



**SITE SPECIFIC SAMPLING AND ANALYSIS PLAN  
DYMET SITE - RS  
REMOVAL ASSESSMENT**

**Project Information**

|  |  |  |  |
|--|--|--|--|
| TDD No.: 001/S05-0001-16-05-001  | TDD Type: Site Assessment              | Analytical TDD No.: 001/S05-0001-16-05-001 |  |
| Site Name: Dymet Site  | City/County: Muskegon, Muskegon County | State: MI                                  |  |
| SRS Project Mgr.: Raghu Nagam  |  | EPA Project Mgr.: Tricia Edwards           |  |
| Site Lead: <input checked="" type="checkbox"/> US EPA <input type="checkbox"/> State <input type="checkbox"/> PRP _____ <input type="checkbox"/> Other _____ |  |  |  |

**Sampling Information**

**Site Description:**

The Dymet site (Site) is an industrial property located at 1901 Peck Street, Muskegon, Michigan. The Site is bounded to the north by Alpha Avenue, to the south by Holbrook Avenue, to the west by Sanford Street, and to the east by Peck Street. Nearby land uses include recreation, commercial, residential, and industrial.

According to photographs taken by the State of Michigan, there are several abandoned drums at the Site. Photographs indicate the presence of hydraulic oil, sodium cyanide, oxidizer, and nickel powder drums and several other unknown drums. One photograph indicates the presence of liquid in the floor pit. Evidence of several spills inside and one spill outside of the building are documented in the photographs. Photograph captions identify spills as oily or greasy liquid. A photograph of lightweight fibrous brick noted as possible asbestos containing material (ACM) is recorded in the photograph log. No operational history is available at this time.

**Site Background:**

The Site was to be proposed as a Brownfields project by the State of Michigan. However, EPA assistance was requested after drums were observed inside the Site building.

**Sampling Summary (START Role, Collection Method, etc.):**

The Superfund Technical Assessment and Response Team (START) is tasked by U.S. EPA to identify and characterize drum contents, the floor pit liquids, spilled floor solids, potential ACM, evaluate any potential threats, and estimate the volumes of hazardous chemicals/materials present at the Site. START will attempt to collect liquid and solid samples from the drums and the floor pit, other operational areas, and also collect potential ACM samples.

**Problem Statement**

This investigation will focus on collecting liquid and solid samples from drums, floor pit, floor spill areas, and potential ACM to determine if hazardous chemicals are present at the Site. The investigation is also intended to characterize the content and volume of potential hazardous chemicals present at the Site.

**Identify the Decisions**

In order to access the contamination at the site, samples will be collected and analyzed to characterize drum, floor pit, floor spill areas, and ACM encountered at the Site. Therefore, the following primary decisions have been identified:

- (1) Are hazardous chemicals present on the Site?
- (2) Do any of these chemicals pose an immediate threat of fire or explosion?
- (3) Are contaminant concentrations identified above regulatory Toxicity Characteristic guidance values (40 CFR 261.24)?
- (4) Are any of these chemicals ignitable or corrosive per applicable regulations (40 CFR 261.21 through 261.23)?
- (5) Is ACM present on the Site?
- (6) Are poly chlorinated biphenyls (PCBs) present on the Site?
- (7) Do releases of hazardous substances constitute an immediate threat to human health and/or the environment?

**Decision Inputs**

The primary input needed to support the decision making process is reported analytical concentrations of hazardous chemicals above Toxicity Characteristics - regulatory Toxicity Characteristic Leaching Procedure (TCLP) criteria, the hazardous characteristics (corrosivity and ignitability), PCBs, and ACM criteria. Analytical results used in the decision-making process will come from laboratory analyses for TCLP metals, volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), PCBs, asbestos, corrosivity, and ignitability determination. Laboratory analysis of all samples collected from the Site will be performed by NELAP certified commercial laboratory.

**Study Boundaries**

The media of interest includes on-site drums, floor pit, floor spill areas, and potential ACM. The study boundaries include the area inside the building, temporal boundaries such as field investigation dates, turnaround times on analytical results, and physical boundaries such as the extent of the floor pit. The study area is the Site property itself.

- START will collect drum and floor pit liquid waste samples subject to site conditions. The liquid samples will be collected using a drum thief or such similar equipment. These samples will be sent to a laboratory for TCLP metals, TCLP VOCs, TCLP SVOCs and PCBs analyses, and corrosivity and flammability determination. Samples sent to the laboratory for corrosivity determination will be based on field pH measurements.
- START will collect floor spill solid waste samples subject to site conditions. The solid samples will be collected using a dedicated trowel, spoon, or other such sampling

equipment. These samples will be collected from the floor surface and from spilled areas around any leaked drums. Sample locations will be determined through observance of visual discoloration of the area. These samples will be sent to a laboratory for TCLP metals, TCLP VOCs, TCLP SVOCs, and PCBs analyses, and ignitability and corrosivity determination. Samples sent to the laboratory for corrosivity determination will be based on field pH measurements.

- START will collect ACM samples subject to Site conditions. The solid samples will be collected using a dedicated trowel, spoon, or other such sampling equipment. These samples will be collected from potential ACM identified by Michigan accredited asbestos personnel.
- Site assessment activities are scheduled to commence during the week of May 16th, 2016, after approval of this Site Assessment Plan (SAP) and the Health and Safety Plan (HASP) by U.S. EPA. A normal turnaround time from the sample submittal date will be requested of the selected laboratory. An additional three weeks from receipt of laboratory results is expected for START to perform data validation.
- After collection of samples, the property will be restored to as normal conditions as possible.

#### **Sample Collection and Handling Procedures**

All samples will be collected, containerized, preserved, handled, and documented in accordance with the EPA Contract Laboratory Program (CLP) Guidance for Field Samplers (CLPGFS) dated October 2014. Any deviations in sampling procedures specified in this SAP will be documented, including the reason for the deviation, in the field logbooks.

START will collect approximately 6 drum, floor pit, and floor spill samples.(not including QA/QC samples) for TCLP metals, TCLP VOCs, TCLP SVOCs, PCBs, and asbestos analyses, and ignitability and corrosivity determination.

START will collect samples for asbestos analysis based on the evaluation performed by Michigan accredited asbestos personnel.

Information identifying the sample type, location, date, and time will be written on each sample bottle. All collected samples will be immediately preserved in accordance with U.S. EPA guidelines.

Additional Quality Assurance/Quality Control (QA/QC) samples will be collected as required. For every 10 samples collected, one duplicate sample will be collected.

Liquid samples will be collected using a drum thief sampler. Field parameters such as pH readings may be collected using a pH strip. The liquid samples will be collected directly into the glass bottles and filled directly from the drum thief via gravity and capillary action. All field observations and descriptions will be recorded in the logbook.

Solid samples will be collected using dedicated trowels, spoons, or other such sampling equipment, containerized, placed on ice, processed, packaged for shipment and submitted to the selected laboratory for above mentioned analysis. All field observations and descriptions will be recorded in the logbook.

### **Field Sampling Equipment Cleaning Procedures/ Investigation-Derived Waste Management**

The following identifies the types of investigation derived waste (IDW) that could be generated during the investigation. IDW will generally consist of personal protective equipment (PPE) including disposable latex gloves and boot covers and equipment decontamination liquid. PPE is used mainly to prevent cross contamination, provide personnel protection, and provide sanitary conditions during sampling activities. If contact with concentrated wastes occurs, PPE will be double bagged and secured on site until sample analytical results are received.

If in the best professional judgment of the Project Manager, dry PPE can be rendered non-hazardous, it will be double-bagged and deposited in an industrial waste container. All sampling equipment will be cleaned and decontaminated prior to departure from the site.

Date of Sampling Event: May 16<sup>th</sup> and 17<sup>th</sup>, 2016 Sample Shipment Date: May 17<sup>th</sup>, 2016

Data Deadline: Verbal: Normal TAT Hardcopy: 2 weeks

Weather Conditions: Temp (F): Sky Condition: Wind Speed /Direction:

Type of Sampling: ☐ Site Characterization ☐ Disposal Characterization ☐ Confirmation  
☐ Split-Samples ☐ Extent of Contamination ☒ Other: Removal Assessment

Laboratory: Field Tests: MultiRAE® Volatile Organic Compounds (VOCs), pH field test

☐ Mobile:

☐ CLP: \_\_\_\_\_ ☒ Subcontracted: TBD

Required Detection Limits: ☒ Method Quantitation Limits ☒ State Cleanup Values ☒ US EPA PRG Values

☐ Drinking Water ☐ Other \_\_\_\_\_

Table 1 (attached) includes the following information:

- Number of samples collected for each matrix (solid, liquid, etc.)
- Number and size of containers
- Number of QC samples collected for each matrix
- Field and Laboratory analytical methods used for analysis

Sample Locations: To be determined in the field.

### **Approvals**

Signatures:

Date:

US EPA Project Manager: Tricia Edwards/Jeff Kimble

SRS Project Manager: Raghu Nagam

SRS QA Review: Richard Baldino

**Table 1**  
**Sampling Requirements Worksheet**  
**Dymet Site - Removal Assessment**

| Matrix <sup>1</sup>            | Parameter/Method <sup>2</sup>   | Volume and Container <sup>2</sup>                  | No. of Investigative Samples | No. of Quality Control (QC) Samples <sup>3</sup> |     |                          |                         |             |            | Total No. of Samples (Investigative + QC) | Total No. of sample containers |
|--------------------------------|---|--|------------------------------|--|-----|--------------------------|-------------------------|-------------|------------|---|--------------------------------|
|                                |   |  |                              | MS   | MSD | Field Duplicate or Split | Equipment Rinsate Blank | Field Blank | Trip Blank |   |                                |
| Liquid Drum/ Floor Pit Samples |   |  |                              |  |     |                          |                         |             |            |   |                                |
| Liquid                         | TCLP Metals/ SW-846 1311/6010D  | 1 x 1L HDPE  | 3                            |  |     | 1                        |                         |             |            | 4   | 4                              |
| Liquid                         | TCLP VOCs/ SW-846 8260B   | 3 x 40mL VOA Vial                                  | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Liquid                         | TCLP SVOCs/ SW-846 1311/8270C   | 2 x1L Amber glass                                  | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Liquid                         | Flammability & corrosivity SW-846: 1010A, SW-846: 9040B; 9010B or 9012A | 2 x 250mL HDPE                                     | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Liquid                         | PCBs/ SW-846: 8082  | 2 x 1L amber glass bottles with Teflon®-lined caps | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Floor Spill Area Samples       |   |  |                              |  |     |                          |                         |             |            |   |                                |
| Solid material <sup>a</sup>    | TCLP Metals/ SW-846 1311/6010D  | 2 x 4 oz. jar with Teflon®-lined cap               | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Solid material                 | TCLP VOCs/ SW-846 8260B   | 2 x 4 oz. jar with Teflon®-lined cap               | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Solid material                 | TCLP SVOCs/ SW-846 1311/8270C   | 2 x 4 oz. jar with Teflon®-lined cap               | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Solid material                 | Flammability & corrosivity SW-846: 1010A, SW-846: 9040B; 9010B or 9012A | 2 x 4 oz. jar with Teflon®-lined cap               | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| Solid material                 | PCBs/ SW-846: 8082  | 2 x 4 oz. jar with Teflon®-lined cap               | 3                            |  |     | 1                        |                         |             |            | 4   | 8                              |
| ACM Samples                    |   |  |                              |  |     |                          |                         |             |            |   |                                |
| Solid material                 | Asbestos/ EPA 600 R-93-116  | 1 x 8 oz. jar                                      | 3 <sup>b</sup>               |  |     | 1                        |                         |             |            | 4   | 4                              |

Notes:

1 Matrix includes debris, solid, liquid and sludge.

2 Refer to Table 2-2 of the START Region 5 Quality Assurance Project Plan (QAPP) for required sample volumes, containers, preservation techniques and holding times.

3 Refer to the Field Quality Control Requirements of the START Region 5 QAPP.

<sup>a</sup> Solid material refers to the samples collected from the floor spill areas.

<sup>b</sup> Number of investigative samples for asbestos analysis will depend on the evaluation performed by Michigan accredited asbestos personnel.

**REFERENCES**  
**(EXCERPTS FROM REGION 5 QAPP)**

### 2.5.1 Field Quality Control Requirements

Field QC samples will be collected and analyzed to assess the quality of data generated from sampling activities. These samples may include trip blanks, field blanks, equipment rinsate blanks, field duplicates, field split samples, Matrix Spike (MS) samples, Matrix Spike Duplicate (MSD) samples, and matrix duplicate samples. Field QC measurements may include field replicate measurements and checks of instrument responses against QC standards.

Trip blanks are used to assess the potential for sample contamination during handling, shipment, and storage. Trip blanks are sample bottles filled by the analytical laboratory with organic-free water. The trip blanks are sealed and transported to the field; kept with empty sample bottles and then with the investigative samples throughout the field effort; and returned to the laboratory for analysis with the investigative samples. Trip blanks are never opened in the field. One trip blank is usually included within every shipping cooler of liquid samples to be analyzed for VOCs.

Field blanks are samples of the same or similar matrix as the actual investigative samples that are exposed to the sampling environment or equipment at the time of sampling. They are used to assess contamination resulting from ambient conditions. Field blanks are required for liquid matrices. For aqueous samples, field blanks consist of analyte-free water such as degasified organic-free water for VOC analysis, High Performance Liquid Chromatography (HPLC) water for semi-VOC (SVOC) analysis, and de-ionized (DI) or de-mineralized water for inorganic analyses. Field blanks are generally not required for solid matrices but may be collected on a case-by-case basis. Typically, one field blank is collected for every 10 or fewer investigative samples.

Equipment rinsate blanks are collected when sampling equipment is used. These blanks assess the cleanliness of sampling equipment and the effectiveness of equipment decontamination. Equipment rinsate blanks are collected by pouring analyte-free or DI water over surfaces of cleaned sampling equipment that contact sample media. Equipment rinsate blanks are collected after sampling equipment has been decontaminated but prior to being reused for sampling. Equipment rinsate blanks are typically collected for each type of decontaminated sampling equipment.

Field duplicate samples are independent samples collected as close as possible in space and time to the original investigative sample. Immediately following collection of the original sample, the field duplicate sample is collected using the same collection method. Care should be taken to collect the field duplicate sample as close to the location of the original sample as possible. Field duplicate samples can measure how sampling and field procedures influence the precision of an environmental measurement. They can also provide information on the heterogeneity of a sampling location. Typically, field duplicates are collected at a frequency of one for every 10 investigative samples of the same matrix type.

Field split samples are usually a set of two or more samples taken from a larger homogenized sample. The larger sample is usually collected from a single sampling location, but can also be a composite sample. Field split samples can be sent to two or more laboratories and are used to provide comparison data between the laboratories. Regulatory agencies involved in a project may request that field split samples be collected to monitor how closely laboratories are meeting project-specific QA objectives.

MS/MSD samples are typically collected for analysis by organic methods, and also often for analysis by inorganic methods. Solid MS/MSDs usually require no extra volume. Each liquid MS/MSD sample is a single sample, usually collected from a single sampling location at triple the normal sample volume. MS and matrix duplicate samples are typically collected for inorganic analysis. The MS sample and matrix duplicate sample are each a single sample, usually collected from a single location at double the normal sample volume. In the laboratory, MS/MSD samples and MS samples are spiked with known amounts of analytes. Matrix duplicate samples are not spiked. Analytical results of MS/MSDs are used to measure the precision and accuracy of the laboratory organic (or inorganic) analytical program and MSs are used to

measure the accuracy of the inorganic analytical program. Matrix duplicate samples are used to measure the precision of the inorganic analytical program. Each of these QC samples is typically collected and analyzed at a frequency of one for every 20 investigative samples per matrix.

QC checks for field measurements will consist primarily of initial and continuing calibration checks of field equipment. When applicable, QC check standards independent of the calibration standards will be used to check equipment performance. For example, when checking the accuracy of field equipment such as pH meters, a standard buffer solution independent of the calibration standards may be used. Precision of field measurements will usually be checked by taking replicate measurements. To the extent possible, SRS will use U. S. EPA-approved field methods. If approved methods are not available, SRS's own Standard Operating Procedures or Practices (SOPs) will be referenced in the project-specific QAPP. The types and frequencies of field QC measurements and the QC limits for these measurements will be specified in the project-specific QAPP.



Table 2-1.SRS SOPs

| Standard Operating Practice Topic  | SOP No     |
|--|------------|
| <b>FIELD PREPARATION</b>   | <b>001</b> |
| Site Access and Clearance  | 001A       |
| <b>FIELD RECORDS &amp; DOCUMENTATION</b>   | <b>002</b> |
| Field Records and Documentation  | 002A       |
| Photo-documentation  | 002B       |
| <b>GEOPHYSICAL INVESTIGATION METHODS</b>   | <b>003</b> |
| Setting Up a Geophysical Survey Grid   | 003A       |
| Electrical Resistivity Techniques  | 003B       |
| EM31 Terrain Conductivity Meter  | 003C       |
| EM61 High Sensitivity Metal Detector   | 003D       |
| Magnetic Geophysical Survey  | 003E       |
| Seismic Refraction Survey  | 003F       |
| Ground Penetrating Radar   | 003G       |
| <b>SURVEYING TECHNIQUES</b>  | <b>004</b> |
| Land Surveying Techniques (including GPS)  | 004A       |
| <b>FIELD SCREENING &amp; FIELD ANALYTICAL METHODS</b>                                | <b>005</b> |
| Standard Field Parameter Measurements  | 005A       |
| Soil Field Screening Techniques  | 005B       |
| Lead Paint Testing Using XRF   | 005C       |
| Heavy Metals Testing Using XRF   | 005D       |
| <b>SURFICIAL MATERIAL SAMPLING TECHNIQUES</b>  | <b>006</b> |
| Sediment Sampling  | 006A       |
| Surface Soil Sampling  | 006B       |
| Surface Water Sampling   | 006C       |
| Concrete Sampling  | 006D       |
| Wipe Sampling for Lead Paint   | 006E       |
| Air Sampling – SVE/VEP Pilot Tests   | 009D       |
| Air Sampling using XRF   | 009E       |
| Air-borne Asbestos Fibers Sampling   | 009F       |
| MicroVac Dust Sampling for Asbestos  | 009G       |
| <b>ENVIRONMENTAL SAMPLE MANAGEMENT</b>   | <b>010</b> |
| Sample containers, Preservatives, and Holding Times ( <i>Project-specific Only</i> ) | 010A       |
| Soil Sample Preservation   | 010B       |
| Sample Labeling, Control and Shipping  | 010C       |
| <b>EQUIPEMENT MANAGEMENT &amp; DECONTAMINATION</b>                                   | <b>011</b> |
| Decontamination Procedures   | 011A       |
| <b>IDW MANAGEMENT</b>  | <b>012</b> |

**TABLE 2-2**  
**Required Sample Volumes, Containers, Preservation Techniques, and Holding Time**

| Matrix | Parameter  | Analytical Method <sup>a</sup>                                    | Volume and Container                                     | Preservation Techniques   | Holding Time <sup>b</sup><br>(Extraction/Analysis) |
|--------|--|---|--|---|--|
| Water  | Volatile organic compounds (VOC)                       | SW-846: 8015B, 8021B, 8260B<br><br>CLP: OLC03.2, OLM04.3, SOM01.1 | Three 40-mL glass vials with Teflon®-lined septum        | To pH # 2 with hydrochloric acid; sodium thiosulfate if residual chlorine; store at 4°C | NA/14 days   |
| Water  | Semi-volatile organic compounds (SVOC)                 | SW-846: 8270C<br><br>CLP: OLC03.2, OLM04.3, SOM01.1               | Two 1,000-mL amber glass bottles with Teflon®-lined caps | Sodium thiosulfate if residual chlorine present; store at 4°C                           | 7 days/40 days                                     |
| Water  | Pesticides and herbicides                              | SW-846: 8081A, 8151A<br><br>CLP: OLC03.2, OLM04.3, SOM01.1        | Two 1,000-mL amber glass bottles with Teflon®-lined caps | Sodium thiosulfate if residual chlorine present; store at 4°C                           | 7 days/40 days                                     |
| Water  | Polychlorinated biphenyls (PCB)                        | SW-846: 8082<br><br>CLP: OLC03.2, OLM04.3, SOM01.1, CBC01.0       | Two 1,000-mL amber glass bottles with Teflon®-lined caps | Sodium thiosulfate if residual chlorine present; store at 4°C                           | 7 days/40 days                                     |
| Water  | Dioxins and furans                                     | SW-846: 8280A, 8290<br><br>CLP: DLM02.0                           | Two 1,000-mL amber glass bottles with Teflon®-lined caps | Store at 4°C  | 30 days/45 days                                    |
| Water  | Metals (except mercury)                                | SW-846: 6010B, 6020<br><br>CLP: ILM05.3                           | One 1,000-mL glass or polyethylene bottle                | To pH < 2 with nitric acid (HNO <sub>3</sub> ); store at 4°C                            | NA/180 days  |
| Water  | Mercury  | SW-846: 6010B, 7470A<br><br>CLP: ILM05.3                          | One 1,000-mL glass or polyethylene bottle                | To pH # 2 with HNO <sub>3</sub> , store at 4°C  | NA/28 days   |
| Water  | Toxicity characteristic leaching procedure (TCLP) VOCs | SW-846: 1311/8260B  | One 4-ounce glass bottle                                 | Store at 4°C  | 14days/14days                                      |

**TABLE 2-2 (Continued)**  
**Required Sample Volumes, Containers, Preservation Techniques, and Holding Time**

| Matrix        | Parameter                  | Analytical Method <sup>a</sup>                     | Volume and Container   | Preservation Techniques                 | Holding Time <sup>b</sup><br>(Extraction/Analysis)     |
|---------------|----------------------------|--|--|---|--|
| Water         | TCLP SVOCs                 | SW-846: 1311/8270C                                 | One 1,000-mL glass bottle  | Store at 4°C                            | 14 days/7 days/40 days <sup>d</sup>                    |
| Water         | TCLP Metals                | SW-846: 1311/6010B                                 | One 1,000-mL glass bottle  | Store at 4°C                            | 180 days/180 days<br><br>28 days/ 28 days<br>(mercury) |
| Water         | Ignitability               | SW-846: 1010, 1020A                                | One 4-ounce glass jar  | Store at 4°C                            | NA   |
| Water         | Corrosivity                | SW-846: 9040B                                      | One 4-ounce glass jar  | Store at 4°C                            | NA   |
| Water         | Total and amenable cyanide | SW-846: 9010B, 9012A                               | One 1,000-mL glass or polyethylene bottle  | To pH >12 with NaOH; store at 4°C       | 14 days  |
| Soil/Sediment | VOCs                       | SW-846: 5035, 8260B<br>CLP: OLM04.3, SOM01.1       | (1) Three 40-mL screw-top septum-sealed glass vials, pre-weighted with magnetic stir bars<br>(2) Three 40-mL screw-top septum-sealed glass vials, pre-weighted with magnetic stir bars (two vials to contain 5 mL of water)<br>(3) Three Encore™ samplers containing 5 grams of soil | Freeze from -7 to -15°C or store at 4°C | NA/14 days (if frozen)<br><br>NA/48 hours (if 4°C)     |
| Soil/Sediment | SVOCs                      | SW-846: 8270C<br><br>CLP: OLM04.3, SOM01.1         | One 8-ounce glass jar with Teflon®-lined cap   | Store at 4°C                            | 14 days/40 days  |
| Soil/Sediment | Pesticides, herbicides     | SW-846: 8081A, 8151A<br><br>CLP: OLM04.3, SOM01.1  | One 8-ounce glass jar with Teflon®-lined cap   | Store at 4°C                            | 14 days/40 days  |
| Soil/Sediment | PCBs                       | SW-846: 8082<br><br>CLP: OLM04.3, SOM01.1, CBC01.0 | One 8-ounce glass jar with Teflon®-lined cap   | Store at 4°C                            | 14 days/40 days  |

**TABLE 2-2 (Continued)**  
**Required Sample Volumes, Containers, Preservation Techniques, and Holding Time**

| Matrix        | Parameter                  | Analytical Method <sup>a</sup>         | Volume and Container                            | Preservation Techniques | Holding Time <sup>b</sup><br>(Extraction/Analysis) |
|---------------|----------------------------|--|---|-------------------------|--|
| Soil/Sediment | Dioxins and furans         | SW-846: 8280A, 8290<br>CLP: DLM02.0    | One 8-ounce glass jar with Teflon®-lined cap    | Store at 4°C            | 30 days/45 days                                    |
| Soil/Sediment | Metals (except mercury)    | SW-846: 6010B, 6020<br>CLP: ILM05.3    | One 8-ounce glass jar                           | Store at 4°C            | NA/180 days  |
| Soil/Sediment | Mercury                    | SW-846: 6010B, 7471A<br>CLP: ILM05.3   | One 8-ounce glass jar                           | Store at 4°C            | NA/28 days   |
| Soil/Sediment | TCLP VOCs                  | SW-846: 1311/8260B                     | Three 40-mL screw-top septum-sealed glass vials | Store at 4°C            | 14 days/14 days                                    |
| Soil/Sediment | TCLP SVOCs                 | SW-846: 1311/8260B                     | One 8-ounce glass jar                           | Store at 4°C            | 14 days/7 days/14 days <sup>c</sup>                |
| Soil/Sediment | TCLP Metals                | SW-846: 1311/8260B                     | One 8-ounce glass jar                           | Store at 4°C            | 180 days/180 days<br>28 days/28 days (mercury)     |
| Soil/Sediment | Ignitability               | SW-846: 1010 or 1020A                  | One 4-ounce glass jar                           | Store at 4°C            | NA   |
| Soil/Sediment | Corrosivity                | SW-846: 9045C                          | One 4-ounce glass jar                           | Store at 4°C            | NA   |
| Soil/Sediment | Total and amenable cyanide | SW-846: 9010B or 9012A<br>CLP: ILM05.3 | One 8-ounce glass jar                           | Store at 4°C            | NA   |
| Waste         | VOCs                       | SW-846: 8260B<br>CLP: OLM04.3, SOM01.  | One 8-ounce glass jar with Teflon®-lined cap    | Store at 4°C            | NA/14 days   |
| Waste         | SVOCs                      | SW-846: 8270C<br>CLP: OLM04.3, SOM01   | One 8-ounce glass jar with Teflon®-lined cap    | Store at 4°C            | 14 days/40 days                                    |

TABLE 2-2 (Continued)

Required Sample Volumes, Containers, Preservation Techniques, and Holding Time

| Matrix | Parameter                  | Analytical Method <sup>a</sup>         | Volume and Container                         | Preservation Techniques | Holding Time <sup>b</sup><br>(Extraction/Analysis) |
|--------|----------------------------|--|--|-------------------------|--|
| Waste  | Pesticides, herbicides     | SW-846: 8081A, 8151A<br>CLP: OLM04.3   | One 8-ounce glass jar with Teflon®-lined cap | Store at 4°C            | 14 days/40 days                                    |
| Waste  | PCBs                       | SW-846: 8082<br>CLP: OLM04.3, CBC01.0  | One 8-ounce glass jar with Teflon®-lined cap | Store at 4°C            | 14 days/40 days                                    |
| Waste  | Dioxins and furans         | SW-846: 8280A, 8290<br>CLP: ILM05.3    | One 8-ounce glass jar with Teflon®-lined cap | Store at 4°C            | 30 days/45 days                                    |
| Waste  | Metals (except mercury)    | SW-846: 6010B, 6020<br>CLP: ILM05.3    | One 8-ounce glass jar                        | Store at 4°C            | NA/180 days  |
| Waste  | Mercury                    | SW-846: 6010B, 7471A<br>CLP: ILM05.3   | One 8-ounce glass jar                        | Store at 4°C            | NA/28 days   |
| Waste  | TCLP VOCs                  | SW-846: 1311/8260B                     | One 4-ounce glass jar                        | Store at 4°C            | 14 days/14 days                                    |
| Waste  | TCLP SVOCs                 | SW-846: 1311/8260B                     | One 8-ounce glass jar                        | Store at 4°C            | 14 days/7 days/14 days <sup>c</sup>                |
| Waste  | TCLP Metals                | SW-846: 1311/6010B                     | One 8-ounce glass jar                        | Store at 4°C            | 180 days/180 days<br><br>28 days/28 days (mercury) |
| Waste  | Ignitability               | SW-846: 1010 or 1020A                  | One 4-ounce glass jar                        | Store at 4°C            | NA   |
| Waste  | Corrosivity                | SW-846: 9040B                          | One 4-ounce glass jar                        | Store at 4°C            | NA   |
| Waste  | Total and amenable cyanide | SW-846: 9010B or 9012A<br>CLP: ILM05.3 | One 8-ounce glass jar                        | Store at 4°C            | NA   |

Notes:

ml = Milliliter

<sup>a</sup> Analytical methods listed are from either SW-846 (Test Methods for Evaluating Solid Waste) or CLP (Contract Laboratory Program) Statements of Work.<sup>b</sup> Holding time is measured from the time of sample collection to the time of sample extraction and analysis.<sup>c</sup> NA = Not applicable<sup>d</sup> SVOCs holding time for Method 1311 include time to extraction/leachate/analysis of sample.