

**DRAFT FINAL**  
**UNIFORM FEDERAL POLICY QUALITY ASSURANCE**  
**PROJECT PLAN (UFP-QAPP) ADDENDUM**  
  
**FOR THE REMEDIAL INVESTIGATION ACTIVITIES AT**  
  
**FORMER STEWART AIR FORCE BASE,**  
**NEWBURGH AND NEW WINDSOR, NEW YORK**  
  
**THE FORMERLY USED DEFENSE SITE (FUDS), NO. C02NY0704**

**CONTRACT NO. W912WJ-19-D-0006**

**Delivery Order No. W912WJ19F0135**

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**July 2026**



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## Abbreviations and Acronyms

|          |                                               |          |                                                   |
|----------|-----------------------------------------------|----------|---------------------------------------------------|
| AFB      | Air Force Base                                | FI       | former incinerator                                |
| AMSL     | Above Mean Sea Level                          | FSA      | Former Stewart Airforce Base                      |
| AOC      | Area of Concern                               | ft       | feet                                              |
| APP      | Accident Prevention Plan                      | FUDS     | Formerly Used Defense Site                        |
| ASTM     | American Society for Testing and Materials    | FUDSChem | Formerly Used Defense Site Chemical Database      |
| bgs      | below ground surface                          | GC/MS    | Gas Chromatograph / Mass Spectrometer             |
| B.S.     | Bachelor of Science                           | gm       | gram                                              |
| CalEPA   | California Environmental Protection Agency    | GIS      | Geographical Information System                   |
| CAMP     | Community Air Monitoring Plan                 | GW       | groundwater                                       |
| CEC      | Cation Exchange Capacity                      | HAZWOPER | Hazardous Waste Operations and Emergency Response |
| CIT      | Certified Instructional Trainer               | HHRA     | Human Health Risk Assessment                      |
| C-O-C    | Chain-of-Custody                              | HSE      | Health, Safety and Environment                    |
| CQC      | Contractor Quality Control                    | HTRW     | Hazardous, Toxic and Radioactive Waste            |
| CQC-M    | Contractor Quality Control Manager            |          |                                                   |
| CSM      | Conceptual Site Model                         |          |                                                   |
| CSP      | Certified Safety Professional                 |          |                                                   |
| Dig Safe | Dig Safe Systems, Incorporated                | ID       | Identification                                    |
| DOC      | Dissolved Organic Carbon                      | IDW      | Investigation-Derived Waste                       |
| DoD      | Department of Defense                         | LCS      | Laboratory Control Sample                         |
| DOT      | Department of Transportation                  | LCSD     | Laboratory Control Sample Duplicate               |
| DQO      | Data Quality Objective                        | LLOPR    | Low-Level Ongoing Precision and Recovery          |
| DPT      | Direct Push Technology                        | LOD      | Limit of Detection                                |
| EB       | Equipment Blank                               | LOQ      | Limit of Quantitation                             |
| ELLE     | Eurofins Lancaster Laboratories Environmental |          |                                                   |
| EM       | Engineering Manual                            | MB       | Method Blank                                      |
| EMCX     | Environmental Munitions Center of Expertise   | MDL      | Method Detection Limit                            |
| ERA      | Ecological Risk Assessor                      | MEC      | Munitions and Explosives of Concern               |



|        |                                                         |          |                                                            |
|--------|---------------------------------------------------------|----------|------------------------------------------------------------|
| MMYY   | two-digit month and two-digit year                      | RCRA     | Resource Conservation and Recovery Act                     |
| M.S.   | Master of Science                                       | RI       | Remedial Investigation                                     |
| MS     | Matrix Spike                                            | RPD      | Relative Percent Difference                                |
| MSD    | Matrix Spike Duplicate                                  | RSL      | Regional Screening Level                                   |
| MW     | Monitoring Well                                         |          |                                                            |
| N/A    | Not Applicable                                          | S&H      | Safety and Health                                          |
| NE     | Not Established                                         | SD       | sediment                                                   |
| NYSDEC | New York State Department of Environmental Conservation | SG       | soil gas                                                   |
| OCP    | Organochlorine Pesticides                               | SIM      | Selective Ion Monitoring                                   |
| ORP    | Oxidation-Reduction Potential                           | SLERA    | Screening-Level Ecological Risk Assessment                 |
| OSHA   | Occupational Safety and Health Administration           | SOP      | Standard Operation Procedure                               |
|        |                                                         | SS       | surface soil                                               |
|        |                                                         | SSHO     | Site Safety and Health Officer                             |
|        |                                                         | SSHP     | Site Safety and Health Plan                                |
|        |                                                         | SVOC     | Semi-Volatile Organic Compounds                            |
| PCB    | Poly Chlorinated Biphenyl                               | SW       | surface water                                              |
| PDT    | Project Delivery Team                                   | SWF      | Stewart International Airport                              |
| PE     | Professional Engineer                                   |          |                                                            |
| PFAS   | Per- and Polyfluoroalkyl Substances                     | TAL      | Target Analyte List                                        |
| %      | Percent                                                 | TB       | Trip Blank                                                 |
| PG     | Professional Geologist                                  | TI-SDC   | Tidewater-Sustainable Design Consortium Joint Venture      |
| PID    | Photo-Ionization Detector                               |          |                                                            |
| PM     | Project Manager                                         | TOC      | Total Organic Carbon                                       |
| PMP    | Project Management Professional                         | TPP      | Technical Planning Process                                 |
| POC    | point of contact                                        | UFP-QAPP | Uniform Federal Policy for Quality Assurance Project Plans |
| PPE    | Personal Protective Equipment                           |          |                                                            |
| PSL    | Project Screening Level                                 | USACE    | United States Army Corps of Engineers                      |
| QA     | Quality Assurance                                       | USEPA    | United States Environmental Protection Agency              |
| QAPP   | Quality Assurance Project Plan                          | UST      | Underground Storage Tank                                   |
| QC     | Quality Control                                         |          |                                                            |
| QSM    | Quality Systems Manual                                  | VOC      | Volatile Organic Compound                                  |



## Executive Summary

The United States Army Corps of Engineers (USACE) has initiated remedial investigation (RI) activities at four areas of concern (AOCs; 2, 3N, 3S, and former incinerator [FI]) at Former Stewart Air Force Base (AFB) in Newburgh and New Windsor, New York (Figure 1 and Figure 2). The Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP) (TI-SDC Joint Venture [TI-SDC], 2023) for the RI sampling activities was issued in June 2023 and can be referred to for detailed information about the Site and the phased approach being used to implement the RI sampling plan. TI-SDC conducted the preliminary phase of RI sampling in July and August 2023 (TI-SDC, 2024). The preliminary RI data were assembled into tables and figures and a presentation was prepared for a Technical Planning Process (TPP) meeting with the USACE Project Delivery Team (PDT) on April 10, 2024, to identify and discuss potential data gaps. Based on a review of the preliminary RI data and discussions during the TPP meeting, additional soil, groundwater, surface water, sediment, and soil gas sampling are described in this UFP-QAPP Addendum to address most of the data gaps and ensure sufficient data exists to conduct the RI. This UFP-QAPP Addendum provides new information that was not already presented in the Final UFP-QAPP (TI-SDC, 2023) including the TPP meeting materials, updated standard operating procedures, and field forms that will be used during the supplemental phase of RI sampling.



## QAPP Worksheet #1 & 2: Title and Approval Page

(UFP-QAPP Manual Section 2.1)  
(EPA 2106-G-05 Section 2.2.1)

### 1. Project Identifying Information

- a. Site name/project name: Former Stewart Air Force Base
- b. Site location/number: FUDS No. C02NY0704
- c. Contract Number: W912WJ-19-D-0006

Contract Title: Remedial Investigation, Feasibility Study, Proposed Plan, and Decision Document at Former Stewart Air Force Base Newburgh and New Windsor, New York, FUDS No. C02NY0704

### 2. Lead Organization: U.S Army Corps of Engineers (USACE), New England District

Lead Organization's Project Manager (PM):

\_\_\_\_\_  
Signature

Ms. Julie Rupp, USACE, New England District

July 7, 2026

### 3. Investigative Organization: TI-SDC

Investigative Organization's PM:

\_\_\_\_\_  
Signature

Mr. Travis Williamson, P.E., PMP; TI-SDC

July 7, 2026



**4. List plans and reports from previous investigations relevant to this project**

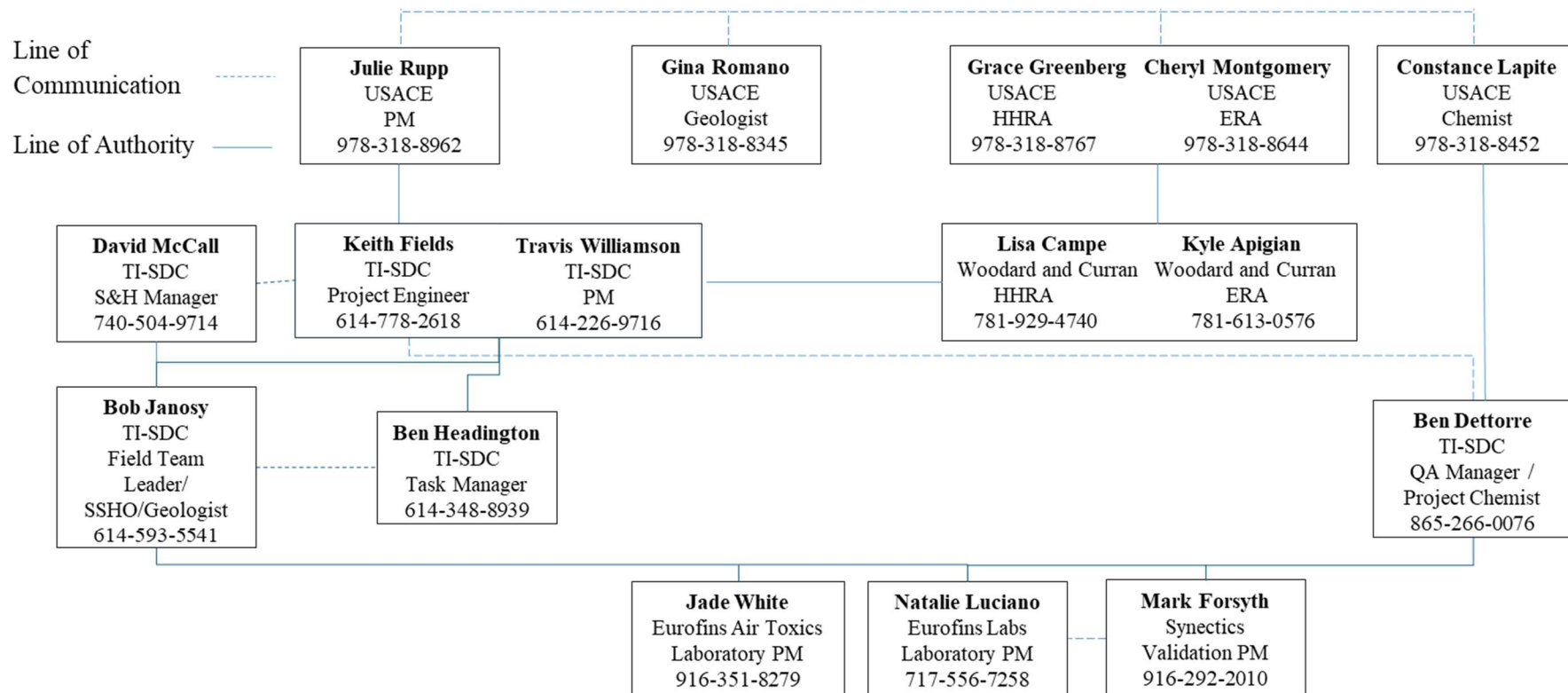
| <b><u>Title</u></b>                                                                                                                                       | <b><u>Received Date</u></b> | <b><u>Prepared By</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|
| Final UFP QAPP for the Remedial Investigation Activities at Former Stewart Air Force Base, Newburgh and New Windsor, New York                             | June 2023                   | TI-SDC                    |
| Final Field Completion Report for Preliminary Phase of Remedial Investigation Sampling, Former Stewart Air Force Base, Newburgh and New Windsor, New York | February 2024               | TI-SDC                    |



## QAPP Worksheet #3 & 5: Project Organization and QAPP Distribution

(UFP-QAPP Manual Section 2.3 and 2.4)

(EPA 2106-G-05 Section 2.2.3 and 2.2.4)



Notes: HHRA = Human Health Risk Assessor  
ERA = Ecological Risk Assessor  
QA = Quality Assurance  
PM = Project Manager  
SSHO = Site Safety and Health Officer  
S&H = Safety and Health  
USACE = United States Army Corps of Engineers



### QAPP Worksheet #4, 7, & 8: Project Personnel Sign-Off Sheet

(UFP-QAPP Manual Sections 2.3.2 – 2.3.4)  
(EPA 2106-G-05 Section 2.2.1 and 2.2.7)

| Project Personnel           | Title                                        | Education / Experience                                                                                                                              | Specialized Training / Certifications                                                               | Telephone Number | Signature / Date |
|-----------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------|------------------|
| <b>Organization: TI-SDC</b> |                                              |                                                                                                                                                     |                                                                                                     |                  |                  |
| Travis Williamson           | Project Manager                              | B.S. Civil Engineering; 25 years of site characterization and remedial action selection, design, and implementation experience                      | PE; PMP; HAZWOPER 40-hour OSHA                                                                      | 614-226-9716     |                  |
| Keith Fields                | Project Engineer                             | B.S. Civil Engineering; 25 years of site characterization and remedial action selection, design, and implementation experience                      | PE; PMP; HAZWOPER 40-hour OSHA                                                                      | 614-778-2618     |                  |
| David McCall                | Safety & Health Manager                      | B.S. Occupational Safety Management; M.S. Environmental Management; 27 years of experience in HSE Program Management; 6 years teaching HSE Programs | CSP; CIT; HAZWOPER 40-hour OSHA; OSHA Construction 30-Hour; EM385 40-hour Safety & Health Awareness | 740-504-9714     |                  |
| Bob Janosy                  | Field Team Leader / SSHO / Project Geologist | B.S. / M.S. Geological Sciences; 20 years of site characterization and remediation experience                                                       | PG; HAZWOPER 40-hour OSHA                                                                           | 614-593-5541     |                  |



| Project Personnel                       | Title                         | Education / Experience                                                                                                                                                                                | Specialized Training / Certifications                              | Telephone Number | Signature / Date |
|-----------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------|------------------|
| Ben Dettorre                            | QA Manager / Project Chemist  | B.S. Chemistry; >25 years of environmental consulting as a chemist for investigating HTRW sites, as well obtaining services from analytical laboratories, data deliverables, and validation.          | HAZWOPER 40-hour OSHA                                              | 865-266-0076     |                  |
| Ben Headington                          | Task Manager / Alternate SSHO | 15+ years of site characterization and remediation experience                                                                                                                                         | PMP; HAZWOPER 40-hour OSHA; OSHA 30-hour Construction; USACE CQM-C | 614-348-8939     |                  |
| Field Team Members                      | Field Team Members            | Past experience conducting environmental investigations of similar size and scope of the RI;                                                                                                          | HAZWOPER 40-hour OSHA                                              | TBD              |                  |
| <b>Organization: Woodard and Curran</b> |                               |                                                                                                                                                                                                       |                                                                    |                  |                  |
| Lisa Campe                              | Human Health Risk Assessor    | B.S. Geology/MPH with Env. Health Concentration; 35 years of human health risk assessment, risk management, site characterization and remediation, vapor intrusion, and litigation support experience | Licensed Site Professional (LSP), Massachusetts; 40-hour OSHA      | 781-929-4740     |                  |



| Project Personnel                                                        | Title                          | Education / Experience                                                                                                                                           | Specialized Training / Certifications | Telephone Number | Signature / Date |
|--------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------|------------------|
| Kyle Apigian                                                             | Ecological Risk Assessor       | B.S Biology / Ph.D. Environmental Science, Policy, and Management; 18 years of site investigation, ecological risk assessment, and ecological studies experience | 40-hour OSHA; 8-hr OSHA Supervisor    | 781-613-0576     |                  |
| <b>Organization: Eurofins Lancaster Laboratories Environmental, Inc.</b> |                                |                                                                                                                                                                  |                                       |                  |                  |
| Natalie Luciano                                                          | Laboratory Project Manager     | --                                                                                                                                                               | --                                    | 717-556-7258     |                  |
| Dorothy Love                                                             | QA Director                    | --                                                                                                                                                               | --                                    | 717-556-7327     |                  |
| <b>Organization: Eurofins Air Toxics, LLC</b>                            |                                |                                                                                                                                                                  |                                       |                  |                  |
| Jade White                                                               | Laboratory Project Manager     | --                                                                                                                                                               | --                                    | 916-351-8279     |                  |
| <b>Organization: Synectics</b>                                           |                                |                                                                                                                                                                  |                                       |                  |                  |
| Mark Forsyth                                                             | Project Manager, Data Reviewer | --                                                                                                                                                               | --                                    | 760-827-1100     |                  |

Notes:

B.S. = Bachelor of Science

CIT = Certified Instructional Trainer

CQM-C = Construction Quality Management for Contractors

CSP = Certified Safety Professional

GC/MS = Gas Chromatography/Mass Spectrometry

HAZWOPER = Hazardous Waste Operations and Emergency Response

HSE = Health, Safety, and Environment

HTRW = Hazardous, Toxic and Radioactive Waste



| Project Personnel | Title | Education / Experience | Specialized Training / Certifications | Telephone Number | Signature / Date |
|-------------------|-------|------------------------|---------------------------------------|------------------|------------------|
|-------------------|-------|------------------------|---------------------------------------|------------------|------------------|

M.S. = Master of Science  
OSHA = Occupational Safety and Health Administration  
PE = Professional Engineer  
PG = Professional Geologist  
PMP = Project Management Professional  
QA = Quality Assurance  
SSHO = Site Safety and Health Officer  
USACE = United States Army Corp of Engineers



## **QAPP Worksheet #6: Communication Pathways**

(UFP-QAPP Manual Section 2.4.2)

(EPA 2106-G-05 Section 2.2.4)

Refer to Final UFP-QAPP (TI-SDC, 2023) for communications pathways.



## QAPP Worksheet #9: Project Scoping Session Participants Sheet

(UFP-QAPP Manual Section 2.5.1)

(EPA 2106-G-05 Section 2.2.5)

| <b>Project Name:</b> Remedial Investigation, Feasibility Study, Proposed Plan, and Decision Document at Former Stewart Air Force Base, Newburgh and New Windsor, New York<br><br><b>Projected Date(s) of Sampling:</b><br><u>August 2024</u><br><br><b>Project Manager:</b> Travis Williamson |                            | <b>Site Name:</b> Former Stewart Air Force Bases<br><br><b>Site Location:</b> Newburgh and New Windsor, New York |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Date of Session:</b> April 10, 2024<br><br><b>Scoping Session Purpose:</b> Conduct initial review of preliminary RI sampling data and identify potential data gaps to be filled during 2024 field mobilization                                                                             |                            |                                                                                                                  |
| Name                                                                                                                                                                                                                                                                                          | Project Role               | Affiliation                                                                                                      |
| Julie Rupp                                                                                                                                                                                                                                                                                    | Project Manager            | USACE                                                                                                            |
| Cheryl Montgomery                                                                                                                                                                                                                                                                             | Ecological Risk Assessor   | USACE                                                                                                            |
| Grace Greenberg                                                                                                                                                                                                                                                                               | Human Health Risk Assessor | USACE                                                                                                            |
| Gina Romano                                                                                                                                                                                                                                                                                   | Geologist                  | USACE                                                                                                            |
| Constance Lapite                                                                                                                                                                                                                                                                              | Chemist                    | USACE                                                                                                            |
| Michelle Bourne                                                                                                                                                                                                                                                                               | Ecological Risk Assessor   | USACE                                                                                                            |
| Eric Barbour                                                                                                                                                                                                                                                                                  | Health Physicist           | USACE                                                                                                            |
| Keith Fields                                                                                                                                                                                                                                                                                  | Program Manager            | TI-SDC                                                                                                           |
| Travis Williamson                                                                                                                                                                                                                                                                             | PM/Engineer                | TI-SDC                                                                                                           |
| Ben Dettorre                                                                                                                                                                                                                                                                                  | QA Manager/Project Chemist | TI-SDC                                                                                                           |
| Bob Janosy                                                                                                                                                                                                                                                                                    | Geologist                  | TI-SDC                                                                                                           |
| Kyle Apigian                                                                                                                                                                                                                                                                                  | Risk Assessor              | Woodard and Curran                                                                                               |

The TPP meeting agenda follows this meeting summary and the meeting materials are provided in Appendix A of this QAPP Addendum. Decisions/observations made during the TPP meeting are documented below:

- Soil
  - Conduct soil sampling in the area of drums observed in southern portion of current Reference Area.



- Conduct additional soil sampling along a transect north of AOC 3N to further delineate northern extent of waste and contamination associated with AOC 3N. Consider locations with respect to Recreation Pond.
- Screen data against ecological project screening levels and compare results to screening to Residential RSLs that has already been performed. *(Note that screening against ecological project screening levels is not included in this QAPP Addendum and will be presented in the RI Report).*
- Reference Area items *(note that the Reference Area related items listed below are not addressed in this QAPP Addendum and will be addressed separately)*
  - Compare metals concentrations in Reference Area to State of New York background data.
  - Attempt to identify other potential background data sets (e.g., Air National Guard project) and evaluate potential use on FUDS Site.
  - Evaluate the use of other potential areas as reference due to dieldrin concentrations in surface soil of the current Reference Area.
  - Determine approach for addressing the current Reference Area with respect to dieldrin in surface soil.
  - Consider the need for additional sampling of dieldrin in surface soil of the current Reference Area so it is adequately delineated in case the area ends up being an AOC.
- Collect two additional soil samples from the southeastern portion of AOC FI to evaluate whether it is a potential source of contamination found in SD-008 (see Sediment section below).
- Cation exchange capacity (CEC) data were discussed and it was noted that the samples were dried while the analytical method that was used (i.e., 9081) does not call for the samples to be dried. PDT risk assessors to qualitatively review CEC data and determine if there are any concerns with its usability in the risk assessments.
- Groundwater
  - Conduct groundwater sampling in line of existing wells located downgradient of CW-11, SLMW-12, and SLWM-16 (i.e., CW-14, SLMW-14D, and SLMW-15S/15D) to further delineate concentrations of metals and SVOCs in groundwater in this area of the Site.
  - Determine whether raw water data exists and is available for the drinking water well associated with the Hill-N-Dale Mobile Home Park. *(Note that the*



*availability of the subject raw water data is not addressed in this QAPP Addendum and will be investigated and presented separately in the RI Report).*

- Surface Water
  - No additional surface water sampling needed with exception of co-located samples where additional sediment sampling is performed and surface water is present (i.e., between SD-008 and SD-020, tributary south of SD-008, and three wetland locations between AOC FI and SD-008).
- Sediment
  - Collect two additional sediment samples between SD-008 and SD-020
  - Collect one additional sample from tributary south of SD-008 before it discharges into Silver Stream.
  - Collect three additional sediment samples from wetland area between AOC FI and SD-008.
- Soil Gas
  - Collect an additional round of soil gas samples from all locations previously sampled in AOC 2 (8 locations) and AOC FI (3 locations).
  - Collect two additional soil gas samples between SG-013 (in southeastern portion of AOC 2) and Hill-N-Dale Mobile Home Park.
- FUDSChem
  - Prior to the next field sampling event, ensure proper personnel with the laboratory are engaged in the eQAPP lab acknowledgement step, and coordinate with the laboratory to load dummy data sets in advance of field mobilization so database issues can be identified and resolved before the sampling event begins.
- Other
  - Based on the planned efforts in the next phase of investigation (data gaps investigation), Environmental Munitions Center of Expertise (EMCX) review of the QAPP addendum is not necessary.
  - Include a meeting with NYSDEC during review of QAPP Addendum to facilitate review.
  - Regarding groundwater contour maps, include dashed lines where contours are inferred. For the deep groundwater contour map, provide an explanation of northeast flow pattern. *(Note that the requested changes to the groundwater contour maps will be made to the figures included in the RI Report).*



- EMCX position on other sites is that iron, manganese, and essential nutrients should not be evaluated as risk drivers. *(Note that this position by the EMCX will be considered as the risk assessments are conducted during development of the RI Report).*



## April 10, 2024 TPP Meeting Agenda

- Data Validation Summary and Preliminary Data Usability Assessment
- Soil Data
  - Compare soil data to residential RSLs, identify compounds that exceed RSLs
  - Initial comparison of compounds exceeding RSLs to background data set
  - Initial evaluation of Exposure Units (one or multiple)
  - **POTENTIAL DATA GAP:** Do we have sufficient data to conduct risk assessment on each Exposure Unit or do we need to collect additional surface soil and/or subsurface soil samples at certain AOCs?
- Groundwater Data
  - Groundwater level contour map to understand flow direction.
  - Compare groundwater chemical data to tap water RSLs, identify compounds that exceed RSLs.
  - Evaluate if the furthest downgradient wells define the plume extent based on comparison to EPA drinking water RSLs?
  - **POTENTIAL DATA GAP:** Are any additional groundwater wells/sampling needed during next phase?
- Surface Water Data
  - Compare upgradient data to Site/downgradient data to assess whether there is any indication of site-related contributions.
  - Compare surface water chemical data to ecological screening criteria.
  - **POTENTIAL DATA GAP:** Are any additional surface water data needed during next phase?
- Sediment Data
  - Compare sediment data to ecological screening criteria to assess whether there is any indication of site-related contributions.
  - **POTENTIAL DATA GAPS:** Are any additional sediment data needed during next phase?
- Soil Gas Data
  - Assess usability and evaluate results relative to applicable screening criteria
    - If elevated concentrations of VOCs/methane are detected, the data will be helpful in determining presence.
    - If VOCs/methane are ND or detected at low-levels, the existing data will likely need to be augmented with additional data to confirm absence.
  - **POTENTIAL DATA GAPS:** If ND/low-level detections, are additional data needed to confirm absence and conduct risk assessments?
- Other Data Gaps
  - Sampling near drums observed during field work.
- FUDSChem Lessons Learned



## QAPP Worksheet #10: Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2)

(EPA 2106-G-05 Section 2.2.5))

Refer to Final UFP-QAPP (TI-SDC, 2023) for detailed discussion of the elements comprising the conceptual site model (CSM) for the Site. This UFP-QAPP Addendum includes a summary of data gaps identified following the preliminary phase of RI sampling, and the approach that will be implemented to address the data gaps during the supplemental phase of RI sampling. A comprehensive update to the CSM for the Site will be documented in the RI Report using data collected during the preliminary and supplemental phases of RI sampling.

### 1. Data Gaps:

Data gaps for the Site have been identified by reviewing the data collected during the preliminary phase of RI sampling activities conducted in July and August 2023. Table 1 below identifies the data gaps and describes the general sampling approach that will be implemented to address each data gap. Information describing each data gap in soil, groundwater, surface water, sediment, and soil gas is provided after Table 1, and details of specific number of samples and analytical parameters are provided in Worksheets #17 and #18. The preliminary RI data were assembled into tables and figures and a presentation was prepared for a Technical Planning Process (TPP) meeting with the USACE Project Delivery Team (PDT) on April 10, 2024, to identify and discuss potential data gaps. The TPP meeting agenda and meeting materials are provided in Appendix A of this QAPP Addendum.

**Table 1. Summary of Data Gaps**

| <b>Data Gaps</b>                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Soil</i></b>                                                                                                                                                                                           |
| 1. No data exist in the area that drums were observed in the west-central portion of the Reference Area and is needed to determine if there were any releases from the drums that impacted soil in the area. |
| 2. Northern extent of waste and chemical concentrations exceeding project screening levels (PSLs) in surface and subsurface soil at AOC 3N has not been fully delineated in lateral and vertical directions. |
| <b><i>Groundwater</i></b>                                                                                                                                                                                    |
| 3. Downgradient extent of chemical concentrations exceeding PSLs in groundwater downgradient of AOC 2 in CW-11, SLMW-12S/12D, and SLMW-16S/16D has not been fully delineated.                                |
| <b><i>Sediment (and Surface Water<sup>1</sup>)</i></b>                                                                                                                                                       |
| 4. Additional data are needed to determine 1) the source(s) of PSL exceedances detected in sediment at SD-008, and 2) how far downstream from SD-008 contamination is present in sediment.                   |
| <b><i>Soil Gas</i></b>                                                                                                                                                                                       |
| 5. Issues with the soil gas leak testing procedure used during the preliminary RI sampling activities create data usability concerns for several soil gas samples collected from AOC 2 and AOC FI.           |



| Data Gaps                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. Maximum vinyl chloride concentration detected above the PSL in soil gas collected from SG-013 in southeastern portion AOC 2 represents a potential concern associated with indoor air exposure pathway in the mobile home park located further downgradient. |

Notes:

1. No specific data gaps were identified in surface water, but co-located sediment and surface water samples will be collected during the supplemental phase of RI sampling (if surface water is present) so correlations between sediment and surface water data can be made.

## Soil

**Data Gap #1.** As per discussions with the USACE PDT on June 14, 2023, observation of rusty drums in the southern portion of the reference area in May 2023 led to an agreement that it was appropriate to conduct soil sampling in the area of the drums to determine if there were any releases from the drums that impacted soil. Due to an oversight by TI-SDC's field team in July 2023, soil sampling was not performed in the area of the deteriorated drums. Therefore, surface and subsurface soil sampling is planned at two locations in the area of the drums – one in the immediate vicinity of the drums and another in a downhill direction.

**Data Gap #2.** Review of surface and subsurface soil analytical data tables and class posting figures provided in Appendix A indicates there are exceedances of PSLs for several chemicals (i.e., 2,3,7,8-tetrachlorodibenzo-p-dioxin, aluminum, antimony, arsenic, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, cobalt, copper, dibenz[a,h]anthracene, dieldrin, iron, lead, manganese, mercury, nickel, thallium, zinc, and PCB-1254) along the northern boundary of AOC 3N. An additional transect consisting of three soil borings is planned north of the northern boundary of AOC 3N to delineate the northern extent of contamination in this area of the Site.

## Groundwater

**Data Gap #3.** Review of groundwater analytical data tables and class posting figures provided in Appendix A indicates there are exceedances of PSLs for several chemicals (i.e., 3-nitrotoluene, arsenic, cadmium, cobalt, iron, manganese, aldrin, heptachlor epoxide, naphthalene, 1,2-dichloroethane, and vinyl chloride) in wells located downgradient of AOC 2. The wells include CW-11, SLMW-12S/12D, and SLMW-16S/16D, and make up a subset of the wells sampled during the preliminary RI sampling activities in July 2023 that are located furthest downgradient from AOC 2. There are additional wells located further downgradient (including CW-14, SLMW-14D, and SLMW-15S/15D) that are proposed for sampling during the supplemental phase of RI sampling activities. In addition, the wells that showed exceedances of PSLs during the preliminary phase of RI sampling will be resampled during the same event that the additional downgradient wells are sampled so a contemporaneous dataset exists for evaluation during the RI process.



## Sediment and Surface Water

**Data Gap #4.** Review of the sediment analytical data table and spider plot figure provided in Appendix A indicates there are exceedances of PSLs for 35 chemicals (including one explosive compound, metals, pesticides, SVOCs, and one VOC) at SD-008 located downgradient from AOC FI. There is another sediment sampling location (SD-020) located downstream of SD-008 that has only five chemicals above PSLs, but it is not known (1) what the source of contamination at SD-008 is, and (2) how far downstream from SD-008 PSL exceedances exist. The sampling summarized below is planned to address these data gaps in sediment:

- Two additional surface soil samples will be collected from the southeastern portion of AOC FI to determine whether chemical concentrations detected in sediment at SD-008 may be originating from surface soil in AOC FI.
- Three additional sediment samples will be collected from the wetland area located between AOC FI and SD-008 to determine whether chemical concentrations detected in sediment within the wetland area may be serving as the source of contamination at SD-008.
- One additional sediment sample will be collected from the tributary south of SD-008 before it discharges into Silver Stream to determine whether chemical concentrations in the southern tributary may be serving as a source of contamination at SD-008.
- Two additional sediment samples will be collected from locations between SD-008 and SD-020 to determine how far downstream of SD-008 PSL exceedances exist.
- Sediment at SD-008 and SD-020 will be resampled during the supplemental phase of RI sampling so a contemporaneous dataset exists for evaluation during the RI process.
- Co-located surface water samples will be collected (where present) at each sediment sampling location so correlations between sediment and surface water data can be made during the RI process.

## Soil Gas

**Data Gap #5.** Review of the soil gas analytical data table provided in Appendix A indicates there are exceedances of PSLs for nine chemicals (i.e., 1,1-dichloroethane, 1,2-dibromoethane, 1,3-butadiene, 1,4-dichlorobenzene, benzene, chloroform, ethylbenzene, trichloroethene, and vinyl chloride) across the locations sampled for soil gas. The overall number and magnitude of PSL exceedances is generally higher in AOCs 2 and FI. In addition, the leak testing procedure used during the preliminary phase of RI sampling activities was not consistent with the latest available guidance, which creates some data usability concerns for several soil gas samples collected from AOCs 2 and FI. Therefore, all soil gas sampling locations in AOCs 2 and FI will be resampled during the supplemental phase of RI sampling so a representative and usable set of soil gas data exists in these AOCs.

**Data Gap #6.** Review of the soil gas analytical data table provided in Appendix A indicates that the highest detected concentration of vinyl chloride in soil gas is 280 micrograms per cubic



meter ( $\mu\text{g}/\text{m}^3$ ) (compared to a PSL of  $5.59 \mu\text{g}/\text{m}^3$ ) at SG-013 in the southeastern portion of AOC 2. The physical location and detected concentration of vinyl chloride at SG-013 represents a potential concern associated with the indoor air exposure pathway to residents in the mobile home park located further downgradient (i.e., in a southeasterly direction). Two additional soil gas sampling locations are planned between SG-013 and the mobile home park to determine whether vinyl chloride is present in soil gas above the PSL. In addition, continuous coring will be performed and surface and subsurface soil samples will be collected in close proximity to the soil gas sampling locations to determine whether volatile organic compounds exist in vadose zone soils in this area of the Site and may be serving as a source of contamination to soil gas.



## **QAPP Worksheet #11: Project/Data Quality Objectives**

(UFP-QAPP Manual Section 2.6.1)

(EPA 2106-G-05 Section 2.2.6)

Refer to Final UFP-QAPP (TI-SDC, 2023) for detailed discussion of the project data quality objectives (DQOs) for the RI being conducted at the Site. The DQOs presented in the Final UFP-QAPP (TI-SDC, 2023) adequately capture the data gaps being addressed by the supplemental phase of RI sampling activities because the data gaps are associated with defining the nature and spatial extent of contamination from DoD-related activities at the Site. Defining the nature and extent of contamination at the Site is one of the primary DQOs presented in the Final UFP-QAPP (TI-SDC, 2023); therefore, no new or revised DQOs are presented in this UFP-QAPP Addendum.

It should be noted, that one of the existing DQOs is Comparability. Maintaining comparability of site-wide data sets with both historical and temporally similar analytical data is achieved through the use of the same sampling points (monitoring wells), sample collection, and analytical SOPs to the extent practicable. Although not planned, the analysis of Cation Exchange Capacity (CEC) in solids was analyzed by a method that included low temperature drying (i.e., 38 degrees Celsius) as part of the sample preparation. Although it is not expected to see any difference between results when the sample is slowly dried at the low temperature of 38°C as opposed to no sample drying, in order to maintain consistency and comparability, the same sampling and analysis procedures (i.e., to include low temperature sample drying prior to analysis) for CEC in solids will be utilized during the supplemental phase of RI sampling.



## QAPP WORKSHEET #12 TABLE INDEX

Refer to Final UFP-QAPP (TI-SDC, 2023) for measurement performance criteria for media and analyses that will be performed during the supplemental phase of RI sampling. Minor revisions have been made to the Worksheet #12 tables listed below and they supersede those included in the Final UFP-QAPP (TI-SDC, 2023).

### QAPP Worksheet #12-1 – Measurement Performance Criteria Table for Water

- Alkalinity – Groundwater and Surface Water (SM 2320B) (removed MS analysis, not performed by procedure)
- Sulfide – Groundwater and Surface Water (Sulfide (SM 4500 S2D) (removed LCSD, MS/MSD analyses, not performed by procedure)
- PFAS – Groundwater IDW (USEPA LC/MS/MS in accordance with QSM, Table B-15) (method changed from *LC/MS/MS in accordance with QSM, Table B-15* to *Final EPA Method 1633, QSM 6.0*)

### QAPP Worksheet #12-2 – Measurement Performance Criteria Table for Soil/Sediment

- Cation Exchange Capacity – Soil and Sediment (USEPA Method 9081) (removed LCS/LCSD and MS/MSD analyses, not performed by procedure)
- PFAS – Soil IDW (USEPA LC/MS/MS in accordance with QSM, Table B-15) (method changed from *LC/MS/MS in accordance with QSM, Table B-15* to *Final EPA Method 1633, QSM 6.0*)

Appendix M in the Final UFP-QAPP (TI-SDC, 2023) provides a detailed listing of all analytical project limits and measurement performance criteria for analyses that are to be performed on samples collected during the preliminary phase of RI sampling. An updated list of analytical project limits and measurement performance criteria will be issued as Appendix F to this QAPP Addendum after receipt from the laboratory and prior to mobilizing to the field for the supplemental phase of RI sampling activities.



## QAPP Worksheet #12: Measurement Performance Criteria

(UFP-QAPP Manual Section 2.6.2)

(EPA 2106-G-05 Section 2.2.6)

### QAPP Worksheet #12-1: Measurement Performance Criteria Table - Water

#### 12-1.9 Alkalinity

Matrix Groundwater and Surface Water  
Analytical Group Alkalinity (SM 2320B)  
Concentration Level Low

| Data Quality Indicator            | QC Sample and / or Measurement Performance Activity | Measurement Performance Criteria                                                 |
|-----------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|
| Accuracy/Bias                     | Laboratory Control Spike                            | Laboratory statistical limits (see Appendix M in Final UFP QAPP [TI-SDC, 2023]). |
| Accuracy/Laboratory Contamination | Method Blank                                        | No analytes detected $\geq$ LOQ or $\geq 1/10$ the amount measured in any sample |
| Precision                         | Lab Duplicate                                       | RPD $\leq 10\%$                                                                  |
| Precision                         | Field Duplicate                                     | RPD $\leq 30\%$ <sup>1</sup>                                                     |
| Completeness                      | Reported Sample Data                                | See Worksheet #37, Subsection “Completeness” in Final UFP QAPP (TI-SDC, 2023)    |
| Bias/Holding Time                 | Reported Sample Data                                | See Worksheet #19 in Final UFP QAPP (TI-SDC, 2023)                               |
| Sensitivity                       | MDLs, LODs, and LOQs                                | See Worksheet #15 in Final UFP QAPP (TI-SDC, 2023)                               |

Notes:

DL = Detection Limit

LOD = Limit of Detection

LOQ = Level of Quantification

QC = Quality Control

RPD = Relative Percent Difference

SM = Standard Method

- The RPD will be used to evaluate field duplicate precision if one or both results is above the LOQ. If one or both results are less than the LOQ, then precision will be evaluated by the difference in concentrations being less than 2 times the LOQ.



## 12-1.10 Sulfide

Matrix Groundwater and Surface Water  
Analytical Group Sulfide (SM 4500 S2D)  
Concentration Level Low

| Data Quality Indicator            | QC Sample and / or Measurement Performance Activity | Measurement Performance Criteria                                                     |
|-----------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------|
| Accuracy/Bias/Precision           | Laboratory Control Spike                            | Laboratory statistical limits (see Appendix M in Final UFP QAPP [TI-SDC, 2023]).     |
| Accuracy/Laboratory Contamination | Method Blank                                        | No analytes detected $\geq 1/2$ LOQ or $\geq 1/10$ the amount measured in any sample |
| Precision                         | Lab Duplicate                                       | $RPD \leq 29\%$                                                                      |
| Precision                         | Field Duplicate                                     | $RPD \leq 30\%^1$                                                                    |
| Completeness                      | Reported Sample Data                                | See Worksheet #37, Subsection “Completeness” in Final UFP QAPP (TI-SDC, 2023)        |
| Bias/Holding Time                 | Reported Sample Data                                | See Worksheet #19 in Final UFP QAPP (TI-SDC, 2023)                                   |
| Sensitivity                       | MDLs, LODs, and LOQs                                | See Worksheet #15 in Final UFP QAPP (TI-SDC, 2023)                                   |

Notes:

DL = Detection Limit  
LOD = Limit of Detection  
LOQ = Level of Quantification

QC = Quality Control  
RPD = Relative Percent Difference  
SM = Standard Method

- The RPD will be used to evaluate field duplicate precision if one or both results is above the LOQ. If one or both results are less than the LOQ, then precision will be evaluated by the difference in concentrations being less than 2 times the LOQ.



### 12-1.13 PFAS

Matrix Groundwater IDW  
Analytical Group PFAS (Final EPA Method 1633, QSM 6.0)  
Concentration Level Low

| <b>Data Quality Indicator</b>       | <b>QC Sample and / or Measurement Performance Activity</b>                                                 | <b>Measurement Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy/Laboratory Contamination   | Instrument Blank (IB)                                                                                      | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Accuracy                            | Extracted Internal Standard (EIS)                                                                          | Isotopically labeled analogs of analytes shall be used when they are commercially available. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 20-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <20%. |
| Accuracy / Laboratory Contamination | Method Blank                                                                                               | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Accuracy / Bias / Precision         | Ongoing Precision and Recovery (OPR) Standard. Shall contain all EIS, NIS, and all analytes to be reported | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%.                                                                                              |



Matrix  
Analytical Group  
Concentration Level

Groundwater IDW  
PFAS (Final EPA Method 1633, QSM 6.0)  
Low

| Data Quality Indicator      | QC Sample and / or Measurement Performance Activity                                                                     | Measurement Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy / Bias / Precision | Low-Level Ongoing Precision and Recovery (LLOPR) Standard. Shall contain all EIS, NIS, and all analytes to be reported. | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%. |
| Accuracy                    | Laboratory Duplicate (LD)                                                                                               | RPD of all analytes must be $\leq 30\%$ between sample and MD. RPD does not apply if both results are below the LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Precision                   | Field Duplicate                                                                                                         | $RPD \leq 30\%^1$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Completeness                | Reported Sample Data                                                                                                    | See Worksheet #37, Subsection "Completeness" in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Bias / Holding Time         | Reported Sample Data                                                                                                    | See Worksheet #19 in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sensitivity                 | MDLs, LODs, and LOQs                                                                                                    | See Worksheet #15 in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Notes:

MDL = Detection Limit  
LOD = Limit of Detection

LOQ = Level of Quantification  
PFAS = Per- and Polyfluoroalkyl Substances

QC = Quality Control  
QSM = Quality Systems Manual

RPD = Relative Percent Difference

- The RPD will be used to evaluate field duplicate precision if one or both results is above the LOQ. If one or both results are less than the LOQ, then precision will be evaluated by the difference in concentrations being less than 2 times the LOQ.

The laboratory shall meet all the requirements contained in Method 1633. This tables contains additional requirements that the laboratory shall meet.



## QAPP Worksheet #12-2: Measurement Performance Criteria Table - Soil/Sediment

### 12-2.11 Cation Exchange Capacity

Matrix                      Soil and Sediment  
Analytical Group        Cation Exchange Capacity (9081)  
Concentration Level    Not Applicable

| Data Quality Indicator            | QC Sample and / or Measurement Performance Activity | Measurement Performance Criteria                   |
|-----------------------------------|-----------------------------------------------------|----------------------------------------------------|
| Precision                         | Field Duplicate                                     | $RPD \leq 30\%^1$                                  |
| Accuracy/Laboratory Contamination | Method Blank                                        | <LOQ                                               |
| Sensitivity                       | DLs, LODs, and LOQs                                 | See Worksheet #15 in Final UFP QAPP (TI-SDC, 2023) |

Notes:

DL = Detection Limit

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

LOQ = Level of Quantification

MS = Matrix Spike

MSD = Matrix Spike Duplicate

QC = Quality Control

QSM = Quality Systems Manual

RPD = Relative Percent Difference

- The RPD will be used to evaluate field duplicate precision if one or both results is above the LOQ. If one or both results are less than the LOQ, then precision will be evaluated by the difference in concentrations being less than 2 times the LOQ.



## 12-2.15 PFAS

Matrix: Soil IDW  
Analytical Group: PFAS (Final EPA Method 1633, QSM 6.0)  
Concentration Level: Low

| <b>Data Quality Indicator</b>       | <b>QC Sample and / or Measurement Performance Activity</b>                                                  | <b>Measurement Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy/Laboratory Contamination   | Instrument Blank (IB)                                                                                       | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Accuracy                            | Extracted Internal Standard (EIS)                                                                           | Isotopically labeled analogs of analytes shall be used when they are commercially available. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 20-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <20%. |
| Accuracy / Laboratory Contamination | Method Blank                                                                                                | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Accuracy / Bias / Precision         | Ongoing Precision and Recovery (OPR) Standard. Shall contain all EIS, NIS, and all analytes to be reported. | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%.                                                                                              |



Matrix  
Analytical Group  
Concentration Level

Soil IDW  
PFAS (Final EPA Method 1633, QSM 6.0)  
Low

| Data Quality Indicator      | QC Sample and / or Measurement Performance Activity                                                                     | Measurement Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy / Bias / Precision | Low-Level Ongoing Precision and Recovery (LLOPR) Standard. Shall contain all EIS, NIS, and all analytes to be reported. | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%. |
| Accuracy                    | Laboratory Duplicate (LD)                                                                                               | RPD of all analytes must be $\leq 30\%$ between sample and MD. RPD does not apply if both results are below the LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Precision                   | Field Duplicate                                                                                                         | $RPD \leq 30\%^1$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Completeness                | Reported Sample Data                                                                                                    | See Worksheet #37, Subsection "Completeness" in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Bias / Holding Time         | Reported Sample Data                                                                                                    | See Worksheet #19 in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sensitivity                 | MDLs, LODs, and LOQs                                                                                                    | See Worksheet #15 in Final UFP QAPP (TI-SDC, 2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Notes:

MDL = Detection Limit  
LOD = Limit of Detection

LOQ = Level of Quantification  
PFAS = Per- and Polyfluoroalkyl Substances

QC = Quality Control  
QSM = Quality Systems Manual

RPD = Relative Percent Difference

- The RPD will be used to evaluate field duplicate precision if one or both results is above the LOQ. If one or both results are less than the LOQ, then precision will be evaluated by the difference in concentrations being less than 2 times the LOQ.

The laboratory shall meet all the requirements contained in Method 1633. This tables contains additional requirements that the laboratory shall meet.



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## **QAPP Worksheet #13: Secondary Data Criteria and Limitations**

(UFP-QAPP Manual Section 2.7)

(EPA 2106-G-05 Chapter 3: QAPP Elements for Evaluating Existing Data)

Refer to Final UFP-QAPP (TI-SDC, 2023) for secondary data criteria and limitations.



## QAPP Worksheet #14/16: Project Tasks and Schedule

(UFP-QAPP Manual Section 2.8.2)  
(EPA 2106-G-05 Section 2.2.4)

| ID  | Task Name                                                                                   | Duration  | Start        | Finish       | 2017      | 2020 | 2023       | 2026 |
|-----|---------------------------------------------------------------------------------------------|-----------|--------------|--------------|-----------|------|------------|------|
| 1   | Award Date / Notice to Proceed                                                              | 0 days    | Tue 7/30/19  | Tue 7/30/19  | ◆ 7/30/19 |      |            |      |
| 2   | <b>Project and Financial Management</b>                                                     | 1233 days | Tue 9/10/19  | Fri 5/31/24  |           |      |            |      |
| 126 | <b>Data Review, Data Gap Evaluation, and Coordination Meeting</b>                           | 134 days  | Tue 7/30/19  | Fri 1/31/20  |           |      |            |      |
| 149 | <b>Modification 01</b>                                                                      | 30 days   | Fri 7/17/20  | Thu 8/27/20  |           |      |            |      |
| 154 | <b>RI Work Plan (including UFP-QAPP and APP)</b>                                            | 1005 days | Mon 9/2/19   | Fri 7/7/23   |           |      |            |      |
| 237 | Finalize Right of Entry (ROE)                                                               | 0 days    | Fri 4/16/21  | Fri 4/16/21  | ◆ 4/16/21 |      |            |      |
| 238 | <b>Execute RI Work Plan</b>                                                                 | 460 days  | Mon 5/1/23   | Fri 1/31/25  |           |      |            |      |
| 239 | <b>RI Field Work - Preliminary Phase</b>                                                    | 248 days  | Mon 5/1/23   | Wed 4/10/24  |           |      |            |      |
| 254 | <b>RI Project Team Meeting</b>                                                              | 26 days   | Thu 3/28/24  | Thu 5/2/24   |           |      |            |      |
| 262 | <b>RI Field Work - Supplemental Phase to Fill Data Gaps</b>                                 | 196 days  | Fri 5/3/24   | Fri 1/31/25  |           |      |            |      |
| 263 | Prepare QAPP Addendum                                                                       | 20 days   | Fri 5/3/24   | Thu 5/30/24  |           |      |            |      |
| 264 | Submit Draft QAPP Addendum                                                                  | 0 days    | Thu 5/30/24  | Thu 5/30/24  |           |      | ◆ 5/30/24  |      |
| 265 | PDT Review of QAPP Addendum                                                                 | 15 days   | Fri 5/31/24  | Thu 6/20/24  |           |      |            |      |
| 266 | Address PDT Comments and Prepare Draft Final QAPP Addendum                                  | 20 days   | Fri 6/21/24  | Thu 7/18/24  |           |      |            |      |
| 267 | Submit Draft Final QAPP Addendum                                                            | 0 days    | Thu 7/18/24  | Thu 7/18/24  |           |      | ◆ 7/18/24  |      |
| 268 | Meeting with Regulators to Discuss Preliminary Data and Proposed Sampling to Fill Data Gaps | 1 day     | Fri 7/19/24  | Fri 7/19/24  |           |      |            |      |
| 269 | Regulatory Review of Draft Final QAPP Addendum                                              | 15 days   | Fri 7/19/24  | Thu 8/8/24   |           |      |            |      |
| 270 | Address Regulatory Comments and Prepare Final QAPP Addendum                                 | 10 days   | Fri 8/9/24   | Thu 8/22/24  |           |      |            |      |
| 271 | Submit Final QAPP Addendum                                                                  | 0 days    | Thu 8/22/24  | Thu 8/22/24  |           |      | ◆ 8/22/24  |      |
| 272 | Prepare for RI Field Work                                                                   | 11 days   | Fri 8/16/24  | Fri 8/30/24  |           |      |            |      |
| 273 | Conduct RI Field Work                                                                       | 15 days   | Mon 9/2/24   | Fri 9/20/24  |           |      |            |      |
| 274 | Prepare Draft Field Report                                                                  | 15 days   | Mon 9/23/24  | Fri 10/11/24 |           |      |            |      |
| 275 | Submit Draft Field Report                                                                   | 0 days    | Fri 10/11/24 | Fri 10/11/24 |           |      | ◆ 10/11/24 |      |
| 276 | USACE Review                                                                                | 10 days   | Mon 10/14/24 | Fri 10/25/24 |           |      |            |      |
| 277 | Prepare RTCs and Final Field Report                                                         | 10 days   | Mon 10/28/24 | Fri 11/8/24  |           |      |            |      |
| 278 | Submit Final Field Report                                                                   | 0 days    | Fri 11/8/24  | Fri 11/8/24  |           |      | ◆ 11/8/24  |      |
| 279 | Sample Analysis and Reporting                                                               | 35 days   | Mon 9/23/24  | Fri 11/8/24  |           |      |            |      |
| 280 | FUDSChem Uploads/Deliverables                                                               | 40 days   | Mon 11/11/24 | Fri 1/3/25   |           |      |            |      |
| 281 | Data Validation and Incorporate Validation Qualifiers into FUDSChem                         | 20 days   | Mon 1/6/25   | Fri 1/31/25  |           |      |            |      |
| 282 | <b>Remedial Investigation Report</b>                                                        | 130 days  | Mon 2/3/25   | Fri 8/1/25   |           |      |            |      |
| 283 | Prepare PDT Draft RI Report                                                                 | 45 days   | Mon 2/3/25   | Fri 4/4/25   |           |      |            |      |
| 284 | Submit PDT Draft RI Report                                                                  | 0 days    | Fri 4/4/25   | Fri 4/4/25   |           |      | ◆ 4/4/25   |      |
| 285 | USACE Review of PDT Draft RI Report                                                         | 15 days   | Mon 4/7/25   | Fri 4/25/25  |           |      |            |      |
| 286 | <b>Meeting No. 1</b>                                                                        | 15 days   | Mon 4/28/25  | Fri 5/16/25  |           |      |            |      |
| 294 | Prepare CX Draft RI Report and RTCs                                                         | 10 days   | Mon 4/28/25  | Fri 5/9/25   |           |      |            |      |
| 295 | Submit CX Draft RI Report                                                                   | 0 days    | Fri 5/9/25   | Fri 5/9/25   |           |      | ◆ 5/9/25   |      |
| 296 | CX Review of ITR Draft RI Report                                                            | 15 days   | Mon 5/12/25  | Fri 5/30/25  |           |      |            |      |
| 297 | Prepare Draft RI Report and RTCs                                                            | 10 days   | Mon 6/2/25   | Fri 6/13/25  |           |      |            |      |
| 298 | Submit Draft RI Report                                                                      | 0 days    | Fri 6/13/25  | Fri 6/13/25  |           |      | ◆ 6/13/25  |      |
| 299 | Regulatory Review of RI Report                                                              | 20 days   | Mon 6/16/25  | Fri 7/11/25  |           |      |            |      |
| 300 | <b>Meeting No. 2</b>                                                                        | 15 days   | Mon 7/14/25  | Fri 8/1/25   |           |      |            |      |
| 308 | Prepare Final RI Report and RTCs                                                            | 10 days   | Mon 7/14/25  | Fri 7/25/25  |           |      |            |      |
| 309 | Submit Final RI Report                                                                      | 0 days    | Fri 7/25/25  | Fri 7/25/25  |           |      | ◆ 7/25/25  |      |
| 310 | <b>Public Involvement Plan (PIP)</b>                                                        | 230 days  | Mon 4/6/20   | Fri 2/19/21  |           |      |            |      |
| 319 | <b>Feasibility Study (FS) Report</b>                                                        | 120 days  | Mon 7/28/25  | Fri 1/9/26   |           |      |            |      |
| 320 | Prepare PDT Draft FS Report                                                                 | 40 days   | Mon 7/28/25  | Fri 9/19/25  |           |      |            |      |
| 321 | Submit PDT Draft FS Report                                                                  | 0 days    | Fri 9/19/25  | Fri 9/19/25  |           |      | ◆ 9/19/25  |      |
| 322 | USACE Review of PDT Draft FS Report                                                         | 15 days   | Mon 9/22/25  | Fri 10/10/25 |           |      |            |      |
| 323 | Prepare ITR Draft FS Report and RTCs                                                        | 10 days   | Mon 10/13/25 | Fri 10/24/25 |           |      |            |      |
| 324 | Submit ITR Draft FS Report                                                                  | 0 days    | Fri 10/24/25 | Fri 10/24/25 |           |      | ◆ 10/24/25 |      |
| 325 | ITR Review of ITR Draft FS Report                                                           | 15 days   | Mon 10/27/25 | Fri 11/14/25 |           |      |            |      |
| 326 | Prepare Draft FS Report and RTCs                                                            | 10 days   | Mon 11/17/25 | Fri 11/28/25 |           |      |            |      |
| 327 | Submit Draft FS Report                                                                      | 0 days    | Fri 11/28/25 | Fri 11/28/25 |           |      | ◆ 11/28/25 |      |



| ID  | Task Name                                                   | Duration        | Start               | Finish              | 2017 | 2020 | 2023 | 2026     |
|-----|-------------------------------------------------------------|-----------------|---------------------|---------------------|------|------|------|----------|
| 328 | Regulatory Review of Draft FS Report                        | 20 days         | Mon 12/1/25         | Fri 12/26/25        |      |      |      |          |
| 329 | Prepare Final FS Report and RTCs                            | 10 days         | Mon 12/29/25        | Fri 1/9/26          |      |      |      |          |
| 330 | Submit Final FS Report                                      | 0 days          | Fri 1/9/26          | Fri 1/9/26          |      |      |      | 1/9/26   |
| 331 | <b>Proposed Plan</b>                                        | <b>132 days</b> | <b>Mon 1/12/26</b>  | <b>Tue 7/14/26</b>  |      |      |      |          |
| 332 | Prepare PDT Draft Proposed Plan                             | 20 days         | Mon 1/12/26         | Fri 2/6/26          |      |      |      |          |
| 333 | Submit PDT Draft Proposed Plan                              | 0 days          | Fri 2/6/26          | Fri 2/6/26          |      |      |      | 2/6/26   |
| 334 | USACE Review of PDT Draft Proposed Plan                     | 15 days         | Mon 2/9/26          | Fri 2/27/26         |      |      |      |          |
| 335 | Prepare ITR Draft Proposed Plan and RTCs                    | 10 days         | Mon 3/2/26          | Fri 3/13/26         |      |      |      |          |
| 336 | Submit ITR Draft Proposed Plan                              | 0 days          | Fri 3/13/26         | Fri 3/13/26         |      |      |      | 3/13/26  |
| 337 | ITR Review of ITR Draft Proposed Plan                       | 15 days         | Mon 3/16/26         | Fri 4/3/26          |      |      |      |          |
| 338 | Prepare Draft Proposed Plan and RTCs                        | 10 days         | Mon 4/6/26          | Fri 4/17/26         |      |      |      |          |
| 339 | Submit Draft Proposed Plan                                  | 0 days          | Fri 4/17/26         | Fri 4/17/26         |      |      |      | 4/17/26  |
| 340 | Regulatory Review of Draft Proposed Plan                    | 20 days         | Mon 4/20/26         | Fri 5/15/26         |      |      |      |          |
| 341 | Prepare Final Proposed Plan and RTCs                        | 10 days         | Mon 5/18/26         | Fri 5/29/26         |      |      |      |          |
| 342 | Submit Final Proposed Plan                                  | 0 days          | Fri 5/29/26         | Fri 5/29/26         |      |      |      | 5/29/26  |
| 343 | 30-Day Public Comment Period                                | 22 days         | Mon 6/1/26          | Tue 6/30/26         |      |      |      |          |
| 344 | Public Meeting                                              | 0 days          | Tue 7/14/26         | Tue 7/14/26         |      |      |      | 7/14/26  |
| 345 | <b>Decision Document (DD)</b>                               | <b>120 days</b> | <b>Wed 7/1/26</b>   | <b>Tue 12/15/26</b> |      |      |      |          |
| 346 | Prepare PDT Draft DD                                        | 40 days         | Wed 7/1/26          | Tue 8/25/26         |      |      |      |          |
| 347 | Submit PDT Draft DD                                         | 0 days          | Tue 8/25/26         | Tue 8/25/26         |      |      |      | 8/25/26  |
| 348 | USACE Review of PDT Draft DD                                | 15 days         | Wed 8/26/26         | Tue 9/15/26         |      |      |      |          |
| 349 | Prepare ITR Draft DD and RTCs                               | 10 days         | Wed 9/16/26         | Tue 9/29/26         |      |      |      |          |
| 350 | Submit ITR Draft DD                                         | 0 days          | Tue 9/29/26         | Tue 9/29/26         |      |      |      | 9/29/26  |
| 351 | ITR Review of ITR Draft DD                                  | 15 days         | Wed 9/30/26         | Tue 10/20/26        |      |      |      |          |
| 352 | Prepare Draft DD and RTCs                                   | 10 days         | Wed 10/21/26        | Tue 11/3/26         |      |      |      |          |
| 353 | Submit Draft DD                                             | 0 days          | Tue 11/3/26         | Tue 11/3/26         |      |      |      | 11/3/26  |
| 354 | Regulatory Review of Draft DD                               | 20 days         | Wed 11/4/26         | Tue 12/1/26         |      |      |      |          |
| 355 | Prepare Final DD and RTCs                                   | 10 days         | Wed 12/2/26         | Tue 12/15/26        |      |      |      |          |
| 356 | Submit Final DD                                             | 0 days          | Tue 12/15/26        | Tue 12/15/26        |      |      |      | 12/15/26 |
| 357 | <b>Post-Contract Site Walk / Project Transition Meeting</b> | <b>29 days</b>  | <b>Wed 12/16/26</b> | <b>Mon 1/25/27</b>  |      |      |      |          |
| 358 | Prepare Agenda                                              | 15 days         | Wed 12/16/26        | Tue 1/5/27          |      |      |      |          |
| 359 | Attend Meeting                                              | 2 days          | Wed 1/6/27          | Thu 1/7/27          |      |      |      |          |
| 360 | Prepare Meeting Summary                                     | 5 days          | Fri 1/8/27          | Thu 1/14/27         |      |      |      |          |
| 361 | Submit Meeting Summary                                      | 0 days          | Thu 1/14/27         | Thu 1/14/27         |      |      |      | 1/14/27  |
| 362 | USACE Review                                                | 5 days          | Fri 1/15/27         | Thu 1/21/27         |      |      |      |          |
| 363 | Prepare Final Meeting Summary and RTCs                      | 2 days          | Fri 1/22/27         | Mon 1/25/27         |      |      |      |          |
| 364 | Submit Final Meeting Summary                                | 0 days          | Mon 1/25/27         | Mon 1/25/27         |      |      |      | 1/25/27  |



## **QAPP Worksheet #15: Project Screening Levels and Laboratory-Specific Detection/Quantitation Limits**

(UFP-QAPP Manual Section 2.8.1)

(EPA 2106-G-05 Section 2.2.6)

Refer to Final UFP-QAPP (TI-SDC, 2023) for project screening levels and laboratory-specific detection/quantitation limits that were used during the preliminary phase of RI sampling. Currently, project screening levels and laboratory-specific detection/quantitation limits are being updated and reviewed by the project team. An update to Worksheet #15 will be issued prior to the start of the supplemental phase of RI sampling.



## **QAPP Worksheet #17: Sampling Design and Rationale**

(UFP-QAPP Manual Section 3.1.1)

(EPA 2106-G-05 Section 2.3.1)

Worksheet #17 (Sampling Design and Rationale) describes the sampling design and associated rationale to meet the objectives of the RI. Details describing the RI field activities and specific tasks are included in Worksheet #18 of the Final UFP-QAPP (TI-SDC, 2023) and as amended in Worksheet #18 of this UFP-QAPP Addendum.

A phased sampling approach has been employed to complete the RI. The preliminary phase of RI sampling focused on characterizing the nature and spatial extent of contamination within the AOCs by collecting random and biased samples in each, and included sampling at a reference area for soil, and upgradient and downgradient locations for groundwater, surface water, and sediment to allow for an assessment of potential background/anthropogenic sources and impacts from historical DoD operations. Data collected during the preliminary phase of RI sampling has been evaluated to identify data gaps that exist (see Worksheet #10 and Appendix A), which will be filled by conducting a supplemental phase of RI sampling to adequately characterize the nature and extent of contamination and complete the HHRA and SLERA. This UFP-QAPP Addendum to the Final UFP-QAPP (TI-SDC, 2023) identifies the data gaps and associated sampling that will be performed to fill them during the supplemental phase of RI sampling.

### **Sampling Design and Rationale:**

Sampling conducted within the Site boundaries during the preliminary and supplemental phases of work is designed to adequately characterize the nature and spatial extent of contamination and assess whether any releases from DoD activities poses a threat to human health, safety, or the environment. Sampling areas and locations that will be the focus of the supplemental phase of RI sampling are summarized in Table 2 and shown in Figure 3, Figure 4, Figure 5, and Figure 6 for soil, groundwater, surface water/sediment, and soil gas, respectively.



**Table 2. Data Gaps Sampling Areas and Rationale by Media**

| Media                          | Sampling Area                    | Data Gap                                                                                                                                                                                                                                                        | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surface and/or Subsurface Soil | Drums Observed in Reference Area | 1. No data exist in the area that drums were observed in the west-central portion of the Reference Area and is needed to determine if there were any releases from the drums that impacted soil in the area.                                                    | <i>Data Gap #1.</i> Collect two additional surface and subsurface soil samples in the area and immediately downhill of the drums to assess whether a historical release occurred from the drums.                                                                                                                                                                                                                                                                                                                                 |
|                                | AOC 3N                           | 2. Northern extent of waste and chemical concentrations exceeding PSLs in surface and subsurface soil at AOC 3N has not been fully delineated in lateral and vertical directions.                                                                               | <i>Data Gap #2.</i> Collect additional surface and subsurface soil samples along an east-west transect located north of AOC 3N to define the northern extent of contamination above PSLs.                                                                                                                                                                                                                                                                                                                                        |
|                                | AOC FI                           | 4. Additional data are needed to determine 1) the source(s) of PSL exceedances detected in sediment at SD-008.                                                                                                                                                  | <i>Data Gap #4.</i> Collect two additional surface soil samples in the southeastern portion of AOC FI to determine if overland flow of chemicals in surface soil may be serving as a source of contamination detected in sediment at SD-008.                                                                                                                                                                                                                                                                                     |
|                                | AOC 2                            | 6. Maximum vinyl chloride concentration detected above the PSL in soil gas collected from SG-013 in southeastern portion AOC 2 represents a potential concern associated with indoor air exposure pathway in the mobile home park located further downgradient. | <i>Data Gap #6.</i> Conduct continuous coring and collect additional surface and subsurface soil samples at two additional soil gas sampling locations between SG-013 and downgradient mobile home park to determine whether sources of volatile contaminants are present in the vadose zone in this area of the Site.                                                                                                                                                                                                           |
| Groundwater                    | Downgradient AOC 2               | 3. Downgradient extent of chemical concentrations exceeding PSLs in groundwater downgradient of AOC 2 in CW-11, SLMW-12S/12D, and SLMW-16S/16D has not been fully delineated.                                                                                   | <i>Data Gap #3.</i> Perform the following groundwater sampling to further delineate nature and extent of contamination downgradient of AOC 2: <ul style="list-style-type: none"> <li>• Conduct groundwater sampling at CW-14, SLMW-14D, and SLMW-15S/15D, which are wells located further downgradient than those sampled during preliminary phase of RI sampling.</li> <li>• Resample groundwater at CW-11, SLMW-12S/12D, and SLMW-16S/16D so a contemporaneous dataset exists for evaluation during the RI process.</li> </ul> |



| Media                      | Sampling Area                                | Data Gap                                                                                                                                                                                           | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sediment and Surface Water | Downgradient AOC FI and Downstream of SD-008 | 4. Additional data are needed to determine 1) the source(s) of PSL exceedances detected in sediment at SD-008, and 2) how far downstream from SD-008 contamination is present in sediment.         | <p><i>Data Gap #4.</i> Collect the following additional samples southeast (i.e., downgradient) of AOC FI and near SD-008 to determine the source(s) of contamination detected in sediment at SD-008 and how far downstream from SD-008 PSL exceedances exist:</p> <ul style="list-style-type: none"> <li>Collect three additional sediment samples from wetland area between AOC FI and SD-008 to determine whether chemical concentrations detected in sediment within the wetland area may be serving as the source of contamination at SD-008.</li> <li>Collect one additional sediment sample from tributary south of SD-008 before it discharges into Silver Stream to determine whether chemical concentrations in the southern tributary may be serving as a source of contamination at SD-008.</li> <li>Collect two additional sediment samples from locations between SD-008 and SD-020 to determine how far downstream of SD-008 PSL exceedances exist.</li> <li>Resample sediment at SD-008 and SD-020 during the supplemental phase of RI sampling so a contemporaneous dataset exists for evaluation during the RI process.</li> <li>Where present, collect co-located surface water samples at each sediment sampling location so correlations between sediment and surface water data can be made during the RI process.</li> </ul> |
| Soil Gas                   | AOC 2 and AOC FI                             | 5. Issues with the soil gas leak testing procedure used during the preliminary RI sampling activities create data usability concerns for several soil gas samples collected from AOC 2 and AOC FI. | <p><i>Data Gap #5.</i> Collect an additional round of soil gas samples from all locations that were sampled in AOC 2 and AOC FI to address data usability concerns associated with the samples collected during the preliminary phase of RI sampling.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



| Media | Sampling Area          | Data Gap                                                                                                                                                                                                                                                        | Rationale                                                                                                                                                                                                                                                                                                             |
|-------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | Downgradient of SG-013 | 6. Maximum vinyl chloride concentration detected above the PSL in soil gas collected from SG-013 in southeastern portion AOC 2 represents a potential concern associated with indoor air exposure pathway in the mobile home park located further downgradient. | <i>Data Gap #6.</i> Collect two additional soil gas samples between SG-013 and mobile home park located downgradient to determine if the vinyl chloride concentration detected in southeastern portion of AOC 2 represents any potential concern associated with indoor air exposure pathway in the mobile home park. |



### ***Soil (Surface and Subsurface)***

The number of planned soil samples are listed below by area:

- Reference Area: 2 surface/4 subsurface (2 borings with 2 subsurface samples per boring)
- AOC 3N: 3 surface/6 subsurface (3 borings with 2 subsurface samples per boring)
- AOC FI: 2 surface from 2 locations
- AOC 2: 2 surface/4 subsurface (2 borings with 2 subsurface samples per boring)

The approximate proposed surface and subsurface sampling locations for the supplemental RI sampling activities are shown in Figure 3.

Surface soil samples will be collected from 0-1 ft bgs using a hand auger or trowel. Subsurface soil samples will be collected from 1-5 ft bgs, 5-10 ft bgs, 10-15 ft bgs, etc. within the vadose zone and to the depth that groundwater is encountered. Since groundwater levels at the Site are generally shallow (i.e., within twelve (12) feet of ground surface in most areas), it is anticipated that only one or two subsurface soil samples will be collected from most borings.

Soil borings will be advanced utilizing a direct push technology (DPT) drill rig, or in the case of borings located on steep slopes or where the drill rig cannot access, a hand auger will be used. Soil sample collection processes are described in WS#18.

### ***Groundwater***

The number of wells planned for groundwater sampling are listed below by area:

- Downgradient AOC 2:
  - 9 wells (All existing: CW-11, CW-14, SLMW-12S/12D, SLMW-14D, SLMW-15S/15D, SLMW-16S/16D.)

The proposed groundwater sampling locations are shown in Figure 4. The depth of the screened interval for existing wells is provided in WS#18, Table 9. Groundwater will be sampled using low-flow groundwater purging to reduce investigation derived waste and minimize turbidity as described in WS#18.

### ***Sediment and Surface Water***

Eight co-located surface water and sediment samples are proposed in addition to those that were sampled during the preliminary phase of RI sampling. The proposed locations are southeast of AOC FI and in the general vicinity of locations SW/SD008 and SW/SD020, which were sampled during the preliminary phase of RI sampling (see Figure 5).

Surface water will be sampled using a peristaltic pump with dedicated tubing and sediment samples will be collected using a push corer.



## ***Soil Gas***

The number of planned soil gas samples during the supplemental phase of RI sampling are listed below by area:

- AOC 2: 10 (same eight locations sampled during preliminary phase of RI sampling plus two new locations located between SG-013 and mobile home park located southeast of SG-013)
- AOC FI: 3 (same three locations sampled during preliminary phase of RI sampling)

Soil gas samples will be collected using a single Post-Run Tubing (PRT) system that allows for soil gas to be collected from the desired depth directly into the laboratory provided canisters.

## **RI Approach**

This section identifies the investigation activities planned for the supplemental phase of the RI. Detailed descriptions of field activities and task descriptions to implement the investigation activities are provided in Worksheet #18.

### Supplemental RI Activities

Planned investigation activities during the supplemental phase of the RI are as follows:

- Conduct subsurface utility surveying in areas planned for sampling.
- Collect surface soil samples from the Reference Area, AOC 3N, AOC FI, and AOC 2.
- Install soil borings and collect subsurface soil samples at the Reference Area, AOC 3N, and AOC 2.
- Conduct comprehensive groundwater gauging event across the Site to determine groundwater flow direction.
- Collect groundwater samples from nine existing well locations located downgradient of AOC 2.
- Collect co-located surface water and sediment samples at identified locations.
- Collect soil gas samples from AOC 2 and AOC FI.

All soil, groundwater, surface water, sediment, and soil gas samples will be analyzed by certified, fixed laboratories for the analytes specified in Worksheet #18 of this UFP-QAPP Addendum. Supplemental investigation activities and analytical methodology will follow the same procedures and methods used for the preliminary RI sampling activities as outlined in the Final UFP-QAPP (TI-SDC, 2023) unless otherwise stated in this QAPP Addendum. The order of investigation activities may vary depending on weather and field team logistics.



## QAPP Worksheet #18: Sampling Locations and Methods

(UFP-QAPP Manual Section 3.1.1 and 3.1.2)

(EPA 2106-G-05 Section 2.3.4 and 2.3.2)

This worksheet describes the planned RI field activities and specific tasks for the supplemental phase of RI sampling that were not already outlined in the Final UFP-QAPP (TI-SDC, 2023). Field SOPs and forms that have been updated since the preliminary phase of RI sampling are provided in Appendix B and Appendix C, respectively. Note that additional details pertaining to sampling procedures are included in this Worksheet #18, and take precedence over information included in the sampling SOPs contained in the Final UFP-QAPP (TI-SDC, 2023) and Appendix B of this QAPP Addendum. The subsections below summarize sampling that will be performed for each type of media, and Table 7 provides a comprehensive summary of the entire sampling plan including normal field samples as well as field quality control samples (i.e., field duplicate and MS/MSD samples).

### Soil (Surface and Subsurface):

All surface soil samples will be collected from 0-1 ft bgs. Subsurface soil samples will be collected from 1-5 ft bgs, 5-10 ft bgs, 10-15 ft bgs, etc. at each bore hole within the vadose zone and to the depth that groundwater is encountered. VOC samples within each subsurface interval will be collected from the approximate mid-point of the interval. In addition, if visible or field instrument-detected contamination is observed during subsurface soil sampling, VOC samples will be collected from the interval that the impacts are observed/measured to assist in defining potential source areas and inform the characterization of the nature and spatial extent of contamination. All other analyses will be performed on a composite sample consisting of soil across the entire 4 or 5-ft subsurface interval. Soil sampling will follow SOP No. 5 Soil Sampling provided in the Final UFP-QAPP (TI-SDC, 2023). Table 3 lists the soil samples to be collected and Figure 3 shows the locations of the proposed soil sampling.

**Table 3. Soil Sampling Locations**

| Sampling Location <sup>4</sup>            | Matrix       | Depth (Feet) | Analytical Group <sup>1</sup>                                                                                          | Number of Samples <sup>2</sup> | Comments             | Sampling SOP Reference |
|-------------------------------------------|--------------|--------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------|------------------------|
| <b>Reference Area:</b><br>SS083 and SS084 | Surface Soil | 0-1          | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC | 2                              | Hand auger or trowel | No. 5 Soil Sampling    |
| <b>AOC 3N:</b><br>SS085, SS086, and SS087 | Surface Soil | 0-1          |                                                                                                                        | 3                              |                      |                        |
| <b>AOC FI:</b> SS088 and SS089            | Surface Soil | 0-1          |                                                                                                                        | 2                              |                      |                        |
| <b>AOC 2:</b> SS090 and SS091             | Surface Soil | 0-1          |                                                                                                                        | 2                              |                      |                        |



| Sampling Location <sup>4</sup>            | Matrix          | Depth (Feet) | Analytical Group <sup>1</sup>                                                                            | Number of Samples <sup>2</sup> | Comments                    | Sampling SOP Reference |
|-------------------------------------------|-----------------|--------------|----------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------|------------------------|
| <b>Reference Area:</b><br>BH083 and BH084 | Subsurface Soil | 1-5 and 5-10 | VOCs, SVOCs, OCPs, PCBs, metals, mercury,                                                                | 4                              | DPT drill rig or hand auger |                        |
| <b>AOC 3N:</b><br>BH085, BH086, and BH087 | Subsurface Soil | 1-5 and 5-10 | explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins <sup>3</sup> , TOC | 6                              |                             |                        |
| <b>AOC 2:</b> BH090 and BH091             | Subsurface Soil | 1-5 and 5-10 |                                                                                                          | 4                              |                             |                        |

1. VOC = Volatile Organic Compound, SVOC = Semi-Volatile Organic Compound, OCP = Organochlorine Pesticides, PCB = Poly Chlorinated Biphenyl, CEC = Cation Exchange Capacity, ORP = Oxidation-Reduction Potential, TOC = Total Organic Carbon.
2. Duplicate samples will be collected for 10% of all soil samples at locations spread across the Site to evaluate field reproducibility. MS/MSD samples will also be collected for 5% of soil samples across the Site to evaluate laboratory method precision and accuracy. See Worksheet #20 for a summary of field QC soil samples that will be collected.
3. Dioxins will be analyzed in Reference Area and AOC 3N subsurface soil samples because burn ash was observed in AOC 3N during the preliminary RI sampling activities. However, dioxins will not be analyzed in subsurface soil samples collected from AOC 2 because burn ash was not observed in this AOC and there is no evidence of potential sources of dioxins.
4. In addition to the soil samples listed in table, if visible or field instrument-detected contamination is observed during subsurface soil sampling, VOC samples will be collected from the interval that the impacts are observed/measured to assist in defining potential source areas and inform the characterization of the nature and spatial extent of contamination.



### Groundwater:

Groundwater sampling will follow SOP No. 2 Groundwater Sampling provided in Appendix B. Table 4 lists the groundwater samples to be collected and Figure 4 shows the locations of the proposed groundwater sampling.

**Table 4. Groundwater Sampling Locations**

| Sampling Location                                                                               | Matrix <sup>1</sup> | Sampling Interval               | Analytical Group <sup>2</sup>                                                                                                                                                       | Number of Samples <sup>3</sup> | Comments                                                | Sampling SOP Reference     |
|-------------------------------------------------------------------------------------------------|---------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------|----------------------------|
| <b>Downgradient AOC 2:</b> CW-11, CW-14, SLMW-12S/12D, SLMW-14D, SLMW-15S/15D, and SLMW-16S/16D | GW                  | At Screened Interval (Variable) | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | 4                              | Pour from high density polyethylene pump discharge line | No. 2 Groundwater Sampling |

1. GW = Groundwater

2. VOC = Volatile Organic Compound, SVOC = Semi-Volatile Organic Compound, SIM = Selective Ion Monitoring, OCP = Organochlorine Pesticides, PCB = Poly Chlorinated Biphenyl.

3. Duplicate samples will be collected for 10% of all groundwater samples. MS/MSD samples will also be collected for 5% of groundwater samples across the Site from locations that have adequate volume to fill the required containers to evaluate laboratory method precision and accuracy. See Worksheet #20 for a summary of field QC groundwater samples that will be collected.



### Sediment and Surface Water:

Surface water and sediment samples will be co-located and target depositional areas. The collection procedures will follow SOP No. 10 Surface Water/Sediment Sampling provided in the Final UFP-QAPP (TI-SDC, 2023). Table 5 lists the surface water and sediment samples to be collected and Figure 5 shows the locations of the proposed surface water and sediment sampling.

**Table 5. Sediment and Surface Water Sampling Locations**

| Sampling Location                                                                                                                                           | Matrix <sup>1</sup> | Depth                                                                                                                                                         | Analytical Group <sup>2</sup>                                                                                                                                                  | Number of Samples <sup>3</sup> | Comments                                                                                                | Sampling SOP Reference                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>Wetland Area Between AOC FI and SW008/SD008:</b> <ul style="list-style-type: none"> <li>SW021/SD021</li> <li>SW022/SD022</li> <li>SW023/SD023</li> </ul> | SW/SD               | SW: 2 ft above the bottom of the surface water body. If less than 2 ft deep, near bottom with as little bottom disturbance as possible.<br><br>SD: 0-6 inches | SW: VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | 3                              | SW: Grab collected using a peristaltic pump with high density polyethylene tubing<br><br>SD: Push corer | No. 10 Surface Water/Sediment Sampling |
| <b>Resample SW008/SD008 and SW020/SD020:</b> <ul style="list-style-type: none"> <li>SW008/SD008</li> <li>SW020/SD020</li> </ul>                             |                     |                                                                                                                                                               |                                                                                                                                                                                | 2                              |                                                                                                         |                                        |
| <b>Tributary South of SW008/SD008 Before Discharge into Silver Stream:</b> <ul style="list-style-type: none"> <li>SW024/SD024</li> </ul>                    |                     |                                                                                                                                                               | SD: VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH                                      | 1                              |                                                                                                         |                                        |
| <b>Locations Between SW008/SD008 and SW020/SD020:</b> <ul style="list-style-type: none"> <li>SW025/SD025</li> <li>SW026/SD026</li> </ul>                    |                     |                                                                                                                                                               |                                                                                                                                                                                | 2                              |                                                                                                         |                                        |

1. SW= Surface Water, SD = Sediment

2. VOC = Volatile Organic Compound, SVOC = Semi-Volatile Organic Compound, SIM = Selective Ion Monitoring, OCP = Organochlorine Pesticides, PCB = Poly Chlorinated Biphenyl, DOC = Dissolved Organic Carbon, CEC = Cation Exchange Capacity, ORP = Oxidation-Reduction Potential, TOC = Total Organic Carbon.

3. Duplicate samples will be collected for 10% of all surface water and sediment samples. MS/MSD samples will also be collected for 5% of surface water and sediment samples across the Site from locations that have adequate volume to fill the required containers to evaluate laboratory method precision and accuracy. See Worksheet #20 for a summary of field QC surface water and sediment samples that will be collected.



## Soil Gas:

Soil gas sampling will follow SOP No. 14 Soil Gas Sampling provided in Appendix B. Table 6 lists the soil gas samples to be collected and Figure 6 shows the locations of the proposed soil gas sampling.

**Table 6. Soil Gas Sampling Locations**

| Sampling Location                                             | Matrix <sup>1</sup> | Sampling Interval | Analytical Group <sup>2</sup>             | Number of Samples <sup>3</sup> | Comments                     | Sampling SOP Reference         |
|---------------------------------------------------------------|---------------------|-------------------|-------------------------------------------|--------------------------------|------------------------------|--------------------------------|
| <b>AOC 2:</b><br>SG007 to<br>SG014 plus<br>SG018 and<br>SG019 | SG                  | Vadose<br>Zone    | VOCs, methane,<br>and helium <sup>4</sup> | 10                             | 1-liter<br>Summa<br>Canister | No. 14 Soil<br>Gas<br>Sampling |
| <b>AOC FI:</b><br>SG015 to<br>SG017                           |                     |                   |                                           | 3                              |                              |                                |

1. SG = Soil Gas

2. VOC = Volatile Organic Compound

3. Duplicate samples will be collected for 10% of all soil gas samples at locations spread across the Site to evaluate field reproducibility (see Worksheet #20).

4. Helium analysis in the laboratory is contingent upon an analysis of the leak test data collected in the field.


**Table 7. Comprehensive Sample Collection Plan**

| Sample ID          | Matrix <sup>3</sup> | Depth (ft bgs) | Type                         | Analytical Groups                                                                                                                    | Sampling SOP        | Comments |
|--------------------|---------------------|----------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| FSA-SS083-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-FD1-SO-0-1-MMY | SS                  | 0-1            | Field duplicate <sup>2</sup> | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH083-1-5-MMY  | SB                  | 1-5            | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-FD2-SO-0-1-MMY | SB                  | 1-5            | Field duplicate <sup>2</sup> | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH083-5-10-MMY | SB                  | 5-10           | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-SS084-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-SS084-0-1-MMY  | SS                  | 0-1            | MS/MSD <sup>2</sup>          | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, TOC                                                                        | No. 5 Soil Sampling |          |
| FSA-BH084-1-5-MMY  | SB                  | 1-5            | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH084-5-10-MMY | SB                  | 5-10           | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |



| Sample ID          | Matrix <sup>3</sup> | Depth<br>(ft bgs) | Type                        | Analytical Groups                                                                                                                    | Sampling SOP        | Comments |
|--------------------|---------------------|-------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| FSA-SS085-0-1-MMY  | SS                  | 0-1               | Hand auger or trowel        | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH085-1-5-MMY  | SB                  | 1-5               | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH085-5-10-MMY | SB                  | 5-10              | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-SS086-0-1-MMY  | SS                  | 0-1               | Hand auger or trowel        | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH086-1-5-MMY  | SB                  | 1-5               | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH086-5-10-MMY | SB                  | 5-10              | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-SS087-0-1-MMY  | SS                  | 0-1               | Hand auger or trowel        | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH087-1-5-MMY  | SB                  | 1-5               | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH087-5-10-MMY | SB                  | 5-10              | DPT drill rig or hand auger | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |



| Sample ID          | Matrix <sup>3</sup> | Depth (ft bgs) | Type                         | Analytical Groups                                                                                                                    | Sampling SOP        | Comments |
|--------------------|---------------------|----------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| FSA-SS088-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-SS089-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-SS090-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH090-1-5-MMY  | SB                  | 1-5            | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC          | No. 5 Soil Sampling |          |
| FSA-FD3-SO-0-1-MMY | SB                  | 1-5            | Field duplicate <sup>2</sup> | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, dioxins, TOC | No. 5 Soil Sampling |          |
| FSA-BH090-5-10-MMY | SB                  | 5-10           | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC          | No. 5 Soil Sampling |          |
| FSA-SS091-0-1-MMY  | SS                  | 0-1            | Hand auger or trowel         | SVOCs, OCPs, PCBs, metals, mercury, explosives compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC               | No. 5 Soil Sampling |          |
| FSA-BH091-1-5-MMY  | SB                  | 1-5            | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC          | No. 5 Soil Sampling |          |
| FSA-BH091-5-10-MMY | SB                  | 5-10           | DPT drill rig or hand auger  | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, CEC, ORP, pH, moisture content, TOC          | No. 5 Soil Sampling |          |



| Sample ID          | Matrix <sup>3</sup> | Depth<br>(ft bgs) | Type                                                    | Analytical Groups                                                                                                                                                                   | Sampling SOP               | Comments |
|--------------------|---------------------|-------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------|
| FSA-BH091-5-10-MMY | SB                  | 5-10              | MS/MSD <sup>2</sup>                                     | VOCs, SVOCs, OCPs, PCBs, metals, mercury, explosive compounds, TOC                                                                                                                  | No. 5 Soil Sampling        |          |
| FSA-CW-11-MMY      | GW                  | 8                 | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling |          |
| FSA-CW-14-MMY      | GW                  | 7.7               | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling |          |
| FSA-SLMW-12S-MMY   | GW                  | 7.5               | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling |          |
| FSA-SLMW-12D-MMY   | GW                  | 32                | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling |          |
| FSA-SLMW-14D-MMY   | GW                  | 114               | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling |          |
| FSA-SLMW-15S-MMY   | GW                  | 8                 | Pour from high density polyethylene                     | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved),                                                                           | No. 2 Groundwater Sampling |          |



| Sample ID        | Matrix <sup>3</sup> | Depth (ft bgs) | Type                                                    | Analytical Groups                                                                                                                                                                   | Sampling SOP                           | Comments                              |
|------------------|---------------------|----------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------|
|                  |                     |                | pump discharge line                                     | explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate                                                                                                           |                                        |                                       |
| FSA-FD1-GW-MMY   | GW                  | 8              | Field duplicate <sup>2</sup>                            | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling             |                                       |
| FSA-SLMW-15D-MMY | GW                  | 109            | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling             |                                       |
| FSA-SLMW-16S-MMY | GW                  | 9              | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling             |                                       |
| FSA-SLMW-16S-MMY | GW                  | 9              | MS/MSD <sup>2</sup>                                     | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling             |                                       |
| FSA-SLMW-16D-MMY | GW                  | 97             | Pour from high density polyethylene pump discharge line | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, hardness, alkalinity, sulfide, chloride, and sulfate | No. 2 Groundwater Sampling             |                                       |
| FSA-SD008-MMY    | SD                  | 0-0.5          | Push corer                                              | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH                                               | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |



| Sample ID      | Matrix <sup>3</sup> | Depth (ft bgs) | Type                         | Analytical Groups                                                                                                                     | Sampling SOP                           | Comments                              |
|----------------|---------------------|----------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------|
| FSA-SD020-MMY  | SD                  | 0-0.5          | Push corer                   | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD021-MMY  | SD                  | 0-0.5          | Push corer                   | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD022-MMY  | SD                  | 0-0.5          | Push corer                   | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD023-MMY  | SD                  | 0-0.5          | Push corer                   | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD024-MMY  | SD                  | 0-0.5          | Push corer                   | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-FD1-SD-MMY | SD                  | 0-0.5          | Field duplicate <sup>2</sup> | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |



| Sample ID     | Matrix <sup>3</sup> | Depth (ft bgs) | Type                                                   | Analytical Groups                                                                                                                                                          | Sampling SOP                           | Comments                              |
|---------------|---------------------|----------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------|
| FSA-SD025-MMY | SD                  | 0-0.5          | Push corer                                             | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH                                      | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD025-MMY | SD                  | 0-0.5          | MS/MSD <sup>2</sup>                                    | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, TOC                                                                                               | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SD026-MMY | SD                  | 0-0.5          | Push corer                                             | VOCs, SVOCs incl. SIM, OCPs, PCBs, metals, mercury, explosive compounds, grain size distribution, TOC, CEC, ORP, moisture content, pH                                      | No. 10 Surface Water/Sediment Sampling | Collect VOC sample before compositing |
| FSA-SW008-MMY | SW                  | 2              | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |                                       |
| FSA-SW020-MMY | SW                  | 2              | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |                                       |
| FSA-SW021-MMY | SW                  | 2              | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |                                       |



| Sample ID      | Matrix <sup>3</sup> | Depth<br>(ft bgs) | Type                                                   | Analytical Groups                                                                                                                                                          | Sampling SOP                           | Comments |
|----------------|---------------------|-------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------|
| FSA-FD1-SW-MMY | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SW022-MMY  | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SW023-MMY  | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SW024-MMY  | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SW025-MMY  | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SW026-MMY  | SW                  | 2                 | Peristaltic pump with high density polyethylene tubing | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC, alkalinity, sulfide, chloride, sulfate | No. 10 Surface Water/Sediment Sampling |          |



| Sample ID     | Matrix <sup>3</sup> | Depth<br>(ft bgs) | Type                | Analytical Groups                                                                                                                                                                              | Sampling SOP                           | Comments |
|---------------|---------------------|-------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------|
| FSA-SW026-MMY | SW                  | 2                 | MS/MSD <sup>2</sup> | VOCs incl. SIM, SVOCs incl. SIM, OCPs, PCBs, metals (total and dissolved), mercury (total and dissolved), explosive compounds, DOC <sup>1</sup> , chloride <sup>1</sup> , sulfate <sup>1</sup> | No. 10 Surface Water/Sediment Sampling |          |
| FSA-SG007-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG008-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG009-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG010-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG011-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG012-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG013-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG014-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG015-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG016-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |
| FSA-SG017-MMY | SG                  | TBD               | PRT                 | VOCs, methane, helium <sup>4</sup>                                                                                                                                                             | No. 14 Soil Gas Sampling               |          |



| Sample ID         | Matrix <sup>3</sup> | Depth (ft bgs) | Type                         | Analytical Groups                  | Sampling SOP               | Comments |
|-------------------|---------------------|----------------|------------------------------|------------------------------------|----------------------------|----------|
| FSA-SG018-MMY     | SG                  | TBD            | PRT                          | VOCs, methane, helium <sup>4</sup> | No. 14 Soil Gas Sampling   |          |
| FSA-FD1-SG-MMY    | SG                  | TBD            | Field duplicate <sup>2</sup> | VOCs, methane, helium <sup>4</sup> | No. 14 Soil Gas Sampling   |          |
| FSA-SG019-MMY     | SG                  | TBD            | PRT                          | VOCs, methane, helium <sup>4</sup> | No. 14 Soil Gas Sampling   |          |
| FSA-FD2-SG-MMY    | SG                  | TBD            | Field duplicate <sup>2</sup> | VOCs, methane, helium <sup>4</sup> | No. 14 Soil Gas Sampling   |          |
| FSA-IDW-GW-MMY    | GW                  | NA             | IDW drum                     | PFAS, RCRA metals (total)          | No. 2 Groundwater Sampling |          |
| FSA-IDWFD1-GW-MMY | GW                  | NA             | Field duplicate <sup>2</sup> | PFAS, RCRA metals (total)          | No. 2 Groundwater Sampling |          |
| FSA-IDWFD1-SO-MMY | SO                  | NA             | IDW drum(s)                  | PFAS, RCRA metals (TCLP)           | No. 5 Soil Sampling        |          |
| FSA-IDW-SO-MMY    | SO                  | NA             | Field duplicate <sup>2</sup> | PFAS, RCRA metals (TCLP)           | No. 5 Soil Sampling        |          |

Notes:

1. Matrix spike only and no matrix spike duplicate to be collected for DOC, chloride, and sulfate analysis in surface water.
2. Field quality control samples including field duplicates and MS/MSD samples may be collected from locations/intervals other than those shown in table depending on field schedule and conditions.
3. SS = surface soil, SB = subsurface soil, GW = groundwater, SD = sediment, SW = surface water, SG = soil gas.
4. Helium analysis in the laboratory is contingent upon an analysis of the leak test data collected in the field.



## **RI Field Activities**

Additional sampling will be performed during the supplemental phase of sampling to fill data gaps identified after the preliminary phase of sampling as outlined in Worksheet #17. Further details regarding the activities proposed during the supplemental phase of RI sampling that were not already provided in the Final UFP-QAPP (TI-SDC, 2023) are described below. TI-SDC field SOPs that have been revised since the Final UFP-QAPP (TI-SDC, 2023) was issued are provided in Appendix B and updated field forms not already provided in the Final UFP-QAPP (TI-SDC, 2023) are provided in Appendix C.

### **Supplemental RI Sampling**

#### ***Mobilization***

Prior to initiation of fieldwork, all field personnel will review the Final UFP-QAPP (TI-SDC, 2023), this QAPP Addendum, and the project APP and SSHP. Daily health and safety tailgate meetings will be conducted with all on-site personnel during each day of field activities.

Prior to mobilizing personnel and heavy equipment (e.g., DPT drill rig) to the Site, TI-SDC will coordinate with the USACE PM and other stakeholders (e.g., airport personnel) to obtain any required permits and permission to access the Site. All stakeholders will be notified of pending RI activities at least four weeks in advance of mobilization to the Site and if any work is to occur within air-side areas of the airport, coordination will occur with airport personnel regarding required escort in a company vehicle.

Consistent with the RI field activities conducted in May, July, and August 2023, unexploded ordnance avoidance and radiological materials screening will be performed at the new locations identified for RI sampling during the supplemental phase of RI sampling.

#### ***Vegetation Clearing and Site Preparation***

TI-SDC will conduct all required vegetation clearance to access the planned sampling locations prior to the commencement of any intrusive activities at the Site. No permits are required for vegetation clearance. Any areas that are anticipated to require vegetation clearance will be cleared prior to the investigation. The locations of the surface and subsurface soil, soil gas, surface water, and sediment sampling locations will be staked or otherwise marked at the onset of the supplemental sampling activities.

#### ***Utility Survey***

Prior to intrusive activities, a survey to locate any overhead or observable features of underground utilities in the vicinity of the surface and subsurface soil and soil gas sampling locations that were not previously cleared for utilities will be conducted. TI-SDC will utilize an available New York call center to notify them of the field activities, and representatives from the various utility companies with potential operations in the area will verify, and mark on the surface, all identified underground utilities. Additionally, TI-SDC will coordinate with Dig Safe Systems, Incorporated



(Dig Safe), or an equivalent vendor, to perform a third-party utility location survey. Dig Safe, or another entity, will mark on the surface all identified underground utilities. The results of the underground utility clearances will be used to confirm or modify the proposed intrusive sampling locations. TI-SDC will coordinate with airport officials to temporarily disconnect any utilities that are located in or near the planned sampling locations, if needed.

### ***Well Gauging and Groundwater Sampling***

Prior to performing any groundwater sampling, TI-SDC will perform a groundwater elevation survey by gauging all suitable monitoring wells across the Site to determine groundwater flow directions at the time of the supplemental phase of RI sampling. Well gauging will follow procedures documented in SOP No. 1 Water Level Measurement provided in the Final UFP-QAPP (TI-SDC, 2023) and the gauging log provided in Appendix C will be used.

TI-SDC will collect groundwater samples from nine existing monitoring wells shown in Figure 4 using the procedures documented in SOP No. 2 Groundwater Sampling (see Appendix B). Groundwater sampling will not be carried out when weather conditions preclude the operation of field instruments, such as heavy rains.

Groundwater samples will be collected using the low-flow groundwater purging and sampling method as outlined in SOP No. 2. Prior to collecting each sample, groundwater will be purged until water quality measurements (collected every three to five minutes) meet the stabilization criteria shown in Table 8 over three consecutive measurements, with a minimum of five measurement events. Purging rates will be approximately 150 to 200 mL/min to minimize water turbulence and possible outgassing of potential VOCs. Water quality measurements and sampling data will be recorded on the groundwater purge log provided in Appendix C. Groundwater samples will be collected in laboratory-provided containers, properly labeled, and placed in a cooler with ice pending shipment to the laboratory for analyses listed in Table 4.

Sampling equipment will be decontaminated prior to and in between samples according to the TI-SDC SOP No. 4 Sampling Equipment Decontamination provided in the Final UFP-QAPP (TI-SDC, 2023) to minimize the possibility of cross-contamination.


**Table 8. Stabilization Criteria for Low-Flow Groundwater Sampling**

| Parameter                     | Criteria                                           |
|-------------------------------|----------------------------------------------------|
| Dissolved Oxygen              | ± 10% or three consecutive readings below 0.5 mg/L |
| Oxidation-Reduction Potential | ± 10 millivolts                                    |
| Turbidity                     | < 10 NTU                                           |
| Specific Conductivity         | ± 3%                                               |
| Temperature                   | ± 10%                                              |
| pH                            | ± 0.1 units                                        |

Groundwater intake pumps will be placed at the approximate midpoint of the well screen. Well details including well depth and depth of screened interval for the four wells that are planned for sampling during the supplemental RI sampling activities are provided in Table 9.

**Table 9. Well Details for Placing Intake Pump for Groundwater Sampling**

| Well No. | Size (in) | Well Depth (ft) | Depth of Screened Interval (ft bgs) | Top of Casing Elevation (ft amsl) | Geologic Unit/Formation Screened |
|----------|-----------|-----------------|-------------------------------------|-----------------------------------|----------------------------------|
| CW-11    | 4         | 10.5            | 4-12                                | 396.86                            | Overburden/Till                  |
| CW-14    | 4         | 10.5            | 4.9-10.5                            | 379.36                            | Overburden/Till                  |
| SLMW-12S | 2         | 10              | 5-10                                | 377.28                            | Bedrock                          |
| SLMW-12D | 6         | 53              | OB: 18-53                           | 376.10                            | Bedrock                          |
| SLMW-14D | 6         | 200             | OB: 28-200                          | 375.74                            | Bedrock                          |
| SLMW-15S | 2         | 11              | 5-11                                | 364.68                            | Overburden/Till                  |
| SLMW-15D | 6         | 200             | OB: 18-200                          | 365.05                            | Bedrock                          |
| SLMW-16S | 2         | 14              | 4-14                                | 375.83                            | Bedrock                          |
| SLMW-16D | 6         | 201             | OB: 18-201                          | 376.34                            | Bedrock                          |

amsl – above mean sea level, bgs – below ground surface, in = inch, ft = feet, OB = open borehole.

### ***Surface Water and Sediment Sampling***

TI-SDC will attempt to collect co-located surface water and sediment samples at locations shown in Figure 5. Surface water and sediment sampling will follow procedures documented in SOP No. 10 Surface Water/Sediment Sampling and will take place when the preceding 72-hours have had less than 0.1 inches of precipitation so the samples are representative of base flow versus stormwater flow conditions.

TI-SDC will collect surface water samples first from approximately two feet above the bottom of the surface water body. If the depth of the surface water body is less than two feet, then the sample will be collected with as little bottom disturbance as possible. TI-SDC will collect the surface water samples utilizing a peristaltic pump with dedicated tubing. Water quality parameters will be measured once in the field (i.e., not purged like a groundwater monitoring well until parameter stabilization) prior to collecting surface water samples from each location. All samples will be containerized in laboratory-provided sample containers, properly labeled, and placed in a cooler with ice pending shipment to the laboratory for analyses listed in Table 5.



Sediment samples will be collected from 0 to 0.5 feet bgs using a push corer. Sediment samples will be hand-packed into laboratory-provided sample containers, properly labeled, and placed in a cooler with ice pending shipment to the laboratory for analyses listed in Table 5.

Sampling equipment will be decontaminated prior to and in between samples according to the TI-SDC SOP No. 4 Sampling Equipment Decontamination (TI-SDC, 2023) to minimize the possibility of cross-contamination.

### ***Surface Soil Sampling***

TI-SDC will collect discrete surface soil samples from nine locations shown in Figure 3. TI-SDC will collect the surface soil samples from 0 to 1.0 feet bgs, for use in ecological and human risk assessments. Surface sampling will follow procedures documented in SOP No. 5 Soil Sampling (TI-SDC, 2023). Surface soil sampling will not be carried out when weather conditions preclude the operation of field instruments or isolation of the sample from precipitation, such as heavy rains.

The soil samples will be collected using a stainless-steel hand auger or trowel. If surface soil sample locations coincide with soil boring locations, surface soil samples may be collected by a licensed, professional driller utilizing a DPT drill rig. Due to the high volume of soil required for all sample analyses, multiple soil borings located immediately adjacent to each other may be necessary to collect a sufficient volume for all analyses. Surface soil samples will be hand-packed into laboratory-provided 4-ounce, 8-ounce glass jars, or other appropriate containers as required by the laboratory. All sample containers will be properly labeled and placed in a cooler with ice pending shipment to the laboratory for analyses listed in Table 3.

Sampling equipment will be decontaminated prior to and in between samples according to the TI-SDC SOP No. 4 Sampling Equipment Decontamination (TI-SDC, 2023) to minimize the possibility of cross-contamination.

### ***Subsurface Soil Sampling***

TI-SDC will advance soil borings at the Site at the locations shown in Figure 3, for the purposes of collecting subsurface soil samples and obtaining lithologic data. Each soil boring will be advanced by a licensed, professional driller, utilizing a DPT drill rig (or hand auger on steep slopes that are not accessible by a drill rig). Each soil boring will be advanced to the depth that groundwater is encountered. If waste material is observed at the depth of groundwater, the soil boring will continue into the saturated zone to attempt to delineate the vertical extent of the waste. Subsurface sampling will follow procedures documented in SOP No. 5 Soil Sampling (TI-SDC, 2023). Subsurface soil sampling will not be carried out when weather conditions preclude the operation of field instruments or isolation of the sample from precipitation, such as heavy rains.

During soil boring advancement, a DPT drill rig (or hand auger on steep slopes or locations that are not accessible by a drill rig) will be used to advance each boring, and soil samples will be collected via a continuous soil core within an acetate sleeve inside the core barrel of the DPT drill rig, to the depth of groundwater (and beyond if waste material is observed at the groundwater



table). The acetate sleeve will be cut open to expose the soil for screening with a PID prior to sample collection from each interval in the vadose zone and above the groundwater table. The exact depth that samples will be collected from each subsurface interval will be the following:

- To provide unbiased data that is representative of overall Site conditions, VOC samples within each subsurface soil sampling interval will be collected from the approximate mid-point of the interval. If during subsurface soil sampling, visible or field instrument-detected contamination is present, VOC sample(s) will also be collected from the interval that the impacts are observed/measured to assist in defining potential source areas and inform the characterization of the nature and spatial extent of contamination.
- All other analyses will be performed on a composite sample consisting of soil across the entire 4 or 5-ft subsurface interval.

Soil samples for all analyses including VOCs will be collected within the 4 or 5-ft interval as indicated by the Sample ID. VOC samples will be collected first from the intact soil core interval by pushing the T-handle sampler directly into the undisturbed core. If using a hand auger (at inaccessible locations), the T-handle will be pushed directly into the collected soil interval within the bucket auger before soil is extracted to minimize sample disturbance. All other analyses will be performed on a composite sample consisting of soil across the entire 4 or 5-ft subsurface interval. Each core will be sliced vertically and half of the soil will be placed in a stainless-steel bowl. The field team will use stainless-steel spoons to mix and homogenize the soil before placing the required volume of soil for other analyses in sample containers. Any debris in the composite soil mixture will be removed prior to filling sample containers. Soil samples collected for VOCs will be collected with laboratory-provided Terra Core sampling kits, and all other analyses will be hand-packed into laboratory-provided 4-ounce or 8-ounce glass jars, properly labeled and placed in a cooler with ice pending shipment to the laboratory for analyses listed in Table 3.

Sampling equipment will be decontaminated prior to and in between samples according to the TI-SDC SOP No. 4 Sampling Equipment Decontamination (TI-SDC, 2023) to minimize the possibility of cross-contamination.

A licensed geologist will oversee the soil boring advancement activities and perform soil logging. The licensed geologist will visually inspect, classify, and log the soil samples and/or soil core according to the ASTM D2488, *Standard Practice for the Description and Identification of Soils* (2017). Soil boring logs provided in the Final UFP-QAPP (TI-SDC, 2023) will be completed in accordance with the USACE Engineer Manual 1110-1-4000, *Monitoring Well Design, Installation, and Documentation at Hazardous Toxic and Radioactive Waste Sites* (1998).

A portable PID and multi-gas meter will be used in the field to protect worker health and safety. The instruments will be used to monitor the drilling crew's breathing zone and monitor above the open borehole during the soil boring advancement process for VOCs, methane, and hydrogen sulfide. The site-specific APP will be followed for all field activities. Additionally, a portion of soil will be placed in a Ziploc bag so that PID measurements can be recorded from soil collected at each sampling interval as outline in SOP No. 5.



Hydrated bentonite chips will be used to backfill each borehole to the surface grade.

### ***Soil Gas Sampling***

Soil gas sampling will be conducted at the 10 locations shown in Figure 6 within and downgradient of AOC 2 and three locations within AOC FI. For locations that were previously sampled, soil gas samples will be collected from the same depth that was sampled during the preliminary RI sampling activities in July and August 2023. For locations that were not previously sampled (i.e., SG-018 and SG-019 shown in Figure 4), soil gas samples will be collected from the same depth as a VOC soil sample collected from the respective soil boring (i.e., BH-090 and BH-091 shown in Figure 3). Borings for soil gas sampling will be advanced 3 to 5 ft away from select co-located abandoned soil borings and a minimum of 48 hours following soil boring grouting (CalEPA, 2015). Borings will be advanced using DPT with a single use PRT. Using the PRT, probe rods are driven to the desired depth and then internal tubing with a PRT fitting is inserted and seated for soil gas sampling. Implementation will follow PRT system operation instructions included in SOP No. 14 provided in Appendix B. Soil gas sampling will follow procedures documented in SOP No. 14 Soil Gas Sampling. Soil gas sampling should take place when the preceding 72-hours have had less than 0.1 inches of precipitation to ensure that the soil is not saturated which would problems for the collection and analysis of vapor samples.

Integrated samples will be collected at 200 mL/min using a VOC canister sampler capable of filling an initially evacuated canister by action of the flow-controlled pump from vacuum to near atmospheric pressure. The filled canister will be properly labeled and packaged for shipment to the laboratory for analyses listed in Table 6.

### ***Investigation-Derived Waste Disposal***

Solid Waste: Any investigation-derived waste (IDW) generated as a result of borehole advancement, soil, and sediment sampling will be containerized into U.S. Department of Transportation (DOT)-approved, 55-gallon steel drums. The containers will be labeled with the following information: date, project name and number, generator name, point of contact (POC) name, applicable contact numbers, contents of drum, and the boring identification number. Empty containers will be labeled as such to avoid confusion. These containers will be stored in a suitable temporary storage area within each AOC for no more than 60 days prior to disposal.

The method of disposal will be determined based on the analytical results from samples collected from the respective drums. If the soil is determined to be non-hazardous, it will be returned to the AOC that the soil originated. Otherwise, if the soil is determined to be hazardous, it will be properly disposed of offsite by a certified waste-handling contractor at a licensed facility.

Personal Protective Equipment (PPE): Used PPE generated during supplemental RI sampling activities will be placed in plastic bags and drums if visible evidence of contamination is observed. If sampling results indicate that RCRA-characteristic hazardous wastes exist, the PPE will be disposed of according to RCRA standards. Otherwise, the PPE will be disposed of as ordinary solid waste.



Liquid Waste. Equipment decontamination and groundwater purging will generate wastewater. Wastewater will be collected into U.S. DOT-approved, 55-gallon steel drums. The drums will be labeled to include date of collection, generator name, POC name, and the POC's phone number. Empty containers will be labeled to avoid confusion. These containers will be stored in a suitable temporary storage area within each AOC for no more than 60 days prior to disposal. The method for wastewater disposal will be determined based on the analytical results of samples collected of the wastewater contained in the drums. If the wastewater is determined to be non-hazardous, it will be returned to the area it originated. If the liquid waste is determined to be hazardous, it will be properly disposed of offsite by a certified waste-handling contractor at a licensed facility.

Consistent with the preliminary phase of RI sampling, soil and groundwater IDW will be analyzed for PFAS as per the requirements of the disposal facility receiving the waste, since Site media will not be analyzed for PFAS because it is not a chemical believed to be associated with DoD activities at the Former Stewart FUDS property. PFAS results will be compared to applicable PSLs in Worksheets #15-24 and 15-25 of the Final UFP-QAPP (TI-SDC, 2023). If the results are below PSLs, then the associated soil or groundwater IDW will be disposed of onsite with respect to PFAS. If the results are above PSLs, then the associated soil or groundwater IDW will be transported and disposed of at a certified offsite facility.

All waste manifests will be submitted to USACE for review and approval.

### ***Reporting***

Following completion of the supplemental RI sampling activities, TI-SDC will prepare a Field Completion Report and process and evaluate all data. Groundwater elevation data will be utilized to create new groundwater contour maps for the Site. Data collected during the groundwater elevation survey will be used to create an updated groundwater contour map.

Following completion of the preliminary and supplemental sampling activities, TI-SDC will process and evaluate all data. Soil, groundwater, surface water, sediment, and soil gas analytical data will be inputted into tables, and utilized to prepare new site figures. TI-SDC will prepare a draft and final RI document, which will provide details regarding all activities, all the raw data collected, details on any deviations from the QAPP, discussion of newly collected analytical data and updated figures, risk assessment summary and results, and any final recommendations. The RI document will be submitted to stakeholders for review, input, and approval of recommendations.

**QAPP Worksheets #19 & #30: Sample Containers, Preservation, and Hold Times**

(UFP-QAPP Manual Section 3.1.2.2)

(EPA 2106-G-05 Section 2.3.2)

The analyses planned during the supplemental phase of RI sampling were included in the preliminary phase of RI sampling. Therefore, the analytical SOPs listed in Worksheets #19 & #30 of the Final UFP-QAPP (TI-SDC, 2023) apply to the supplemental phase of sampling. The SOPs listed below have been revised since the Final UFP-QAPP (TI-SDC, 2023) was issued and document the latest laboratory accreditation expiration date for the SOPs that will be used during the supplemental phase of RI sampling. Updated laboratory certifications are provided in Appendix D and updated laboratory SOPs will be provided in Appendix E after they have all been received from the laboratories.

| <b>Analytical Group</b> | <b>Matrix</b> | <b>Analytical Method / SOP Reference</b> | <b>Accreditation Expiration Date</b> | <b>Containers (number, size, and type)</b> | <b>Preservation Requirements</b> | <b>Preparation Holding Time</b>         | <b>Analytical Holding Time</b>          | <b>Data Package Turnaround Time</b> |
|-------------------------|---------------|------------------------------------------|--------------------------------------|--------------------------------------------|----------------------------------|-----------------------------------------|-----------------------------------------|-------------------------------------|
| VOCs                    | Water         | SW-846 8260C/D / WI8194                  | A2LA/DoD ELAP 11/30/24               | 3 x 40 mL glass vial                       | HCl to pH < 2 or None, 2-6°C     | 14 days preserved; 7 days not preserved | 14 days preserved; 7 days not preserved | 15 business days                    |
| VOCs                    | Water         | SW-846 8260D SIM / EFGS-T-VOA-SOP41108   | ANAB DoD QSM V5.4 1/19/25            | 3 x 40 mL glass vial                       | HCl to pH < 2, 2-4°C             | 14 days from sampling to analysis       | 14 days from sampling to analysis       | 15 business days                    |
| VOCs                    | Soil          | SW-846 8260C/D / WI8236                  | A2LA/DoD ELAP 11/30/24               | Terra Core sampling kits                   | 2-6°C (for 48-hr hold time)      | 48-hours                                | 14 days                                 | 15 business days                    |
| VOCs                    | Soil Gas      | TO-15 / SOP #6                           | ANAB DoD QSM V5.4 4/27/26 /          | 1L Summa Canister                          | None, Ambient temperature        | NA                                      | 30 days                                 | 21 business days                    |



| Analytical Group                 | Matrix   | Analytical Method / SOP Reference                | Accreditation Expiration Date                               | Containers (number, size, and type) | Preservation Requirements | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround Time |
|----------------------------------|----------|--------------------------------------------------|-------------------------------------------------------------|-------------------------------------|---------------------------|--------------------------|-------------------------|------------------------------|
|                                  |          |                                                  | Oregon Primary NELAP 10/17/2024                             |                                     |                           |                          |                         |                              |
| Methane and Helium (Fixed Gases) | Soil Gas | ASTM D1946 / SOP #8                              | ANAB DoD QSM V5.4 4/27/26 / Oregon Primary NELAP 10/17/2024 | 1L Summa Canister                   | None, Ambient temperature | NA                       | 30 days                 | 21 business days             |
| SVOCs                            | Water    | SW-846 8270D / WI9617; SW-846 8270D SIM / WI9995 | DoD A2LA/DoD ELAP 11/30/24                                  | 2 x 250 mL amber glass bottle       | None, 2-6°C               | 7 days                   | 40 days                 | 15 business days             |
| SVOCs                            | Soil     | SW-846 8270D / WI9617; SW-846 8270D SIM / WI9995 | DoD A2LA/DoD ELAP 11/30/24                                  | 4 or 8-ounce glass jar              | None, 2-6°C               | 14 days                  | 40 days                 | 15 business days             |
| OCPs                             | Water    | SW-846 8081B / WI9998                            | DoD A2LA/DoD ELAP 11/30/24                                  | 2 x 250 mL amber glass bottle       | None, 2-6°C               | 7 days                   | 40 days                 | 15 business days             |
| OCPs                             | Soil     | SW-846 8081B / WI9232                            | DoD A2LA/DoD ELAP 11/30/24                                  | 4 or 8-ounce glass jar              | None, 2-6°C               | 14 days                  | 40 days                 | 15 business days             |



| Analytical Group               | Matrix | Analytical Method / SOP Reference | Accreditation Expiration Date | Containers (number, size, and type) | Preservation Requirements         | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround Time |
|--------------------------------|--------|-----------------------------------|-------------------------------|-------------------------------------|-----------------------------------|--------------------------|-------------------------|------------------------------|
| PCBs                           | Water  | SW-846 8082A / WI9238             | DoD A2LA/DoD ELAP 11/30/24    | 2 x 250 mL amber glass bottle       | None, 2-6°C                       | 365 days                 | 40 days                 | 15 business days             |
| PCBs                           | Soil   | SW-846 8082A / WI10004            | DoD A2LA/DoD ELAP 11/30/24    | 4 or 8-ounce glass jar              | None, 2-6°C                       | 365 days                 | 40 days                 | 15 business days             |
| TAL Metals (excluding Mercury) | Water  | SW-846 6020B / WI11933            | DoD A2LA/DoD ELAP 11/30/24    | 250 mL plastic                      | HNO <sub>3</sub> to pH < 2, 2-6°C | 6 months                 | 6 months                | 15 business days             |
| TAL Metals (excluding Mercury) | Soil   | SW-846 6020B / WI11933            | DoD A2LA/DoD ELAP 11/30/24    | 16or 32-ounce glass jar             | None, 2-6°C                       | 6 months                 | 6 months                | 15 business days             |
| Explosive Compounds            | Water  | SW-846 8330B / WI9981             | DoD A2LA/DoD ELAP 11/30/24    | 2 x 1,000 mL amber glass bottle     | None, 2-6°C                       | 7 days                   | 40 days                 | 15 business days             |
| Explosive Compounds            | Soil   | SW-846 8330B / WI9981             | DoD A2LA/DoD ELAP 11/30/24    | 4 or 8-ounce glass jar              | None, 2-6°C                       | 14 days                  | 40 days                 | 15 business days             |
| Mercury                        | Water  | SW-846 7470A / WI7965             | DoD A2LA/DoD ELAP 11/30/24    | 250 mL plastic                      | HNO <sub>3</sub> to pH < 2, 2-6°C | 28 days                  | 28 days                 | 15 business days             |



| Analytical Group        | Matrix | Analytical Method / SOP Reference | Accreditation Expiration Date       | Containers (number, size, and type) | Preservation Requirements | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround Time |
|-------------------------|--------|-----------------------------------|-------------------------------------|-------------------------------------|---------------------------|--------------------------|-------------------------|------------------------------|
| Mercury                 | Soil   | SW-846 7471B / WI7965             | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 4 or 8-ounce glass jar              | None, 2-6°C               | 28 days                  | 28 days                 | 15 business days             |
| Dioxins                 | Soil   | SW-846 8290A / WI9476             | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 8-ounce amber glass jar             | None, 2-6°C               | 365 days                 | 365 days                | 15 business days             |
| Grain Size Distribution | Soil   | ASTM D422 / WI46354               | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 16-ounce glass jar                  | None, 2-6°C               | NA                       | NA                      | 15 business days             |
| Anions                  | Water  | SW-846 9056A; WI11626             | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 50 mL plastic vial                  | Cool, 6°C                 | NA                       | 28 days                 | 15 business days             |
| TOC                     | Soil   | SW-946 9060A / WI11627            | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 4 or 8-ounce glass jar              | None, 2-6°C               | NA                       | 28 days                 | 15 business days             |
| CEC                     | Soil   | SW-846 9081 / WC-22-007           | NA (TCEQ<br>NELAP<br>06/30/2025)    | 4 or 8-ounce glass jar              | None                      | 6 months                 | 6 months                | 15 business days             |
| ORP                     | Soil   | ASTM D1498 / WI11512              | DoD<br>A2LA/DoD<br>ELAP<br>11/30/24 | 100 g glass                         | Cool, 6°C                 | NA                       | NA                      | 15 business days             |
| Moisture Content        | Soil   | SM 2540 G-1997 %                  | DoD<br>A2LA/DoD                     | 50 g plastic or glass jar           | Cool, 6°C                 | NA                       | 7 days                  | 15 business days             |



| Analytical Group | Matrix    | Analytical Method / SOP Reference | Accreditation Expiration Date | Containers (number, size, and type) | Preservation Requirements           | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround Time |
|------------------|-----------|-----------------------------------|-------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------|------------------------------|
|                  |           | Moisture Calc / WI10697           | ELAP 11/30/24                 |                                     |                                     |                          |                         |                              |
| pH               | Soil      | SW-846 9045D / WI11518            | DoD A2LA/DoD ELAP 11/30/24    | 4 or 8-ounce glass jar              | Cool, 6°C                           | NA                       | NA                      | 15 business days             |
| Alkalinity       | Water     | SM 2320B; WI11475                 | DoD A2LA/DoD ELAP 11/30/24    | 250 mL plastic or glass bottle      | Cool, 6°C                           | NA                       | 14 days                 | 15 business days             |
| Sulfide          | Water     | SM4500 S2D / WI11483              | DoD A2LA/DoD ELAP 11/30/24    | 250 mL glass bottle                 | Cool, 6°C, no headspace, NaOH, ZnAc | NA                       | 7 days                  | 15 business days             |
| DOC              | Water     | SM5310; WI11637                   | DoD A2LA/DoD ELAP 11/30/24    | 4 or 8 ounce glass jar              | Cool, 6°C                           | NA                       | 28 days                 | 15 business days             |
| PFAS             | Soil IDW  | PFAS EPA Method 1633 / WI72428    | DoD A2LA/DoD ELAP 11/30/24    | 4.5 ounce plastic bottle            | None, 2-6 °C                        | 28 days                  | 28 days                 | 15 business days             |
| PFAS             | Water IDW | PFAS EPA Method 1633 / WI72427    | DoD A2LA/DoD ELAP 11/30/24    | 2 x 250 mL HDPE bottle              | None, 2-6 °C                        | 14 days                  | 28 days                 | 15 business days             |



| <b>Analytical Group</b> | <b>Matrix</b> | <b>Analytical Method / SOP Reference</b> | <b>Accreditation Expiration Date</b> | <b>Containers (number, size, and type)</b> | <b>Preservation Requirements</b> | <b>Preparation Holding Time</b> | <b>Analytical Holding Time</b> | <b>Data Package Turnaround Time</b> |
|-------------------------|---------------|------------------------------------------|--------------------------------------|--------------------------------------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------------|
|-------------------------|---------------|------------------------------------------|--------------------------------------|--------------------------------------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------------|

**Notes:**

Analyses requiring preservation will have sample containers pre-preserved by the laboratory.

°C = Degrees Celsius

ASTM= American Society for Testing and Materials

CEC = Cation Exchange Capacity

DI = Deionized

DOC = Dissolved Organic Carbon

DoD = Department of Defense

ELAP = Environmental Laboratory Accreditation Program

EPA= Environmental Protection Agency

mL = Milliliter

NYSDOH = New York State Department of Health

OCP = Organochlorine Pesticide

ORP = Oxidation-Reduction Potential

PCB = Polychlorinated Biphenyl

SIM = Selective Ion Monitoring

SM = Standard Method

SOP = Standard Operating Procedure

SVOC = Semi-Volatile Organic Compound

TAL = Target Analyte List

TOC = Total Organic Carbon

VOC = Volatile Organic Compound



## QAPP Worksheet #20: Field Quality Control Sample Summary

(UFP-QAPP Manual Section 3.1.1 and 3.1.2)

(EPA 2106-G-05 Section 2.3.5)

| Matrix          | Analytical Group        | Conc. Level | Field Samples | Field Duplicates (10%) | No. of MS/MSDs (5%) | No. of Trip Blanks | No. of Equipment Blanks <sup>1</sup> | Other | Total No. of Analyses |
|-----------------|-------------------------|-------------|---------------|------------------------|---------------------|--------------------|--------------------------------------|-------|-----------------------|
| Surface Soil    | SVOCs                   | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | OCPs                    | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | PCBs                    | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | TAL Metals & Mercury    | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | Explosives              | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | Grain Size Distribution | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| Surface Soil    | TOC                     | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| Surface Soil    | CEC                     | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| Surface Soil    | ORP                     | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| Surface Soil    | pH                      | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| Surface Soil    | Moisture Content        | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| Subsurface Soil | VOCs                    | Low         | 14            | 2                      | 1                   | 1/Cooler           | 1/Day                                | 0     | 17 (+TB/EB)           |



| Matrix          | Analytical Group        | Conc. Level | Field Samples | Field Duplicates (10%) | No. of MS/MSDs (5%) | No. of Trip Blanks | No. of Equipment Blanks <sup>1</sup> | Other | Total No. of Analyses |
|-----------------|-------------------------|-------------|---------------|------------------------|---------------------|--------------------|--------------------------------------|-------|-----------------------|
| Subsurface Soil | SVOCs                   | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | OCPs                    | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | PCBs                    | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | TAL Metals & Mercury    | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | Explosives              | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | Dioxins                 | Low         | 10            | 1                      | 1                   | 0                  | 0                                    | 0     | 12                    |
| Subsurface Soil | Grain Size Distribution | N/A         | 14            | 2                      | 0                   | 0                  | 0                                    | 0     | 16                    |
| Subsurface Soil | TOC                     | Low         | 14            | 2                      | 1                   | 0                  | 0                                    | 0     | 17                    |
| Subsurface Soil | CEC                     | N/A         | 14            | 2                      | 0                   | 0                  | 0                                    | 0     | 16                    |
| Subsurface Soil | ORP                     | N/A         | 14            | 2                      | 0                   | 0                  | 0                                    | 0     | 16                    |
| Subsurface Soil | pH                      | N/A         | 14            | 2                      | 0                   | 0                  | 0                                    | 0     | 16                    |
| Subsurface Soil | Moisture Content        | N/A         | 14            | 2                      | 0                   | 0                  | 0                                    | 0     | 16                    |
| Soil IDW        | PFAS                    | N/A         | 1             | 1                      | 0                   | 0                  | 0                                    | 0     | 2                     |
| GW              | VOCs                    | Low         | 9             | 1                      | 1                   | 1/Cooler           | 0                                    | 0     | 11 (+TB)              |
| GW              | SVOCs                   | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| GW              | OCPs                    | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| GW              | PCBs                    | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |



| Matrix | Analytical Group                 | Conc. Level | Field Samples | Field Duplicates (10%) | No. of MS/MSDs (5%) | No. of Trip Blanks | No. of Equipment Blanks <sup>1</sup> | Other | Total No. of Analyses |
|--------|----------------------------------|-------------|---------------|------------------------|---------------------|--------------------|--------------------------------------|-------|-----------------------|
| GW     | TAL Metals & Mercury (Total)     | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| GW     | TAL Metals & Mercury (Dissolved) | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| GW     | Explosives                       | Low         | 9             | 1                      | 1                   | 0                  | 0                                    | 0     | 11                    |
| GW     | Hardness                         | N/A         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| GW     | Alkalinity                       | Low         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| GW     | Sulfide                          | Low         | 9             | 1                      | 0                   | 0                  | 0                                    | 0     | 10                    |
| GW     | Chloride                         | Low         | 9             | 1                      | 1 (MS only)         | 0                  | 0                                    | 0     | 11                    |
| GW     | Sulfate                          | Low         | 9             | 1                      | 1 (MS only)         | 0                  | 0                                    | 0     | 11                    |
| GW IDW | PFAS                             | N/A         | 1             | 1                      | 0                   | 0                  | 0                                    | 0     | 2                     |
| SW     | VOCs                             | Low         | 8             | 1                      | 1                   | 1/Cooler           | 0                                    | 0     | 10 (+TB)              |
| SW     | SVOCs                            | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | OCPs                             | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | PCBs                             | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | TAL Metals & Mercury (Total)     | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | TAL Metals & Mercury (Dissolved) | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | Explosives                       | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| SW     | Alkalinity                       | Low         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| SW     | Sulfide                          | Low         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| SW     | Chloride                         | Low         | 8             | 1                      | 1 (MS only)         | 0                  | 0                                    | 0     | 10                    |
| SW     | Sulfate                          | Low         | 8             | 1                      | 1 (MS only)         | 0                  | 0                                    | 0     | 10                    |
| SW     | DOC                              | Low         | 8             | 1                      | 1 (MS only)         | 0                  | 0                                    | 0     | 10                    |



| Matrix   | Analytical Group            | Conc. Level | Field Samples | Field Duplicates (10%) | No. of MS/MSDs (5%) | No. of Trip Blanks | No. of Equipment Blanks <sup>1</sup> | Other | Total No. of Analyses |
|----------|-----------------------------|-------------|---------------|------------------------|---------------------|--------------------|--------------------------------------|-------|-----------------------|
| Sediment | VOCs                        | Low         | 8             | 1                      | 1                   | 1/Cooler           | 0                                    | 0     | 10 (+TB)              |
| Sediment | SVOCs                       | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | OCPs                        | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | PCBs                        | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | TAL Metals & Mercury        | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | Explosives                  | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | Grain Size Distribution     | N/A         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| Sediment | TOC                         | Low         | 8             | 1                      | 1                   | 0                  | 0                                    | 0     | 10                    |
| Sediment | CEC                         | N/A         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| Sediment | ORP                         | N/A         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| Sediment | pH                          | N/A         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| Sediment | Moisture Content            | N/A         | 8             | 1                      | 0                   | 0                  | 0                                    | 0     | 9                     |
| Soil Gas | VOCs                        | N/A         | 13            | 2                      | 0                   | 0                  | 0                                    | 0     | 15                    |
| Soil Gas | Methane Helium <sup>2</sup> | N/A         | 13            | 2                      | 0                   | 0                  | 0                                    | 0     | 15                    |

Notes:

- Equipment blanks will be collected during each day of subsurface soil sampling while no equipment blanks will be collected during any other type of sampling because dedicated equipment and materials will be used for all other types of sampling.
  - Helium analysis in the laboratory is contingent upon an analysis of the leak test data collected in the field.
- MS/MSD samples will be labeled the same as the associated field sample.  
Only site-specific sample matrices will be used to create field QC samples (i.e., FD, MS/MSD).  
Trip Blanks will be labeled as FSA-TBX-MMYX (where X indicates the sequential number).  
Equipment Blanks will be labeled as follows where X indicates the sequential number:

- FSA-EBX-SO-MMYX (for soil)



## QAPP Worksheet #21: Field SOP References

(UFP-QAPP Manual Section 3.1.2)

(EPA 2106-G-05 Section 2.3.2)

Field SOPs are listed below. See Worksheet #18 for additional sampling details.

| Reference Number | Title, Revision Date and / or Number                    | Originating Organization | Equipment Type                                                                                            | Modified for Project Work? (Yes/No) | Comments                                             |
|------------------|---------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------|
| SOP No. 1        | Water Level Measurement, Rev 1.0, 12/15/2021            | TI-SDC                   | Oil-Water Interface Probe                                                                                 | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 2        | Groundwater Sampling, Rev 5.0, 7/8/2024                 | TI-SDC                   | Low-Flow bladder pump with Controller                                                                     | Yes                                 | Found in Appendix B in this QAPP Addendum            |
| SOP No. 3        | Sample Handling and Management, Rev 1.0, 5/15/2020      | TI-SDC                   | N/A                                                                                                       | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 4        | Sampling Equipment Decontamination, Rev 1.0, 12/15/2021 | TI-SDC                   | Decontamination of Sampling Equipment, Field Monitoring Equipment and Personnel                           | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 5        | Soil Sampling for Chemical Analysis, Rev 4.0, 7/8/2024  | TI-SDC                   | Pre-cleaned stainless-steel sampling utensils (spoons, trowel) Terra Core® kits                           | Yes                                 | Found in Appendix B in this QAPP Addendum            |
| SOP No. 6        | IDW Management, Rev 2.0, 9/27/2021                      | TI-SDC                   | N/A                                                                                                       | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 7        | Drilling and Lithologic Logging, Rev 1.0, 12/15/2021    | TI-SDC                   | DPT and HSA rig, air/fluid rotary rig, Munsell Soil Color Chart, Soil Boring Log Form, drums for cuttings | Yes                                 | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |



| Reference Number | Title, Revision Date and / or Number                                             | Originating Organization | Equipment Type                                                                                                                                                                             | Modified for Project Work? (Yes/No) | Comments                                             |
|------------------|----------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------|
| SOP No. 8        | Piezometer, Monitoring Well and Injection Point Construction, Rev 1.0, 5/15/2020 | TI-SDC                   | DPT, HSA rig, air/fluid rotary rig, hollow-stem auger drill rig, monitoring well construction diagram, PVC rise pipe and screen, protective casing, lock, concrete form for pads, bollards | Yes                                 | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 9        | Monitoring Well Development, Rev 2.0, 1/28/2022                                  | TI-SDC                   | Submersible pump, well development forms                                                                                                                                                   | Yes                                 | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 10       | Surface Water and Sediment Sampling for Chemical Analysis, Rev 1.0, 12/15/2021   | TI-SDC                   | Ponar sampler, Pre-cleaned stainless-steel sampling utensils (trowel).                                                                                                                     | Yes                                 | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 11       | Well and Borehole Abandonment, Rev 1.0, 12/15/2021                               | TI-SDC                   | Grout machine, tremie pipe                                                                                                                                                                 | Yes                                 | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 13       | Soil Boring and Monitoring Well Survey, Rev 1.0, 12/15/2021                      | TI-SDC                   | Stakes and surveying equipment.                                                                                                                                                            | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |
| SOP No. 14       | Soil Gas Sampling for Chemical Analysis, Rev 4.0, 7/8/2024                       | TI-SDC                   | VOC Summa canister, PID, multi-gas meter, helium detector, vacuum pump, tubing, valves, shroud, particulate filter, and associated sample equipment relating to soil gas sampling.         | No                                  | Found in Appendix B in this QAPP Addendum            |
| SOP No. 15       | Instrument Calibration, Rev 1.0, 5/30/2024                                       | TI-SDC                   | PID, Horiba U-51/U-52, Geotech Turbidity Meter, ION GasCheck G Helium Detector                                                                                                             | No                                  | Found in Appendix B in this QAPP Addendum            |



| Reference Number | Title, Revision Date and / or Number  | Originating Organization | Equipment Type | Modified for Project Work? (Yes/No) | Comments                                             |
|------------------|---------------------------------------|--------------------------|----------------|-------------------------------------|------------------------------------------------------|
| SOP No. 16       | Multi-Gas Meter Operation, 12/15/2021 | TI-SDC                   | Eagle II meter | No                                  | Found in Appendix G in Final UFP-QAPP (TI-SDC, 2023) |

Notes:

DPT = Direct-Push Technology

HAS = Hollow-Stem Auger

IDW = Investigation-Derived Waste

N/A = Not Applicable

PVC = Polyvinyl Chloride

VOC = Volatile Organic Compounds



## QAPP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection

(UFP-QAPP Manual Section 3.1.2.4)

(EPA 2106-G-05 Section 2.3.6)

| Field Equipment                 | Activity    | SOP Reference                    | Responsible Person       | Frequency                            | Acceptance Criteria                                   | Corrective Action                                 |
|---------------------------------|-------------|----------------------------------|--------------------------|--------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| Horiba U-51 Water Quality Meter | Calibration | SOP #15 Instrument Calibration   | Vendor/Field Team Leader | Prior to shipment to the field/Daily | Documentation from Vendor/Auto calibration successful | Re-calibrate if “Er3” or “Er4” appears in display |
| Horiba U-51 Water Quality Meter | Maintenance | Manufacturers Instruction Manual | Equipment Coordinator    | Yearly                               | Inspection certification                              | N/A                                               |
| Horiba U-52 Water Quality Meter | Calibration | SOP #15 Instrument Calibration   | Vendor/Field Team Leader | Prior to shipment to the field/Daily | Documentation from Vendor/Auto calibration successful | Re-calibrate if “Er3” or “Er4” appears in display |
| Horiba U-52 Water Quality Meter | Maintenance | Manufacturers Instruction Manual | Equipment Coordinator    | Yearly                               | Inspection certification                              | N/A                                               |
| GeoTech Turbidity Meter         | Calibration | SOP #15 Instrument Calibration   | Field Team Leader        | Daily                                | Calibration successful                                | Re-calibrate, as necessary                        |
| GeoTech Turbidity Meter         | Maintenance | Manufacturers Instruction Manual | Equipment Coordinator    | Yearly                               | Inspection certification                              | N/A                                               |
| PID                             | Calibration | SOP #15 Instrument Calibration   | Field Team Leader        | Daily                                | Calibration successful                                | Re-calibrate, as necessary                        |



| Field Equipment                       | Activity        | SOP Reference                     | Responsible Person    | Frequency                              | Acceptance Criteria      | Corrective Action          |
|---------------------------------------|-----------------|-----------------------------------|-----------------------|----------------------------------------|--------------------------|----------------------------|
| PID                                   | Maintenance     | Manufacturers Instruction Manual  | Equipment Coordinator | Yearly                                 | Inspection certification | N/A                        |
| Eagle 2 Multi-Gas Meter               | Calibration     | SOP #16 Multi-Gas Meter Operation | Field Team Leader     | Daily                                  | Calibration successful   | Re-calibrate, as necessary |
| Eagle 2 Multi-Gas Meter               | Maintenance     | Manufacturers Instruction Manual  | Equipment Coordinator | Yearly                                 | Inspection certification | N/A                        |
| IONScience GasCheck G Helium Detector | Calibration     | SOP #15 Instrument Calibration    | Field Team Leader     | Daily                                  | Calibration successful   | Re-calibrate, as necessary |
| IONScience GasCheck G Helium Detector | Maintenance     | Manufacturers Instruction Manual  | Equipment Coordinator | Yearly                                 | Inspection certification | N/A                        |
| Soil / Groundwater Sampling Equipment | Decontamination | See Worksheet #21                 | Field Team Leader     | Before each use at a sampling location | N/A                      | N/A                        |
| Drilling Rig / Equipment              | Decontamination | See Worksheet #21                 | Field Team Leader     | Before each use at a drilling location | N/A                      | N/A                        |

Notes:  
N/A = Not Applicable

**QAPP Worksheet #23: Analytical SOP References Table**

(UFP-QAPP Manual Section 3.2.1)

(EPA 2106-G-05 Section 2.3.4)

The analyses planned during the supplemental phase of RI sampling were included in the preliminary phase of RI sampling. Therefore, the analytical SOPs listed in Worksheet #23 of the Final UFP-QAPP (TI-SDC, 2023) apply to the supplemental phase of sampling. The SOPs listed below have been revised since the Final UFP-QAPP (TI-SDC, 2023) was issued and document the latest revision number and date for the SOPs that will be used during the supplemental phase of RI sampling. Updated laboratory SOPs will be provided in Appendix E after they have all been received from the laboratories.

| Reference Number    | Title, Revision Date, and / or Number                                                                                                     | Definitive or Screening Data | Analytical Group              | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|------------|----------------------------------|----------------------------------|
| SOP11880            | Laboratory Support Equipment - Calibrations, Verifications, and Maintenance, Rev 15, effective 04-AUG-2023                                | N/A                          | Maintenance                   | Balance    | ELLE                             | N                                |
| WI7619              | GC and GC/MS Instrumentation Maintenance, Rev 11, effective 28-MAY-2024                                                                   | N/A                          | Maintenance                   | GC/MS      | ELLE                             | N                                |
| WI7965              | Mercury in Aqueous, Solid, and Tissue Samples by EPA 7471A, 7471B, 7470A, and 245.1 rev 3 by Cold Vapor AA, Rev 22, effective 16-MAY-2024 | Definitive                   | Solid, Liquid, Tissues Metals | ICP        | ELLE                             | N                                |
| WI8194              | VOCs and GRO by GC/MS in Waters and Wastewaters by EPA 8260C/D, Rev 16, effective 12-JUN-2024                                             | Definitive                   | Water GC/MS VOCs              | GC/MS      | ELLE                             | N                                |
| EFGS-T-VOA-SOP41108 | Determination of Volatile Organic Compounds by GC/MS Selected Ion Monitoring                                                              | Definitive                   | Water Volatiles               | GC/MS      | Eurofins Tacoma, WA              | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                   | Definitive or Screening Data | Analytical Group                                     | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------|------------|----------------------------------|----------------------------------|
|                  | (Method 8260D), Rev 3, effective 16-MAY-2024                                                                            |                              |                                                      |            |                                  |                                  |
| WI8236           | VOCs and GRO by GC/MS in Soils and Solids by EPA 8260C/D, Rev 13, effective 12-JUN-2024                                 | Definitive                   | Solid GC/MS VOCs                                     | GC/MS      | ELLE                             | N                                |
| WI8636           | Sample Prep of Sediments, Sludges, Soils, and Tissues by SW846 3050B for ICP and ICP-MS, Rev, 28, effective 11-JUL-2023 | N/A                          | Solid and Tissues Inorganic Preparation SW-846 3050B | N/A        | ELLE                             | N                                |
| WI8639           | Digestion of Waters and Leachates by EPA 3005A for Analysis of Metals by ICP/ICPMS, Rev 20, effective 13-OCT-2023       | N/A                          | Liquid Inorganic Preparation SW-846 3005A            | N/A        | ELLE                             | N                                |
| WI9232           | Analysis of Pesticides by 8081B in Solid Samples using GC-ECD, Rev 9.1, effective 29-AUG-2023                           | Definitive                   | Pesticides                                           | GC         | ELLE                             | N                                |
| WI9238           | Analysis of Polychlorinated Biphenyls (PCBs) by 8082A in Aqueous Samples using GC-ECD, Rev 11, effective 26-JUN-2024    | Definitive                   | PCBs                                                 | GC         | ELLE                             | N                                |
| WI9446           | Standards Management in the High Resolution Mass Spectrometry Laboratory Rev. 12, effective 26-JUN-2024                 | N/A                          | NA; Standards                                        | N/A        | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                                                                                   | Definitive or Screening Data | Analytical Group                           | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------|------------|----------------------------------|----------------------------------|
| WI9476           | Determination of Tetra- through Octa-Chlorinated Dioxins and Furans in water/solid/food/feed samples using HRGC/HRMS by EPA 1613B or SW-846 Method 8290A, Rev 17, effective 30-NOV-2022 | Definitive                   | all matrices; Dioxins and Furans           | HRGC/HRMS  | ELLE                             | N                                |
| WI9488           | Soxhlet Extraction Procedure for HRMS Analysis in a Solid Matrix by Methods: 1613B, 8290A, 1668C, and 1668A Rev. 7, Effective 06/16/2022                                                | Definitive                   | Solids; Extraction                         | N/A        | ELLE                             | N                                |
| WI9617           | Semivolatile Organic Compounds by Method 8270D/E in Aqueous and Non-Aqueous Matrices using GC-MS, Rev 14, effective 26-JUN-2023                                                         | Definitive                   | Water, Solid, Tissue, Leachate GC/MS SVOCs | GC/MS      | ELLE                             | N                                |
| WI9954           | Interpretation of Chromatographic Data, Rev 17, effective 26-JUL-2023                                                                                                                   | NA                           | Data Interpretation                        | GC & HPLC  | ELLE                             | N                                |
| WI9981           | Nitroaromatics and Nitroamines by Method 8330B in Water and Solids using HPLC with UV Detection, Rev 9, effective 08-AUG-2023                                                           | Definitive                   | Nitroaromatics/Nitroamines                 | HPLC       | ELLE                             | Y <sup>1</sup>                   |
| WI9995           | Semivolatiles in Waters and Soils by Methods 8270D/E SIM by GC/MS, Rev 20, effective 07-JUL-2023                                                                                        | Definitive                   | Water, solid, tissue GC/MS SVOCs SIM       | GC/MS      | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                              | Definitive or Screening Data | Analytical Group                                       | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------|------------|----------------------------------|----------------------------------|
| WI9998           | Pesticides in Water by Method 8081B using GC-ECD, Rev 18, effective 04-JUN-2024                                                    | Definitive                   | Pesticides                                             | GC         | ELLE                             | N                                |
| WI10004          | Polychlorinated Biphenyls (PCBs) in Solid Samples by 8082A using GC-ECD, Rev 12, effective 01-JUL-2024                             | Definitive                   | PCBs                                                   | GC         | ELLE                             | N                                |
| WI10697          | % Moisture Calculation and % Solids Calculation (Gravimetric), Rev 20; effective 07-MAR-2023                                       | Definitive                   | Solid                                                  | Balance    | ELLE                             | N                                |
| WI10920          | Separatory Funnel Extraction by Method 3510C, 608, or 608.3 for Pesticides and PCBs in a Wastewater, Rev 24, effective 29-APR-2024 | N/A                          | Organic Preparation Method 3510C                       | N/A        | ELLE                             | N                                |
| WI10926          | Microwave Extraction Method 3546 for Pesticides in a Solid Matrix, Rev 13, effective 03-JUN-2024                                   | N/A                          | Organic Preparation Method 3546                        | N/A        | ELLE                             | N                                |
| WI10927          | Microwave Extraction Method 3546 for PCBs in a Solid Matrix, Rev 11, effective 14-JUL-2023                                         | N/A                          | Organic Preparation Method 3546                        | N/A        | ELLE                             | N                                |
| WI10928          | Microwave Extraction by Method 3546 for Semivolatiles, Rev 15, effective 19-APR-2024                                               | N/A                          | Method 3546 Microwave (standard, SIM, and tissue) prep | N/A        | ELLE                             | N                                |
| WI10942          | Extraction of Nitroaromatics and Nitroamines by Method 3535A in Water, Rev. 16, effective 16-MAY-2023                              | N/A                          | Organic Preparation Method 8330/B                      | N/A        | ELLE                             | N                                |
| WI10943          | Ultrasonic Extraction of Nitroaromatics and Nitroamines                                                                            | N/A                          | Organic Preparation Method 8330/B                      | N/A        | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                                                                                           | Definitive or Screening Data | Analytical Group                                    | Instrument                     | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------|--------------------------------|----------------------------------|----------------------------------|
|                  | by method 8330B in Solids, Rev 19, effective 12-JUL-2023                                                                                                                                        |                              |                                                     |                                |                                  |                                  |
| WI11242          | Preparation of Vials for Field Preservation of Soils for Volatile Analysis, Rev 19, effective 24-APR-2023                                                                                       | N/A                          | Organic Solids Preparation SW-846 5035,5030A, 5035A | N/A                            | ELLE                             | N                                |
| WI11432          | Separatory Funnel Extraction by Method 3510C for BNAs in Wastewater, Rev 21, effective 20-MAR-2024                                                                                              | N/A                          | Method 3510C water prep                             | N/A                            | ELLE                             | N                                |
| WI11475          | Multi-Parameters in Solids and Waters by ManTech Multi-Parameter System Rev 19; effective 16-MAY-2024                                                                                           | Definitive                   | Water                                               | ManTech Multi-Parameter System | ELLE                             | N                                |
| WI11483          | Colorimetric Sulfide in Waters, Sulfide as H <sub>2</sub> S, Dissolved Sulfide in Waters by 4500-S <sub>2</sub> D-2011, 4500-S <sub>2</sub> H-2011, or EPA 376.2, Rev 21, effective 11-JUL-2023 | Definitive                   | Water                                               | UV Spec                        | ELLE                             | N                                |
| WI11512          | Oxidation-Reduction Potential for Wastewaters and Soils by ASTM D1498, Rev 16, effective 18-JAN-2024                                                                                            | Definitive                   | ORP                                                 | pH meter                       | ELLE                             | N                                |
| WI46354          | Particle Size Distribution of Soils and Solids/Grain Size Classification by ASTM D-422-63 (reapproved 2007) - Modified, Rev 4, effective 16-MAY-2024                                            | Definitive                   | Soil                                                | Hydrometer                     | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                                                          | Definitive or Screening Data | Analytical Group                          | Instrument   | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------|--------------|----------------------------------|----------------------------------|
| WI11518          | pH by EPA 9045C, 9045D and Corrosivity by SW-846 Chap 7 of Solids, Soils, and Solvents using Electrometric Methods, Ver 15, effective 15-NOV-2023              | Definitive                   | Solid                                     | pH meter     | ELLE                             | N                                |
| WI11519          | pH Probes and Meters, Rev 15, effective 03/31/2022                                                                                                             | NA                           | N/A                                       | pH Meter     | ELLE                             | N                                |
| WI11626          | Anions by Ion Chromatography in Waters and Soil by EPA 300.0, SW 846 9056, and SW 846 9056A, Rev. 26, effective 22-MAR-2024                                    | Definitive                   | Water and Solid                           | IC           | ELLE                             | N                                |
| WI11627          | TOC and TC in Solids and Sludges by Combustion by SW-846 9060/9060A, Lloyd Kahn, Rev 20, effective 12-MAR-2024                                                 | Definitive                   | Solid                                     | TOC Analyzer | ELLE                             | N                                |
| WI11637          | Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC), and Total Inorganic Carbon (TIC) by SM 5310C or EPA 415.1 in Waters, Rev 22, effective 05-JUL-2024 | Definitive                   | Water                                     | TOC Analyzer | ELLE                             | N                                |
| WI11924          | Digestion of Aqueous Samples by SW-846 Method 7470A, Rev 24, effective 15-MAY-2024                                                                             | N/A                          | Liquid Inorganic Preparation SW-846 7470A | N/A          | ELLE                             | N                                |
| WI11933          | Metals by ICPMS by Methods 6020/6020A/6020B (waters, solid, tissue), and EPA 200.8 (waters), Rev 13, effective 07/27/2022                                      | Definitive                   | Solid, Liquid, Tissues Metals             | ICP/MS       | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                                                                                    | Definitive or Screening Data | Analytical Group                                                        | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------------|------------|----------------------------------|----------------------------------|
| WI11948          | Preparation of Solids by EPA 7471A or B for Mercury Analysis, Rev 24, effective 19-FEB-2024                                                                                              | N/A                          | Solid, Tissue and Oil Inorganic Preparation SW-846 7471A & SW-846 7471B | N/A        | ELLE                             | N                                |
| WI19229          | DFS HRGC/HRMS Preventative and Corrective Maintenance, Rev. 3, Effective 01-MAY-2023                                                                                                     | N/A                          | NA; Maintenance                                                         | N/A        | ELLE                             | N                                |
| WC-22-007        | LDNR 29B Parameters, Rev. 0, Effective 09/9/22                                                                                                                                           | Definitive                   | Solid CEC                                                               | N/A        | Eurofins Houston                 | N                                |
| MET-18-001       | Metals Analysis by ICP, SW-846 6010B/6010C/6010D and 200.7 Rev 1, Effective 4/11/2024                                                                                                    | Definitive                   | Solid CEC                                                               | N/A        | Eurofins Houston                 | N                                |
| SOP #6           | Analysis of Volatile Organic Compounds in Summa™ Polished Canisters by GC/MS, Modified EPA Method TO-14A and EPA Method TO-15 Rev. 49, Effective 10/18/2023                              | Definitive                   | Air-VOCs                                                                | GC/MS      | Eurofins Air Toxics              | N                                |
| SOP #8           | ASTM D1946 / SOP #8 - Analysis of Oxygen, Nitrogen, Methane, Ethane, Ethene, Carbon Monoxide, Carbon Dioxide, Hydrogen and NMOC, Modified ASTM Method D1946 Rev. 31, Effective 8/12/2023 | Definitive                   | Air-Methane + Fixed Gases                                               | GC         | Eurofins Air Toxics              | N                                |
| WI23588          | Preventative and Corrective Maintenance for the AB Sciex Liquid Chromatograph Mass Spectrometers (LC/MS/MS), Rev 5, effective 18-JUN-2024                                                | N/A                          | NA / Maintenance                                                        | LC/MS/MS   | ELLE                             | N                                |



| Reference Number | Title, Revision Date, and / or Number                                                                                              | Definitive or Screening Data | Analytical Group | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------|------------|----------------------------------|----------------------------------|
| WI46585          | PFAS Leaching Procedure (TCLP, SPLP) by EPA 1311-modified and 1312-modified in Solids and Wastes, Version 2, effective 19-MAR-2024 | N/A                          | Leachate         | NA         | ELLE                             | N                                |
| WI72427          | Aqueous PFAS Prep by SPE and Analysis by LC-MS-MS by EPA 1633/QSM 6.0 Table B-24, Version 1, effective 25-JUN-2024                 | Definitive                   | Water / PFAS     | LC/MS/MS   | ELLE                             | N                                |
| WI72428          | Solid PFAS Prep by Sonication and Analysis by LC-MS-MS by EPA1633/QSM 6.0 Table B-24, Version 1, effective 25-JUN-2024             | Definitive                   | Solid / PFAS     | LC/MS/MS   | ELLE                             | N                                |

Notes:

1. Modifications to Method 8330B will be made because discrete soil samples and not ISM soil samples are being collected in the field (see Worksheet #17 for additional discussion of ISM with regard to the Site.). ISM-related sample processing in the laboratory including drying, sieving, grinding, and subsampling will not be done.

ASTM = American Society for Testing and Materials

CEC = Cation Exchange Capacity

EFGS = Eurofins Frontier Global Sciences

ELLE = Eurofins Lancaster Laboratories Environmental

EPA = Environmental Protection Agency

GC = Gas Chromatograph

GRO = Gasoline Range Organics

HPLC = High Performance Liquid Chromatography

HRMS = High Resolution Mass Spectrometry

HRGC = High Resolution Gas Chromatograph

ICP = Inductively Coupled Plasma

ICS = Ion Chromatography System

MS = Mass Spectrometer



| Reference Number | Title, Revision Date, and / or Number | Definitive or Screening Data | Analytical Group | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|------------------|---------------------------------------|------------------------------|------------------|------------|----------------------------------|----------------------------------|
|------------------|---------------------------------------|------------------------------|------------------|------------|----------------------------------|----------------------------------|

ORP = Oxidation-Reduction Potential  
 PCB = Polychlorinated Biphenyls  
 SIM = Selective Ion Monitoring  
 SVOC = Semi-Volatile Organic Compound  
 TOC = Total Organic Compound  
 UV = Ultraviolet  
 VOC = Volatile Organic Compound

QAPP Worksheet #24: Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)  
(EPA 2106-G-05 Section 2.3.6)

Refer to Final UFP-QAPP (TI-SDC, 2023) for analytical instrument calibration requirements with the following exceptions. Additionally, it should be noted that there were no changes to this Worksheet related to the use of the an alternate sample preparation procedure for CEC analysis in solids or the correction of the laboratory identified as performing the VOC SIM analyses in liquids.

The Final UFP-QAPP (TI-SDC, 2023), WS #24 table titled *LC/MS/MS PFAS in accordance with QSM, Table B-15* is now titled *LC/MS/MS PFAS EPA Method 1633*.

| Instrument: LC/MS/MS PFAS Final EPA Method 1633, QSM 6.0 |                                                                                              |                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                  |                           |                  |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| Calibration Procedure                                    | Frequency of Calibration                                                                     | Acceptance Criteria                                                                                                                                                                                                                                                                          | Corrective Action (CA)                                                                                                                                                                           | Person Responsible for CA | SOP Reference    |
| Mass Calibration                                         | Initially, annually, and after performing major maintenance                                  | Per manufacturer specifications                                                                                                                                                                                                                                                              | NA                                                                                                                                                                                               | ELLE Analyst              | W36458 & WI36459 |
| Tuning of LC/MS/MS                                       | When masses fall outside ± 0.5 amu of true masses                                            | Within 0.5 amu of true value                                                                                                                                                                                                                                                                 | Retune and verify. If tuning fails acceptance criteria, perform a mass calibration and repeat the tune check.                                                                                    | ELLE Analyst              | W36458 & WI36459 |
| Mass Spectral Acquisition Rate                           | Each analyte, labeled analyte, and injection internal standard                               | A minimum of 10 spectra scans are acquired across each chromatographic peak                                                                                                                                                                                                                  | NA                                                                                                                                                                                               | ELLE Analyst              | W36458 & WI36459 |
| Initial calibration with a minimum 5 points              | After continuing calibration fails                                                           | S/N ratio ≥10:1 for all ions used for quantification. % RSD of the RFs for all analytes must be <20%. Linear or non-linear calibrations must have a r2 ≥0.99. Must use at least 6 points for a quadratic. Analytes must be within 70-130% of their true value for each calibration standard. | Perform more aggressive instrument maintenance and recalibrate                                                                                                                                   | ELLE Analyst              | W36458 & WI36459 |
| Instrument Sensitivity Check                             | Prior to analysis and every 12 hours using a standard with analyte concentrations at the LOQ | Recover within ±30% of their true value                                                                                                                                                                                                                                                      | Correct problem and rerun ISC. If problem persists, repeat ICAL                                                                                                                                  | ELLE Analyst              | W36458 & WI36459 |
| ICV Standard                                             | Once with every ICAL                                                                         | Within ±30% of their true value                                                                                                                                                                                                                                                              | Reanalyze the ICV and samples associated with the non-compliant ICV. If ICV fails again do system maintenance, recalibrate, and reanalyze samples.                                               | ELLE Analyst              | W36458 & WI36459 |
| LOD standard                                             | Quarterly                                                                                    | All compound must be detected                                                                                                                                                                                                                                                                | Reprep and reanalyze LOD.                                                                                                                                                                        | ELLE Analyst              | W36458 & WI36459 |
| LOQ Verification                                         | Quarterly                                                                                    | Within 50% of true value                                                                                                                                                                                                                                                                     | Reprep and reanalyze LOQ.                                                                                                                                                                        | ELLE Analyst              | W36458 & WI36459 |
| CCV Standard                                             | Every 10 samples and at the end of a sequence                                                | Alternate analyte concentrations range from the LOQ to the mid-level of the calibration curve. Recover within ±30% of their true value                                                                                                                                                       | Reanalyze CCV in duplicate immediately. If both pass, samples can be report. If either fails or if immediate reanalysis of CCV in duplicate cannot be performed all samples since acceptable CCV | ELLE Analyst              | W36458 & WI36459 |

| Instrument: LC/MS/MS PFAS Final EPA Method 1633, QSM 6.0 |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    |                           |                  |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| Calibration Procedure                                    | Frequency of Calibration                                                             | Acceptance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Corrective Action (CA)                                                                                                                                                                                             | Person Responsible for CA | SOP Reference    |
|                                                          |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | must be reanalyzed. If the CCV fails high any associated samples that are ND can be reported.                                                                                                                      |                           |                  |
| Instrument Blanks                                        | Immediately following the highest standard analyzed and daily at start of a sequence | Concentration of each analyte must be $\leq 1/2$ LOQ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | If criteria not met after highest calibration standard, must decrease that standard's concentration until criteria is met. If criteria not met for sample, run additional instrument blanks until criteria is met. | ELLE Analyst              | W36458 & WI36459 |
| Retention Time Window Position Check                     | One per ICAL and at the beginning of each sequence                                   | Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed.<br>On days when ICAL is not performed, the initial CCV is used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NA                                                                                                                                                                                                                 | ELLE Analyst              | W36458 & WI36459 |
| Retention Time Window Width Check                        | Every field sample, standard, blank and QC samples                                   | RT of each analyte and EIS analyte must fall within 0.4 minutes of the predicted retention times from the daily calibration verification or, on days when ICAL is performed, from the midpoint standard of the ICAL. Analytes must elute within 0.1 minutes of the associated EIS. This criterion applies only to analyte and labeled analog pairs.                                                                                                                                                                                                                                                                                                                                                                                                                      | Correct problem and reanalyze samples                                                                                                                                                                              | ELLE Analyst              | W36458 & WI36459 |
| Ion transitions (Precursor --> Product)                  | Every field sample, standard, blank and QC samples                                   | <div>In order to avoid biasing results high due to known interferences for some transitions, the following transitions must be used for the quantification of the following analytes:<br/>PFOA: 413 <math>\rightarrow</math> 369<br/>PFOS: 499 <math>\rightarrow</math> 80<br/>PFHxS: 399 <math>\rightarrow</math> 80<br/>PFBS: 299 <math>\rightarrow</math> 80<br/>4:2 FTS: 327 <math>\rightarrow</math> 307<br/>6:2 FTS: 427 <math>\rightarrow</math> 407<br/>8:2 FTS: 527 <math>\rightarrow</math> 507<br/>NEtFOSAA: 584 <math>\rightarrow</math> 419<br/>NMeFOSAA: 570 <math>\rightarrow</math> 419</div> <div>If these transitions are not used, the reason must be technically justified and documented (e.g., alternate transition was used due to observed</div> | NA                                                                                                                                                                                                                 | ELLE Analyst              | W36458 & WI36459 |

QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection

(UFP-QAPP Manual Section 3.2.3)  
(EPA 2106-G-05 Section 2.3.6)

Refer to Final UFP-QAPP (TI-SDC, 2023) for analytical instrument and equipment maintenance, testing, and inspection requirements. Additionally, it should be noted that there were no changes to this Worksheet related to the use of the an alternate sample preparation procedure for CEC analysis in solids. For the two GC/MS records below, the Responsible Person was updated to reflect the correct laboratory facility. For the LC/MS/MS record below, the SOP Reference was updated.

| Instrument / Equipment | Maintenance Activity                                                                                                                | Testing Activity  | Inspection Activity                    | Frequency                                                        | Acceptance Criteria                                                          | Corrective Action                                                                          | Responsible Person      | SOP Reference       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------|---------------------|
| GC/MS                  | Clean sources, maintain vacuum pumps                                                                                                | Tuning            | Instrument performance and sensitivity | Service vacuum pumps twice per year, other maintenance as needed | Tune and CCV pass criteria                                                   | Recalibrate instrument                                                                     | Eurofins Tacoma Chemist | EFGS-T-VOA-SOP41108 |
| GC/MS                  | Change septum, clean injection port, change or clip column, install new liner, change trap                                          | Sensitivity check | Instrument performance and sensitivity | Daily or as needed                                               | Tune and CCV pass criteria                                                   | Reinspect injector port, cut additional column, reanalyze CCV, recalibrate instrument      | Eurofins Tacoma Chemist | EFGS-T-VOA-SOP41108 |
| LC/MS/MS               | Backflush of column, injection port and pre-columns, cleaning of ion spray cone, adjustment of collision energies, others as needed | Calibration Check | Visual                                 | As Needed                                                        | Initial calibration or calibration verification passes method specifications | Perform additional maintenance prior to instrument calibration or calibration verification | ELLE Analysts           | WI23588             |



## QAPP Worksheet #26 & 27: Sample Handling, Custody, and Disposal

(UFP-QAPP Manual Attachment A)

(EPA 2106-G-05 Section 2.3.3)

### Sampling Organization: TI-SDC

**Laboratories:** Eurofins Lancaster Laboratories Environmental in Lancaster, PA, Eurofins Environment Testing in Houston, TX, Eurofins Environment Testing in Tacoma, WA, and Eurofins Air Toxics in Folsom, CA.

**Method of sample delivery:** Overnight delivery shipment to laboratory

**Number of Days from Reporting until sample disposal:** 45 days after the final report is issued

| Activity                                            | Organization and Title of person responsible for activity                                 | SOP Reference                                                                                    |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Sample Collection                                   | Field Sampling Team: TI-SDC                                                               | SOP No. 3 - Sample Handling and Management (see Appendix G of the Final UFP-QAPP [TI-SDC, 2023]) |
| Sample Labeling                                     | Field Sampling Team: TI-SDC                                                               | SOP No. 3 - Sample Handling and Management (see Appendix G of the Final UFP-QAPP [TI-SDC, 2023]) |
| Chain-of-Custody Form Completion                    | Field Sampling Team: TI-SDC                                                               | SOP No. 3 - Sample Handling and Management (see Appendix G of the Final UFP-QAPP [TI-SDC, 2023]) |
| Packaging                                           | Field Sampling Team: TI-SDC                                                               | SOP No. 3 - Sample Handling and Management (see Appendix G of the Final UFP-QAPP [TI-SDC, 2023]) |
| Shipping Coordination                               | Field Sampling Team: TI-SDC                                                               | --                                                                                               |
| Sample Receipt                                      | Laboratory Sample Custodian: ELLE, Eurofins Houston, Eurofins Tacoma, Eurofins Air Toxics | --                                                                                               |
| Sample Custody and Storage                          | Laboratory Sample Custodian: ELLE, Eurofins Houston, Eurofins Tacoma, Eurofins Air Toxics | --                                                                                               |
| Entry of Samples Requiring Subcontracting/Workshare | Laboratory Sample Administrator: ELLE                                                     | SOP S-SA-WI10717                                                                                 |



| Activity                                          | Organization and Title of person responsible for activity                                              | SOP Reference    |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------|
| Homogenization, Sample Splitting, and Subsampling | Laboratory Sample Preparation Technician: ELLE                                                         | SOP S-SS-WI10686 |
| Sample Preparation                                | Laboratory Sample Preparation Technician: ELLE, Eurofins Houston, Eurofins Tacoma, Eurofins Air Toxics | --               |
| Sample Determinative Analysis                     | Laboratory Analytical Chemist: ELLE, Eurofins Houston, Eurofins Tacoma, Eurofins Air Toxics            | --               |
| Sample Disposal                                   | Laboratory Sample Custodian: ELLE, Eurofins Houston, Eurofins Tacoma, Eurofins Air Toxics              | --               |

Notes:

ELLE = Eurofins Lancaster Laboratories Environmental

SOP = Standard Operating Procedure

QAPP Worksheet #28: Analytical Quality Control and Corrective Action

(UFP-QAPP Manual Section 3.4 and Tables 4, 5, and 6)  
(EPA 2106-G-05 Section 2.3.5)

Refer to Final UFP-QAPP (TI-SDC, 2023) for analytical quality control requirements and associated corrective actions. The following analytical quality control and corrective action requirements have been revised from the Final UFP-QAPP to reflect those which will be used during the supplemental phase of RI sampling. Additionally, it should be noted that there were no changes to this WS related to the use of the alternate sample preparation procedure for CEC analysis in solids or the correction of the laboratory identified as performing the VOC SIM analyses in liquids.

**Matrix:** Groundwater IDW/ Soil IDW  
**Analytical Group:** PFAS  
**Analytical Method/SOP Reference:** LC/MS/MS / Final EPA Method 1633, QSM 6.0

| QC Sample                                    | Frequency/Number                                                                                                                                                                                          | Corrective Action (CA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Person(s) Responsible for Corrective Action | Measurement Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Instrument Blank (IB)                        | At the beginning of the analytical sequence and after the analysis of high concentration samples and standards (e.g., customer samples, highest calibration standard, calibration verification standard). | If acceptance criteria are not met after the highest calibration standard, calibration shall be performed using a lower concentration for the highest standard until acceptance criteria is met. If field sample analyte concentrations exceed the highest calibration standard and the same analytes in the following field sample or in a consecutive following field samples also exceed the IB acceptance criteria, the affected samples shall be reanalyzed using a fresh aliquot of the sample extract. If the extract cannot be reanalyzed and re-extraction is not possible, apply qualifier to affected results and explain in the case narrative. | ELLE Analyst                                | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Extracted Internal Standard (EIS)            | Every field sample, QC sample, and standard.                                                                                                                                                              | Follow the requirements listed in Method 1633, Section 15.3.2 for all sample matrices. If EIS recoveries still fall outside of the acceptance range, the customer shall be contacted for additional measures to be taken. Apply qualifier to affected analyte results and explain in the case narrative.                                                                                                                                                                                                                                                                                                                                                    | ELLE Analyst                                | Isotopically labeled analogs of analytes shall be used when they are commercially available. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 20-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <20%. |
| Non-extracted Internal Standards (NIS) added | per sample (including MB, LCS, LCSD) prior to extraction                                                                                                                                                  | If fails high, check for errors and report. If fails low, re-analyze fresh aliquot of sample. If in control, report. If the failure confirms report the initial analysis and narrate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ELLE Analyst                                | NIS areas 50-200% of the area of the continuing calibration standard in undiluted sample extracts and sample extracts that require NIS to be added.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| QC Sample                                                 | Frequency/Number                                                                        | Corrective Action (CA)                                                                                                                                                                                                                                                                                                                                                                            | Person(s)<br>Responsible for<br>Corrective<br>Action | Measurement Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| following extraction<br>and prior to analysis             |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Method Blank                                              | One pre preparatory batch.                                                              | Correct problem. If required, reprepare and analyze MB and all QC samples and affected field samples processed with the contaminated blank if sufficient sample material is available. If the samples cannot be reprepared and analyzed, apply qualifier to affected analyte results of all samples in the associated preparatory batch and explain in the case narrative.                        | ELLE Analyst                                         | No analytes detected >1/2 LOQ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ongoing Precision and Recovery (OPR) Standard             | One pre preparatory batch. Shall contain all EIS, NIS, and all analytes to be reported. | Correct problem. If required, reprepare and analyze the OPR and all affected QC samples and field samples in the associated preparatory batch for failed analytes if sufficient sample material is available. If the samples cannot be reprepared and analyzed, apply qualifier to affected analyte results of all samples in the associated preparatory batch and explain in the case narrative. | ELLE Analyst                                         | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%. |
| Low-Level Ongoing Precision and Recovery (LLOPR) Standard | One pre preparatory batch. Shall contain all EIS, NIS, and all analytes to be reported. | Correct problem. If required, reprepare and analyze the OPR and all affected QC samples and field samples in the associated preparatory batch for failed analytes if sufficient sample material is available. If the samples cannot be reprepared and analyzed, apply qualifier to affected analyte results of all samples in the associated preparatory batch and explain in the case narrative. | ELLE Analyst                                         | Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, a laboratory shall use laboratory-developed recovery acceptance criteria no wider than any acceptance criteria provided by the customer. Preliminary laboratory acceptance criteria of 40-150% shall be used until laboratory acceptance criteria are developed in accordance with Method 1633. Where Method 1633 does not provide EIS recovery acceptance criteria for the sample matrix under evaluation, the lower limit of the laboratory-developed acceptance criteria cannot be <40%. |
| Laboratory Duplicate (LD)                                 | Once per laboratory batch.                                                              | If an assignable cause isolated to only the MD is identified, reanalyze the MD or reprepare and analyze the MD if sufficient sample material is available, as indicated by the cause. Otherwise, apply qualifier to affected analyte results in the parent sample and explain in the case narrative.                                                                                              |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| QC Sample | Frequency/Number | Corrective Action (CA)                                                                                                  | Person(s)<br>Responsible for<br>Corrective<br>Action | Measurement Performance Criteria |
|-----------|------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------|
|           | ELLE Analyst     | RPD of all analytes must be $\leq 30\%$ between sample and MD.<br>RPD does not apply if both results are below the LOQ. |                                                      |                                  |



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## **QAPP Worksheet #29: Project Documents and Records**

(UFP-QAPP Manual Section 3.5.1)

(EPA 2106-G-05 Section 2.2.8)

Refer to Final UFP-QAPP (TI-SDC, 2023) for a summary of project documents and records.



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## **QAPP Worksheets #31, 32, & 33: Assessments and Corrective Action**

(UFP-QAPP Manual Sections 4.1.1 and 4.1.2)

(EPA 2106-G-05 Section 2.4 and 2.5.5)

Refer to Final UFP-QAPP (TI-SDC, 2023) for a description of the Quality Assurance/Quality Control procedures.



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## **QAPP Worksheet #34: Data Verification and Validation Inputs**

(UFP-QAPP Manual Section 5.2.1 and Table 9)

(EPA 2106-G-05 Section 2.5.1)

Refer to Final UFP-QAPP (TI-SDC, 2023) for a summary of data verification and validation inputs.

**QAPP Worksheet #35: Data Verification Procedures**

(UFP-QAPP Manual Section 5.2.2)

(EPA 2106-G-05 Section 2.5.1)

The Responsible Person to review the field logbook and chain-of-custody forms was changed from “Field Team Leader” in the Final UFP-QAPP (TI-SDC, 2023) to “Project Manager (or approved designee; separate from the Field Team Leader)” in this QAPP Addendum. In addition, the Responsible Person to review the data validation reports was changed from LDC in the Final UFP-QAPP (TI-SDC, 2023) to Synectics and TI-SDC Project Chemist in this QAPP Addendum.

| <b>Records Reviewed</b> | <b>Required Documents</b> | <b>Process Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Responsible Person, Organization</b>                                                                                                        |
|-------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Field Logbook           | QAPP, Field SOPs          | Verify that records are present and complete for each day of field activities. Verify that all planned samples including field QC samples were collected and that sample collection locations are documented. Verify that meteorological data were provided for each day of field activities. Verify that changes/exceptions are documented and were reported in accordance with requirements. Verify that any required field monitoring was performed, and results are documented. | Daily – Project Manager (or approved designee; separate from the Field Team Leader)<br><br>At conclusion of field activities - Project Manager |
| Chain-of-custody forms  | QAPP, Field SOPs          | Verify the completeness of chain-of-custody records. Examine entries for consistency with the field logbook. Check that appropriate methods and sample preservation have been recorded. Verify that the required volume of sample has been collected and that sufficient sample volume is available for QC samples (e.g., MS/MSD). Verify that all required signatures and dates are present. Check for transcription errors.                                                       | Daily - Project Manager (or approved designee; separate from the Field Team Leader)<br><br>At conclusion of field activities - Project Chemist |
| Laboratory Deliverable  | QAPP, Lab SOPs            | Verify that the laboratory deliverable contains all records specified in the QAPP. Check sample receipt records to ensure sample condition upon receipt was noted, and any missing/broken sample containers were noted and reported according to plan. Compare the data package with the chain-of-custody forms to verify that results were provided for all collected samples. Review the narrative to ensure all QC exceptions are described. Check for                           | Before release - Laboratory Project Manager<br><br>Upon receipt - Project Chemist                                                              |



| Records Reviewed        | Required Documents | Process Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Responsible Person, Organization                                                            |
|-------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                         |                    | evidence that any required notifications were provided to project personnel as specified in the QAPP. Verify that necessary signatures and dates are present.                                                                                                                                                                                                                                                                                                                       |                                                                                             |
| Data Validation Reports | QAPP               | Verify that all planned audits were conducted. Examine audit reports. For any deficiencies noted, verify that corrective action was implemented according to plan. Establish that all QAPP required QC samples were run and met the required limits for precision and accuracy. Verify that sample results met the project quantitation limits specified in the QAPP. Conduct a Stage 4 validation (i.e., review of raw data to confirm laboratory calculations) on 10% of samples. | Synectics and TI-SDC –<br>Project Chemist prior to<br>submittal to USACE<br>Project Chemist |

Notes:

MS = Matrix Spike

MSD = Matrix Spike Duplicate

QAPP = Quality Assurance Project Plan

QC = Quality Control

SOP = Standard Operation Procedure



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## **QAPP Worksheet #36: Data Validation Procedures**

(UFP-QAPP Manual Section 5.2.2)

(EPA 2106-G-05 Section 2.5.1)

Refer to Final UFP-QAPP (TI-SDC, 2023) for a summary of data validation procedures.



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## **QAPP Worksheet #37: Data Usability Assessment**

(UFP-QAPP Manual Section 5.2.3)

(EPA 2106-G-05 Section 2.5.2, 2.5.3, and 2.5.4)

Refer to Final UFP-QAPP (TI-SDC, 2023) for a description of the data usability assessment process.



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## REFERENCES

- American Society for Testing and Materials (ASTM), 2017. *Standard Practice for the Description and Identification of Soils*, ASTM D2488-17e1.
- California Environmental Protection Agency (CalEPA), 2015. *Advisory Active Soil Gas Investigations*. Prepared by Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, and San Francisco Regional Water Quality Control Board. July.
- United States Army Corps of Engineers (USACE), 1998. *Monitoring Well Design, Installation, and Documentation at Hazardous Toxic and Radioactive Waste Sites*, USACE Engineer Manual 1110-1-4000, November 1.
- TI-SDC, 2023. *Final UFP QAPP for the Remedial Investigation Activities at Former Stewart Air Force Base, Newburgh and New Windsor, New York*. June.
- TI-SDC, 2024. *Final Field Completion Report for Preliminary Phase of Remedial Investigation Sampling, Former Stewart Air Force Base, Newburgh and New Windsor, New York*. February.

## **FIGURES**

**Figure 1. Site Vicinity Map**

**Figure 2. Site Location Map**

**Figure 3. Proposed Soil Sampling Locations**

**Figure 4. Proposed Groundwater Monitoring Locations**

**Figure 5. Proposed Sediment and Surface Water Sampling Locations**

**Figure 6. Proposed Soil Gas Sampling Locations**

## **APPENDICES**

### **Appendix A – April 10, 2024 Technical Planning Process Meeting Materials**

### **Appendix B – Updated TI-SDC Standard Operating Procedures**

SOP No. 2 – Groundwater Sampling

SOP No. 5 – Soil Sampling for Chemical Analysis

SOP No. 14 – Soil Gas Sampling for Chemical Analysis

SOP No. 15 – Field Instrumentation Calibration

### **Appendix C – Updated Field Forms**

Groundwater Gauging Log

Well Development/Purge Log

Sediment Collection Log

Surface Water Collection Log

Soil Gas Collection Log

CAMP Field Form

Horiba U-51/U-52 and GeoTech Turbidity Meter Calibration Logs

### **Appendix D – Updated Laboratory Certifications**

### **Appendix E – Updated Laboratory Standard Operating Procedures**

### **Appendix F – Updated Analytical Project Limits**

## **APPENDIX A**

### **APRIL 10, 2024 TECHNICAL PLANNING PROCESS MEETING MATERIALS**

## **APPENDIX B**

### **UPDATED TI-SDC STANDARD OPERATING PROCEDURES**

## **APPENDIX C**

### **UPDATED FIELD FORMS**

## **APPENDIX D**

### **UPDATED LABORATORY CERTIFICATIONS**

## **APPENDIX E**

**UPDATED LABORATORY STANDARD OPERATING PROCEDURES**  
***(TO BE PROVIDED WHEN MADE AVAILABLE BY LABORATORIES)***

## **APPENDIX F**

### **UPDATED ANALYTICAL PROJECT LIMITS**

***(TO BE PROVIDED WHEN MADE AVAILABLE BY LABORATORIES)***