

Superfund Site Assessment Program Quality Assurance Project Plan



**Division of Waste Management
Waste Cleanup Program
CERCLA Site Screening Section
Florida Department of Environmental Protection
June 8, 2017**

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Appendix A: Sample Collection Requirements

A-1 Distribution List

This Program Quality Assurance Project Plan (QAPP) and the associated documents will be distributed as follows:

- ❖ All Florida Department of Environmental Protection (FDEP) CERCLA Site Screening Section (CSSS) staff members
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 - Richard Stephens, Ecology & Environment (E&E) Inc.
325 John Knox Road
Building F, Suite 140
Tallahassee, Florida 32303
(850) 523-0954 Ext: 3915

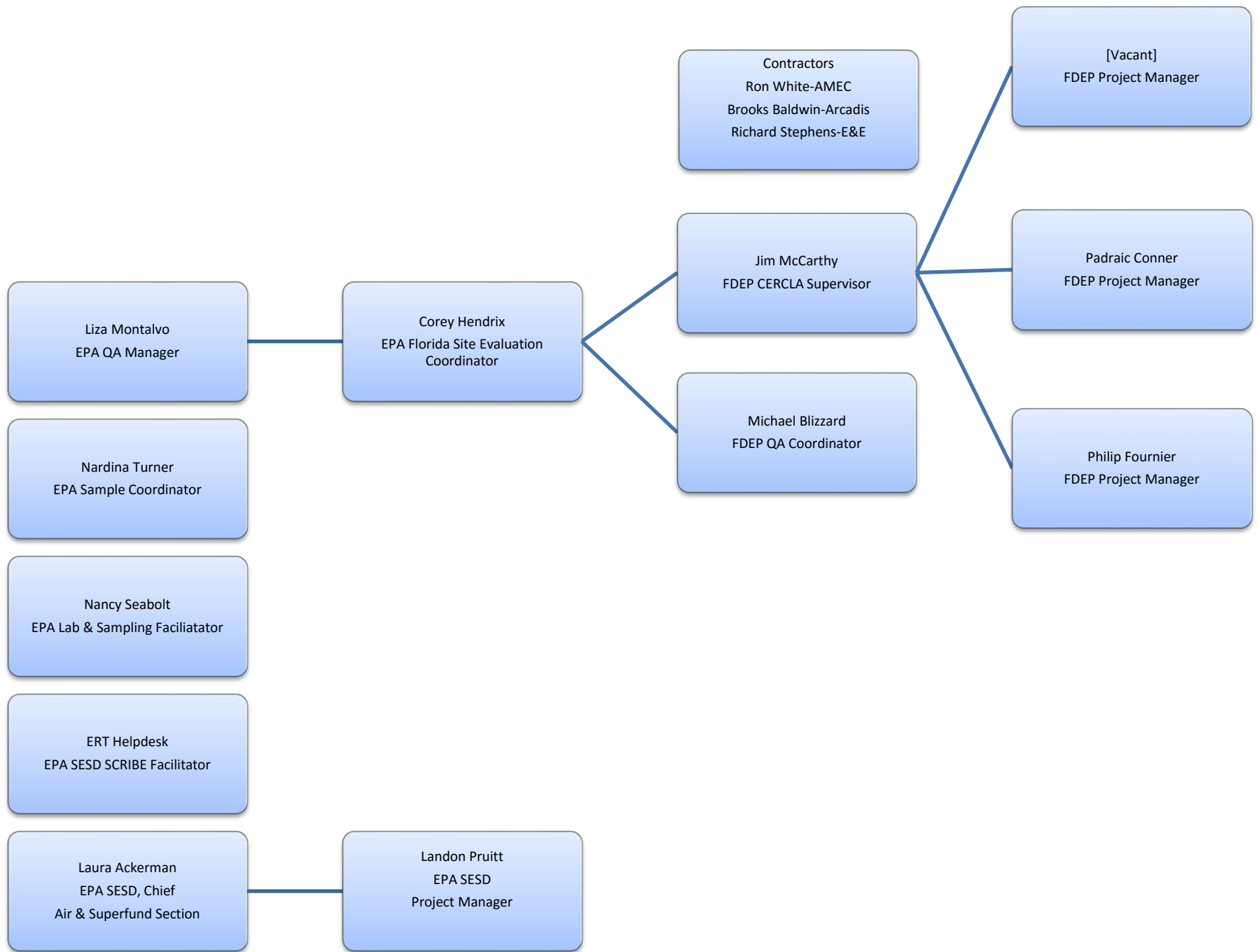
 - Brooks Baldwin, Arcadis US Inc.
3522 Thomasville Road, Suite 200
Tallahassee, Florida 32309
(850) 322-2555

Typically, Site-Specific Sampling QAPPs will be distributed to the sampling team and the EPA Site Evaluation Coordinator.

A-2 Project/Task Organization

A-2.1 General

The FDEP CSSS exists within the Waste Cleanup Program (WCP) under the Division of Waste Management (DWM). The Quality Assurance Coordinator for the FDEP Water, Waste Management, Ecosystem Restoration and Land and Recreation programs is located in the Division of Environmental Assessment and Restoration (DEAR). In addition, the DWM has designated QA officers for each of its program areas. Organization charts for EPA and FDEP Key Project Personnel are provided below:



A-2.2 Roles and Responsibilities

The FDEP CSSS staff is responsible for reviewing file information, collecting additional information, obtaining site access, preparing reports, assisting with field-sampling duties and occasionally preparing combined work plan/quality assurance project plans (WP/QAPPs). CSSS staff coordinates with other DWM QA staff to transmit and share information, suggest changes, assists with preparing the DWM QA plan. Additionally, the FDEP has contractors who perform site assessment work. Generally, the contractors assist with completion of Pre-Comprehensive Environmental Response, Compensation and Liability Act (Pre-CERCLA) Screening Assessments with Sampling (PSAWS), Site Inspections (SIs) and provide sub-contractual services, which may include installation of monitoring wells, obtaining mobile laboratory services, removal of Investigation Derived Wastes (IDW), and other services as necessary. Occasionally, the contractors may assist with completion of Preliminary Assessment (PA) reports. The CSSS staff provides assistance to and conducts oversight of contractors as required.

In addition to FDEP contractors, CSSS also conducts site assessments jointly with EPA's Science and Ecosystem Support Division (SESD) and its Contractors when field work is required, such as for PSAWS and SIs.

SESD also assists with the auditing of FDEP State Contractors. SESD Project Managers (PMs) and/or CSSS PMs and/or contractors are responsible for preparing WP/QAPP for their projects. Other FDEP personnel, including FDEP's Quality Assurance Program Manager are utilized as needed for specific expertise or for additional help on larger and/or more complex sites.

A-2.3 Lines of Authority-Contractor Projects

For the CSSS Contractor projects, the State Contractors and/or CSSS PM draft the PSAWS and SI WP/QAPPs, Health and Safety Plans (HASPs), and PSAWS and SI reports. The WP/QAPP preparation is usually preceded by a site reconnaissance and a scoping meeting. The WP/QAPPs and reports go through an internal review and consultation process after submittal by the assigned State Contractor and/or CSSS PM. In addition, the internal review may include the FDEP District Office in which the site is located. If QA/QC questions arise that cannot be resolved by the CSSS staff, the FDEP QA Project Manager is consulted.

Following the internal review, the draft WP/QAPPs and reports are forwarded to the EPA Site Evaluation Coordinator for both technical and QA review. The EPA Coordinator may consult with the EPA Region 4 SESD Quality Assurance staff regarding any QA/QC issues. It should be noted that all QA Officers or QA Managers retain independence from the rest of the key personnel. Following this review; the assigned State Contractor and/or CSSS PM incorporates the EPA comments into the WP/QAPPs and reports.

Approximately three weeks prior to the commencement of fieldwork activities, the CSSS PM contacts the EPA Sample Coordinator and provides a copy of the Analytical Request Form for Routine Analytical Services for SESD and/or CLP Laboratory procurement. Prior to and

during site investigations, the EPA Laboratory and Sampling Facilitator and EPA Sample Coordinator are consulted to assure proper QA/QC. Project leadership is jointly shared by the site State Contractor PM and CSSS PM. The State Contractor and the CSSS staff are jointly responsible for the sample collection and chain of custody during the actual sampling event. EPA may utilize CLP or SESD or combination of the laboratories for each field project. The various EPA Region 4 Quality Assurance Section (QAS) personnel are responsible for data verification, review and validation. CSSS may also utilize the FDEP's Bureau of Laboratories if necessary.

A-2.4 Lines of Authority-EPA SESD/CONTRACTOR-FDEP Joint Projects

For the CSSS/EPA's SESD/Contractor Joint Projects, the SESD/Contractor PM, in consultation with the CSSS staff, draft the PSAWS and/or SI WP/QAPPs and HASPs. The CSSS staff provides assistance in completing the WP/QAPPs and HASPs as necessary. The WP/QAPPs and reports go through an internal peer review process culminating in a review by the EPA and/or CSSS supervisors. If Quality Assurance/Quality Control (QA/QC) questions arise that cannot be resolved by the EPA's SESD/Contractor PM and/or by the CSSS staff, the EPA Region 4 SESD staff and/or FDEP QA Officer is consulted. The draft WP/QAPPs and reports are forwarded to the EPA Site Evaluation Coordinator for both technical and QA review. It should be noted that all QA Officers or QA Managers retain independence from the rest of the key personnel. EPA's SESD/Contractor and/or CSSS PMs incorporate the EPA Site Evaluation Coordinator comments into the WP/QAPPs and reports.

Approximately three weeks prior to the commencement of fieldwork activities, the SESD PM contacts the EPA Sample Coordinator and provides a copy of the Analytical Request Form for Routine Analytical Services for SESD and/or CLP laboratory procurement. Prior to and during site investigations, the EPA Laboratory and Sampling Facilitator and EPA Sample Coordinator are consulted by the EPA's SESD/Contractor PM to assure proper QA/QC. Project leadership is jointly shared by the site SESD/Contractor PM and CSSS PM. The SESD/Contractor staff and CSSS staff are jointly responsible for the sample collection and chain of custody during the actual sampling investigation. EPA may utilize CLP or SESD or combination of the laboratories for each field project. The various EPA Region 4 QAS personnel are responsible for data verification, review and validation.

A-3 Problem Definition/Background

The CSSS receives funding from the EPA Superfund program through a Cooperative Agreement (CA) to perform Superfund Site Assessment activities at sites throughout Florida. This program QAPP is being specifically prepared for remaining projects being conducted under the current CA and can be used for projects in future years, as needed, until conditions or circumstances prompt changes. The objective is to evaluate sites with known or suspected releases of hazardous substances, pollutants, or contaminants. This activity is authorized under the CERCLA of 1980 ("Superfund"), and is detailed in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300. The site screening process includes a preliminary screening and site evaluation to determine if CERCLA database entry

is appropriate and CERCLA criteria are met to further evaluate the site through the Superfund site assessment process. The CSSS staff assists EPA by evaluating known or potential sites in Florida through both the pre-CERCLA and CERCLA stages of the site assessment process, and helps EPA to identify candidate sites for the National Priorities List (NPL) which represents the most significant risk to human health and the environment.

A-4 Project/Task Description

The environmental site assessments performed under the cooperative agreement (CA) will be described in the CA work plan and quarterly progress reports. The number of joint projects with EPA's SESD and Contractors will be determined at the beginning of the project period for purposes of annual EPA Superfund Division/SESD planning. All assessments will comply with this program QAPP; and will be conducted in accordance with EPA guidance and EPA's Strategic Plan, Goal 3, Objective 3.3 Restore Land contains the Government Performance and Results Act (GPRA) measure for Superfund assessment work. FDEP will contribute to EPA Region 4's annual GPRA measures by evaluating potential hazardous waste sites in Florida to determine if they warrant CERCLA remedial response or other cleanup activities. The current Superfund Remedial Site Assessments (RSAs) measure includes those assessments completed by Florida and other states each year. The RSAs include those cooperative agreement deliverables as follows:

- Pre-CERCLA Screening Assessment
- Pre-CERCLA Screening Assessment with Sampling
- Preliminary Assessments
- Site Inspections
- Expanded Site Inspections

These RSAs are described in more detail below.

A-4.1 Pre-CERCLA Screening Assessment (PSA) / Checklist & Narrative

CSSS conducts PSAs to evaluate sites for possible placement into the CERCLA inventory. The PSAs help eliminate the duplication of effort associated with projects managed by other governmental programs and prevent the inclusion of sites into CERCLA database that do not need federal Superfund response action. A PSA will include a review of a site's regulatory status and operational history, potential impacts to public health and the environment, and, if available, a summary of contaminants detected at the site with the comparative state standards or cleanup target levels. This information will be used to prepare the PSA checklist and narrative summary. CSSS will develop a preliminary Hazard Ranking System (HRS) score only when a decision cannot be made without a score, since at this stage there is not enough data or information to score a site. The PSAs can be completed for sites identified through citizen complaints, and through referrals from local governments, FDEP compliance and enforcement personnel, and other regulatory programs.

A-4.2 Pre-CERCLA Screening Assessment with Sampling (PSAWS)

CSSS conducts PSAWS at sites that have limited information regarding the possible presence of contamination. In some cases, sites that are marginal candidates under the Superfund program may be eliminated by conducting a PSAWS. PSAWS allow limited environmental sampling of sites. On average, between 8-10 environmental samples, including groundwater, soil and/or sediment samples, are collected for laboratory analysis. The sampling phase may be preceded by various screening techniques to identify potential areas of contamination. PSAWS are conducted using a combination of EPA's SESD/Contractor and/or CSSS and/or FDEP State Contractor resources. A report and draft HRS evaluation are completed by CSSS PMs following a review of the analytical data.

A-4.3 Preliminary Assessments (PAs)

Sites recommended for placement in CERCLA database following completion of a PSA or a PSAWS require a PA. The PA is designed to distinguish between sites that pose little or no threat to human health and the environment and sites that require further investigation. Each PA will include a narrative report, an HRS PA score, and a reference package. CSSS may also complete Site Inspection Worksheets for certain sites if sufficient sampling data is available.

A-4.4 Site Inspections (SIs)

SIs are completed to determine whether or not a site warrants further Superfund action, including NPL listing. During the SI, CSSS staff evaluates the extent to which a site presents a threat to human health or the environment, through the collection and analysis of environmental samples to determine whether hazardous substances are present at the site. The SI consists of file review, historical records review, site reconnaissance, target survey, WP/QAPP preparation, field sampling, data interpretation, draft HRS score development, and report preparation.

CSSS performs SIs in conjunction with EPA's SESD/Contractor or by utilizing FDEP State Contractors. SI-HRS scores will be completed by CSSS staff.

An average of 10-20 samples will be collected per site. CSSS will utilize technologies including direct push drilling, soil screening equipment, and other EPA-approved sampling and screening techniques to help control cost and reduce the number of samples required at sites. The CSSS may complete desktop SIs for sites that do not require sampling because sufficient site specific, analytical data is available in the site file to complete the evaluation and SI-HRS score sheets.

A-4.5 Expanded Site Inspections (ESIs)

CSSS will conduct ESIs on sites that warrant further sampling after an SI or on sites that warrant a larger scope than a typical SI after a PA. An ESI involves collecting additional

data beyond that collected in the SI to evaluate the site for HRS scoring. ESIs are reserved for more complex sites that cannot be adequately characterized using standard SI methodologies. Installation of groundwater monitoring wells is typical of activities performed under the ESI. CSSS typically uses State Contractors to conduct an ESI; however, in some cases it may be appropriate to use EPA's SESD/Contractor. This would be determined on a site-specific basis.

A-4.6 Project Schedule

Project specific schedules will be determined on a site-specific basis. Project schedules will be provided in the CA work plan as best as can be determined and provided to EPA throughout the year as they are identified. Project schedules, will be provided in the WP/QAPPs.

A-5 Special Training Requirements/Certification

CSSS staff responsible for project management are classified as Environmental Specialists (ES) or Professional Geologists (PG). The minimum education requirement for an ES is an undergraduate degree from an accredited college or university in the physical or biological sciences, whereas the PG must be a certified PG by the state of Florida. Staff gain necessary skills through on-the-job training and by attending technical workshops and seminars provided by EPA, FDEP and other organizations. Senior staff members are responsible for mentoring new section employees. Personnel acting as Superfund Pre-Remedial Project Managers should have the following Site Assessment-related training within the first year of employment:

- ❖ OSHA 40-hour Hazardous Waste Operator and Emergency Response with annual 8-hour Refresher
- ❖ EPA Preliminary Assessment and Site Inspection training
- ❖ EPA Hazard Ranking System training
- ❖ EPA Standard Operating Procedures (SOP) Training

A-6 Documentation and Records

All sites will have a working file set up by the project manager. All documents associated with the assessment, including prior site history, correspondence, site access agreements, WP/QAPPs, field notes, chain of custody records, laboratory and assessment reports or any other relevant site information will be maintained within the file for 10 years as required by EPA (currently, FDEP keeps its site file documents permanently).

FDEP State Contractor or EPA's SESD/Contractor Field Logbooks will contain any pertinent information that occurred while field sampling was conducted. Examples of such information include, boring logs, well installation logs, field analysis logs and sample locations, dates and times.

Laboratory data is also maintained in the file. Data is typically processed on a 21-day turnaround schedule, however at times 7 or 14-day turnaround may be requested which requires EPA Sample Coordinator's and Florida Site Evaluation Coordinator's approval.

Grant-related reports and financial records are also maintained under this CA. FDEP is in the process of making all file information available electronically. Files are no longer maintained as paper copies after the backlog is scanned to electronic filing system called Oculus™ at <https://depedms.dep.state.fl.us/Oculus/servlet/login> or FDEP Information Portal at <http://webappsbeta.dep.state.fl.us/DepNexus/public/search-portal>.

B-Data Generation and Acquisition

B-1 Sampling Process Design

The environmental assessments completed under this QAPP will be designed by the respective Site PM working in coordination with EPA's SESD/Contractor and/or FDEP State Contractors. These assessments will follow approaches outlined in the following guidance manuals:

- ❖ EPA Guidance for Performing Preliminary Assessments under CERCLA
- ❖ EPA Guidance for Performing Site Inspections under CERCLA
- ❖ EPA Region 4 PSA Guidance
- ❖ EPA Region 4 SESD Field Branches Quality System and Technical Procedures
- ❖ FDEP QA-002-02 Quality Assurance Requirements for Field and Analytical Work
- ❖ Chapter 62-160 Florida Administrative Code, Quality Assurance Rules

Because there are some differences between the EPA and FDEP SOPs, the more stringent requirements will take precedence during CERCLA assessment.

Environmental samples for investigations are generally analyzed through EPA's CLP. Typical Analyte lists for organic and inorganic constituents and their Contract-Required Quantitation Limits (CRQLs) are found at <http://www.epa.gov/superfund/programs/clp/>. For routine sampling, the following CLP choices would be specified:

Table 1 Typical CLP Analytical Request		
Soil/Sediment	Non-Potable Waters	Potable Waters
VOA (low soil)	VOA (trace water)	VOA (trace water)
SVOA (low soil)	SVOA (low water)	SVOA (low water by SIM)
Pesticides / Aroclors	Pesticides / Aroclors	Pesticides / Aroclors
ICP-AES Metals	ICP-AES Metals	ICP-MS Metals
Mercury	Mercury	Mercury
Cyanide	Cyanide	Cyanide

B-2 Sampling Method Requirements

FDEP Standard Operating Procedures, FDEP-SOP-001/01 FDEP Standard Operating Procedures for Field Activities can be found at <http://www.dep.state.fl.us/water/sas/sop/sops.htm> as well as EPA, Region 4 Field Branches Quality System and Technical Procedures, <http://www.epa.gov/region4/sesd/fbqstp/index.html>.

Each PM is responsible for following the most recent operating procedure and ensuring consistency of assessment and sampling protocols during their assessment. The most current sampling procedures are referenced below; however, the EPA procedures are periodically updated so the most recent version would need to be followed.

B-2.1 Soil sampling:

FDEP SOP FS 3000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-300-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Soil-Sampling.pdf>

B-2.2 Sediment sampling:

FDEP SOP FS 4000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-200-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Sediment-Sampling.pdf>

B-2.3 Groundwater sampling:

FDEP SOP FS 2200

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-301-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Groundwater-Sampling.pdf>

B-2.4 Surface Water sampling:

FDEP SOP FS 2100

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-201-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Surfacewater-Sampling.pdf>

B-2.5 Waste sampling:

FDEP SOP FS 5000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-302-R2

<https://www.epa.gov/sites/production/files/2015-06/documents/Waste-Sampling.pdf>

FDEP State Contractors or EPA SESD/Contractor staff generally handles preparation for sampling events. Sample containers for each analysis are provided in accordance with EPA CLP Guidance for Field Samplers.

https://www.epa.gov/sites/production/files/2015-03/documents/samplers_guide.pdf

Equipment decontamination is typically handled by SESD or FDEP State Contractors at their respective warehouses. If possible, enough sampling equipment is taken to the site to complete the investigation with a minimum of field decontamination. However, field decontamination is occasionally required, and will be performed in accordance with FDEP and EPA procedures.

FDEP SOP FC 1000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

EPA Field Branches Quality System and Technical Procedures,
Section SESDPROC-205-R3

https://www.epa.gov/sites/production/files/2016-01/documents/field_equipment_cleaning_and_decontamination205_af.r3.pdf

Samples are generally shipped by FDEP State Contractors or EPA's SESD/Contractor at the end of each day of sampling via overnight courier to the CLP laboratory. All sample locations will be surveyed using a Garmin GPS or equivalent unit, capable of measuring within one-meter accuracy. Sample holding times and preservation are covered in Chapter 62-160, Florida Administrative Code (FAC) and EPA's CLP Guidance for Field Samplers.

B-3 Critical and Non-Critical Measurements

During the site investigation and sampling process, a number of critical and non-critical measurements are collected. Some of the critical measurements monitored during the groundwater purging/sampling procedure include turbidity, pH, temperature and specific conductance. These measurements are critical in determining when to collect a representative groundwater sample for laboratory analysis. Measurements for dissolved oxygen (DO) may also be monitored. However, the DO is not necessarily a critical measurement. Depending on site conditions, radiation monitoring may also be conducted. Other critical measurements, which would be used primarily for screening purposes, would include monitoring for organic vapors with an organic vapor analyzer (OVA) and x-ray fluorescence using an L-level X-Ray Fluorescence (L-XRF) portable field instrument for monitoring metals in soils. CSSS may also utilize innovative field screening technologies,

or a mobile laboratory to generate data. The data collected from field screening will be used to select sampling locations. The specific SOPs for these measurements can be found in the FDEP-SOP-001/01 FDEP Standard Operating Procedures for field activities, as well as EPA, Region 4 Field Branches Quality System and Technical Procedures. The links to the field measurement SOPs include:

Field pH Measurement

SESDPROC-100-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Field-pH-Measurement.pdf>

FDEP SOP FT 1100

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Field Specific Conductance Measurement

SESDPROC-101-R6

https://www.epa.gov/sites/production/files/2016-07/documents/field_specific_conductance101_af.r6.pdf

FDEP SOP FT 1200

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Field Temperature Measurement

SESDPROC-102-R4

<https://www.epa.gov/sites/production/files/2015-06/documents/Field-Temperature-Measurement.pdf>

FDEP SOP FT 1400

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Field Measurement of Dissolved Oxygen

SESDPROC-106-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Field-DO-Measurement.pdf>

FDEP SOP FT 1500

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Field Turbidity Measurement

SESDPROC-103-R3

<https://www.epa.gov/sites/production/files/2015-06/documents/Field-Turbidity-Measurement.pdf>

FDEP SOP FT 1600

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Field Measurement of Oxidation-Reduction Potential

SESDPROC-113-R1

<https://www.epa.gov/sites/production/files/2015-06/documents/Field-Measurement-of-ORP.pdf>

Field X-Ray Fluorescence Measurement

SESDPROC-107-R3

https://www.epa.gov/sites/production/files/2016-01/documents/field_xrf_measurement107_af.r3.pdf

Global Positioning System

SESDPROC-110-R4

https://www.epa.gov/sites/production/files/2015-10/documents/global_positioning_system110_af.r4.pdf

Groundwater Level and Well Depth Measurement

SESDPROC-105-R2

<https://www.epa.gov/sites/production/files/2015-06/documents/Groundwater-Level-Measurement.pdf>

B-4 Sample Handling and Custody Requirements

CSSS PSAWS and SIs performed under this QAPP will use EPA's Scribe software for sample control and for producing chain-of-custody reports. A standardized electronic data deliverable (EDD) format will be used to submit the environmental sampling data. We will also use the DARTER utility for uploading project information to EPA.

Environmental Data Submission

SESDGUID-106-R0

<https://www.epa.gov/sites/production/files/2015-06/documents/Environmental-Data-Submission.pdf>

EPA Sample and Evidence Management Operating Procedures will be followed for proper sample record control.

Sample and Evidence Management

SESDPROC-005-R2

<https://www.epa.gov/sites/production/files/2015-06/documents/Sample-and-Evidence-Management.pdf>

FDEP staff and contractors will also comply with FDEP SOP for General Sampling and Documentation procedures, which provides sample control and chain-of-custody requirements.

General Sampling

FDEP SOP FS 1000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

General Aqueous Sampling

FDEP SOP FS 2000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Documentation

FDEP SOP FD 1000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

CSSS staff work cooperatively with FDEP State Contractors and EPA's SEDS/Contractors staff to properly label and package all samples for shipment to the CLP laboratory and to generate appropriate chain-of-custody paperwork to accompany the samples.

B-5 Analytical Methods Requirements

The EPA Region 4 Laboratory or CLP performs all laboratory analysis for the CSSS. The CLP is implemented by EPA, analytical method requirements can be found at <https://www.epa.gov/clp/what-are-superfund-contract-laboratory-programs-methods-analysis>. Samples submitted to the Region 4 Laboratory are analyzed in accordance to EPA's Analytical Services Branch Laboratory Operations and Quality assurance manual, https://www.epa.gov/sites/production/files/2016-06/documents/loqam_042816.pdf.

B-6 Quality Control Requirements

Quality control samples collected under the site assessment program usually consist of duplicate samples, trip blanks and performance evaluation samples. Duplicate samples are collected for every twenty samples collected. For samples requiring volatile organic compound analysis, trip blanks are sent to the laboratory with every shipment of samples. Performance evaluation samples for the CLP laboratory are supplied by EPA and are submitted with sample shipments. The acceptance criteria for QC samples are specified in the CLP scope of work (SOW) and the SEDS SOPs. This is not a requirement for the Region 4 SEDS Laboratory.

SEDS QA section performs quality control on CLP data collected for the CSSS program following the Data Validation Standard Operating Procedures for ICP-AES, ICP-MS, Cyanide and Mercury (Revision 2.0, September 2, 2011), and Gas Chromatograph/Mass Spectrometer and Gas Chromatograph/Electron Capture Detector (February 16, 2016). Data that is generated by the SEDS Analytical Services Branch is peer reviewed by staff who were independent of the analytical process.

B-7 Instrument/Equipment Testing, Inspection, and Maintenance Requirements

CSSS staff does not maintain any field instrumentation. All field equipment is maintained, inspected, and tested by FDEP State Contractors or EPA's SEDS/Contractor staff.

Laboratory equipment is maintained by the Region 4 Laboratory in accordance with the Analytical Services Branch Laboratory Operations and Quality Assurance Manual and the appropriate vendor/manufacturer instrument or equipment manuals. CLP laboratories maintain testing and maintenance requirements in accordance with their respective Quality Assurance Manuals. The applicable SEDS SOPs for field measurement and sampling

procedures and quality system procedures and guidance documents will be followed for the list of field equipment and supplies commonly used during both FDEP contractor and Joint EPA/FDEP site investigations (Table 2).

Table 2 Equipment & Supplies	
Equipment	Supplies
OVA FID/PID	PPE Latex gloves (not powdered)
Niton® L-XRF Field instrument	PPE Tyvek suits
Pipe Locator	Hard Hat
Turbidity meter	Hearing protection (foam ear plugs)
pH meter	Safety Boots (per ANSI Z41)
Conductivity meter	Safety Glasses
NIST Thermometer or Temperature meter	Sun Block (>SPF30) & Insect Repellant
Electronic water level indicator	Tables
GPS hand Held Unit (WAAS)	First Aid Kit
Magnetometer	Trash bags and visqueen sheeting (Boxes/Rolls)
Leveling telescope, tripod and telescoping survey rod	Folding Chairs
Laptop computer w/ Scribe and Darter software	Overhead cover /Canopy Tent
Digital Camera	Printer Paper and Avery labels (boxes)
Sampling Equipment	Field books (Write in the Rain®)
Submersible Pump	Shipping Supplies
Peristaltic pump (adjustable)	Clear Packing Tape (rolls)
Hand Auger T-handles	Sample coolers
Hand Auger SS extensions	Vermiculite (bags)
Hand Auger SS Buckets	Duct Tape (rolls)
Glass or SS Mixing bowls	Trash bags (39 gallon) boxes
SS spoons	Zip lock bags (1-gallon) boxes
Bailers (SS or Teflon®)	Sample Bottles
Teflon® tubing Rolls	Encore® samplers (5grams)
Tygon tubing (Rolls)	o2si Smart Solutions Sampler kits EPA Method 5035
Sediment scoop (SS) and ext.	40-ml Glass vials
Encore® sampling T-handle	1-liter poly bottles
Decon Supplies	1-liter amber glass bottles
Alconox™ soap (Boxes)	2 oz glass jars (moisture content)
Potable water (gallons)	8oz Glass jars
5-gallon buckets	Mason jars (box)
Isopropanol (bottles)	Preservatives
Aluminum Foil (rolls)	HCL (bottles)
DI/Organic Free water (gals)	HNO ³ (Bottles)
Brushes	NAOH (bottles)
Paper Towels (rolls)	Ice (bags)

Table 2 Equipment & Supplies	
Well Installation Supplies	Miscellaneous
¾" ID PVC casing	Bottled Water/ Sports Drinks
¾" ID PVC pre-pack well screens (20/30 sand pack)	Tool Box
30/65 sand (bags)	Red Pin Flags
Type I & II Concrete Grout (bags)	Orange Spray Paint

Key

SS - Stainless steel
 GPS - Global Positioning Satellite
 WAAS - Wide Area Augmentation System
 OVA - Organic Vapor Analyzer
 PID/FID - Photo Ionization Detector/Flame Ionization Detector

Acceptable criteria for field equipment and supplies listed in Table 2 are addressed in EPA’s Field Branches Quality System and Technical Procedures and in FDEP SOP-001/01 FS 1000-8200 and FT 1000-3000.

<https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches>
<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Preventative and corrective maintenance measures for the sampling equipment and instruments include:

- Pre-inspection and testing of all equipment and instruments prior to field mobilization.
- Assuring all calibration reagents used in the preparation of calibration standards of the instruments are present and in sufficient quantity.
- Calibration and recalibration of all monitoring instruments during the field investigation in accordance with the FDEP-SOP-001/01 FDEP Standard Operating Procedures for field activities, as well as EPA, Region 4 Field Branches Quality System and Technical Procedures.
- Redundancy of equipment by providing backup components of key instruments and equipment.
- Post-inspection and testing of all equipment and instruments prior to future field mobilizations including replenishment of calibration components.

B-8 Instrument/Equipment Calibration and Frequency

Field instrument maintenance, inspection, and testing procedures are addressed in EPA’s Field Branches Quality System and Technical Procedures and in FDEP SOP-001/01 FT 1000 (General Field Testing and Measurement) and FD 1000 (Documentation Procedures). Field instruments are provided by EPA’s SESD/Contractor staff or FDEP State Contractors.

<https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches>
<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

Laboratory equipment is calibrated by the Region 4 Laboratory in accordance with the Analytical Services Branch Laboratory Operations and Quality Assurance Manual and the appropriate vendor/manufacture instrument or equipment manuals. CLP laboratories adhere to the calibration requirements specified in the CLP SOWs.

B-9 Inspection/Acceptance Requirements for Supplies and Consumables

CSSS follows the bottle specifications provided for the CLP requirements. Bottles are supplied through FDEP State Contractors or EPA's SESD/Contractor staff. Containers will meet or exceed the specifications in EPA's "Specifications and Guidance for Contaminant Free Sample Containers" (EPA Publication 9240.0-05A-EPA 540/R-93/051-PB93-953316). A list of bottle requirements is presented in Appendix A. Additional supplies and consumables are generally purchased and maintained by FDEP State Contractors or SESD staff. The list of the routine supplies and consumables used on-site, including field sample collection equipment checklists and their acceptance criteria are included in Region 4 Equipment and Inventory Management SOP SESDPROC-108-R5 (August 13, 2015) and Purchasing of Services and Supplies SOP SESDPROC-015-R5 (July 2, 2015) and DEP-SOP-001/01, FM 1000, Field Planning and Mobilization (July 30, 2014).

Equipment and Inventory Management

SESDPROC-108-R5

https://www.epa.gov/sites/production/files/2015-10/documents/equipment_inventory_and_management108_af.r5.pdf

Purchasing of Services and Supplies

SESDPROC-015-R5

<https://www.epa.gov/sites/production/files/2015-08/documents/purchasing-services-and-supplies.pdf>

Field Planning and Mobilization

DEP-SOP-001/01, FM 1000

<http://www.dep.state.fl.us/water/sas/sop/sops.htm>

B-10 Data Acquisition Requirements for Non-Direct Measurements

CSSS rarely relies on non-directly measured data for the CERCLA site screening process, however on occasion the need to use existing data may arise. Typically, this data would consist of historical monitoring data, or prior assessment data. CSSS will review available information to ensure that samples were collected and analyzed in accordance with their respective SOP's. Additionally, when necessary for the intended use of the data, CSSS will verify and validate existing data in accordance with Chapter 62-160.670, FAC to determine

if data are useable. CSSS may choose not to utilize data or it may provide a statement regarding suspected quality control issues if potential impacts to the obtained data are recognized.

B-11 Data Management

All data generated under the site assessment program becomes part of the specific site file and becomes a reference for the final investigation report. Analytical results are received electronically from SESD, and are stored on the PM's personal computer and in the electronic site file. Reports are delivered to EPA in electronic form via e-mail or on FDEP's FTP web page depending on final report package size. File types that are generally produced for our reports are as follows:

- ❖ Microsoft Word Narratives, Reports, or Checklists
- ❖ ESRI ArcMap Shape Files containing GIS information
- ❖ Digital pictures from site recons or sampling
- ❖ Microsoft Excel data files
- ❖ References
- ❖ Adobe pdf files of analytical data and complete submitted report packages
- ❖ HRS Quickscore files

FDEP enters all site information into a data management system called Oculus™. All file material for each site is being entered into the system. Records are available for FDEP staff and the public to access. Currently, FDEP keeps its documents, records and data permanently regardless of the format. FDEP has a network backup system that in the case of disaster, the backup would be used to restore lost documents, records and data.

<https://depedms.dep.state.fl.us/Oculus/servlet/login>

The FDEP also has an office which handles all inquiries from the public and distributes information according to Florida Law.

C. Assessment and Oversight

C-1 Assessments and Response Actions

The CSSS staff and FDEP State Contractors or EPA's SESD/Contractor staff are responsible for ensuring that all field activities are performed following standard protocols as outlined under this QAPP. As in all fieldwork, problems arise and are handled by the Project Manager in conjunction with senior staff. These problems and their resolutions are properly documented in records and discussed upon return from the field. If possible, improvements are put into place to prevent similar issues in the future.

SESD generally conducts field audits of all FDEP State Contractors as resources permit. If deficiencies are identified, the contractor is notified and corrected while the audit is being performed.

The Region 4 CLP Project Officer (PO) and Quality Assurance Technical Services (QATS) contractor perform annual audits of the laboratories participating in the CLP program. Performance evaluation samples are also submitted for each analytical parameter and case as a means of gauging the laboratory's performance. CLP laboratories are also subject to data tape audits and must analyze quarterly blind samples as part of the overall quality control oversight process for the program.

The SESD laboratory is International Organization for Standardization (ISO) certified/accredited and is subject to triennial on-site audits and participates in a minimum of two proficiency testing studies each year in order to maintain their accreditation status under ISO.

In certain circumstances, it may be necessary to reanalyze an existing sample or to collect a new sample. For the CLP, a sample may be reanalyzed by a laboratory if contamination is detected in laboratory blanks, recovery of an analyte is outside of acceptable ranges, or if the laboratory deems it necessary for other reasons. Samples will also be reanalyzed if blank contamination is above the CRQL, if the initial/continuous calibration verification fails for a cyanide or mercury analysis, or if the Percent Relative Intensity (RI%) of the response in the sample falls outside the acceptable range for the internal standard in an ICP-MS analysis. On rare occasions, samples may need to be recollected. This might occur if it was determined that the samples were not collected in accordance with the appropriate SOP, if samples were determined to be tampered with, if samples are not identifiable because of problems with the chain of custodies, or for other circumstances deemed valid by EPA and the CSSS staff.

Periodic audits may be performed to inform the FDEP and contractors of the extent of their conformance to the field procedure requirements of Chapter 62-160.650, Florida Administrative Code. An audit will be used to establish the implementation of FDEP SOP-001/01, which includes activities such as sample collection, field testing, and required field documentation.

<https://www.flrules.org/gateway/readFile.asp?sid=0&type=1&tid=14838980&file=62-160.650.doc>

C-2 Reports to Management

Quarterly reports are submitted to EPA documenting the progress in meeting the Cooperative Agreement work plan objectives. The reports provide a detailed summary of project activities and expenditures during each quarter and include all tangible deliverables produced during the reporting period. The report also includes a comparison of actual accomplishments to the outputs expected in the CA work plan, reasons for slippage if established outputs were not met and additional pertinent information as necessary. Reports are currently being prepared by Jim McCarthy and are distributed to and reviewed by Corey Hendrix and Chinwe Ozulumba of EPA. A copy is also maintained in the CA file.

D. Data Validation and Usability

D-1 Data Review, Validation, and Verification

Almost all environmental samples collected for laboratory analysis are analyzed either through EPA's CLP or directly through EPA-Athens SESD laboratories. The criteria used to review and validate data are described in Section D-2.

D-2 Validation and Verification Methods

Data review and validation is performed by the EPA Region 4 Environmental Services Assistance Team (ESAT) on all data generated in the SESD laboratory and for all data produced under the CLP. Overview and approval of the validation process is given by QAS. The following SOPs detail the data validation and verification methods that are utilized:

Analytical Services Branch Laboratory Operations and Quality Assurance Manual, April 28th, 2016.

https://www.epa.gov/sites/production/files/2016-06/documents/loqam_042816.pdf

Data Validation Standard Operating Procedures for Organic Data, February 16, 2016.

https://www.epa.gov/sites/production/files/2016-03/documents/qas-sop-0025_data_validation_for_clp_organics.pdf

Data Validation Standard Operating Procedures for Inorganic Data, September 2, 2011.

<https://www.epa.gov/sites/production/files/2015-06/documents/rassop-inorganics-icp.pdf>

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<https://www.epa.gov/sites/production/files/2015-06/documents/rassop-inorganics-cn.pdf>

Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis, February 27, 2014.

<https://www.epa.gov/sites/production/files/2015-06/documents/r4diosop.pdf>

D-3 Reconciliation with User Requirements

As data is received from SESD, it will be evaluated for its usability compared to the site-specific data objectives. Data will be evaluated for its usability by the CSSS project manager and/or contractor, SESD and the EPA Site Evaluation Coordinator. Quality and usability of data will be judged on a number of variables, including the following:

- ❖ Were samples collected at the correct locations?
- ❖ Were samples collected using the appropriate sampling containers and preservative?
- ❖ Were the samples handled properly and did they arrive at the laboratory at 4 °C (degrees Celsius) or less?
- ❖ Were the samples recorded properly on the chain of custody form?
- ❖ Were the correct analyses performed on the sample?
- ❖ Were the QA/QC results within the established limits?
- ❖ Were any problems noted by the laboratory?
- ❖ Were the data usability evaluated based on the data qualifiers flags assigned to non-compliant data points?

If necessary, data will be declared invalid and will not be used for any subsequent calculations or decision-making processes. If invalidated data are considered critical, the project manager in conjunction with EPA may require re-analysis if there is sufficient sample remaining within the required holding time. CSSS and EPA may also decide that recollection and analysis of the compromised sample is more appropriate. CSSS may use “J”, “U” qualified data, and use “UJ” qualified data under limited conditions but do not use “N” or “R” qualified data when completing assessment reports and HRS Scoring. All qualified data will be handled in accordance with the following EPA Guidance Documents:

- ❖ Using Qualified Data to Document an Observed Release and Observed Contamination (EPA 540-F-94-028, OSWER 9285.7-14FS, PB94-963311, November 1996).
<https://semspub.epa.gov/work/HQ/174006.pdf>

Data will also be reconciled based on the data validation reports submitted by EPA. Information addressed in those reports will assist the project manager in determining why data is deemed qualified or invalid. The explanations for qualified and invalid data may be noted in the report if deemed appropriate.

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Appendix A
Sample Collection Requirements for CLP and SESD

Sample Collection Requirements for CLP and SESD

Water Samples



- **Semivolatiles** 1 Matrix Spike/Matrix Spike Duplicate (MS/MSD) /20 samples





Sample Only =   = 2 bottles
 Sample Extra volume

Sample + MS/MSD =     = 4 bottles
 Sample Extra vol MS MSD



(Requirements for SVOA + SIM are the same as SVOA, except when sending SVOA + SIM to the EPA Regional lab include 2 extra bottles for MS/MSD for total of 6 bottles)





- **Pesticides** 1 MS/MSD required per 20 samples

Sample Only =   = 2 bottles
 Sample Extra vol

Sample + MS/MSD =     = 4 bottles
 Sample Extra vol MS MSD

- **PCB's = Polychlorinated Biphenyls** 1 MS/MSD required per 20 samples

Sample Only =   = 2 bottles
 Sample Extra vol

Sample + MS/MSD =     = 4 bottles
 Sample Extra vol MS MSD

* If collecting for all analyses listed above, total will be 6 1L bottles + 6 additional for MS/MSD = 12


Preservative for all above samples = Ice to 4° C

Sample Collection Requirements for CLP and SESD

Water Samples


- **VOA = Volatile Organic Analysis** 1 MS/MSD required per 20 samples

Sample Only =



1- 40ml + 1- 40ml + 1- 40ml = **3 vials**
 Sample Screen Extra vol

Sample + MS/MSD =




1-40ml + 1-40ml + 1-40ml + 1-40ml + 1-40ml + 1-40ml = **6 vials**
 Sample Screen Extra MS MSD Extra

Preservative = HCl to pH<2 + ice to 4° C


- **VOA + SIM (CLP Only) = Volatile Organic Analysis + Selective Ion Monitoring**
 1 MS/MSD required per 20 samples

Sample Only =



1-40ml + 1-40ml + 1-40ml + 1-40ml = **4 vials**
 Sample Extra SIM Extra

Sample + MS/MSD =



1-40ml + 1-40ml + 1-40ml + 1-40ml + 1-40ml + 1-40ml = **6 vials**
 Sample SIM Extra MS MSD Extra

Preservative = HCl to pH<2 + ice to 4° C

(Additional requirements for EPA Regional lab: **Sample: 1 additional bottle for screening; Sample + MS/MSD: 1 additional bottle for screening and 2 additional bottles for MS/MSD of SIM**)

Sample Collection Requirements for CLP and SESD

Water Samples

- **Metals or Metals + Mercury** 1 MS/D required per 20 samples

Sample Only or Sample + MS/D =



Preservative = HNO₃ to pH<2

1-1L poly only

-
- **Cyanide** 1 MS/D required per 20 samples

Sample Only or Sample + MS/D =



Preservative = NaOH to ph>12

1-1L poly only

No additional volume for MS/D

Sample Collection Requirements for CLP and SESD

Soil/Sediment Samples

- **Semivolatiles + Pesticides + PCB's**

1 MS/MSD required per 20 samples

Sample Only =



1- 8oz Glass Sample

Sample + MS/MSD =



1- 8oz Glass Sample + 1- 8oz Glass MS/MSD

- **VOA = Volatile Organic Analysis**

1 MS/MSD required per 20 samples

Sample Only =



3- 5g EnCores®

+



1- 2oz jar for % solids

Sample + MS/MSD =



9- 5g EnCores® +

1- 2oz jar for % solids

- **Metals + Mercury + Cyanide**

1 MS/MSD required per 20 samples

Sample Only or
Sample + MS/MSD =



1- 8oz Glass

Preservative for all above samples = Ice to 4° C