

## **C.0 PERMIT ATTACHMENT C WASTE ANALYSIS PLAN**

### **C.1 INTRODUCTION**

This waste analysis plan (WAP) contains requirements and procedures for the characterization of the chemical and physical nature of hazardous wastes generated, stored, or otherwise managed at the Advanced Chemical Treatment LLC.'s (ACT's) Treatment and Storage Facility (the Facility).

### **C.2 PERMITTED AND PROHIBITED WASTE**

The Facility shall only accept and manage those hazardous wastes listed in Part A of the Facility's Permit Attachment B (Authorized Wastes). In addition, only hazardous waste which meets the land disposal restrictions (LDR) treatment standards identified in 40 CFR Part 268, Subpart D shall be accepted.

The facility is prohibited from accepting for treatment, storage, and otherwise management of hazardous and other wastes listed in Permit Part 2, Section 2.2.4.

### **C.3 PRE-ACCEPTANCE PROCEDURES FOR OFF-SITE WASTE**

Before a waste stream is accepted, all off-site generators will be required to provide a complete waste characterization as described below (Section C.3.2). After evaluating the information supplied by the generator, the Facility shall send a representative sample of the waste to a laboratory for analysis and will evaluate the analytical results (Section C.3.4). Finally, the Facility will notify the generator that the Facility will accept the waste stream (Section C.3.5).

#### **C.3.1 Waste Characterization Information Provided by the Generator**

The generator must provide the Permittee with the following waste characterization information for each waste stream:

- i. a completed Waste Profile Sheet signed by an authorized agent of the generator. This form may be changed if the Facility believes that more information is warranted or if there are changes in regulations governing the Facility;
- ii. other documentation that supports the information presented on the Waste Profile Form, such as safety data sheets (SDS);
- iii. a description of the process that generated the waste;
- iv. all other supporting data on testing, tracking, and recordkeeping required by 40 CFR § 268.7;
- v. all required certifications;
- vi. waste analysis data used to characterize the waste documentation and/or process knowledge documentation, as applicable; and

If waste analysis is used to characterize the waste, the generator must supply, at a minimum, the following waste analysis data for each representative sample:

- a. identification of the sample medium (e.g., liquids, sludge, soil).
- b. information about waste stratification.
- c. final laboratory reports including case narratives, waste analyses, and QA/QC analyses; and
- d. identification of the laboratory that performed the waste analyses.

The Facility shall evaluate the way each representative sample was obtained in order to determine whether it is truly representative of the waste stream. The Facility shall evaluate the information provided by the supplier and will use the documents listed below for guidance:

- The Sampling Plan, Section C.6 of this Permit Attachment,
- Standard Practice for Sampling Waste and Soil for Volatile Organics (American Society for Testing and Materials (ASTM) D4547-91),
- Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, (US Environmental Protection Agency Publication SW-846, latest edition), and
- RCRA Sampling Procedures Handbook (EPA Region VI).

In certain cases, generators may meet waste analysis requirements by supplying Acceptable Knowledge (AK) to the Facility, including process knowledge and waste analysis. Process knowledge includes detailed information of a waste obtained from existing published or documented waste analysis data or studies on hazardous wastes generated by processes similar to those which generated the waste, or industry or trade association hazardous waste profile studies, or EPA documents. Examples of waste streams where process knowledge may be adequate for characterization are K-listed wastes (hazardous wastes from specific sources), which are identified by comparing the specific process that generated the waste to those processes listed in 40 CFR § 261.32. The application of process knowledge is appropriate where the physical/chemical make-up of the waste is well known and consistent.

### **C.3.2 Paperwork Evaluation**

ACT shall evaluate all the waste characterization paperwork to determine if it adequately represents the physical and chemical characteristics of the waste stream and whether the waste stream is appropriate for management at the Facility. As part of the pre-shipment process, the Facility shall work with the off-site waste generators to ensure that all necessary waste analyses and waste characterization information are provided to meet the applicable acceptance requirements.

If waste analysis was used to characterize the waste, the Facility shall evaluate the data to determine that:

- i. appropriate extraction and preservation techniques were used;

- ii. appropriate sampling strategies were used;
- iii. appropriate representative sample types were collected;
- iv. appropriate parameters were selected for analysis;
- v. appropriate analytical methods were used;
- vi. recommended holding times were met;
- vii. detection limits were below applicable standards (e.g., the LDR standards); and
- viii. the quality of the analytical data is up to date, valid, and adequate for making a waste determination based on an evaluation of the final laboratory reports.

If the data supplied are not adequate to provide a complete characterization of the waste stream, the Facility will either require additional information from the generator or will not accept the waste.

All the waste characterization information supplied by the generator shall be maintained in the Facility's Operating Record. In addition, the Facility's evaluation of this information and the results of the independent analysis shall be maintained in the Operating Record.

#### **C.3.3. a Major Discrepancies**

Major discrepancies include the following:

- i. analytical results indicating that the generator applied an incomplete or incorrect waste code to the waste stream;
- ii. analytical results indicating that the generator submitted incomplete or incorrect information on the LDR Notification Form;
- iii. analytical results including constituents or underlying hazardous characteristics that are not explained by a description of the process; and
- iv. any other information indicating that the waste stream was not characterized properly.

In the event of a significant discrepancy, the Facility shall reject the paperwork and require the generator to analyze the waste in accordance with a sampling plan that is consistent with the guidance in the EPA document *SW-846, Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods*, Chapter 9, or the replacement document, "RCRA Waste Sampling Technical Guide SW-846". The Facility shall require the generator to resubmit the waste characterization information listed in Section C.3.1 and one or more additional representative samples for chemical analyses.

### **C.3.3.b Minor Discrepancies**

Minor discrepancies include any other waste characterization discrepancies that do not potentially affect hazardous waste code assignments, waste treatment, or the presence of prohibited items. In the event of a minor discrepancy, the Facility shall work with the generator to resolve the discrepancy. For example, uncertainties regarding whether sorbents are present will be handled as minor discrepancies. The Facility shall contact the generator if the Waste Profile Form does not indicate whether a sorbent was added to the waste, or if it indicates that a sorbent was added but did not specify the name and type of sorbent and whether it is biodegradable. If the generator cannot provide this documentation, the waste must be tested to determine whether it contains a biodegradable sorbent. If the waste is determined to contain a biodegradable sorbent, it shall be rejected.

### **C.3.3.c Additional Waste Acceptance Conditions**

In addition to complete characterization of the waste, ACT shall also evaluate the waste to ensure that it can be managed at the Facility. Waste analysis shall be conducted where necessary to ensure that:

- i. the waste is not prohibited (e.g., the waste is included in Part A of this application, is not listed in Permit Part 2.2.4 as a prohibited waste or does not exceed allowable PCB concentrations and also does not include dioxins).
- ii. the LDR treatment standards contained in 40 CFR Part 268, Subpart D, including the standards for underlying hazardous constituents, are met if applicable.
- iii. the general requirements contained in 40 CFR § 264.17 for ignitable, reactive, and/or incompatible waste are met; and
- iv. the waste does not contain biodegradable sorbents, as required in 40 CFR § 264.314(d).

All major and minor discrepancies, discrepancy resolutions, and compliance with the additional waste acceptance conditions listed above shall be documented in writing and maintained in the Facility Operating Record.

### **C.3.4 Notification and Approval of Waste Shipment**

After the Facility has determined that the waste stream meets the pre-acceptance requirements, the Facility shall send a written notification to the generator. This notification shall include the following:

- i. a statement that the waste can be accepted at the Facility.
- ii. a unique identifier number for the waste stream, assigned by the Facility.
- iii. instructions to put the unique identifier number on all shipment paperwork and all future waste characterization data that are submitted for the waste stream.

- iv. a requirement to notify the Facility at least 24 hours before shipping, so that the Facility can ensure that there are enough resources and capacity to manage the shipment when it arrives.
- v. A statement that the Facility reserves the right to delay acceptance of shipments beyond the 24-hour time frame.
- vi. instructions to ensure safe management of the waste (e.g., packaging, or labeling requirements not otherwise required by regulations).
- vii. a requirement that the generator retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to characterization of the waste stream for five years from the date that the waste was last sent to the Facility.

Once the Facility has completed pre-acceptance requirements and has determined that a waste stream is acceptable for storage at the Facility, the on-site laboratory will be notified in writing. The notification shall include the waste type, waste stream identifier, physical form, packaging, and how the waste is to be managed. This information shall be used by the laboratory as follows:

- the waste stream identifier shall be used to track the samples in relation to the waste stream;
- the waste type shall be used to help determine the analytical methods to be employed for fingerprint analysis; and
- the physical form and packaging will determine the most applicable sampling methods.

Using this information, the on-site laboratory shall designate a sampling and analytical protocol specific to each waste stream as described in Section C.6. The unique identifier number for the waste stream shall be used to track all activities for the waste stream. Individual shipments from within the waste stream shall receive an additional identifier to enable the Facility to tie information back to the specific shipment as well as to the waste stream.

## **C.4 PROCEDURES FOR INCOMING WASTE ACCEPTANCE**

Prior to accepting incoming waste, the Facility shall review the waste shipment paperwork and resolve paperwork discrepancies (Section C.4.1) and visually inspect the waste inside the containers and roll-off boxes (Section C.4.2). Waste analyses for incoming shipments shall be conducted as described in Section C.4.3 of this waste Analysis Plan. Based on the Facility's evaluation of the waste stream, a determination to accept or reject the waste shall be made.

### **C.4.1 Paperwork Review**

Upon receipt of a waste shipment, the vehicle shall be routed to a parking area outside the Facility gate while documents are reviewed. The Facility shall:

- i. review all paperwork for completeness to verify that all required documentation is present and signed as necessary.
- ii. compare the information in the manifest, the Waste Profile Form, the LDR Notification Form, and pre-acceptance waste characterization information for consistency.
- iii. compare the number of containers, the volume or weight of the waste, and the waste labels on each container with the manifest for consistency; and
- iv. review all paperwork to verify that the unique identifier number for the waste stream is on all the waste shipment paperwork and all accompanying waste characterization data.

If the Facility determines that the paperwork is complete and consistent, the waste shipment shall be routed to the truck sampling station, a staging area inside the Facility gate.

If the Facility determines that the paperwork is incomplete or inconsistent, the waste shipment shall not be accepted. The Facility shall resolve significant manifest discrepancies in accordance with 40 CFR § 264.72. Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste contained in the shipment received at the Facility.

Major discrepancies in quantity are:

- *Bulk waste:* variations greater than 10 percent in weight; and
- *Batch waste:* any variation in piece count, such as a discrepancy of one drum in a truckload.

Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid or toxic constituents not reported on the manifest or shipping paper.

All discrepancy resolutions shall be documented in writing and maintained in the Facility Operating Record. If manifest discrepancies are not resolved within 15 days of identifying the discrepancy, waste shall not be accepted for disposal, and the waste shall be returned to the sender or transported to an appropriate off-site facility.

#### **C.4.2 Visual Inspection**

After all the paperwork discrepancies have been resolved, the Facility shall physically open and inspect the waste inside the drums and roll-off boxes for color, similar physical appearance (e.g., single phase, bi-layer, or multi-layer), and physical state (e.g., solid or semi-solid). This information shall be compared with the waste characterization information provided by the generator and the physical appearance of the representative sample. If the color and/or viscosity of bulk wastes (solids and sludges) appear inconsistent, the Facility shall perform additional chemical tests (e.g., composite samples may be collected from within the different areas of coloration or viscosity).

The Facility shall inspect a minimum of 10 percent of all containers of each hazardous waste stream per shipment (but not less than one container per waste shipment).

The Facility shall physically open all containers of hazardous debris and inspect the contents to ensure that the waste shipment matches the waste that is expected. Hazardous debris may be visually inspected because it is exempted from the representative sample waste analysis requirements discussed in Section C.7.2. This visual inspection must ensure that the waste stream matches the description provided by the generator.

Certain loads may not be sampled, at the discretion of the Facility manager or laboratory supervisor, for environmental and safety reasons (e.g., severe weather which causes unsafe working conditions). In these cases, the generator or his agent shall be required to provide a signed certification that the load conforms to the Waste Profile Form. This variance from established procedure shall be documented in the Facility Operating Record.

If a discrepancy is found, the Facility shall contact the waste generator for resolution (see Section C.4.1). The results of visual inspections and all discrepancy resolutions shall be documented in writing and maintained in the Facility Operation Record. If discrepancies noted during visual examination are not resolved within 15 days of identifying the discrepancy, waste shall not be accepted for disposal, and the waste will either be returned to the sender or transported off-site to an appropriate facility.

#### **C.4.3 Waste Analysis for Incoming Shipments**

Waste analysis for incoming shipments shall include fingerprint tests, and visual verification as described in Sections C.4 and C.5 of this Permit Attachment.

##### **C.4.3.a Fingerprint Test Procedure**

Fingerprint testing is an abbreviated analysis and is used to confirm that an incoming shipment of waste received at the Facility is the actual waste expected and that it matches the expected chemical content for that waste. Fingerprint analysis shall be conducted on each waste stream in each shipment prior to shipment acceptance. Fingerprint analysis shall be conducted generally for parameters that will provide information that can be used to verify that a waste stream received from off-site matches the expected characteristics of the waste.

While the incoming shipment is staged at the sampling station, laboratory personnel or other trained personnel shall review the sampling and laboratory requirements for the specific waste stream. After completion of this review, sampling personnel shall obtain the necessary samples in the manner prescribed in the Sampling Plan under Section C.6 and applicable laboratory requirements. Sampling shall be conducted in accordance with approved site operating procedures. These procedures shall detail the sampling requirements, sample labeling, chain-of-custody requirements, any necessary sample preservation requirements, and other sampling components (Section C.6).

Each waste stream in each shipment shall be sampled in accordance with the following sampling rate, at a minimum:

- *Bulk waste:* one sample shall be collected from each shipment of bulk waste (one shipment of bulk waste is one truck load or one roll-off box). If, upon visual inspection, the color and viscosity of solids or sludges appear inconsistent, the Facility shall obtain additional samples. These samples may be collected from within the different areas of color or viscosity.
- *Batch waste:* one sample shall be collected from each 10 waste drums in each waste stream in each shipment. If there are less than 10 waste drums in the waste stream, one drum shall be sampled. One sample shall be collected from each drum if the waste appears to be inconsistent with the pre-acceptance waste characterization data.

The Facility may increase this sampling rate for any reason. For example, the Facility may decide to collect additional samples if the waste appears to be inconsistent between containers or with the pre-acceptance characterization data. In some instances, the Facility may elect to waive one or more analyses under the following conditions:

- the transported waste is a portion of a continuously shipped, well documented waste stream, such as waste produced from a consistent, non-variable process or contaminated soils from a specific remedial action.
- the waste has been approved for receipt by the NMED on an emergency basis,
- Facility personnel at the point of generation sampled, or oversaw the sampling of, the waste, and the fingerprint test/supplemental analyses have been conducted. (In cases where a generator is sending very large or continual shipments, the Facility may elect to station personnel at the point of generation to obtain samples prior to or during loading of the waste).

Prior to waiving any sampling and analysis requirements, the Facility shall request a variance from the NMED and shall not dispose of the waste until NMED approval is received.

#### **C.4.3.b Annual Waste Analysis Procedure**

As part of the Facility's QA/QC procedures (Section C.7.2), the representative sample analysis for each waste stream from each generator shall be repeated annually. Repeating this pre-acceptance procedure shall ensure that the analysis is accurate and up-to-date and that the waste stream has remained within the operational bounds of the Facility. This annual analysis shall be performed by an independent laboratory. This analysis shall be repeated more frequently if the Facility believes, or has been informed by the generator, that the process generating the waste stream has changed. In the case of a change in the waste generation process the waste stream shall be managed as a new waste stream in accordance with the requirements of this WAP.

#### **C.4.3.c Analysis of Initial Five Shipments**

As part of the Facility's QA/QC procedures, the Permittee shall submit representative samples collected from the first five shipments of each waste stream from each generator for the appropriate

characterization laboratory analyses and compare the test results to the generator supplied data to ensure that discrepancies do not exist between the waste received and generator supplied information. If no significant discrepancy is discovered, then the Permittee shall conduct stratified sampling and analysis for each waste stream from each generator as specified at Permit Part C.4.3.b. If significant discrepancies are discovered, then the Permittee shall analyze each incoming waste shipment from that waste generator until no significant discrepancies are observed for five consecutive shipments.

#### **C.4.4 Waste Acceptance/Rejection Determination**

##### **C.4.4.a Discrepancy Resolution**

Upon completion of the fingerprint analysis, the Permittee shall make a determination on whether or not the wastes are consistent with the pre-acceptance waste characterization information and within the acceptance limits of the Facility. If any of the analyses determine the waste is not within the operational acceptance limits for disposal, the waste shall not be accepted by the Facility. If the results of the analysis conflict with the waste profile information, the Facility shall take any or all of the following actions:

- i. resample the waste, if necessary, and perform a second fingerprint test. The Facility manager has discretion to accept the waste if the second fingerprint results match those on the waste profile sheet. The discrepancy between results shall be explained and included in the Facility Operating Record for that waste stream or shipment.
- ii. perform further characterization as necessary to verify the composition of the waste by sending a sample to a qualified independent analytical laboratory.
- iii. reject the entire waste shipment or the nonconforming portion of the shipment.

If discrepancies between fingerprint analysis and waste stream characterization information exist upon completion of discrepancy resolution, the waste shall be rejected by the Facility and the rejected waste returned to the generator or, alternately, the Facility will ensure proper transport of the waste at to an appropriate off-site facility within 30 days of the waste rejection.

##### **C.4.4.b Shipment Acceptance Procedures**

Once the decision has been made to accept a waste shipment, the appropriate papers shall be signed for the generator, and the waste stream will be transported to the Treatment, Storage, Disposal Facility (TSDF).

#### **C.5 WASTE ANALYSIS OF HAZARDOUS WASTE GENERATED OFF-SITE**

Tables C-1 through C-3 specify parameters which the waste will be analyzed for, to ensure that all criteria for waste acceptance and management are met. The Facility will use approved SW-846 or ASTM analytical methods, or alternate NMED- approved methods. If an alternative method not contained in SW-846 is to be used, the Facility shall demonstrate that such alternative method is equivalent or superior to the approved method contained in SW-846 or this WAP. Alternative methods shall be submitted to the NMED at least 30 days prior to the sample collection event.

**TABLE C-1: Parameters and Methods for Pre-Acceptance, Representative Sample Analysis**

| Waste Parameters                | Extraction or Sample Preparation | Analysis Methods <sup>a</sup>     | Rationale for Selection                                                                                                                                        |
|---------------------------------|----------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Volatile organic compounds      | 5021, 5031<br>5032, 5035         | 8260 and 8260B                    | Determine if the waste is potentially listed or if the concentration of any volatile organic compound exceeds the limits in 40 CFR § 261.24                    |
| Semi volatile organic compounds | 3510<br>3520                     | 8270                              | Determine if the waste is potentially listed or if the concentration of any semi volatile organic compound exceeds the limits in 40 CFR § 261.24.              |
| Organochlorine pesticides       | 3510<br>3520                     | 8081/8270                         | Indicates if the material is chlorinated. The information is used to check conformance with Waste Profile Sheets (WPS) as needed, as well as disposal options. |
| PCBs                            | Prohibited                       | Prohibited                        | To determine PCB content in order to verify WPS information and assess applicability under the Toxic Substances Control Act (TSCA).                            |
| TCLP: Organics                  | 1311                             | 8260/8270                         |                                                                                                                                                                |
| Chlorinated herbicides          | 8151 <sup>b</sup>                | 8151                              | Indicates if the material is chlorinated. The information is used to check conformance with Waste Profile Sheets (WPS) as needed, as well as disposal options. |
| Reactive cyanide                |                                  | Prohibited                        |                                                                                                                                                                |
| Reactive sulfide                |                                  | 9034                              |                                                                                                                                                                |
| Ignitability/BTU Value          |                                  | 1010/1030,                        | Indicates the fire-producing potential of the waste and helps Facility determine whether the waste is ignitable.                                               |
| Energy Content                  |                                  | ASTM D240                         | To determine the BTU values of liquid waste streams by Bomb Calorimeter.                                                                                       |
| Flashpoint                      |                                  | 1010/1020 A                       | Indicates the fire-producing potential of the waste and determines whether the waste is ignitable.                                                             |
| Corrosivity to metals           |                                  | 1110                              | Indicates the potential of the waste to corrode metals and determines whether the waste is corrosive.                                                          |
| Oxidizer Screen                 |                                  | 9040 (Solid), ASTM-D4981 (liquid) | A general qualitative test used to determine if a waste is an oxidizer, which must be segregated, to avoid potential reaction with a wide range of wastes.     |
| pH                              |                                  | 9040C                             | Used to determine the acidity and alkaline levels in aqueous liquids.                                                                                          |
| RCRA Metals                     | 3000<br>1311                     | 6000 series<br>7000 series        | Determines if the concentrations of Arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium exceed the limits in 40 CFR § 261.24               |

a Most current revision of SW-846 will be used.

b Method 8151 contains the extraction, cleanup, and determinative procedures for these analytes.

**TABLE C-2. Tests And Analytical Methods for Fingerprint Samples**

| Test                          | Method and Description                                                 | Qualitative or Quantitative |
|-------------------------------|------------------------------------------------------------------------|-----------------------------|
| Flammability potential screen | ASTM D4982                                                             | Qualitative                 |
| Free liquids                  | Paint filter test, penetrometer, or visual/9095                        | Qualitative                 |
| Ignitability                  | Match test, Pensky-Martens closed cup or Set-a-flash 1010/1020A        | Qualitative                 |
| Miscibility                   | 50/50 mixture with water                                               | Qualitative                 |
| Chlorinated solvents          | Colorimetric test or Beilstein test                                    | Quantitative                |
| PCBs                          | Colorimetric test/8080                                                 | Quantitative                |
| Specific gravity              | Hydrometer/Method dependent on material composition and physical state | Quantitative                |
| Sulfide screen                | ASTM 4978                                                              | Quantitative                |

**TABLE C-3. Additional Tests and Analytical Methods**

| Test                   | Reference                  | Description                                                                                                                                                        |
|------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Paint filter test      | EPA 9095                   | This test will determine the free liquids that are contained within the waste matrix and will be used as a control parameter for wastes that are to be landfilled. |
| Heavy metals           | 6010A/7470                 | This test determines the concentration of heavy metals.                                                                                                            |
| Total organic halogens | EPA 9020                   | Tests if the waste potentially contains LDR constituents above BDAT standards for California List wastes.                                                          |
| PCBs                   | Colorimetric test/EPA 8080 | Tests if PCBs are contained in the waste matrix and determines the concentration.                                                                                  |
| IR scan                | ASTM D2621, D4053          | Tests for the presence of organics and provides a rough estimate of their concentration.                                                                           |

a Analytical method chosen is dependent upon the constituent being determined (i.e., Organics 8260, 8270, 8080).

### C.5.2 Representative Sample Analysis

The Facility shall select parameters for analysis to ensure that the criteria for waste acceptance identified in Section C.3 are met. The analysis shall include, at a minimum, testing for each hazardous waste contained in the waste stream, as identified by EPA RCRA hazardous waste code, and for each underlying hazardous constituent, as identified in Table C-1, Parameters and Methods for Pre-Acceptance Representative Sample Analysis. Additionally, parameters on Tables C-2, Tests and Analytical Methods for Fingerprint Samples, and C-3, Additional Tests and Analytical Methods, shall be included, as applicable.

For off-site generated wastes, in addition to the conditions specified above, representative sample analysis for each waste stream shall include testing for all constituents listed in 40 CFR § 268.48

using practical quantitation limits capable of measuring the standards specified in 40 CFR § 268.48. The results of this test shall be used to perform the comparison with the generator's Waste Profile Form specified in the Representative Sample Assessment Section (Waste Analysis Plan Condition C.3.3). Testing for all constituents listed in 40 CFR § 268.48 shall not be required for the annual analyses.

Hazardous debris, as defined in 40 CFR § 268.2(g), that has already been treated to meet the LDR treatment standards as described in 40 CFR § 268.45 does not have to meet the representative sample analysis requirements, if the Facility determines that the generator provided waste characterization information that demonstrates that the proper EPA RCRA Hazardous Waste Numbers were applied and indicates whether or not the LDR treatment standards have been met.

### **C.5.3 Initial Five Shipments and Annual Analysis**

The representative sampling and analyses for each waste stream from each generator shall be conducted on the initial five shipments at an independent analytical laboratory other than the laboratory used by the generator (Section C.4.3.c). The representative sample analyses for each waste stream from each generator shall, at a minimum, be repeated annually. (Section C.4.3.b).

### **C.5.4 Fingerprint Analysis**

Fingerprint samples shall be analyzed for all parameters listed on Table C-2 and may include tests for physical appearance and pH. Additional fingerprint parameters shall be selected based on the pre-acceptance waste characterization data, shipment records, physical form of the waste, and the visual inspection of the contents of containers and bulk waste. The Facility shall follow the additional parameter selection process described in Section 2.2 of the EPA guidance document, Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes.

Based on the detailed chemical and physical properties of a waste, additional necessary and appropriate fingerprint or spot-check parameters shall be chosen to verify that the waste fingerprint analysis includes, at a minimum, the parameters to confirm the waste received is the waste stream identified by the generator. These parameters shall either be analyzed at the on-site laboratory or at an off-site analytical laboratory. Analyses that are not within the on-site laboratory's capability shall be sent to an independent laboratory for analysis.

Fingerprint analysis shall also include all parameters necessary to ensure that the waste is within the Facility's regulatory and operational acceptance limits (Table C-3). To select these additional sample parameters, the Facility shall consider:

- i. compliance with applicable regulatory and permit requirements (may require selection of parameters not reported by the generator);
- ii. identification of incompatible and inappropriate wastes; and
- iii. process and design considerations.

Fingerprint analysis is intended to minimize the potential for receiving waste that is unacceptable. Therefore, the level of additional analyses required for a waste shipment is a function of Facility

knowledge about the waste generation process and the waste generator. The Facility may elect to perform additional fingerprint tests to attain a higher level of confidence that a full waste characterization has been achieved. If discrepancies are noted between the received waste and the Waste Profile Form, the waste shall be analyzed further using additional fingerprint parameters. Discrepancies that can result in the Facility requiring additional analysis include, but are not limited to, non-conformance with the results of required testing or a change in color, texture, liquid content, or other characteristics that can be observed upon receipt.

The Facility shall follow the additional parameter selection process described in Part 2 of this Permit, and Section 2.4 of the EPA guidance document, Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes (EPA, OSWER April 2015).

#### **C.5.5 Overview of Waste Management Procedures in the Permitted Hazardous Waste Management Units**

Upon completion of the fingerprint analysis, and supplemental analyses, if conducted, waste will be transferred to the appropriate staging area. Prior to final disposition of the waste, however, additional analyses may be required to ensure that requirements for the storage unit or Sub X treatment units are met.

Analysis necessary for disposal is generally conducted as part of the pre-acceptance procedure (Section C.7.2). Appropriate parameters shall be selected from Tables C-2 and C-3. The Facility will use a combination of process knowledge and analytical results to obtain the information needed prior to placing waste in the storage Units. The Facility may elect to use other EPA-approved analytical methods, if it is felt that information other than that obtainable by these methods is needed to manage the waste safely.

The Facility shall conduct compatibility tests as part of the representative sample analysis procedure on an incoming waste stream and other waste streams with which it may be combined.

#### **C.5.6 Waste Analysis for Hazardous Wastes Generated On-Site**

The Facility is expected to generate some waste on-site through day-to-day Facility operations. These on-site generated wastes include personal protective equipment, sludge, solids, liquids, and/or releases of hazardous waste to the environment (see Table C-4).

**TABLE C-4. Potential On-Site Generated Waste**

| <b>Area</b>     | <b>Method of Generation</b>                                                                | <b>Waste Form</b>     |
|-----------------|--------------------------------------------------------------------------------------------|-----------------------|
| Operations      | Personal protective equipment (PPE) contaminated during routine and non-routine operations | Solid                 |
| Site Operations | Spill residues primarily from waste handling operations.<br>Sampling activities.           | Liquid, Sludge, Solid |

Waste generated on-site shall be assumed to be RCRA-regulated until process knowledge and/or sampling and analysis can be used to determine the actual nature of the waste. Sampling and analysis shall be accomplished in accordance with the requirements of this WAP.

The Facility shall select waste analysis parameters that are appropriate to confirm the identity of waste streams generated at the Facility. The selection of waste analysis parameters will typically be based on knowledge of the physical and chemical processes that produced the waste stream. If there is doubt as to the specific source, the Facility shall use the waste tracking system to identify all possible sources and to develop a list of specific parameters for laboratory analyses. Acceptable knowledge and analytical testing shall be used to ensure compliance with LDR requirements and provide waste compatibility and other information to determine appropriate waste management practices. The Facility shall ensure that all on-site generated waste sent to the container storage or treatment unit/s meets all LDR treatment standards.

The Facility will produce some waste on-site from day-to-day operations (e.g., paint and paint strippers, laboratory chemicals and equipment, vehicle maintenance wastes). This waste shall be characterized using acceptable knowledge or waste analyses, if the source cannot be definitively determined. If it is hazardous waste and meets all disposal requirements, it may be placed in the container storage unit. If it does not meet the requirements for storage or treatment or if it is not hazardous waste, it will be sent off-site for treatment or disposal.

## **C.6 SAMPLING PLAN FOR ON-SITE GENERATED WASTE**

The Sampling Plan for on-site generated waste is based upon the guidance provided in RCRA Waste Sampling Technical Guidance, which is in an updated Part 2 of SW-846 and includes the regulatory and technical objectives identified in this WAP. Modifications to the Sampling Plan to include detailed sampling protocols specific to the site activities will be required to reflect the sampling to be performed on on-site generated waste during operation of the Facility.

The sampling program shall account for all types of waste constituents and waste matrices that may be encountered. The Facility shall identify the protocols by which sample locations will be selected and the methods most appropriate for collecting samples from the different waste streams.

The latest revision of SW-846, ASTM or other approved methods shall be used, and site procedures shall be revised as necessary to incorporate the new requirements. General sampling methods and collection techniques, QA/QC procedures, sample preservation, volume and holding times, and equipment decontamination, are discussed in Sections C.6.1 through C.6.7.

### **C.6.1 Sampling Methods for On-Site Generated Waste**

Sampling methods shall follow Appendix I of 40 CFR, Part 261 unless a more appropriate method is identified. Table C-5 lists general waste matrices and appropriate sampling methods that will be used at the Facility.

Matrices that will be sampled include viscous liquids/sludges, crushed/powdered material, rock/rock-like material, soil, and fly-ash-like material. The methods and equipment used for sampling wastes must be appropriate for the form and consistency of the material to be sampled. The matrices will be sampled using a variety of sampling tools (see Table C-5), including, but not limited to, a dipper (sludge/viscous liquid), thief (sludge/viscous liquid), scoop (sludge, powdered material, rock/soil material, fly-ash material), shovel (powdered material, rock/soil material), auger (soil/fly-ash-like material) and tube sampler, for example a Composite Liquid Waste Sampler (COLIWASA) for sampling fly-ash like materials and containerized liquid wastes. The Facility shall select the appropriate sampling method from Table C-5 based upon the sample matrices, chemical constituents within the sample, and sampling conditions. If a sampling method not presented on Table C-5 would be more appropriate for the specific matrices to be sampled given site-specific conditions or if the procedures presented below must be modified, an alternative method may be used. If an alternative method is used, the sampling method shall be well documented, justified, placed in the Operating Record, and approved by NMED prior to implementation.

**TABLE C-5. Sampling Methods**

| Waste Matrix                       | Sampling Method | Sampling Equipment                               |
|------------------------------------|-----------------|--------------------------------------------------|
| Sludge                             | ASTM D140-70    | Scoop                                            |
| Crushed or powdered material       | ASTM D346-75    | Scoop, shovel, tube sampler                      |
| Soil or rock-like material         | ASTM D420-69    | Scoop, shovel, auger                             |
| Soil-like material                 | ASTM D1452-65   | Scoop, shovel, tube sampler                      |
| Fly ash-like material              | ASTM D2234-76   | Tube sampler, auger, scoop, shovel               |
| Fly-ash like materials and Liquids | ASTM D5495      | <b>Composite Liquid Waste Sampler (COLIWASA)</b> |

Sampling equipment shall be compatible with waste, and shall generally be made of glass, steel, brass or Teflon. Decontamination procedures shall be conducted in accordance with Permit Part 7, Section 8.2.14 (Decontamination Procedures).

#### **C.6.1.2 Sampling with a Tube Sampler and a COLIWASA**

Tube samplers are used to collect soil/solid samples and are generally glass or steel tubing that can be inserted into relatively compact matrix. (Modified tube samplers, however, can be used for liquid sampling.) Following insertion of the tube, the tube is extracted with the sample contained in the inserted tube. The following general process shall be used to sample with the tube sampler:

- i. clean/decontaminate the sampler.
- ii. lower/insert the tube into the waste to the desired depth.
- iii. when the desired depth is reached, slowly withdraw the tube, taking care to retain as much sample with the tube as possible; and
- iv. extract the sample into the appropriate sample container.

## **C.6.2 Sample Collection Procedures**

This section discusses the general sampling procedures for each type of sample to be collected at the Facility, as presented in Table C-6. It is recognized that the specific sampling that will take place at the Facility may differ from the general procedures included herein based on the specific conditions, and whether approval by NMED is required before revisions may be implemented.

### **C.6.2.a Annual Sampling**

Wastes that underwent representative sampling prior to initial waste shipment shall undergo annual sampling to confirm waste composition. The Facility shall assess the representative sampling procedure prior to initial waste acceptance, and this same representative sampling procedure shall be used for annual sampling. Annual sampling shall follow the representative sampling process performed prior to initial waste shipment. If the process is modified, the Facility shall reassess the sampling process to ensure collection of a representative sample and place this assessment in the Operating Record.

### **C.6.2.b On-Site Generated Hazardous Waste Types**

Several wastes may be generated on-site that require sampling and analysis (see Table C-4). Specifically, treated waste, day-to-day generated waste (e.g. personal protective equipment), releases of wastes, run-on/run-off, investigation-derived waste, and contaminated soil shall be considered on-site generated waste.

### **C.6.2.c Container Storage**

All incoming waste streams to the Container Storage Units shall be sampled to ensure continued compliance with LDR requirements. The initial five shipments of each waste stream from each generator shall be sampled and subsequent sampling shall be conducted on an annual basis. The Facility shall also conduct stratified random samples and analyze a minimum of 10 percent of incoming waste streams that are to be sent to a permitted facility for disposal, to verify conformance with the LDR requirements. These additional samples shall be analyzed for the specific regulated hazardous constituents contained in the hazardous waste stream. The data generated from these samples, in conjunction with the generator-supplied data, shall be used to verify conformance with the LDR requirements. Sampling procedures shall follow those presented in Sections C.6.2, and Table C-6, as applicable.

**TABLE C-6: Off-Site and On-Site Sample Collection Activities and Frequencies**

| Sample Type                                                         | Matrix                                                                                                                                 | Collection frequency                                                                                                                                                                      | Comments                                                                                                               |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b><u>Off-Site<br/>Incoming Waste</u></b><br><br>Fingerprint sample | All incoming sludge and solids. Debris waste will not be fingerprinted                                                                 | One per shipment for bulk shipments<br><br>1/10 drums for drummed waste                                                                                                                   | Table C-2 defines base fingerprint analysis required                                                                   |
| Annual sample                                                       | All incoming sludge and solids; debris waste will not be sampled (Acceptable knowledge will be used)                                   | One sample annually for each waste stream that underwent representative sampling prior to initial shipment                                                                                | Table C-1 defines base representative analysis required. Sampling to be performed at the generator site.               |
| Spills/releases                                                     | Spilled waste and contaminated material (sludge, liquid, soil)                                                                         | Each release                                                                                                                                                                              | For hazardous waste determination                                                                                      |
|                                                                     | All incoming sludge and solidified solid waste; except debris for which acceptable knowledge will be used                              | Initial five shipments of each waste stream from each generator and subsequent random sampling of waste slated for disposal in a permitted off-site facility landfill.                    | To verify LDR status                                                                                                   |
| <b><u>On-Site<br/>Generated Waste</u></b>                           | 1. Treated waste<br>2. Day-to-day operations<br>3. Releases<br>4. Run-on/runoff<br>5. Investigation-derived waste<br>6. Soil<br>7. Air | 1,2. When acceptable knowledge is not available<br>3,4. Each Release and each Run-on/run-off<br>5. Each container<br>6. Contingency Plan implementation or other spill response procedure | To determine hazardous waste and LDR status. See Table C-5 for specific waste matrices generated by on-site activities |

#### **C.6.4 Sample Types**

Samples of the waste will be collected as either composite or grab samples. It is possible that the Facility may modify or augment the procedures discussed below for the collection of composite and grab samples before the Facility becomes operational; if so, these revisions must be approved by NMED prior to implementation.

In composite sampling, several samples are initially collected from a waste and blended into a single sample which is then analyzed for the constituents of concern. Composite sampling is acceptable for homogeneous samples and tends to minimize sample variation between samples. This allows for a reduction in the number of samples that must be analyzed to verify the contents of a waste shipment. Composite samples can also be obtained from a waste that is stratified; however, the composite shall only be made from samples obtained from the same strata within the waste. Composite samples shall be collected using clean sampling equipment and such samples will be blended, unless VOCs are present, before analysis. If VOCs are present, separate discrete grab samples shall be collected for VOC analysis. Grab sampling shall be used to obtain samples of heterogeneous wastes.

#### **C.6.5 Sampling Quality Assurance (QA)/Quality Control (QC)**

Quality Assurance (QA) sampling procedures shall be conducted in accordance with the guidance provided in EPA SW-846 and EPA's *Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste*. The QA requirements shall be applicable to on-site sampling (e.g., system samples) as well as to the sampling of incoming waste shipments. This program is necessary to ensure that decisions regarding the acceptance and disposition of waste are based on valid and documented data. Additional QA procedures associated with sampling and analysis determined prior to initiation of on-site sampling will be included in the Operating Record.

The sampling QA program shall include the following:

- training requirements for personnel responsible for sample collection.
- chain-of-custody protocols for tracking samples.
- QA review of procedures to ensure proper use of equipment.
- protocols for equipment maintenance.
- identification of required sampling techniques for specific media.
- field sampling QC procedures; and
- documentation of sampling locations.

Deviations from the approved sampling program, sampling methods, or chemical analytical methods shall be documented and reviewed by personnel responsible for site QA. NMED shall be notified in writing of the QA exceptions, within seven days of the occurrence and measures shall be taken to correct the problems as soon as practicable.

#### **C.6.5.a Training Requirements for Personnel Responsible for Sample Collection**

All personnel and supervisory staff responsible for collecting waste samples for screening and chemical analysis shall be trained in the use of all sampling methods and equipment used at the site.

#### **C.6.5.b Chain-of-Custody Protocols for Tracking Samples**

The integrity of the sampling/analytical protocol shall be maintained by following chain-of-custody procedures from the point of sample collection through analytical data reporting to sample disposal. The possession and handling of samples shall be traceable from the time of collection through analysis and final disposition.

A sample is considered to be in a person's custody if it is:

- in a person's physical possession;
- in view of the person after taking possession; or
- secured in a container sealed by the responsible person so that it cannot be tampered with during transport to the designated destination or during storage after being secured by that person in an area of restricted access.

The sampler shall place a sample label on each sample container. The label shall include the following information:

- sample number, a unique identifier that is traceable to the waste stream and shipment;
- name of collector (sampler);
- date and time of collection; and
- place of collection.

Labels shall be affixed to sample containers prior to or at the time of sampling and shall be filled out at the time of collection.

Sample chain-of-custody seals are required if the sample is designated to leave the possession of Facility personnel for transport to an analytical laboratory. The seal shall include the same information as the sample label. The seal shall be attached in such a way that it is necessary to break it in order to open the sample container. In addition, chain-of-custody seals shall be affixed to sample storage containers in a similar manner in order to prevent tampering prior to shipment from the Facility to off-site analytical laboratories. Samples and storage containers which require seals must be sealed prior to leaving the possession of Facility personnel.

To establish the documentation necessary to trace sample possession from the time of collection, a chain of custody record shall be filled out and shall accompany every sample.

If the sample is to be shipped off-site for analysis, it shall be accompanied by a sample analysis request sheet. The sample analysis request sheet will include the information necessary to identify the sample and the analyses requested by the Facility. Samples shipped off-site for analysis shall be packaged and shipped in accordance with DOT transportation requirements.

Laboratory samples shall be maintained in a secure area and retained until holding times expire, as listed in SW-846. After the holding time has expired, samples shall be disposed of at the Facility with compatible waste batches. Records of the date the samples are removed from storage and the date and method of disposal shall be maintained at the Facility until completion of post-closure care. In cases where samples are not analyzed within their holding times, the Facility shall resample.

#### **C.6.5.c QA Review of Procedures to Ensure Proper Use of Equipment**

Standard operating procedures shall be developed for the selection, use, decontamination, and storage of sampling equipment used to characterize waste shipped to the Facility. The standard operating procedures shall include the sampling equipment to be used, instructions for use, and the applications for use of the equipment for collection of samples from specific media and types of shipping containers. The procedures and QA standards for waste sample collection shall be included in the standard operating procedures.

#### **C.6.5.d Protocols for Equipment Maintenance**

The protocols for equipment maintenance shall be included in the standard operating procedures. Protocols will be developed, as described in the preceding paragraph, for use, decontamination, and storage of equipment. Protocols for equipment maintenance shall be included in the standard operating procedures (See Section C.6.7 for general decontamination requirements).

#### **C.6.5.e Identification of Required Sampling Techniques for Specific Media**

The sampling methods and equipment used for collecting samples from specific media shall be selected in accordance with the guidelines included in 40 CFR, Part 261, Appendix I, and in the EPA guidance manual, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, Chapter 2*. Alternative sampling methods may be used with prior approval from the NMED.

#### **C.6.6 Sample Preservation, Volumes, and Holding Times**

Table C-7 presents general preservation, container, and holding time information for samples collected. EPA SW-846 guidelines have been used to determine these general requirements, although these may be modified or augmented to account for specific conditions, waste-specific requirements, waste-container compatibility considerations, or additional waste parameters for analysis. Method-specific sample volumes and containers appropriate for the sampling event will be determined by the Facility. Prior to any sampling event, sample container labels shall be prepared and affixed to sample containers, and all sample containers shall be certified clean by the supplying laboratory. Sample labels shall identify, at a minimum, sample number, date, sampler, matrix, analyses to be performed, and sample preservation. Once collected, samples shall be placed immediately into the shipping container (i.e., cooler), and chain-of-custody documentation shall be filled out (Section C.6.5.b).

**TABLE C-7**  
**Requirements for Sample Matrix Container Type, Preservation, and Holding Time**

| Sample Matrix                       | Concentration | Fraction               | Volume      | Container Type | Preservative | Holding Time                                                 |
|-------------------------------------|---------------|------------------------|-------------|----------------|--------------|--------------------------------------------------------------|
| <b>INORGANICS</b>                   |               |                        |             |                |              |                                                              |
| Soil, Sludge, Sediment, and Residue | Low/Medium    | Total Metals           | 6 oz        | F or G         | Cool to 4°C  | 6 months                                                     |
| <b>ORGANICS</b>                     |               |                        |             |                |              |                                                              |
| Soil, Sludge, Sediment, and Residue | Low/Medium    | VOCs                   | 240 mL      | D              | Cool to 4°C  | 14 days                                                      |
|                                     |               | SVOCs                  | 3oz         | F or G         | Cool to 4°C  | 14 days for extraction, 40 days after extraction to analysis |
|                                     |               | Petroleum hydrocarbons | <b>3 oz</b> | F or G         | Cool to 4°C  | 15 days for extraction, 40 days after extraction to analysis |

**Note:** The above table is general in nature and may be modified or augmented, so long as the requirements are congruent with SW-846 requirements.

a Container types are as follows, if applicable:

D = 120-mL glass septum vial with Teflon-lined, white poly cap or Encore® sampler or equivalent

F = 8-oz wide-mouthed glass jar with Teflon-lined black poly cap

G = 4-oz wide-mouthed glass jar with Teflon-lined, black poly cap

### C.6.7 Equipment Decontamination

Reusable sampling equipment shall be decontaminated prior to use in accordance with Permit Part 7, Section 8.2.14. In general, decontamination of sampling equipment typically includes initial scrubbing with a biodegradable commercial detergent, followed by a tap water rinse and subsequent de-ionized water rinse. The decontamination process shall include wiping or scrubbing of sampling equipment to remove surface residue, followed by detergent wash, rinse, a second detergent wash, and second rinse. Modifications to this process may be required to account for site/contaminant conditions and may take place so long as the decontamination procedure is well documented and appropriate supporting information is placed in the Operating Record.

## C.7 ANALYTICAL METHODS

Analytical methods which the Facility will use for specific tests are identified in the waste analysis tables (Tables C-1 through C-3). All analytical methods used in conjunction with this WAP must be EPA-approved methods or methods required by the New Mexico hazardous waste management regulations. If there is no equivalent EPA-approved method, an ASTM method or other NMED-approved method may be used. If the Facility or a generator wishes to use alternate test methods, the Facility or generator must first demonstrate to the NMED that the proposed method is equal

to, or better than, the corresponding methods prescribed in 40 CFR Part 261 or Part 264, in accordance with 40 CFR § 260.21. Such demonstration shall be provided through a Permit modification request. All proposed alternative methods must achieve the appropriate data quality objective.

The Permit Modification request must include the following information:

- i. a statement of the need and justification for the proposed action;
- ii. a full description of the alternative method (i.e., a standard operating procedure) including all procedural steps and equipment used in the method;
- iii. a description of the types of wastes, or waste matrices, for which the proposed method may be used;
- iv. comparative analytical data obtained from using the proposed method with those obtained from using the corresponding methods;
- v. a demonstration that the proposed analytical procedure is equal to, or superior to, the corresponding methods in terms of its sensitivity, accuracy, and precision (i.e., reproducibility);
- vi. an assessment of any factors which may interfere with or limit the use of the proposed method; and
- vii. a description of the QA/QC procedures necessary to ensure the sensitivity, accuracy, and precision of the proposed method.

An example of a non-EPA method required by hazardous waste regulations are the ASTM tests specified in 40 CFR § 264.314(e)(2) to determine the presence of non-biodegradable sorbents.

#### **C.7.1 Duties of the Laboratory Manager**

The on-site laboratory manager shall have the following responsibilities to ensure an effective quality assurance program:

- i. ensuring that laboratory personnel are adequately trained to perform sampling and analytical procedures and in safety procedures;
- ii. ensuring that equipment and instrumentation under his or her control are calibrated and functioning properly;
- iii. coordinating internal and external assurance audits;
- iv. reviewing procedures and QA plans of outside laboratories used. QA/QC practices shall be considered during the selection of independent analytical laboratories. QA/QC practices that will be reviewed shall include written procedures, certification, internal and external audits, personnel training, and chain-of-custody procedures; and
- v. development, updating, and implementation of the laboratory QA plan.

#### **C.7.2 Facility Laboratory QA/QC Plan**

Prior to beginning operations, the Facility shall develop procedures that will comprise the laboratory QA/QC plan. The Facility shall develop a QA manual for operation of the on-site laboratory. The manual shall be submitted to NMED for review no less than 90 days prior to the initial receipt of waste.

The results of chemical analysis of waste samples generated by the on-site laboratory may not be used as part of the waste acceptance evaluation process prior to NMED's review of the QA manual.

The overall QA objective for measurement data is to ensure that data of known and acceptable quality are provided. All measurements will be made to yield accurate and precise results representative of the media and conditions measured. QA objectives for precision, accuracy, and completeness shall be established for each measurement variable, where possible, and shall be included in the QA manuals of the on-site and off-site laboratories where waste samples will be submitted for chemical analysis. The laboratory procedures, practices, and qualifications shall be included in the QA manual for each laboratory.

The laboratory QA manual shall be based on guidance provided in EPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5). As such, the plan shall address the following key elements in compliance with EPA QA/R-5: project organization; laboratory quality assurance organization; data quality objectives and criteria; employee training and certification requirements; laboratory analytical methods; quality control requirements; laboratory equipment and instrumentation calibration, testing, inspection, and maintenance; QA/QC of suppliers and vendors; data acquisition requirements; data management; data review, validation and verification; and, reconciliation with quality objectives and criteria. These elements and other procedures included in this plan are discussed in the following sections:

- i. laboratory quality assurance;
- ii. equipment calibration;
- iii. laboratory QA/QC samples;
- iv. laboratory QC;
- v. analytical procedures; and
- vi. laboratory maintenance.

#### **C.7.2.a Laboratory Quality Assurance**

The Facility laboratory and each off-site laboratory shall maintain an internal quality assurance program, as documented in its laboratory quality assurance manual. The laboratories shall use a combination of blanks, surrogates, duplicates, matrix spike/matrix spike duplicate (MS/MSD), laboratory control samples, and blank spike/blank spike duplicate (BS/BSD), to demonstrate analytical QA/QC. Control limits shall be established for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The specific procedures to be completed and the laboratory control limits shall be included in the QA manual for each laboratory.

#### **C.7.2.b Equipment Calibration**

The laboratory equipment calibration procedures, calibration frequency, and calibration standards shall be conducted in accordance with EPA (or equivalent method) specified test methodology requirements and will be documented in the laboratory's QA manual. All instruments and equipment used by the laboratory shall be operated, calibrated, and maintained according to

manufacturers' guidelines and recommendations. Operation, calibration, and maintenance shall be performed by personnel who have been properly trained in these procedures. A routine schedule and record of instrument calibration and maintenance shall be kept on file at the laboratory.

#### **C.7.2.c Laboratory QA/QC samples**

Analytical procedures shall be evaluated by analyzing reagent or method blanks, surrogates, MS/MSDs, BS/BSDs, and/or laboratory duplicates, as required or appropriate for each method. The laboratory QA/QC samples and frequency of analysis to be completed shall be in accordance with EPA or equivalent method protocols and shall be included in the QA manual for each laboratory.

The laboratory QA manuals and procedures shall incorporate data quality objectives (DQOs) to verify that waste characterization data obtained by the methods established in this WAP meet regulatory requirements with regards to regulatory compliance and Facility waste management requirements. The following DQOs are established for the sampling and analysis of waste managed by the Facility:

- i. identify and quantify the hazardous constituents in the waste to ensure compliance with 40 CFR Part 264 and the requirements of the Facility permit, and
- ii. compare the contaminant concentrations in the waste with the specified characteristics of 40 CFR Part 261 in order that the waste may be managed in accordance with Facility requirements.

To ensure that the laboratory data quality objectives are met, the following analyses shall be completed in the laboratory to monitor the analytical process:

- *Laboratory duplicate samples:* Laboratory duplicate samples will be analyzed to monitor for intra-laboratory precision of data generated. These samples shall be analyzed at a rate of no less than 5% (1 for every 20 samples) of the total samples with at least one duplicate if fewer than 20 samples are analyzed for any parameter;
- *Spiked samples (Matrix Spike/Blank Spike):* Spiked samples shall be analyzed to monitor analytical precision. Spiked samples will be tested on no less than a five percent (1 for every 20 samples) basis for any parameter. At least one spiked sample shall be run if fewer than 20 samples are analyzed;
- *Control charts:* Control charts shall be utilized to establish laboratory control limits to monitor and review the accuracy of the data generated as a result of spike analyses. Control limits reflect long-term data accuracy trends and must be modified as new data are acquired;
- *Method/reagent blanks:* Method/reagent blanks shall be prepared using samples of purified water or reagents that shall then be subjected to the entire sample analytical procedure to monitor potential contamination of samples due to contamination in the

laboratory or laboratory equipment. Method or reagent blanks shall be included with each set of samples;

- *Laboratory equipment blanks:* Laboratory equipment blanks shall be analyzed to monitor potential contamination of samples due to improper or ineffective cleaning of equipment. These samples shall be analyzed at a rate of no less than 5 percent (1 for every 20 samples) of the total samples;
- *Quality control samples:* QC samples shall be analyzed to monitor for accuracy of data generated. EPA QC samples or samples purchased from a reputable independent source shall be submitted to off-site laboratories as blind samples for chemical analysis of a set of selected analytes approved by NMED at the beginning of the Facility operation and at regular intervals during the Facility operating life;
- *Surrogates:* Surrogates shall be analyzed in accordance with EPA guidelines for organics analysis. Surrogate recovery is a measure of the effectiveness of the analytical process. Surrogates shall be tested on no less than a 5 percent (1 for every 20 samples) basis for any analysis of organic compounds;
- *Calibration standards and devices:* Calibration standards and devices shall be used in accordance with the manufacturers' recommended guidelines to calibrate laboratory instrumentation; and
- *Internal standards:* Internal standards prepared in the laboratory shall be referenced against external standards to measure accuracy.

Laboratory QC procedures shall be included in the laboratory QA manuals prepared by each laboratory.

#### **C.7.2.d Laboratory Quality Control**

Quality Control objectives for the analytical data are a means of checking and controlling the sources of error in analytical data results. The criteria for data evaluation include assessing the data accuracy, precision, completeness, representativeness, and comparability. The criteria are described below:

- *Accuracy:* Accuracy is a measure of the error between chemical analytical results and the true sample concentrations. Accuracy is a measure of the bias in a system and will be expressed as the percent recovery of spiked samples. Accuracy will be presented as percent recovery and shall be calculated as follows:

$$\%R = (S-U)/C_{sa} \times 100$$

Where %R = percent recovery

S = spike sample analytical result

U = sample analytical result

C<sub>sa</sub> = known or actual spike concentration

The DQOs for accuracy for each analytical method shall be presented in the laboratory QA manual.

- *Precision:* Precision is a measure of data variability. Variability can be attributed to sampling activities and/or chemical analysis. Relative percent difference (RPD) will be used to assess the precision of the sampling and analytical method and shall be calculated as follows:

$$RPD = [C1 - C2 / (C1 + C2) / 2] \times 100$$

Where RPD = relative percent difference

C1 = larger of the two concentrations

C2 = smaller of the two concentrations

The DQOs for precision for each analytical method shall be presented in the laboratory QA manual.

*Completeness:* Completeness shall be evaluated to assess whether enough valid data is obtained. Completeness is described as the ratio of acceptable measurements. Completeness will be calculated as follows:

$$C = (\text{Number of samples having acceptable data}) / (\text{total number of samples analyzed}) \times 100\%$$

where C = completeness

The DQOs for completeness shall be presented in the laboratory QA manual.

- *Representativeness:* Representativeness is a qualitative parameter related to the degree to which the sample data represents the specific characteristics of concern. Procedures in sample collection will be implemented to assure representative samples, such as repeated measurements of the same parameter from the same waste stream in the same shipping container over several distinct sampling events. Any procedures or variations that may affect the collection or analysis of representative samples shall be noted and the data qualified as appropriate.
- *Comparability:* Comparability is a qualitative parameter related to whether similar sample data can be prepared. To ensure comparability, analytical results shall be reported in appropriate units for comparison with other data (such as past studies or clean-up

standards), and the standard collection and analytical procedures included in this WAP shall be implemented. Any procedures or variations that may affect comparability shall be noted, and the data will be qualified as appropriate.

#### **C.7.2.e Analytical Procedures**

Specific QA/QC procedures to be used for sampling, chain-of-custody, calibration, analytical methods, reporting, internal QC, audits, and preventive maintenance shall be included in the laboratory QA manual.

Laboratory procedures and methods to be used shall contain all of the information presented in the EPA document, SW-846, for each method. The format for each method shall be similar to that used in SW-846. If there is no appropriate SW-846 method ASTM or other approved methods will be employed. The laboratory procedures and methods also shall include the following:

- *Scope:* A description of the scope of applicability of the procedure;
- *Principal:* A brief description of the steps to be taken and/or the theory involved in the laboratory analysis;
- 
- *Interference:* A description of known interfering agents that would cause difficulty in the laboratory analysis;
- 
- *Apparatus:* A listing or description of equipment required to perform the laboratory analysis;
- *Reagents:* A listing of the reagents required, a description of the steps involved in preparing the reagents, and instructions on storage requirements and retention times;
- *Procedures (instructions):* An enumeration of the sequence of activities to be followed. The topics include sample preparation or pretreatment, sample storage requirements, instrument set-up, standardization or calibration, sample analysis, calculations, and glassware-cleaning procedures. The procedure shall include any precautions, explanation, or clarifications needed to properly perform the analysis. These include safety precautions, the frequency of standardization required, the acceptance criteria or procedures for determining the acceptability of standard curves, clarification or special techniques critical to the analysis, and the procedure the analyst uses to determine the reliability of sample results based on the standard curves;
- *Quality control requirements:* A listing of the QC checks to be performed and the acceptance criteria used to evaluate the QC data; and
- *Reference:* A listing of the publications from which the information was derived in preparing the laboratory method. All references pertaining to these documents. As a rule, laboratory methods are derived from the following publications:

- Standard Methods for the Examination of Water and Wastewater, American Public Health Association;
- Annual Book of Standards, American Society for Testing and Materials;
- Methods for Chemical Analysis of Water and Waste, US Environmental Protection Agency;
- Test Methods for Evaluating Solid Waste, SW-846, US Environmental Protection Agency;
- National Functional Guidelines for Organics Data Review; and
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses.

Editions used shall be those currently specified in the latest 40 CFR, as updated.

#### **C.7.2.f Laboratory Maintenance**

The analytical laboratory shall have in place a procedure that details the steps to be taken to calibrate and standardize instruments to ensure that the analytical data produced are accurate. Records of all calibrations, preventive maintenance, and service calls shall be available upon request from the laboratory files. Calibration procedures shall follow the method procedures outlined in the EPA document, SW-846, or the ASTM Standards.

A procurement procedure that identifies methods to be used to document and control the purchase of materials, parts, and services shall be implemented by the laboratory and be presented in the laboratory QA manual. The procedure shall include identifying the quality of laboratory chemicals and equipment, management approval of procedure items, inspection of shipments for compliance with requirements, and isolation of nonconforming items to be returned to vendors. Equipment quality shall conform to the requirements specified in the most current edition of the EPA document, Handbook of Analytical Quality Control in Water and Wastewater Laboratories, the Federal Register, or other regulatory agency publications. This procurement procedure shall serve to ensure that routinely required spare parts are readily available.

#### **C.7.3 Requirements for Off-Site Laboratories**

The Facility shall document that the following conditions are met for each off-site laboratory performing waste analyses for the Facility:

- i. the laboratory used by the Facility shall be different from the laboratory used by the generator;
- ii. the laboratory must be approved by the Facility;
- iii. the laboratory must use the analytical methods identified in Section C.5;

- iv. if there is more than one analytical method for a specific test identified in Section C.5, the laboratory must follow the guidance in Chapter Two of the current version of EPA document SW-846 to determine the appropriate analytical method; and
- v. the laboratory must follow the QA/QC requirements described in this WAP.

#### **C.7.4 Laboratory Requirements for Off-Site Generators**

The Facility shall ensure and document that all laboratory analyses provided by Off-Site generators is performed by a laboratory accredited or certified for the appropriate hazardous waste field of testing by an authority using the EPA's National Environmental Laboratory Accreditation Conference standards.

### **C.8 WASTE TRACKING**

To identify and track the waste managed at the Facility, a Facility-specific number shall be assigned to each waste stream and to each shipment within that waste stream. Each waste shipment shall be tracked using a unique alphanumeric designation. This designation shall identify the generator, a sequential number specific to the shipment, substance and source and the delivery date (or, in the case of site-generated waste, the date the waste entered the system). An example is presented below:

ABC-0001-073113

where ABC identifies the generator

0001 identifies the waste stream, source, and shipment

073113 is the date the waste was delivered

The waste numbering system will assist in the tracking of waste as it moves through the Facility. The number shall be recorded on:

- i. all incoming paperwork from the generator;
- ii. samples received from the generator;
- iii. samples collected on-site (that also shall have unique identifiers; and
- iv. site-generated records.

The date shall not be recorded until the waste arrives on-site. This numbering system will allow the Facility to track a specific waste with regards to the final disposition of the waste. In addition, assigning a unique designation to each generator and a unique number to each waste stream from that generator shall make possible determining the amount of waste from a given waste stream that has been received by the Facility. Individual shipments from within the waste stream shall receive an additional unique identifier to enable the Facility to tie information back to the specific shipment

as well as to the waste stream to allow the Facility to locate the current location of the waste in the container storage area.

Tracking waste in this manner shall be used by the Facility to determine the efficiency and accuracy of a generator's profiling efforts and the rejection rate for incoming waste and to assist in determining the rate of fingerprint analysis required for a given generator.

The Facility number shall designate waste generated on-site. All other numbering and tracking shall be same for all waste managed at the Facility. The tracking system shall be maintained in the Facility Operating Record.

## **C.9 NOTIFICATION, CERTIFICATION, AND RECORDKEEPING**

The Facility shall maintain a Facility Operating Record in accordance with 40 CFR § 264.73.

The Operating Record will include:

- i. all analytical results;
- ii. all chain-of-custody forms;
- iii. generator notices of restricted wastes not meeting treatment standards or exceeding levels specified in RCRA Section 30049(d), including the information listed in 40 CFR § 268.7(a)(1);
- iv. generator notices of restricted wastes meeting applicable treatment standards and prohibition levels, including the information in 40 CFR §268.7(a)(2).
- v. all final disposition records;
- vi. all manifest and waste discrepancy resolution documentation; and
- vii. all other information (e.g., notifications, certifications, waste analysis reports, waste movements) which will be maintained in the Operating Record as noted in this WAP.

As required in 40 CFR § 268.7, the following records shall be maintained at the Facility for wastes generated on-site, and/or documentation of treating restricted wastes:

- i. where on-site generated wastes are characterized to determine compliance with LDR standards using only process knowledge, all data used to make any such determination. These data shall be maintained in the Facility Operating Record;
- ii. where a representative sample of waste is analyzed to determine compliance with LDR standards, all waste analysis information. These data shall be retained on-site in Facility Operating Record; and

- iii. all notifications and/or certifications submitted by waste generators. These records shall be maintained until Facility closure as required in 40 CFR § 264.73.

In addition, relevant inspection forms and monitoring data shall be maintained on file at the Facility. Files will be maintained for a minimum of three years (for inspection records and LDR notification), or until approval of Facility closure (for inventory records).

## **C.10 ORGANIC AIR EMISSION REQUIREMENTS**

The Permittee manages wastes that are subject to organic air emissions requirements of 40 CFR Part 264, Subpart CC. For wastes that are not eligible for exemption, the Permittee shall address the applicable requirements for control of air pollutant emissions as follows:

1. In lieu of determining the concentration of VOCs in a waste at the point of generation, the Permittee may declare that a container holding the waste is subject to the requirements of 40 CFR Part 264, Subpart CC.
2. To determine the VOC concentration, the Permittees shall follow the waste determination procedures specified in 40 CFR 264.1083(a). If sampling and analysis are necessary, it shall be performed in accordance with the methods specified in this Permit Attachment.
3. Whenever changes to the source generating the waste are reasonably likely to or may potentially cause the average VOC concentration of the hazardous waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 40 CFR § 264.1082, a new waste evaluation shall be performed by the Permittee, as specified in 40 C.F.R. § 264.1083(a)(1)(ii).
4. The Permittee shall review the characterization documentation for VOCs as part of the characterization process discussed in Section C.3 of this Permit Attachment.
5. Characterization of routinely generated hazardous wastes that are subject to 40 CFR Part 264, Subpart CC shall be reviewed and updated at least once every 12 months to determine whether Subpart CC requirements continue to apply.

## **C.11 WASTE ANALYSIS PLAN UPDATE**

This waste analysis plan will be modified when a new waste product is collected or when sampling and material management methods change. Revision of the plan is a permit modification and shall be implemented in accordance with the applicable procedures included in 40 CFR §270.42.