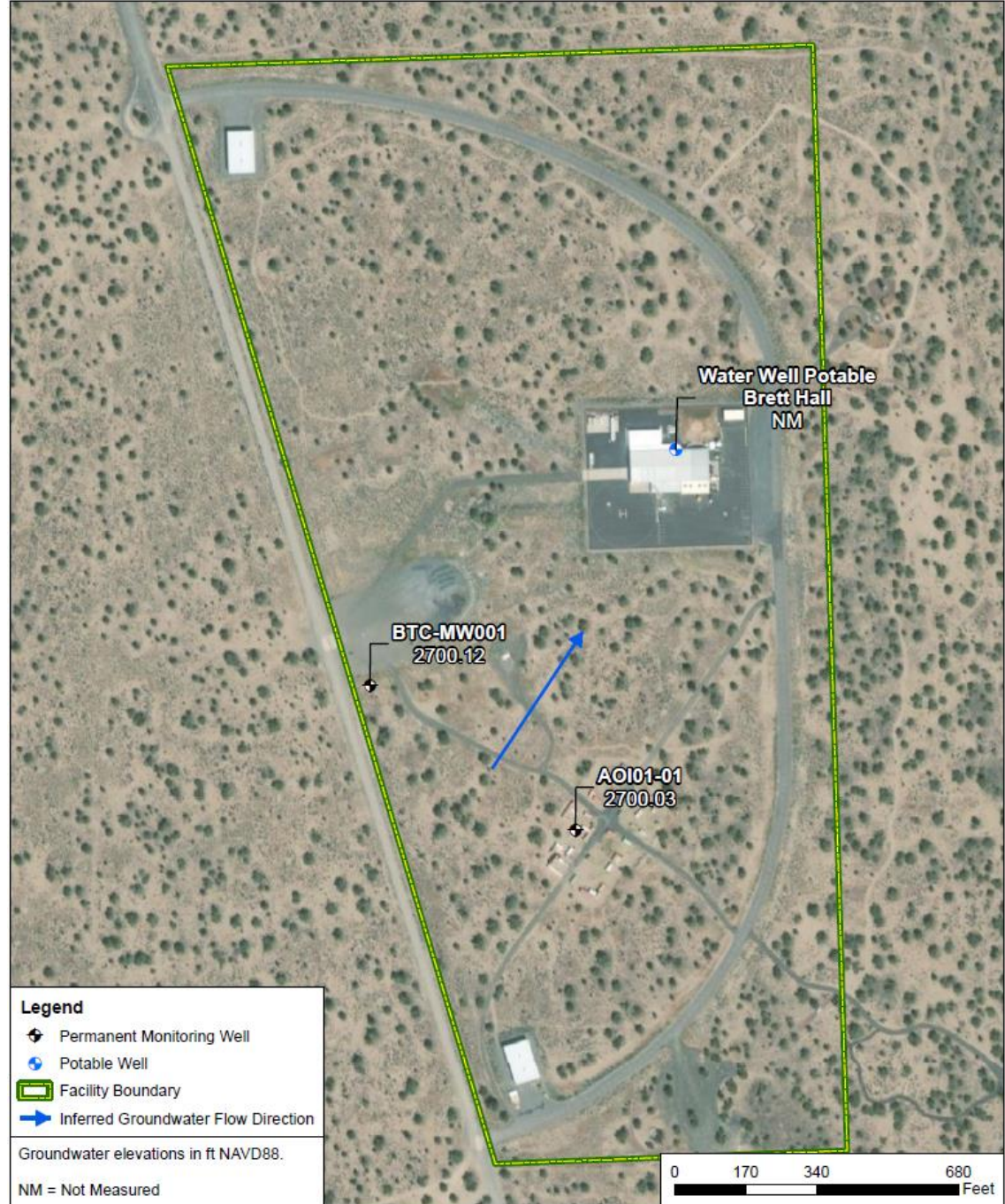
# SI – Summary of Approach SI Investigation Locations





# SI – Summary of Findings

## Groundwater Elevations



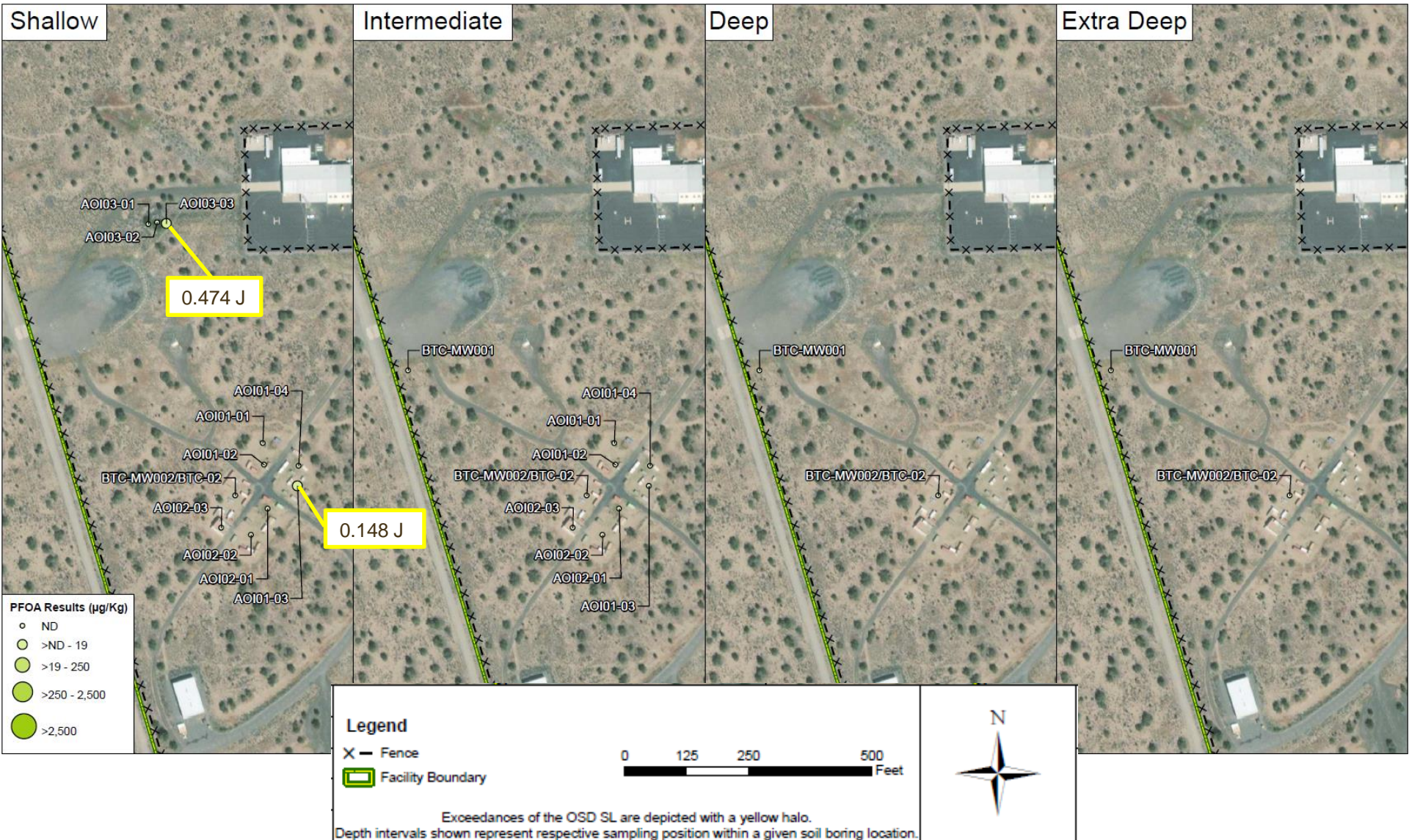


# SI – Summary of Findings

- PFOA, PFOS, PFHxS, and PFNA detected in surface soil, no SL exceedances
  - Detected concentrations were orders of magnitude below the SLs; PFNA detected below the SL at AOI03-03 (5.19  $\mu\text{g}/\text{kg}$ )
  - PFBS not detected in any soil samples
  - No PFAS detections in shallow subsurface soil, one detection of PFOS in deep subsurface soil at BTC-02/MW002
- PFAS not detected in groundwater samples



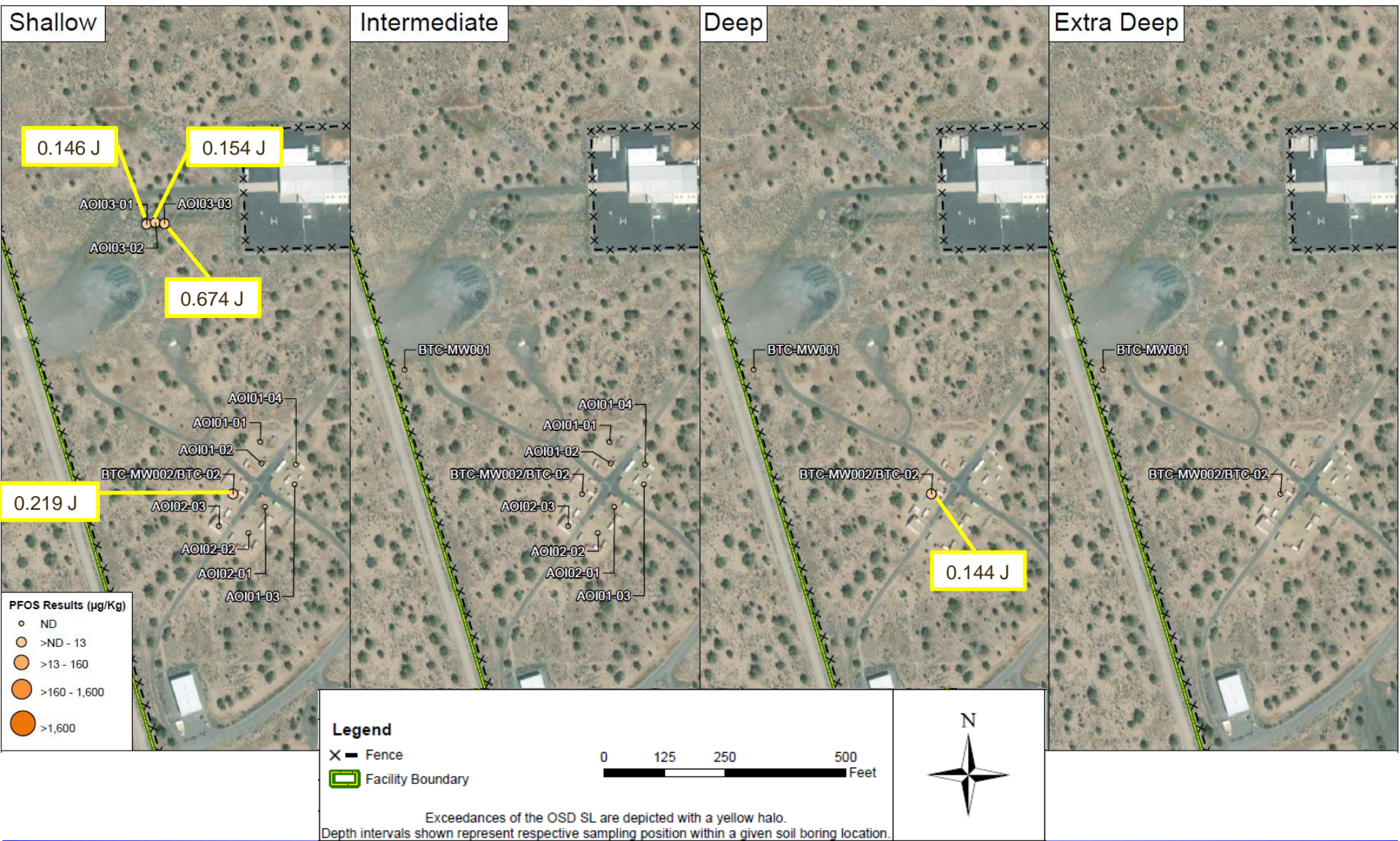
# SI – Summary of Findings PFOA in Soil





# SI – Summary of Findings

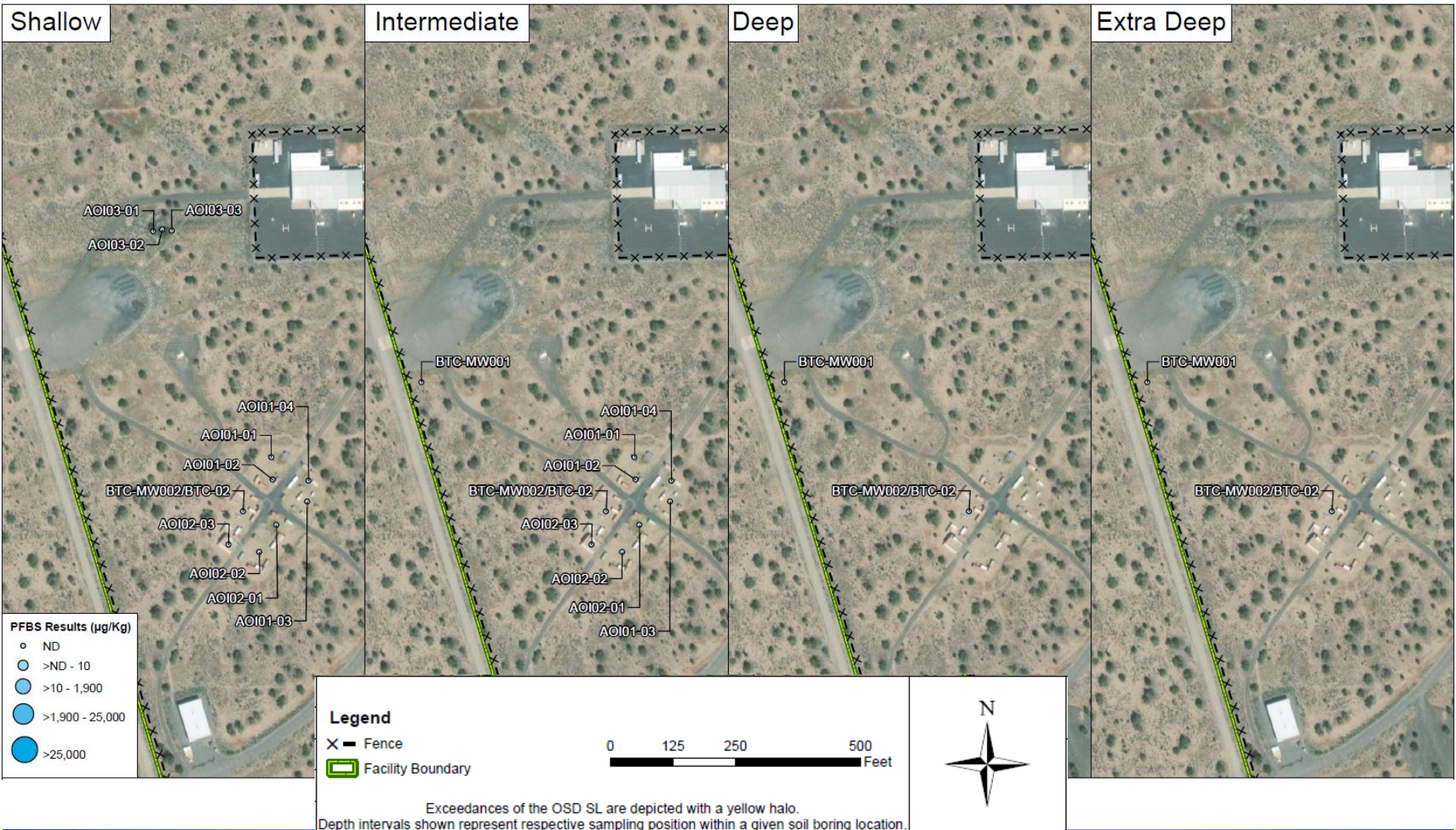
## PFOS in Soil





# SI – Summary of Findings

## PFBS in Soil





# SI – Summary of Findings

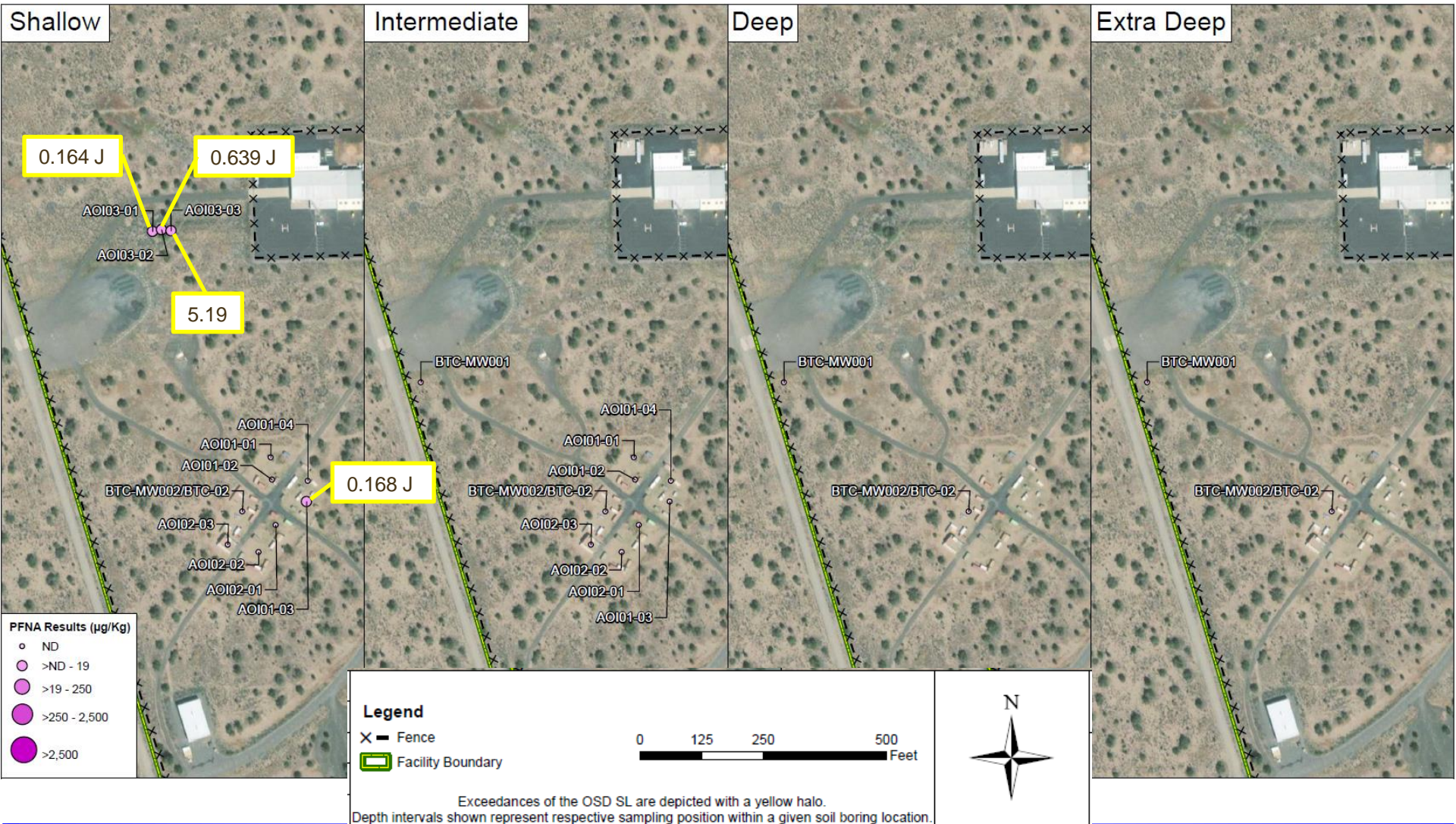
## PFHxS in Soil





# SI – Summary of Findings

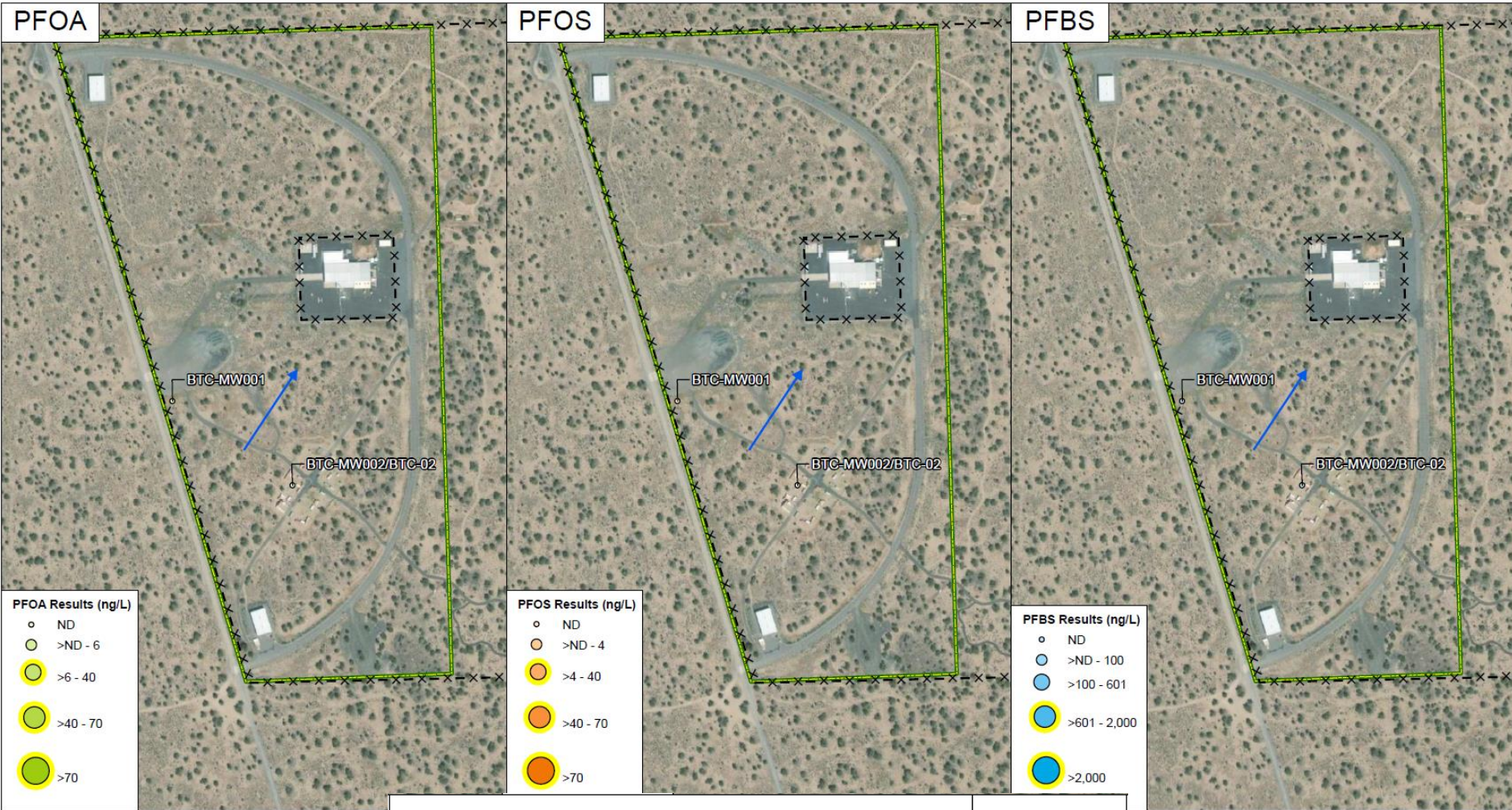
## PFNA in Soil





# SI – Summary of Findings

## PFOA, PFOS, and PFBS in Groundwater



**Legend**

- X - Fence
- Facility Boundary
- Inferred Groundwater Flow Direction

Exceedances of the OSD SL are depicted with a yellow halo.  
Groundwater sample ID AOI01-01-GW is associated with monitoring well BTC-MW002.

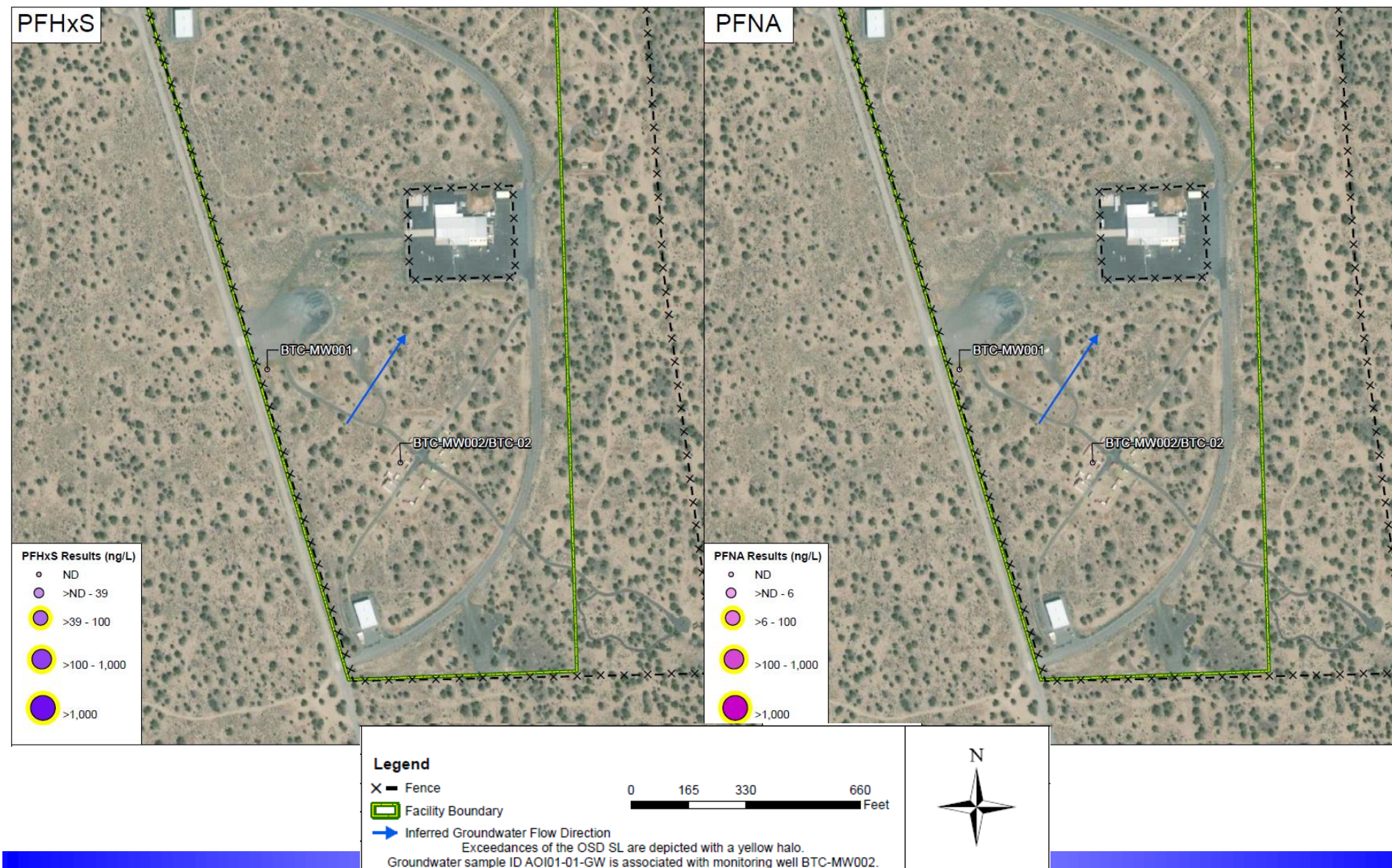
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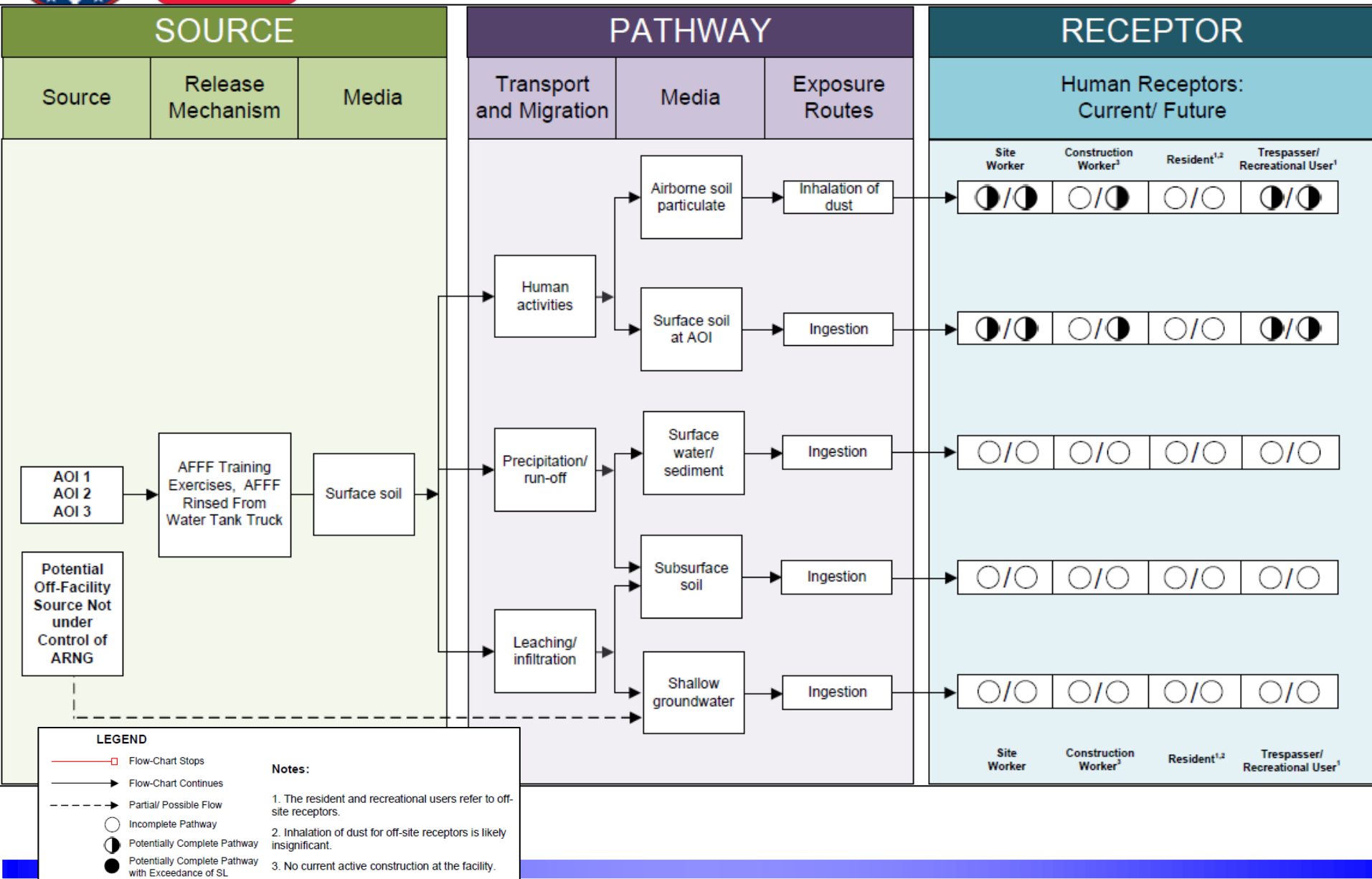
# SI – Summary of Findings

## PFHxS and PFNA in Groundwater





# SI – Summary of Findings





# SI – Summary of Findings

AOI	Potential Release Area	Soil – Source Area	Groundwater – Source Area	Groundwater – Facility Boundary	Future Action
1	Engine Academy Training Area	●	○	○	No further action
2	Bomb Squad Training Area	●	○	N/A	No further action
3	Range Control Infiltration Basin	●	N/A	N/A	No further action

**Legend:**

N/A = not applicable

● = detected; exceedance of the screening levels

◐ = detected; no exceedance of the screening levels

○ = not detected



# Next Steps

- Finalize SI Report
  - Address comments from ORDEQ
  - Schedule
- Initiate next step in CERCLA process: No Further Action



# Open Discussion





# Acronyms

- $\mu\text{g}/\text{kg}$  – micrograms per kilogram
- AFFF – aqueous film forming foam
- AOI – area of interest
- ARNG – Army National Guard
- bgs – below ground surface
- CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
- CSM – conceptual site model
- DoD – US Department of Defense
- DQO – data quality objective
- ft – feet
- FBI – Federal Bureau of Investigation
- GW – groundwater
- HFPO-DA – hexafluoropropylene oxide dimer acid
- OHA – Oregon Health Authority
- ORDEQ – Oregon Dept. of Environmental Quality
- OSD – Office of the Secretary of Defense
- NA – not applicable
- $\text{ng}/\text{L}$  – nanograms per liter
- PA – Preliminary Assessment
- PFAS – per- and polyfluoroalkyl substances
- PFBS – perfluorobutanesulfonic acid
- PFHxS – perfluorohexanesulfonic acid
- PFNA – perfluorononanoic acid
- PFOA – perfluorooctanoic acid
- PFOS – perfluorooctanesulfonic acid
- RI – Remedial Investigation
- SI – Site Inspection
- SL – screening level
- TBD – to be determined
- TPP – Technical Project Planning
- US – United States
- UFP-QAPP – Uniform Federal Policy- Quality Assurance Project Plan
- USACE – U.S. Army Corp of Engineers
- USFS – United States Forest Service