State of Oregon
Department of
Environmental
Quality

Waste Analysis Plan

For

Chemical Waste Management of the
Northwest, Inc.

Arlington Facility • ORD 089 452 353
17629 Cedar Springs Lane
Arlington, Oregon

Standalone Document No. 1

This document is issued by the
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1 INTRODUCTION

In accordance with the regulatory requirements set forth in 40 CFR 264.13[1] Chemical Waste Management of the Northwest, Inc. (CWMNW) ‡ **Rev. 7** has developed this *Waste Analysis Plan* (WAP) for the Arlington Facility located in Gilliam County, Oregon. A copy of this WAP is available at the facility at all times.

The purpose of the WAP is:

- To document procedures that will ensure that this facility will be in compliance with all the requirements of 40 CFR Part 264.13; and

- To document the necessary sampling methodologies, analytical techniques, and overall procedures which are undertaken for all hazardous wastes (hereinafter "waste") that enter the CWMNW facility for treatment, storage, and/or disposal.

Procedures delineated in this WAP are as follows:

Topic	Explanation	Detailed in Section
Sampling Procedures	Used to obtain samples of incoming waste shipments in order to perform any appropriate analyses.	2.0
Analytical Parameters and Rationale	Document the decision logic for the selection and application of various analytical techniques.	3.0
Pre-Acceptance Procedures	Determine the acceptability of a particular waste stream, pursuant to facility permit conditions and operating capabilities, prior to acceptance of that waste by the facility.	4.0
Incoming Waste Shipment Procedures	Identify that the delivered waste matches the accompanying manifest, pre-acceptance documentation, and the facility permit conditions.	5.0
Process Operations Procedures	Maintain safe and appropriate methods of treatment, storage, disposal or movement of wastes within the facility.	6.0
Quality Assurance Control Policy	Followed by the facility laboratory to achieve high quality analytical results.	7.0

[1] All references to Title 40 of the Code of Federal Regulations (CFR) Part 260 et. seq. refer also to the Oregon Administrative Rules (OAR), Chapter 340, Division 100 to 104 which adopt by reference and modify parts of Title 40 CFR Part 260 et. seq.

Documentation:	The forms shown within this WAP are forms currently used by the facility. These forms may change to equivalent or alternative forms based upon changes in regulations, customer needs, facility operations, company policy or other needs. Any new forms must contain, at a minimum, the same information contained in the forms in this document. New forms must be submitted to the Department in accordance with Permit Condition II.R. CWMNW maintains, as part of its WAP-required records, generator-supplied and internally developed information, decisions and forms. This documentation may be received, stored, transmitted, and/or retrieved electronically in addition to, or in lieu of, hard (paper) copy.
References:	For the purposes of implementation and performance of this WAP, CWMNW or CWM means the CWMNW facility and/or laboratory, any company laboratory, any company-subsidiary laboratory, or any company-approved non-company laboratory. In addition, CWMNW or CWM means WMX Technologies, Inc. and its subsidiaries or partnerships.
Process Chart:	Figure 1-1 shows a flow chart indicating how various hazardous wastes come through the initial step of receipt, weight, and analysis and then through the various tracks through different units ending in either onsite disposal or off-site shipment.

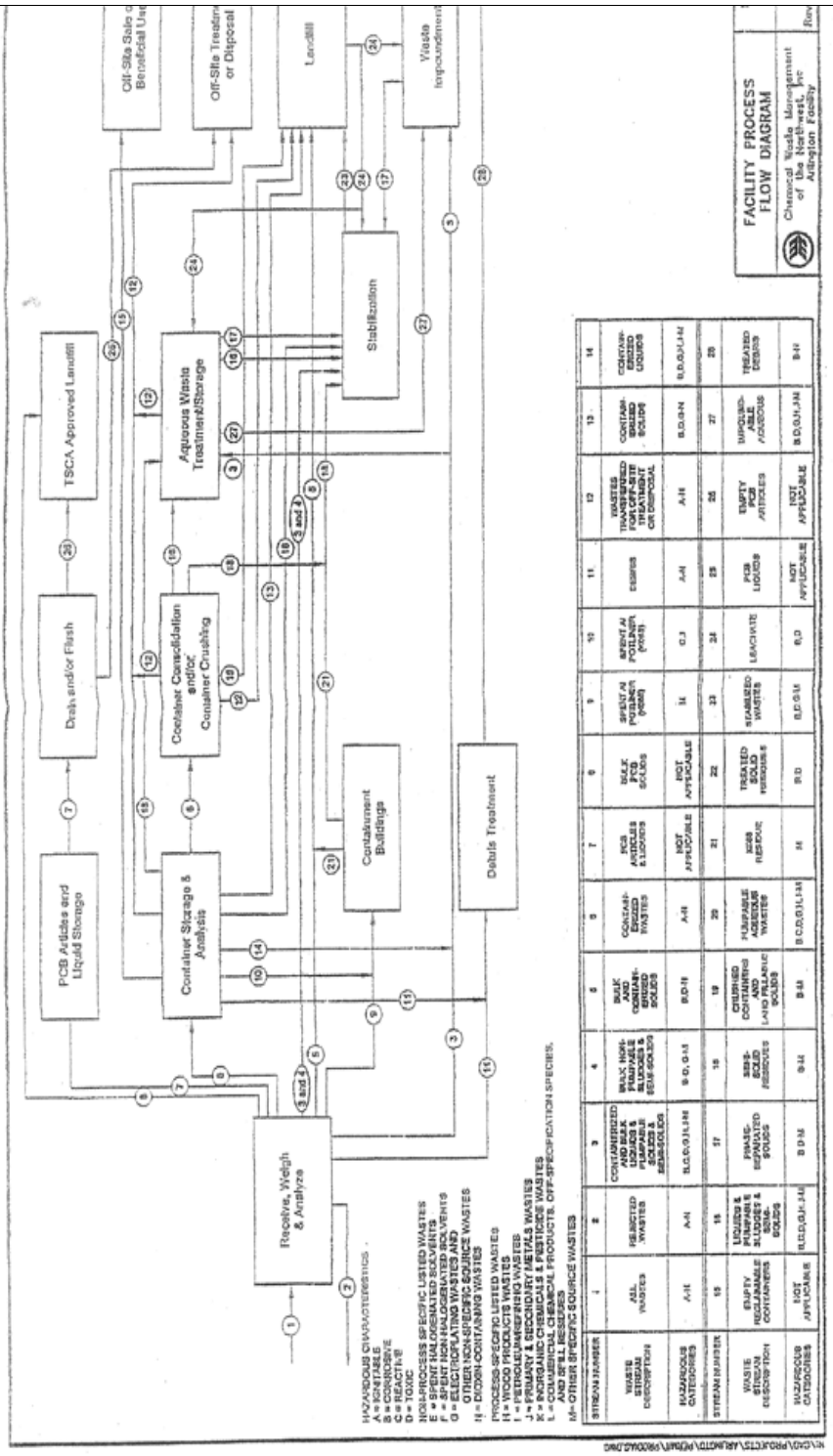

FACILITY PROCESS FLOW DIAGRAM
Chemical Waste Management of the Northwest, Inc. Arlington Facility
Receive, Weigh & Analyze
PCB Articles and Liquid Storage
Drain and/or Flash
TSCA Approved Landfill
Container Storage & Analysis
Coolsaver Consolidation and/or Container Crushing
Aqueous Waste Treatment/Storage
Off-Site Sale or Beneficial Use
Off-Site Treatment or Disposal
Landfill
Waste Impoundment
Stabilization
Containment Buildings
Debris Treatment
HAZARDOUS CHARACTERISTICS
NON-PROCESS SPECIFIC LISTED WASTES
PROCESS-SPECIFIC LISTED WASTES
M= OTHER SPECIFIC SOURCE WASTES

Figure 1-1

2 SAMPLING METHODOLOGY

Specific sampling procedures are dependent on both the nature of the material and type of containment. The sampling methods and the equipment utilized for different materials are presented in Table 2-1. Sampling is performed either by:

- The generator at the generator's location to make an initial waste characterization;
- Agents on behalf of CWMNW at the generator's location to make an initial waste characterization; and/or
- CWMNW personnel at the facility to identify waste shipments.

Generators and agents requesting guidance for sampling procedures are referred to 40 CFR 261 Appendix I.

The nature of a waste shipment has already been determined by the generator before it arrives at CWMNW for management. The generator will have determined if the waste is one or more of the following:

- A listed hazardous waste as defined in Subpart D of 40 CFR 261;
- A characteristic waste as defined in Subpart C of 40 CFR 261;
- A recyclable hazardous waste, as defined by 40 CFR Part 261.6;
- An Oregon state (only) hazardous waste, as defined in OAR 340-101-033; and/or
- A hazardous waste from another state (as only defined by that state), as defined in OAR 340-101-033; and/or
- A solid waste which is not a hazardous waste, as defined by 40 CFR Part 261.4(b), Oregon Revised Statutes (ORS) Title 36, Chapter 459, Section 459.005(27) and/or OAR 340-93-030.

The above waste determination is noted on the waste profile (e.g., a completed Waste Profile Sheet [WPS], typical form included as Figure 4-1 [see Section 4.0]). Therefore, as described in U.S. Environmental Protection Agency (EPA) document SW-846, CWMNW can use a less

comprehensive sampling approach than that used by the generator to initially characterize the waste (e.g., vertical compositing). The purpose of the sampling and analysis is to ensure that the waste shipment matches the identity of the waste designated on the accompanying manifest or shipping paper.

2.1 Sampling Techniques

The sampling methods and the equipment used for different materials are presented in Table 2-1. The sampling techniques utilized for specific materials correspond to those referenced in 40 CFR 261 Appendix I, or as developed by CWM as approved by the Department. Drawings and descriptions of the listed sampling devices are provided in EPA document SW-846 (see reference in Table 2-1). Certain waste materials or containments may require different sampling procedures or equipment. If the techniques and methods described by Section 2.2 cannot be performed due to the type of containment, the type of material, or safety reasons, then CWM will obtain a sample by any representative means. Procedures and equipment may be updated and revised as new equipment or procedures become available. Such procedures must first be submitted as either a change in accordance with Permit Condition II.R. or a permit modification.

2.2 Sampling Strategies

Material and Containment Type - The sampling strategies selected for any given waste load depend on the type of material to be sampled as well as the type of containment. Wastes arrive at the facility in various physical phases (e.g., liquids, solids, sludges, or other mixtures) and in either containers (e.g., drums) or bulk loads (e.g., tanks, roll-off boxes, lugger boxes, macroencapsulation devices, tanker trucks, dump-type trucks). In addition, various types of waste management units such as tanks, impoundments, or sumps must be sampled and analyzed periodically. As such, strategies and techniques are unique for each sampling requirement. Specific sampling procedures are referenced in Table 2-1.

Liquid Waste - Most liquid wastes require only a single vertical composite to yield an acceptable sample. Horizontal variations in liquid wastes generally are unimportant because there is a much greater tendency for liquid wastes to be heterogeneous in a vertical rather than a horizontal direction. Similarly, solid and liquid wastes in small containers such as drums, portable tanks, and sumps would not be expected to exhibit significant heterogeneity in the horizontal direction.

Solid Waste - Bulk solid shipments are the only waste loads in which variations in the waste in the horizontal direction may be important. Therefore, bulk solid loads are sampled at three points to accommodate horizontal variations in the waste.

Sample Access - Access to the container influences the location from which samples are drawn. For example, samples may be obtained by removing a vertical cross section from a container through the bung opening, from a tank through the top sampling hole, or from a vacuum truck through a top hatch.

Sampling and Compositing - At least one sample is collected from every ten containers of waste, except with wastes specified in Section 5.1.1. When conducting initial waste identification, up to ten samples intended for mandatory analyses may be composited providing they are (1) compatible, (2) from a single generator, and (3) consisting of one waste profile. Samples intended for supplemental analyses may be composited providing samples are compatible.

Waste Management Units - If more than one sample is collected from a waste management unit, samples may be composited prior to analysis.

Bulk Vehicles - A sample is collected at three points. Samples from the same vehicle may be composited prior to analysis, provided there are no differences in appearance of the samples.

2.2.1 Containers, Tanks, and Sumps

Sampling Small Containers - Sampling of small containers (e.g., drums, cartons, and other small units) varies with the nature of the material.

Flowable materials are sampled with:

- A coliwasa, open tube sampler, or other device as listed in Table 2-1 to draw a vertical section.

Solid materials are sampled with:

- A trier, thief sampler, or other device, as listed in Table 2-1, when the consistency of the waste (e.g., moisture content, grain size, etc.) allows their use; or
- A trowel, scoop, or other device as listed in Table 2-1 from a point; or
- Available sampling equipment to the best extent possible for material which cannot be penetrated. For example, if a drum of solidified resin is to be sampled, a portion of the resin may be chipped out of the bung opening with a non-sparking hammer and chisel. A material which is solidified by the generator and put into containers where it sets up like concrete would also qualify for this sampling approach.

Sampling Tanks - Tanks or any other containment vessel containing liquids are sampled with:

- A coliwasa; or
- A weighted bottle, bomb sampler or other device, if the tank is too deep to allow the use of a coliwasa.

Alternatively, sampling may be accomplished through ports or taps located in a vertical plane along the side of a tank or through pumps or fittings at a tank's inlet or outlet, or by other representative means. These samples are composited in equal volumes to yield a tank sample. If examination indicates strata through color or visible miscible layers, then each layer may be analyzed separately. Different strata will be indicated by either differences in color or visible indications of immiscible phases.

Tanks or other vessels containing sediment may be sampled by other representative procedures. For example, samples may be retrieved from the bottom sampling valve (bulk storage tanks) or scooped out (sumps) as necessary prior to removing and treating this waste material.

Portable tanks containing solid materials are sampled by a scoop, trier, thief sampler, or other sampling device as allowed by the consistency of the waste material. Usually, one sample is obtained corresponding to a container, tank, or sump.

2.2.2 Bulk Waste Shipments

Bulk Liquid - Tanker trucks delivering bulk liquid wastes are sampled through one of the top access hatches. The driver is requested to park at a location that allows the truck to rest in as near a horizontal position as possible. After the truck driver has opened the hatch, a vertical sample is obtained using a coliwasa, open tube sampler, or other sampling device as listed in Table 2-1. Usually, only one sample is obtained from each tank. For large volumes sent by a generator for a single waste from the same process, the facility will use the sampling plan described for bulk solids described next.

Bulk Solid – For each new calendar quarter the facility shall follow the following sampling plan anew: Trucks delivering bulk solid materials are sampled by obtaining three-point samples using the sampling equipment indicated in Table 2-1. If a generator produces a large volume of a single waste from the same process (an average of at least 20 truck-loads, per month), then 50 percent of the first ten truck loads are sampled. Every truck is inspected. If there is no variation among the sampled trucks, the sampling regime is reduced to 20 percent of the loads thereafter until the end of the calendar quarter, unless such volumes are large enough to be received at the facility for a half of year or more. If single generated wastes are received for more than half a year, the 20 percent sampling regime may continue for a year after initial receipt of the waste. If the sampled trucks do show variation, the 50 percent sampling frequency is continued. If variation is found during the 20 percent sampling regime, the 50 percent sampling frequency is reinstituted for the next 10 truck-loads. If these do not show variation, then the frequency returns to 20 percent sampling. The above procedure for sampling of bulk solids will also be used for the sampling of rail gondola cars at the 10-day rail facility. Variation shall be determined by differences in coloration or immiscible differences noted.

2.2.3 Surface Impoundments

A new surface impoundment sample is collected before adding any waste stream which is different from the immediately previous waste stream. These samples are checked for compatibility. Samples from the targeted impoundment are mixed with samples of the waste to ensure that discharge operations do not result in incompatible waste reactions. “Different” shall mean a difference in color or a difference in immiscible phases noted.

For impoundments, samples are obtained from the active discharge area (the area where the waste is introduced) since this is the most immediate point of contact between the impoundment liquids and the discharging waste. Impoundment contents are circulated as necessary. The sampling equipment indicated in Table 2-1 is used to obtain one or more point samples from the active discharge area at a location near where the waste will be introduced.

2.2.4 Bioremediated Wastes

Containers - Contaminated wastes that have been bioremediated in treatment containers will be sampled to verify that the contaminants are below the regulatory levels specified in 40 CFR Part 268 prior to land disposal or beneficial use. Three-point samples will be obtained from each container using the sampling equipment indicated in Table 2-1.

Static Piles and Windrows – Attainment of bioremediation levels in large static piles or windrows will be confirmed by analysis of grab samples obtained from the remediated waste. A representative number of samples will be collected from randomly assigned locations and analyzed for regulated contaminants. A three-dimensional simple random sampling strategy will be used to determine the sample locations on the pile as outlined in USEPA *Test Methods for Evaluating Solid Wastes, SW-846*[2].

The pile will be divided into a three-dimensional grid system, the grid sections assigned numbers, and the sampling points chosen using a random number generator or random number table. A sample will be taken for each 250 tons or part thereof. **‡ Rev. 7** The interior of the pile will be sampled with the assistance of a backhoe excavator to remove the overlying soil and allow access to the sampling grid in question.

2.2.5 ORU Waste Treatment Verification Sampling

Solid wastes resulting from treatment in the ORU will be sampled to verify that the contaminant levels remaining in the solids are below the regulatory levels for profiled waste constituents as specified in the Land Disposal Restrictions (LDRs) in 40 CFR Part 268. Once all applicable LDRs are met, the waste will be land disposed. Liquids resulting from ORU treatment that are destined for beneficial use (such as fuel blending) will be evaluated to make sure they meet standards for the applicable beneficial use. Liquid wastes resulting from ORU treatment that are to be sent off-site for further waste treatment (such as incineration) will only be sampled if required by the downstream treatment facility.

ORU waste sampling will be based on an individual profiled waste stream. The sampling scheme is based on an initial sampling period followed by less frequent sampling for the remainder of the waste and an anticipated production rate of 10 tons per hour (240 tons per day). The first 1,000 tons under each waste profile will be sampled three times per day (at approximately eight hour intervals). The three samples will be combined, and a composite sample (from the three samples) will be sent for lab analysis. Effectively, that should provide a composite daily sample per approximately 240 tons of waste. If all samples for the initial 1,000 tons of treated waste under a profile pass the applicable LDRs, then sampling for the waste stream will change to one composite sample (from three grab samples taken at approximately equal weight intervals) per 1,000 tons of waste.

Once a sample fails, then the sampling scheme reverts to the original sampling rate of three samples per production day until 1,000 tons passes without any failures whereupon the sampling

[2] USEPA, 1986, *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, SW-846, Chapter 9, 3rd Edition, U. S. Government Printing Office, Washington, DC, 20402.

will extend to one sample per 1,000 tons. When a profiled waste stream resumes after treatment of a different waste stream or other interruption, the sampling scheme will resume under the frequency that it was being conducted prior to the interruption.

TABLE 2-1

SAMPLING METHODS AND EQUIPMENT

MATERIAL	METHOD[1]	EQUIPMENT
Extremely viscous liquid	ASTM D140 ASTM E300	Tubing, trier or coliwasa
Crushed or powdered material	ASTM D346 ASTM E300	Tubing, trier, scoop, or shovel
Soil or Rock-like material	ASTM D420 ASTM E300	Tubing, trier, auger, scoop, or shovel
Soil-like material	ASTM D1452 ASTM E300	Tubing, trier, auger, scoop, or shovel
Fly ash-like material	ASTM D2234 ASTM E300	Tubing, trier, auger, scoop, or shovel
Containerized liquids	SW-846 ASTM E300	Coliwasa or tubing
Liquids in impoundments	SW-846	Bomb sampler, tubing, weighted bottle, and/or dipper sampler

Notes:

(1) ASTM refers to *Annual Book of ASTM Standards*, American Society for Testing Materials, West Conshohocken, PA, 1995 or most recent edition. SW-846 refers to *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, Third Edition, U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC, September 1986, as amended by Final Update I, July 1992, or more recent update or edition.

3 ANALYTICAL RATIONALE

The usage and applicability of analyses are described herein. The analytical procedures and methods given in this text and listed in Appendix A, whether standard procedures or procedures developed by CWM through its operating experience, have been chosen for their ability to identify waste and to provide the information required to properly and safely manage wastes. Procedures developed by CWM must be approved by the Department. In each case facility management selects the parameters from those listed below according to the needs and requirements specified for pre-acceptance analyses (see Section 4.0), for incoming shipment identification analyses (see Section 5.0), and for process analytical testing (see Section 6.0). Analyses are not necessarily repeated for sequential activities or movement of the same waste within the facility unless required by changes in the waste's character, as determined by facility management. This is discussed further in Section 5.2.

Analytical tests are classified as either mandatory or supplemental:

Mandatory Analysis - All incoming waste identification samples are subjected to the mandatory analyses as a first step in the analytical scheme.

Supplemental Analysis - Facility management may select additional supplemental analyses to obtain information required for efficient process control or to further evaluate a positive result from a mandatory screening test (e.g., a flash point may be run to provide more specific waste data when a positive flammability potential is reported during the mandatory analysis testing).

This arrangement allows a tiered approach to waste identification, enabling CWM to structure the analyses to adequately identify the waste or to define operational parameters for various treatment processes.

Analyses, when required, may be performed prior to or after arrival of the waste at the facility. Most analyses utilize procedures from authoritative sources such as the EPA, American Society of Testing Materials (ASTM) or standard methods for the analysis of water and wastewater. Where standard methods are not available unique procedures and protocol that meet CWM performance standards are used. These procedures and protocols have been developed by CWM through its operating experience and are found to be preferable for waste identification or they may be used in the absence of standard techniques. The parameters and rationale are identified below. The analytical methods are identified in Appendix A.

Additional parameters not listed may be added as required (by changes in regulations, processes, waste streams, etc.). The procedures used for these parameters are as follows:

- Among those listed in Appendix A;
- From sources listed in the references at the end of Appendix A;

3.1 Mandatory Analyses

Mandatory analyses include basic screening procedures or "fingerprints" that are performed to provide a general identification of the waste (often referred to as "fingerprinting") and to indicate

the management scenario that is most suitable. The parameters and associated rationale for these analyses are as summarized in Table 3-1 and as follows:

- Physical Description is used to determine the general physical properties of the waste. This facilitates subjective comparison of the sampled waste with prior waste descriptions or samples. Also, it is used to verify the observable presence or absence of free liquids.

- Flammability Potential is used to indicate the fire-producing potential of the waste. This test is used to identify any obvious difference in waste type such as waste flammable solvent substituted for waste mineral acid. This test is not performed on solids unless the waste contains free liquids as defined in 40 CFR 260.10.

- pH Screening is undertaken to indicate the pH and, in general, the corrosive nature of the waste. pH may not apply to certain waste types, for example, organic wastes, or wastes which are not water soluble.

- Cyanides Screening (performed on wastewaters with a pH greater than 6 and other wastes which are to be treated in a process unit) indicates whether the waste produces hydrogen cyanide upon acidification below pH 2.

- Sulfides Screening (performed on wastewaters with a pH greater than 6 and other wastes which are to be treated in a process unit) indicates whether the waste produces hydrogen sulfide upon acidification below pH 2.

- Water Compatibility is used to determine whether the waste has a potential to react vigorously with water, to form gases, other products, or to generate extreme heat and to determine its solubility in water. This test does not apply to wastes that are already in contact with excess water or to wastes that are known to be water reactive.

3.2 Supplemental Analyses

Appropriate supplemental tests are performed on wastes accepted at the facility when one of the following three conditions are met:

- If a discrepancy is noted during mandatory testing and additional information is required in order to determine how to manage the waste;

- If additional or more precise information is required in order to manage the waste safely within the facility's permit conditions; and

- If facility management has reason to believe the composition of the waste has changed.

The results of these supplemental analyses provide facility management with another level of confidence concerning the proper means of treatment, storage, and disposal. Each waste management unit has a unique set of limitations. Once facility management has made a preliminary decision as to the acceptability of the waste for a particular unit (that is, the targeted

unit), supplemental analyses may be conducted as necessary to ensure that the waste does not exceed a parameter limitation for that unit (see standalone documents for each waste management unit or operation at the facility). Certain supplemental analyses are required in conjunction with the use of the treatment/disposal units. These are indicated in Section 6.0. The parameters which constitute the supplemental analysis include, but are not limited to the following:

- Percent Acidity determines the acidity in the waste. It may be performed if the waste is aqueous and below a pH of 4.

- Percent Alkalinity determines the amount of alkalinity in the waste. It may be performed if the waste is aqueous and above a pH of 10.

- Beilstein Screen is used to indicate the presence of halogenated organics in aqueous and organic wastes.

- Bench-Scale Treatment Evaluation to determine the appropriate ratios of wastes to reagents or waste-to-waste to be used in the treatment process to produce the desired reaction.

- Chlorides determine if the major acid component is hydrochloric acid or its salt.

- Liquid Waste Compatibility determines whether liquid wastes which are to be combined together are compatible. This is a required supplemental analysis when combining different wastes (see Section 6.1).

- Cyanides Screening indicates whether the waste produces hydrogen cyanide upon acidification below pH 2.

- Total and Amenable Cyanides quantifies the concentration of all unbound and most complexed cyanides (total cyanides) and/or cyanide species amenable to alkaline chlorination (amenable cyanides). Results may be used for treatability determinations, to monitor treatment processes, and/or to meet disposal restrictions including Land Disposal Restrictions.

- Flash Point further characterizes ignitable liquid wastes to establish the proper storage mode and conformance with permit conditions.

- Gas Chromatography Scan is used to identify specific organic compounds.

- Ignitability of Solids Method 1030 further characterizers ignitable solid waste to establish the proper storage mode and conformance with permit conditions. ‡ **Rev. 9**

- Load Bearing Capacity Test is used to determine structural integrity of stabilized material to be landfilled.

- Metals Content may be determined to quantify metals concentrations for process operating parameters or potential salt precipitation for monitoring certain processes.

- Nitrates determine if the major acid component is nitric acid or its salt.

- Oil and Grease quantifies the amount of oil and grease so as not to impact certain processes.

- Organics Screening performed in order to determine whether or not a waste contains various specific organic compounds (e.g., pesticides, herbicides, PCP, TPH, etc.).

- Oxidizer Screening determines the presence of oxidizers.

- Paint Filter Test is used to verify the presence or absence of free liquid in wastes to be landfilled.

- pH by Meter provides a more precise measurement of pH and an indication of corrosivity when determining process parameters.

- PCB Screening is performed in order to determine whether or not polychlorinated biphenyls (PCB's) are present in waste.

- PCB's conducted to determine whether PCB's are present and/or to ascertain their concentration.

- Phosphates determine if the major acid component is phosphoric acid or its salt.

- Total Residue quantifies the suspended and dissolved solids present and moisture content for selected processes.

- Filterable Residue quantifies the suspended solids present to determine filtration requirements in process operations.

- Non-Filterable Residue quantifies the dissolved solids present to determine acceptability for certain processes.

- OREMET-WAH CHANG Method: OWC Impact Test For Ignitable or Reactive Solids evaluate whether a material will combust, detonate, or react, based on compressive force. (See Appendix G) ‡ **Rev. 9**

- Percent Solids is used to determine the amount of solids that will settle out of a waste for operational purposes.

- Solvent Screen is used to identify the presence of land disposal restricted solvent constituents.

- Specific Gravity or Bulk Density indicates the density of the waste. This information is used to convert pounds of liquids to gallons of liquids (and visa versa). It is also a key parameter for identifying changes in a waste.

- Stabilization Evaluation is performed to determine whether the waste is amenable to stabilization, and to determine the ratio of reagent to waste required to effect stabilization.

- Sulfates determine if the major acid component is sulfuric acid or its salt.

- Sulfides Screening is used to indicate whether the waste produces hydrogen sulfide upon acidification below pH 2.

- Total Sulfides is analyzed to provide quantitative backup to the sulfide screen.

- TOC may be used to determine the soluble organics concentration of a wastewater.

- Water Content is used to identify the percentage of water present in a waste.

TABLE 3-1

ANALYTICAL PARAMETERS SELECTION FOR INCOMING WASTE SHIPMENTS (1)

PARAMETER	USAGE	EXCEPTIONS In Addition To Those in Section 5.1.1
Physical Description	Mandatory	
Flammability Potential	Mandatory	
pH Screening	Mandatory	Organic, water-insoluble and other non-aqueous wastes
Cyanides Screening	Mandatory	Direct landfill wastes and wastewaters with pH ≤ 6
Sulfides Screening	Mandatory	Direct landfill wastes and wastewaters with pH ≤6
Water Reactivity	Mandatory	
Radioactivity Screening	Mandatory	

Notes:

(1) See WAP Section 3 (Sections 3.0 and 3.1) for details, additional requirements, explanation of terms and exceptions. See WAP Section 5 (Sections 5.0 and 5.1) for detailed applicability of these analyses to incoming waste shipments. See also WAP Section 5.1.1 for exceptions.

4 PRE-ACCEPTANCE PROCEDURES

CWMNW has developed a series of control procedures to determine the acceptability of specific wastes for management at the facility. These pre-acceptance control procedures dictate what information CWMNW must obtain to determine the acceptability of the waste for management. At a minimum, CWMNW must obtain all the information required by 40 CFR Part 264.13(a)(1), as described in 40 CFR 264.13(a)(2) and comment, and other information necessary to manage a waste stream. Standard profiles may be developed for use as part of CWM's pre-acceptance procedures; see Section 4.2 for a discussion of standard profiles.

Pre-acceptance control is the mechanism for deciding to approve for management a particular type of waste, prior to its acceptance by the facility, based on the conditions or limitations of existing permits and applicable regulations, and the waste's compatibility with other wastes being stored, treated, or disposed of at the facility.

The pre-acceptance procedures for this facility may be carried out at this facility or another CWM facility and may be performed or completed upon receipt (prior to acceptance) of the initial shipment of the waste. Where pre-acceptance information is needed on the initial shipment, these wastes will not be at CWM without a preliminary decision as to the management of the waste.

4.1 Procedural Requirements

The following procedures are implemented for each new waste stream that is a candidate for delivery to the facility:

Written and Analytical Information - CWMNW obtains the following:

- Pertinent chemical and physical data on the waste profile;
- A sample, <u>if necessary</u>. A sample may not be required by CWMNW if site management determines that the pre-acceptance documentation gives sufficient information to maintain compliance with permit and operational constraints and that the submittal of a sample would not aid in the disposal decision process. If necessary, this sample may be obtained by CWM upon receipt of the initial shipment of the waste prior to acceptance. Also see Section 4.2;
- Land Disposal Restriction (LDR) Notification/Certification Information and/or Data as provided in 40 CFR 268.7, if applicable;
- Other supporting documentation such as Material Safety Data Sheets (MSDS), product ingredients, etc.; and a
- Subpart CC Determination as required below:

The Subpart CC rule requires a waste determination to be made at the point of waste origination, either by direct measurement or process knowledge. Direct measurement may be made using ASTM method 25D or by using methods 624, 625, 1624, 1625, 8260 B, or 8270 C. If process knowledge is used, supporting documentation must include previous testing, process material balance, or information included on waste profiles, manifests or LDR forms. If direct measurements are used, the mass weighted average of volatile organic concentration must be determined using a minimum of 4 samples and an averaging period of not more than one year. If the hazardous waste meets the organic treatment standards that apply to the waste (including UHC's that apply), no waste determination is necessary and the waste is not subject to subpart CC controls. All waste profiles must contain a certification from the generator indicating whether or not its waste is Subpart CC waste.

CWMNW obtains all of the information required by 40 CFR 264.13(a)(1) to manage each waste stream.

Analysis - CWMNW will perform the Mandatory Analyses on a sample(s) of the waste in order to provide the facility with the information needed to determine if the waste can be managed and/or to determine if the waste material matches the identity of the waste designated on the accompanying pre-acceptance paperwork. A Supplemental Analyses must be performed when a discrepancy or question arises with the Mandatory Analysis.

Facility Conditions - After reviewing the pre-acceptance information and any data from the laboratory, CWMNW will determine the acceptability of the waste based on:

- The permit conditions for the facility;
- The availability of the proper waste management techniques; and
- The available capacity at the facility.

Alternative Treatment Standards - Hazardous debris waste streams subject to the alternate treatment standards will be evaluated to determine:

- The geometric shape of the debris;
- The hazardous constituents present on the debris; or
- Whether the debris is contaminated on the outer surfaces, the internal surfaces, or both.

Based on these criteria CWMNW will determine the acceptability of the debris for macro-encapsulation, microencapsulation, or both.

4.2 Standard Profiles

Definition - "Standard profiles" may be used for waste streams which are:

- Similar in physical and chemical characteristics; and

- Generated by similar industries or processes.

This profile designation is consistent with the EPA approach of assigning a listed waste code to similar process wastes. All the wastes within a standard profile are managed at the facility using the same treatment process.

Process - An analytical database is developed for a specific standard profile based on analytical data from waste streams that are representative of wastes from similar industries, processes or historical data. CWM reviews the database and determines whether the individual waste streams are sufficiently similar in physical and chemical characteristics to an established standard profile. The analytical database developed as discussed above will replace any requirement for a pre-acceptance sample (see Section 4.1) for each individual waste stream. CWM will use generator provided information to evaluate whether a waste conforms to an established standard profile. A specific waste stream is identified as conforming to an approved standard profile by evaluating the individual waste stream information against the standard profile. The specific waste stream information must fall within the standard profile representative database ranges in order to incorporate that waste stream into the standard profile. Standard profiles are a limited subset of a waste stream conceivably expected to fit into a set of defined ranges.

Specific candidate waste streams which, upon review, are identified as conforming to an existing approved standard profile will be managed under the existing waste management decision specific for that standard profile.

Usage - The standard profile templates will be submitted to Oregon Department of Environmental Quality (DEQ) for review and approval prior to their implementation at the facility.

4.3 Decision Evaluation Logic

Facility management is responsible for the pre-acceptance evaluation decision (that is, whether to accept or reject the waste).

Samples required for wastes under consideration for acceptance are subjected to the mandatory analyses (see Section 3.1). In addition, certain supplemental analyses have been designated as required tests for specific waste management units. A description of the operation of the units and the associated required supplemental analyses are provided in Section 6.0.

Facility management must use supplemental analyses to screen samples for additional contaminants or properties if the mandatory analysis raises questions. The basis for requiring these additional analyses are:

- Facility management's experience and judgment;
- WPS description of the chemical and physical properties of the waste;
- WPS description of the process generating the waste;

- Any additional documentation, including information that the waste is subject to the Land Disposal Restrictions of 40 CFR Part 268, if appropriate (see Section 4.1); and
- Results of any mandatory analyses.

The pre-acceptance evaluation is concluded with documentation of the decision regarding the acceptability of the waste and the proposed method of management. Facility management's technical disposal decisions are based on:

- Management methods available;
- Conditions or limitations of existing permits and regulations;
- Capability to manage the waste in a safe and environmentally sound manner;
- WPS description of the process generating the waste;
- WPS description of the chemical and physical properties of the waste;
- Any additional documentation, including information that the waste is subject to Land Disposal Restrictions of 40 CFR 268, if appropriate (see Section 4.1(2));
- Results of any mandatory analyses;
- Results of supplemental analyses, as appropriate; and
- Management's technical experience and judgment.

A waste must be rejected during the pre-acceptance process, unless later reconsidered, for one of the following reasons:

- Incomplete or outdated information provided by the waste generator;
- The waste category is specifically excluded from acceptance at the facility; and
- The waste cannot be treated, processed, stored, or disposed of at the facility.

4.4 Waste Profile Re-evaluation

In accordance with 40 CFR 264.13, a waste profile re-evaluation will be conducted when one of the following occurs:

- A generator notifies CWMNW that the process generating the waste has changed; or
- The results of inspection or analysis indicate that the waste received at the facility does not match the identity of the waste designated on the accompanying manifest or shipping paper or pre-acceptance documentation, in which case the procedure in Section 5.2 is followed.

When this occurs, CWMNW will review the available information, if existing analytical is not sufficient, the generator may be requested to:

- Review the current profile;
- Supply a new profile or analysis;
- Submit a sample for analysis; or
- CWMNW may obtain a sample from a shipment of the waste for analysis.

In addition, every two years, a waste profile re-evaluation is conducted. This re-evaluation process consists of a review of the paperwork to ascertain that the analytical data is accurate and current and that it is sufficient to properly manage the waste as intended. The generator may be asked to review the current waste profile to confirm the information.

This process, along with a vigilant incoming load screening program, is sufficient to ensure that wastes continue to be properly managed at the facility.

4.5 K088, F998, F999, P998 and P999 Waste Profile Re-Evaluation

Once every 12 months, a waste profile re-evaluation is conducted for hazardous wastes designated by EPA waste code K088 or State of Oregon waste codes F998, F999, P998, and P999. This re-evaluation process consists of a review of the paperwork to ascertain that the analytical data is accurate and current and that it is sufficient to properly manage the waste as intended. The generator will be asked to review the current waste profile and recertify that the information provided continues to represent the waste. The generator may be asked to provide a new sample if site management has any reason to believe that retesting is necessary.

4.6 Waste Profile Evaluation for Organic Recovery Unit Wastes

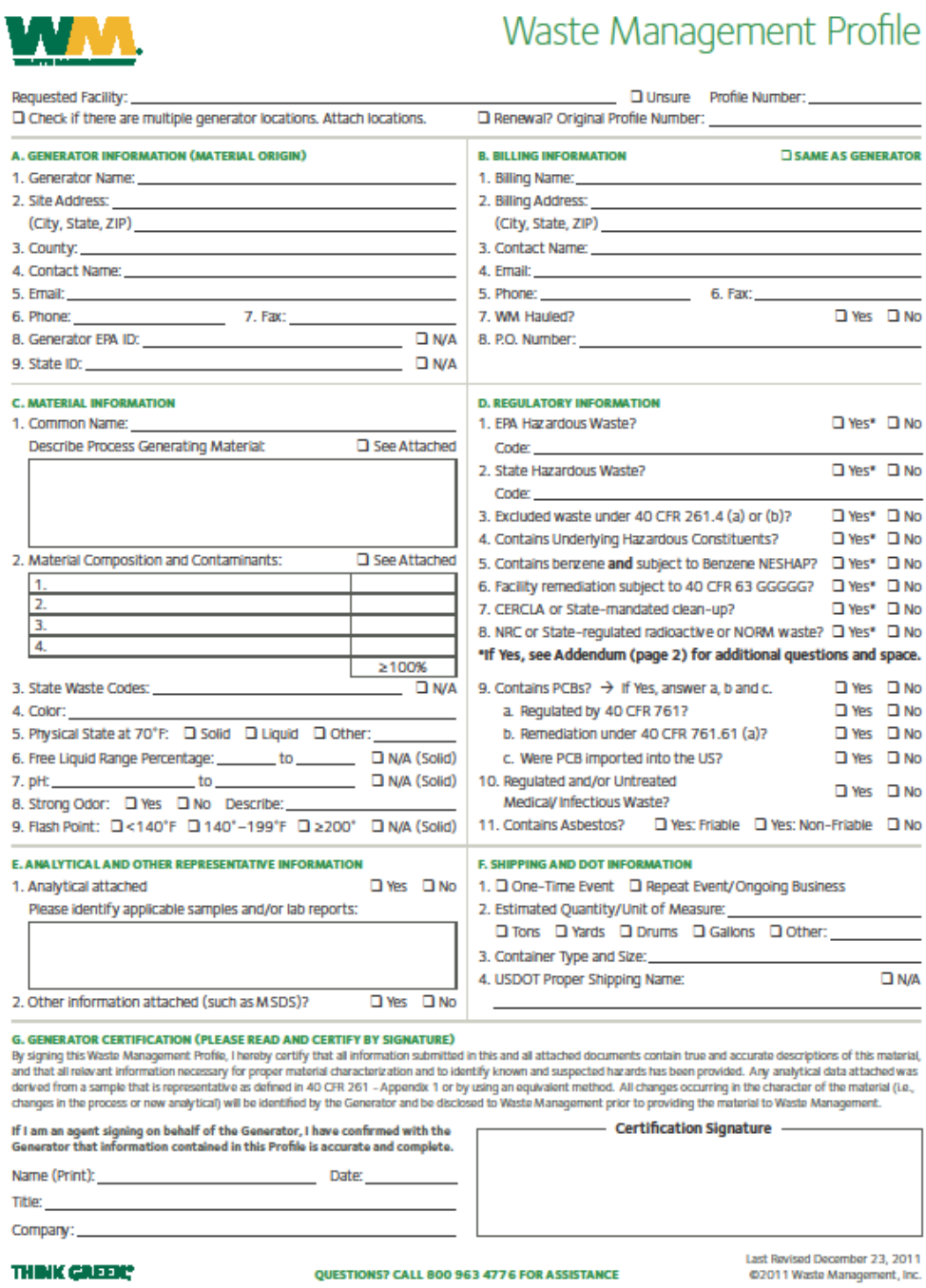
Contaminated waste will be initially profiled, brought in, tested, and prepared for processing prior to acceptance for processing in the ORU. CWMNW will consult with WMI technical staff as needed to evaluate each specific waste stream for ORU treatment. This evaluation will begin with a review of existing information on the physical and chemical properties of the contaminated waste matrix. A laboratory treatability study to confirm treatment rate and extent may also be performed as necessary. As CWMNW gains experience in the ORU treatment of the contaminated waste in question, consultation with the WMI technical staff will not be necessary if the type of contaminant(s) and concentration levels in the contaminated waste are similar to that historically treated at the ORU.

Initial profiling of contaminated waste is by generator information. CWMNW will run tests consistent with its Permit. In addition, important specific tests for the ORU are for heating value and moisture content. The heating value test sets the upper limit of what fuel value can be recovered from the waste stream and the weight of vaporizable organics. The combination of the heating value and moisture content dictate the load on the ORU and the volume of liquid effluent to be handled by condensing train. A final factor is the relative amount of a particular

contaminated waste stream on an annual basis. Small amount of even difficult to handle material (e.g., wet, sloppy loads) can be blended with easier-to-handle material such as soil from other job orders.

Major objectives for operations will include the need to balance, optimize, and prepare the contaminated waste. For example, high liquid streams would typically be mixed with bag-house dust or other dry material to allow a friable, soil-like feed or mixed with warm, dry ORU product for the same reason. ORU waste streams with high boiling points (e.g., coal tar) would be mixed with streams with low boiling points (e.g., gasoline and diesel) to produce an easier to handle and to treat condensed organic material and reduce the chance of fouling of the condensers. Organic condensate could be stored and blended if there are BTU and chlorine targets that must be met for reuse or if there is an intention to send the material to fuel blenders.

The major organic constituents and type of the waste will dictate the organics to be recovered and the operating temperature of the ORU. For example, light solvents can be vaporized at lower temperatures and yield a low viscosity organic that may have potential for reuse in solvent recycling. Coal tars, on the other hand, will yield a very thick organic, which, if not kept heated, may form a tar in the condensers and storage tanks. Blending high concentration coal feedstock with a solvent bearing feedstock is a way to thin the recovered product and make it easier to handle and potentially to reuse.



Waste Management Profile

Requested Facility: _____ ❑ Unsure Profile Number: _____
❑ Check if there are multiple generator locations. Attach locations. ❑ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)
1. Generator Name: _____
2. Site Address: _____
(City, State, ZIP) _____
3. County: _____
4. Contact Name: _____
5. Email: _____
6. Phone: _____ 7. Fax: _____
8. Generator EPA ID: _____ ❑ N/A
9. State ID: _____ ❑ N/A

B. BILLING INFORMATION ❑ SAME AS GENERATOR
1. Billing Name: _____
2. Billing Address: _____
(City, State, ZIP) _____
3. Contact Name: _____
4. Email: _____
5. Phone: _____ 6. Fax: _____
7. WM Hauled? ❑ Yes ❑ No
8. P.O. Number: _____

C. MATERIAL INFORMATION
1. Common Name: _____
Describe Process Generating Material: ❑ See Attached
2. Material Composition and Contaminants: ❑ See Attached

1.	
2.	
3.	
4.	
	≥100%

3. State Waste Codes: _____ ❑ N/A
4. Color: _____
5. Physical State at 70°F: ❑ Solid ❑ Liquid ❑ Other: _____
6. Free Liquid Range Percentage: _____ to _____ ❑ N/A (Solid)
7. pH: _____ to _____ ❑ N/A (Solid)
8. Strong Odor: ❑ Yes ❑ No Describe: _____
9. Flash Point: ❑ <140°F ❑ 140°–199°F ❑ ≥200° ❑ N/A (Solid)

D. REGULATORY INFORMATION
1. EPA Hazardous Waste? ❑ Yes* ❑ No
Code: _____
2. State Hazardous Waste? ❑ Yes* ❑ No
Code: _____
3. Excluded waste under 40 CFR 261.4 (a) or (b)? ❑ Yes* ❑ No
4. Contains Underlying Hazardous Constituents? ❑ Yes* ❑ No
5. Contains benzene **and** subject to Benzene NESHAP? ❑ Yes* ❑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ❑ Yes* ❑ No
7. CERCLA or State-mandated clean-up? ❑ Yes* ❑ No
8. NRC or State-regulated radioactive or NORM waste? ❑ Yes* ❑ No
***If Yes, see Addendum (page 2) for additional questions and space.**
9. Contains PCBs? → If Yes, answer a, b and c. ❑ Yes ❑ No
a. Regulated by 40 CFR 761? ❑ Yes ❑ No
b. Remediation under 40 CFR 761.61 (a)? ❑ Yes ❑ No
c. Were PCB imported into the US? ❑ Yes ❑ No
10. Regulated and/or Untreated Medical/ Infectious Waste? ❑ Yes ❑ No
11. Contains Asbestos? ❑ Yes: Friable ❑ Yes: Non-Friable ❑ No

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION
1. Analytical attached ❑ Yes ❑ No
Please identify applicable samples and/or lab reports:
2. Other information attached (such as MSDS)? ❑ Yes ❑ No

F. SHIPPING AND DOT INFORMATION
1. ❑ One-Time Event ❑ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: _____
❑ Tons ❑ Yards ❑ Drums ❑ Gallons ❑ Other: _____
3. Container Type and Size: _____
4. USDOT Proper Shipping Name: ❑ N/A
_____

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)
By signing this Waste Management Profile, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): _____ Date: _____
Title: _____
Company: _____

Certification Signature

THINK GREEN.

QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

Last Revised December 23, 2011

Figure 4-1

Waste Management Profile Addendum

Only complete this Addendum if prompted by responses on Waste Management Profile (page 1) or to provide additional information. Sections and question numbers correspond to Waste Management Profile.

Profile Number: _____

SECTION C

Describe Process Generating Material (Continued from page 1): If more space is needed, please attach additional pages.

Material Composition and Contaminants (Continued from page 1): If more space is needed, please attach additional pages.

5.	
6.	
7.	
8.	
9.	
10.	
	≥100%

SECTION D

Only questions with a "Yes" response on Waste Management Profile (page 1) need to be answered here.

1. EPA Hazardous Waste
   a. Please list all USEPA listed and characteristic waste code numbers:
   b. Is the material subject to the Alternative Debris standards (40 CFR 268.45)? ❑ Yes ❑ No ❑ Unsure
   c. Is the material subject to the Alternative Soil standards (40 CFR 268.49)? → If Yes, complete question 4. ❑ Yes ❑ No ❑ Unsure
   d. Is the material exempt from Subpart CC Controls (40 CFR 264.1083 and 265.1084)? ❑ Yes ❑ No ❑ Unsure
   → If Yes, please select one of the following:
   ❑ Waste has been determined to be LDR exempt [265.1083(c)(4) and 265.1084(c)(4)] based on the fact that it meets all applicable organic treatment standards (including UHCs for D-coded characteristic wastes) or a Specified Technology has been utilized.
   ❑ Waste does not qualify for a LDR exemption, but the average VOC at the point of origination is <500 ppmw and this determination was based on analytical testing (upload copy of analysis) or generator knowledge.
2. State Hazardous Waste → Please list all state waste codes: _____
3. Excluded Waste → Please select which of the following categories apply to your material:
   ❑ Delisted Hazardous Waste ❑ Excluded Waste under 40 CFR 261.4 → Specify Exclusion: _____
   ❑ Treated Hazardous Waste Debris ❑ Treated Characteristic Hazardous Waste → If checked, complete question 4.
4. Underlying Hazardous Constituents → Please list all Underlying Hazardous Constituents:
5. Benzene NESHAP → Please include benzene concentration and percent water/moisture in chemical composition.
   a. Are you a TSDF? → If yes, please complete Benzene NESHAP questionnaire. If not, continue.
   b. What is your facility's current total annual benzene quantity in Megagrams? ❑ <1 Mg ❑ 1–9.99 Mg ❑ ≥10 Mg
   c. Is this waste soil from remediation at a closed facility? ❑ Yes ❑ No
   d. Has material been treated to remove 99% of the benzene or to achieve <10 ppmw? ❑ Yes ❑ No
   e. Is material exempt from controls in accordance with 40 CFR 61.342? ❑ Yes ❑ No
   → If yes, specify exemption: _____
   f. Based on your knowledge of your waste and the BWON regulations, do you believe that this waste stream is subject to treatment and control requirements at an off-site TSDF? ❑ Yes ❑ No
6. 40 CFR 63 GGGGG → Does the material contain <500 ppw VOHAPs at the point of determination? ❑ Yes ❑ No
7. CERCLA or State-Mandated clean up → Please submit the Record of Decision or other documentation to assist others in the evaluation for proper disposal.
8. NRC or state regulated radioactive or NORM Waste → Please identify Isotopes and pCi/g: _____

THINK GREEN.

QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

Last Revised December 23, 2011

Figure 4-1 cont.

5 INCOMING WASTE SHIPMENT

Purpose - Each shipment of waste coming to the facility is inspected, sampled and analyzed as described herein before the initiation of any further activity at the facility (except as noted in Section 5.1.1). This serves two purposes:

- It compares the actual waste identity with that described in the pre-acceptance phase and with that listed on the waste manifest; and
- It further ensures the proper disposition of the waste to appropriate on-site treatment, storage, and/or disposal.

Other CWM personnel or a CWM-approved laboratory can provide any necessary incoming waste shipment analyses required, prior to or in conjunction with, the arrival of the shipment on site. Waste shipments that have arrived at the facility are considered to be in the receiving process until the laboratory or facility management makes a final decision regarding waste acceptability and space availability; at that time wastes are considered accepted.

LDR Form Required - In addition, all initial shipments for wastes that are subject to the Land Disposal Restrictions (40 CFR Part 268) and that have been treated, exempted, or varianced, or that naturally meet the appropriate treatment standard or prohibition without treatment, must be accompanied by a form from the generator or treater, certifying that the treated, exempted or varianced waste meets the appropriate treatment standard, prohibition, exemption or variance, or that the waste naturally meets the treatment standard. This form must be supplied with each first shipment of the waste and include the applicable analytical data or reference to such data or documentation to support the certification in accordance with 40 CFR Part 268. LDR forms accompanying documentation will be placed in the generators profile package

Furthermore, for all wastes which are subject to the Land Disposal Restrictions and require treatment; the first shipment must be accompanied by a form from the generator or treater, notifying the facility of the appropriate treatment standards and all applicable prohibitions which must be met, and include any applicable analytical data or reference to such data or documentation in accordance with 40 CFR Part 268. LDR forms and accompanying documentation will be placed in the generators profile package

Hazardous waste shipments consisting of residue from the demilitarization, treatment, and testing of blister and nerve agents (State of Oregon waste code F998 and F999, respectively) and from the generation of blister and nerve agents (State of Oregon waste code P998 and P999) that are received at CWM will have an associated unique LDR form. This form provided as Figure 5-1, includes a certification statement that the hazardous waste is agent-free. The specialized LDR form for these F998, F999, P998, or P999 hazardous waste loads will be sent to CWM in advance of any shipment.

5.1 Receiving Procedures

Incoming waste shipment identification begins in conjunction with the arrival of the waste at the facility. The inspection, sampling, and analysis of the incoming waste is performed in accordance with the methods and parameters described in this WAP, except as noted in Section 5.1.1.

Bulk Waste - Each bulk solid and liquid waste shipment is sampled and analyzed for the applicable mandatory analyses, except as noted in Section 5.1.1 or where large volumes of a single waste character are received from a single source, (e.g., a major site cleanup of contaminated soil or water). See specifics in Section 2.2.2.

Containers and Portable Tanks -

- Each shipment is checked against the accompanying manifest to verify piece count, condition, and material identification.

- At least 10 percent of the containers from each generator's waste stream(s) are selected at random for sampling, using calculator or computer generated random numbers. Applicable mandatory and supplemental analyses are run for waste profile and manifest comparison and to confirm the acceptability of the waste for the targeted waste management unit. Container samples may be composited as described in Section 2.2.

- All containers which are accepted at the facility for direct landfill will be inspected to confirm that they are 90 percent full prior to placement in the landfill.

- In the event that free liquid is found in any container of an incoming waste shipment and such liquid is not identified on the manifest or profile sheet, CWMNW will:

- open the entire shipment of containers for visual inspection of non-conforming free liquid, and

- document the apparent discrepancy in the operating record and contact the generator to attempt to resolve the discrepancy.

- RCRA debris for alternative LDR treatment – For bulk and containerized debris wastes received for macro-encapsulation, each bulk shipment and drum or container is visually inspected for debris size and content (material greater than 60 mm in diameter (2.3 inches) must exceed the volumes of other material i.e. in a load of debris and soil, the debris component must exceed 50% for the load to be treated as debris). Incoming load inspectors additionally compare the load to the respective profile sheet to make sure that the waste matches its profile. The waste is additionally inspected when placed in the stabilization unit bins. The operator views the waste from an elevated position. Unusual or irregular items may be retrieved at this point. The waste is again inspected by the waste handler in charge of sealing the macro box when the macro box lid is fitted onto the macro box. Waste that does not belong in the load can be retrieved before the box is

sealed and placed in the landfill.

The sample(s) (composited or individual) are then subjected to appropriate mandatory analyses (see Section 3.1). Required analyses are summarized in Table 3-1 (see Section 3.0). If analytical results are consistent with the manifest or shipping papers and with the pre-acceptance documentation, the waste is accepted and distributed to the appropriate designated management area.

Upon receiving excepted waste streams (as described in Section 5.1.1), the shipment of containers are, at a minimum, visually inspected and screened for radiation. In addition, piece count is verified. The sampling and analysis of excepted wastes as described in Section 5.1.1 is not required unless specifically requested by facility management. If inspection results are consistent with the manifest or shipping papers and with the pre-acceptance documentation, the waste is accepted and distributed to the appropriate designated management area. Site generated wastes and post treated wastes are not screened for radiation.

5.1.1 Exceptions

Exceptions to the foregoing WAP sampling and analysis requirements include the following wastes:

- Small containers of waste in over-packed containers (lab packs) packaged in accordance with 40 CFR 264.316 and not prohibited under the Land Disposal Restrictions specified in 40 CFR 268.
- "Empty" product containers as defined in 40 CFR 261.7.
- Commercial products or chemicals: off-specification, outdated, unused or banned. This also includes products voluntarily removed from the marketplace by a manufacturer or distributor, in response to allegations of adverse health effects associated with product use.
- Asbestos waste from demolition or cleaning. The unopened containers are visually inspected for integrity.
- Contaminated debris from demolition, decommissioning or cleaning, such as piping, tanks, concrete and wood (not including liquids). This does not include the evacuation and removal of associated contaminated soil, although some amount of soil, which is removed unavoidably with the debris, is expected and acceptable.
- Site generated waste. Wastes generated on-site can generally be characterized adequately by knowledge of the generating process or source of the waste.
- Controlled substances regulated by any political subdivision including drugs, whether legal or illegal, and/or materials from clandestine labs.
- Debris as defined in 40 CFR 268.2(g). These materials will be visually inspected prior to acceptance (see Section 5.0) in order to ensure that the waste meets the definition of debris.
- Materials which are non-hazardous under Oregon laws and regulations.

- Materials or solid wastes which are covered under an exclusion listed in 40 CFR 261.4.
- Materials or hazardous wastes generated by a conditionally exempt small quantity generator as detailed in 40 CFR 261.5.
- Reactive wastes (example: reactive metal shavings "Swarf") **‡ Rev. 9**

These materials are not sampled because they present health and safety hazards (e.g., asbestos), exhibit unusual or impractical sampling and analytical complication (e.g., lab packs), and/or are of such a nature that their contents are known in sufficient and reliable chemical and physical detail that sampling and analysis is not needed (e.g., outdated commercial products.). For the above exceptions, the facility will complete the following:

- Obtain sufficient chemical and physical characteristics information for proper management of the waste;
- Know the chemical and physical composition of the excepted material before it is moved on-site;
- Evaluate the waste for compatibility prior to storage, treatment, or disposal; and
- Obtain the LDR Notification/Certification required by 40 CFR 268.7 if any of the above material is subject to the Land Disposal Restrictions.
- Materials or solid wastes generated from the demilitarization, treatment, and testing of blister agents with a State of Oregon waste code designation of F998 or F999.
- Materials or solid wastes generated from the production of blister and nerve agents with a State of Oregon waste code designation of P998 or P999.

The sampling and analysis of these excepted wastes is not required unless specifically requested by facility management.

5.2 Incoming Shipment Decision Evaluation Logic

The following major decision points are utilized by facility management to accept or reject a particular waste shipment:

Waste identification - The effectiveness of the waste identification step is dependent on one or more of the following components:

- Inspection;
- Sampling;
- Analytical results;
- Pre-acceptance documentation;
- Waste Manifest;
- LDR forms; and
- Facility management's experience and judgment.

Additional analyses, if necessary - Facility management decides whether additional analyses are required for a particular waste as described in Section 3.0. Further testing is required if the results indicate unexpected information with respect to pre-acceptance information, or if facility management has reason to suspect that the waste composition has changed.

An evaluation of whether a waste is found to be in conformance or non-conformance - Facility management must classify the waste shipment as being in "non-conformance" if it is significantly different in composition from the information shown on the WPS, the pre-acceptance information, or the manifest. In addition, it would be classified as a significant discrepancy if it is significantly different in the weight or piece count shown on the manifest, in accordance with 40 CFR Part 264.72.

Four major criteria are used to arrive at this decision. They are:

- For bulk wastes, variations greater than 10 percent in weight;
- For batch wastes (e.g., drums, bags, etc.), any variation in piece count or any disagreement between the number of pieces on the arriving truck; or
- If inspection or analysis of any waste shipment determines differences in waste type or code, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper; or
- If the non-conformance changes the originally approved method of management.

Manifest discrepancies or non-conformances that do not fall within these criteria are considered to be "minor" and in conformance. If CWMNW has reason to believe that a minor discrepancy is a continued variation and that a particular waste stream is different from its documented values, the pre-acceptance information may be amended.

An evaluation of whether wastes found to be in non-conformance can be accepted or should be rejected - Non-conforming wastes may be rejected or they may be re-evaluated for possible acceptance by the facility despite the variance. CWMNW's re-evaluation procedure is designed to determine whether a waste in its form as identified by CWMNW (i.e., not consistent with WPS information, and/or manifest data) can be handled at the facility and whether or not the generator concurs with the CWMNW identification. This procedure is intended to prevent the unnecessary movement of a waste material back and forth between the facility and the generator, when the material can be managed by the facility. By eliminating this unnecessary movement, CWMNW is attempting to minimize potential exposure to human health or the environment. The re-evaluation will be based on the following criteria:

- Discussions with or information from the generator;
- Facility conditions for storage, treatment, and disposal;
- Facility management's judgement; and
- Additional supplemental analyses.

If all of the above criteria and results of the supplemental analyses indicate the waste can be accepted and the generator concurs, a new waste disposal decision form is prepared by facility management, if the method of management changes. Pursuant to 40 CFR 264.72 management will discuss and attempt to resolve with the generator any discrepancies between the received waste and that shown in the manifest. If the discrepancy cannot be resolved within 15 days of shipment receipt, the facility will notify the DEQ of the discrepancy and the attempts to reconcile it, in writing, and provide a copy of the involved manifest.

A waste may be rejected for one of the following reasons:

- The generator's/transporter's paperwork is not in order;
- A manifest discrepancy cannot be resolved to the generator's and CWMNW's satisfaction;
- Regulatory requirements (e.g., Subpart CC, benzene NESHAP, etc.);
- A bulk liquid shipment is incompatible (fails a commingled liquid waste compatibility determination) with wastes stored in the impoundments or bulk liquid storage tanks and no other management method is available; or
- Management’s discretion
- Adequate segregated space is not available at the drum storage area for containerized liquid wastes and special handling cannot be used to correct the deficiency.

The final decision to reject all or part of a waste shipment is made by facility management. Decisions are made as soon as the facility has collected and considered all of the applicable information listed above. The facility strives to complete these decisions as early as practicable, but circumstances which prevent sampling (e.g., extreme weather) can cause delays in obtaining the information necessary to make an informed decision on the acceptability of the waste. Under such circumstances, the facility will take appropriate action to facilitate the decision process. During this time proper staging locations are determined using the available information. This information (e.g., WPS, MSDS, etc.) will provide sufficient information to ensure staging with compatible materials.

Where rejected waste will be located - Once the final decision has been made to reject part or all of a waste shipment, the rejected wastes are placed in designated rejected waste areas at the facility. Wastes rejected at the S2 storage facility (typically drums, small containers and super sacks) are stored in the southeast area of the building. At storage building S2, red cones are placed on each item of rejected waste or red cones are used to outline the area containing rejected waste. Large containers of rejected wastes (typically intermodal containers) are stored in the southwestern area of the facility just east of the main entrance gate. Per prior agreements with the DEQ, the rejected wastes are held outside of permitted storage areas until an authorized transporter can accept the waste. If this waste is held by CWMNW for longer than 30 days after the date of rejection, additional attempts are made to utilize a different transporter. **‡ Rev. 2**

Hazardous waste removal inspection – After CWMNW completes the removal of hazardous waste from the container holding the hazardous waste (e.g., a truck with a roll off container has dumped its hazardous waste in a landfill unit), CWMNW will visually inspect the interior of the container to make sure that all of the hazardous waste that can be removed by the removal practice employed by CWMNW, has been removed. **‡ Rev. 4**

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM
UMATILLA CHEMICAL AGENT DISPOSAL FACILITY (UMCDF)

Date____/____/____ Page _____ Manifest Doc. No.: _____ Profile Number: _____

Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Non-Wastewater_____

Identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no subcategory. Spent solvent treatment standards are listed on the following page. If D001-D043 requires treatment of the characteristic and meet 268.48 standards, then the underlying constituent(s) present in the waste must be listed and attached.

1. Identify ALL Oregon State waste codes that apply to this waste shipment.

Ref #	USEPA/OREGON STATE HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY, ENTER THE SUBCATEGORY DESCRIPTION.IF NOT APPLICABLE, SIMPLY CHECK NONE	5. HOW MUST THE WASTE BE MANAGED? NTER LETTER FROM BELOW

To identify F039 or D001-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here: ____.
If no UHCs are present in the waste upon its initial generation check here: ____.
To list additional USEPA waste code(s) and subcategory(s), use the supplemental sheet provided and check here: .

HOW MUST THE WASTE BE MANAGED? In Column 5 above, enter the letter (A, B3, or D) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7). States authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed below. Where these regulatory citations differ, your certification will be deemed to refer to those state citations instead of the 40 CFR citations.

A. RESTRICTED WASTE REQUIRING FURTHER TREATMENT (i.e., Brine Salt)
"I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification. The waste streams identified on the aforementioned manifest, having the following Oregon State waste numbers F999 and P999, fulfill the requirements outlined in Permit Condition II.B.2 and meet the "agent free" criteria outlined in Attachment 2 of the UMCDF Hazardous Waste Permit. However, this waste is a characteristic hazardous waste which is intended for further treatment/disposal in accordance with treatment standards set forth in 40 CFR 268.40. For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."

B.3 ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS (i.e., DFS Ash)
I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification. The waste streams identified on the aforementioned manifest, having the following Oregon State waste numbers F999 and P999, fulfill the requirements outlined in Permit Condition II.B.2 and meet the "agent free" criteria outlined in Attachment 2 of the UMCDF Hazardous Waste Permit. However, this waste is a characteristic hazardous waste which is intended for further treatment/disposal in accordance with treatment standards set forth in 40 CFR 268.40. For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."

D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT – (F999 & P999 waste codes only - Dunnage)
"I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification. The waste streams identified on aforementioned manifest having the following Oregon State waste numbers F999 and P999, fulfill the requirements outlined in Permit Condition II.B.2 and meet the "agent free" criteria outlined in Attachment 2 of the UMCDF Hazardous Waste Permit. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

_____

I hereby certify that all information submitted in this, and all associated documents is complete accurate, to the best of my knowledge and information.

Signature_____ Title_____

Date___/___/___

Figure 5-1

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM
UMATILLA CHEMICAL AGENT DISPOSAL FACILITY (UMCDF)
SUPPLEMENTAL FORM

Date___/___/___ Page _____ Manifest Doc. No.: _____ Profile Number: _____

This form is a continuation from UMCDF Land Disposal Notification and Certification Form or Form CWM-2005-E for a waste identified by more than five USEPA waste code/subcategory groups. This page by itself IS NOT an acceptable Land Disposal Notification and Certification Form!

Continue to identify ALL USEPA hazardous wastes that apply to this waste shipment (as defined by 40 CFR 261). For each waste number, identify the corresponding subcategory (write in the description from 40 CFR 268.40, or check NONE if the waste does not have a subcategory). Also identify in column 5 how the waste must be managed. Spent solvents are listed on second page. F039 constituent(s) and underlying hazardous constituent(s) if applicable, must be listed and attached.

REF #	USEPA/OREGON STATE HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY, ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE	5. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
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26			
27			
28			
29			
30			

To identify F039 or D001-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here:____.

If no UHCs are present in the waste upon its initial generation check here: ____.

I hereby certify that all information submitted in this and all associated documents is complete accurate, to the best of my knowledge and information.

Signature_____ Title_____ Date___/___/___

Chemical Waste Management of the Northwest, Inc.

Figure 5-1

6 PROCESS OPERATIONS PROCEDURES

Each movement of a waste within the facility, during which any change in its composition may occur, makes it subject to additional inspection, sampling and analysis to determine appropriate handling and management of the waste. Many of the analyses needed for waste management functions are performed during incoming load identification. These procedures are not repeated unless it is known or believed that the waste characteristics have changed during storage or processing.

6.1 Storage

6.1.1 Containerized Storage

Stored containerized liquid wastes are segregated with respect to ignitability, reactivity and compatibility. A discussion of the procedures used to prevent the mixture of incompatible wastes can be found in the stand-alone documents for each waste management unit or operation at the facility. Other containerized solid wastes are usually sent directly to the landfills. Should there be any question regarding the storage of containerized liquids within a segregated area of the storage unit, a waste compatibility determination is performed and passed. Further segregation within categories is performed as necessary to prevent storage of incompatible wastes. There must be no storage of incompatible wastes as stated at 40 CFR 264 Appendix V.

6.1.2 Bulk Liquid Storage

Liquid wastes which are transferred from drums, portable tanks, or tank trucks may be placed in the bulk storage tanks. Before any wastes are placed in tanks, facility management assesses the compatibility of the waste with the tank materials of construction and with the wastes already stored therein. Samples of the current bulk liquid storage tank contents must be obtained for use in conducting the compatibility determination. A waste compatibility determination is a required supplemental analysis which will be passed with all liquid materials before they are placed in non-empty bulk storage tanks unless the wastes in the tank are from the same source

6.2 Treatment Operations

The proper and complete treatment of a particular waste depends on appropriate sampling and analysis during selected phases of the operation. The results of this analytical program serve to determine safety constraints, confirm treatment method selection, and identify the process parameters. The treatment sampling/analysis program may be divided into three segments, each with a specific purpose:

- Pre-treatment analyses confirm that the waste falls within the selected process design parameters and allow fine tuning of the process operational conditions for optimal treatment.
- In-process analyses are performed to control the process and to monitor progress.

- Post-treatment analyses confirm successful treatment and that the characteristics of the process effluent are such that it can be sent to the next step (disposal or further treatment) based on permit or process constraints. Wastes or residues resulting from on-site treatment of land disposal restricted wastes will be analyzed and evaluated against the appropriate treatment standard or prohibition unless excepted at Section 5.1.1. Any residues or waste sent off-site for disposal or further treatment will have appropriate certification/notification forms in accordance with 40 CFR Part 268.

6.2.1 Stabilization

Stabilization is a process by which waste can be treated to remove free liquids, producing a mixture that has (1) no free liquids, and (2) sufficient structural integrity for the landfill. In addition, stabilization can be used to treat (that is, immobilize or reduce the toxicity of) certain inorganic components, including some land disposal restricted inorganic compounds. In this later case, the requirements of 40 CFR 268 are followed.

In this process, wastes are batch mixed with a suitable stabilizing agent (e.g., lime, cement, kiln dust, fly ash, ground blast furnace slag, Portland cement-based reagents, etc.) and/or other suitable reagents (e.g., ferrous sulfate, etc.) that cause a chemical reaction producing a treated mixture suitable for land disposal.

6.2.1.1 Stabilization of Wastes Containing Free Liquids

In this process wastes that are not land disposal restricted are treated solely to stabilize free liquids. Pre-treatment analyses for these wastes consist of the basic mandatory analysis performed on the incoming shipments. In addition, a stabilization evaluation may be performed on a pre-treatment sample, known in CWMNW operations as a “sale sample,” to ensure the waste's amenability to stabilization and to determine a mix ratio to be used as a guideline when the shipment of that waste material is to undergo stabilization. If an evaluation is not performed on a pre-treatment sample, a previously developed and established mix ratio is identified for use.

After a shipment has been accepted, it will be sent to the stabilization treatment unit for stabilization using the optimum ratio previously identified. Post-treatment analyses consist of the paint filter test. In addition, supplemental analyses may be requested by facility management to further evaluate the suitability of the stabilized waste for landfill disposal. There are no in-process analyses.

On occasion, a non-land disposal restricted solid waste shipment may arrive containing a minimal amount of free liquids. These types of "off-spec" solid waste shipments may be stabilized/solidified at the stabilization unit, in the transportation vehicle and/or in the shipping container prior to land disposal or they may be rejected. If the off-spec shipment is to be stabilized, the following steps will be taken:

- After performing the mandatory analyses on the incoming waste shipment sample, a sample of the off-spec solid waste shipment is collected for additional laboratory analysis.
- The temperature of the waste sample is recorded.
- Stabilization reagent is blended into the waste material of the sample until a homogeneous mixture with no free liquids is observed.
- The temperature increase that occurs during stabilization of the waste is calculated and recorded.
- The off-specs waste is stabilized using the mix ratio established above.
- Supplemental analyses may be requested by facility management to further reevaluate the stabilized waste. Post-treatment analyses consist of the paint filter test ensuring that no free liquids are present.

6.2.1.2 Stabilization of Land Disposal Restricted Waste

In this process certain wastes that are prohibited from land disposal unless treated are stabilized to meet the appropriate stabilization treatment standard. The pre-acceptance analysis for the waste to be stabilized to meet a particular stabilization treatment standard consists of the basic mandatory analyses performed on the incoming shipment sample. In addition, a portion of a pre-treatment sample may be stabilized, and then analyzed to demonstrate that the waste can be stabilized to meet the appropriate treatment standard and/or to establish the mix ratio of reagent(s) to waste that will be used. If an evaluation is not performed on a pre-treatment sample, a previously developed and established mix ratio is identified for use.

Post-treatment analysis is conducted as needed to assure that the stabilization treatment process continues to be effective in meeting the land disposal restrictions (LDR) treatment standards. This post-treatment analysis must be performed while the waste is in a storage or treatment unit. There shall be no interim storage in a landfill unit unless this Permit is modified to do so.

The post-treatment analysis is conducted to assure that the process continues to be effective in meeting the LDR treatment standards for the constituents of concern. In order to demonstrate compliance with the LDR standards, a reagent to waste mix ratio (recipe) will be developed through use of a bench-scale LDR stabilization evaluation or a database of applicable recipes for target waste codes. The recipe developed for each profile will be used to treat all subsequent shipments of the profiled waste.

Upon initial receipt of the waste stream, following stabilization treatment, the first three loads for each profile will be sampled and analyzed (by TCLP) to demonstrate the validity of the recipe. At this point, the profile may be moved to a quarterly testing frequency at the discretion of facility management.

The same post-treatment sampling and analysis will be conducted for code groups or groups of profiles that have similar mix recipes. After three consecutive loads of a given code group or

group of profiles (with similar mix recipes) demonstrate compliance, the group may be moved to quarterly testing frequency at the discretion of facility management.

Results from the analyses that indicate that the LDR treatment standards are not being met must not be disposed of and must be returned for further treatment or storage awaiting further processing. Insufficiently treated hazardous wastes must not be stored for more than one year in accordance with 40 CFR 268.50(c) unless the storage is solely for the purpose of accumulation of such quantities of hazardous wastes as are necessary to facilitate proper recovery, treatment or disposal.

6.2.1.3 Stabilization of K088 Waste – Post Treatment Testing

In this process, the K088 waste is treated in the stabilization unit tanks to meet the land disposal restrictions (LDR) treatment standards in 40CFR part 268, subpart D. This treatment process is discussed in more detail in other parts of the permit. The post-treatment sampling and analysis is conducted to assure that the process continues to be effective in meeting the LDR treatment standards. Following stabilization treatment, the K088 waste residue will be sampled and analyzed for the constituents the waste is treated for as determined during the pre-acceptance step. Such post-treatment testing of the K088 waste residue will be performed at least once every month that the facility is treating K088 waste to demonstrate the treatment technology and process have been operated and maintained so as to comply with the performance levels specified in 40CFR part 268, subpart D.

6.2.1.4 Stabilization of F998, F999, P998 and P999 Waste – Pre-Treatment Inspection

Residue from the demilitarization, treatment, and testing of blister and nerve agents (State of Oregon waste code F998 and F999, respectively) and waste generated from the production of blister and nerve agents (State of Oregon waste code P998 and P999 respectively) received by CWM may require stabilization treatment for heavy metals prior to disposal. Prior to treatment, each load of F998, F999, P998, or P999 hazardous waste will be visually inspected to ensure that the contents match the WPS. This will be conducted at the Stabilization Unit bin during transfer of the F998, F999, P998, or P999 waste into the stabilization bin for treatment.

6.2.2 Solar Evaporation

Where climatologically conditions allow, surface impoundments are used as a waste treatment method whereby aqueous volume reduction occurs via solar evaporation. Land disposal restricted wastes will not be candidates for surface impoundment.

The mandatory analyses are performed to screen out wastes that are not acceptable for impoundment. Liquid waste compatibility is a required supplemental analyses to be passed before solar evaporation. A liquid waste compatibility is run to determine which impoundment should accept the waste, and the waste is examined for the presence of visible oil and grease.

6.2.3 Immobilization

Immobilization is the process by which all debris contaminated with hazardous materials, without contaminant restriction, can be treated to substantially reduce the potential of contaminants from leaching from the debris. Two of these procedures (macro-encapsulation and microencapsulation) can be performed using existing CWMNW stabilization facilities-Macro-encapsulation is the treatment technology that encases debris to provide a physical barrier that reduces the potential of contaminants from leaching from the debris. Debris is placed into a macro-encapsulation device and an acceptable material is placed around the debris to fill any void spaces. The macro-encapsulation device is then sealed and placed in a hazardous waste landfill.

Microencapsulation is similar to the current stabilization operations in use at CWMNW. The treatment technology involves the treatment of the debris with reagent(s) material such that the "leachability of the hazardous constituents is reduced", with the subsequent disposal in a hazardous waste landfill.

6.2.4 Aqueous Waste Treatment

The various treatment options described below identify processes which may be used to treat wastes dependent upon the constituents identified in each waste. The treatment options selected will be determined by facility management based on the information obtained in the pre-acceptance and incoming processes.

6.2.4.1 Neutralization

In this process, wastes are neutralized. Most of the wastes fed to this system will be acidic in nature. Thus, caustic or other reagents, including suitable alkaline wastes, are typically used for neutralization purposes.

Pre-treatment analyses serve to establish the quantity of the neutralization agent and to screen out those wastes that are not suitable for this process. Pre-treatment analyses, together with process controls, will ensure proper treatment and safety such that no adverse chemical or physical reactions occur.

In-process analyses are performed to monitor the pH and temperature as a means of controlling the reaction process.

Post-treatment analyses are performed to confirm that the waste has been sufficiently neutralized. In addition, the suitability of the waste treatment end-products for further treatment, discharge, and disposal is determined.

6.2.4.2 Chemical Oxidation

In this process, cyanide bearing or other oxidizable wastes are treated by chemical oxidation into innocuous species. This conversion may utilize hydrogen peroxide, sodium hypochlorite, calcium hypochlorite, chlorine, and/or other oxidizing agents.

Pre-treatment analyses establish that the waste is, non-ignitable, and allows the selection of the optimum type and quantity of oxidizing reagent. The pre-treatment analyses also establishes that all waste constituents are compatible and, together with process controls, ensure that no adverse reactions will occur.

In-process analyses consist of a check on the concentration levels of the oxidizable constituent as a measure of reaction completeness. Samples are taken and analyzed until the remaining oxidizable constituent concentration levels are within safe and acceptable limits. This may involve the addition of more reagents or a longer reaction time. When these tests indicate that the oxidation reaction has been sufficiently completed, oxidation is discontinued.

Post-treatment analyses ensure all wastes are processed such that the resulting mixture is adequately treated. Analysis conducted is dependent upon the compound targeted for destruction. These analyses assure that the waste medium is safe for the next step of waste management and that no chemically attributed adverse impact will occur.

6.2.4.3 Heavy Metal/Complex Cyanide Treatment

In this process, heavy metals and/or cyanides are removed from wastewaters through chemical precipitation. Various chemical reagents are combined with the wastes at pre-determined ratios which can adjust the pH of the waste and/or cause the constituents of concern to precipitate.

Pre-treatment analyses, such as bench scale treatment evaluation, serve to establish the proper type and quantity of reagents needed and screen out those wastes that are not suitable for this process. The pre-treatment analyses also establish that all waste constituents are compatible and, together with process controls, ensure that no adverse reactions will occur.

Post-treatment analyses, such as total cyanides or metals content, ensure all wastes are processed such that the resulting mixture is adequately treated. These analyses assure that the waste medium is safe for the next step of waste management and that no chemically attributed adverse impact will occur.

6.2.4.4 Carbon Absorption/Air Stripping

In this process, low level organics are removed from wastes by passing the waste through carbon or passing the waste through an air stripper, whereby the organics are removed and absorbed.

Pre-treatment analyses, such as PCBs or organics screening, serve to screen out those wastes that are not suitable for this process. The pre-treatment analyses also establish that all waste

constituents are compatible and, together with process controls, ensure that no adverse reactions will occur.

Post-treatment analyses, such as PCBs, ensure all wastes are processed such that the resulting mixture is adequately treated. These analyses assure that the waste medium is safe for the next step of waste management and that no chemically attributed adverse impact will occur. The spent carbon is managed as a site generated waste either on or off site as necessary.

6.2.4.5 UV/Peroxide Oxidation

In this process, organic compounds contained in wastewaters are destroyed by combining the waste with an oxidizing agent such as hydrogen peroxide and exposing the mixture to a source of UV light. The process leads to the end products of mainly carbon dioxide and water with, depending on the waste composition, small amounts of various anions.

Pre-treatment analyses, such as organics screening serve to screen out those wastes that are not suitable for this process. The pre-treatment analyses also establish that all waste constituents are compatible and, together with process controls, ensure that no adverse reactions will occur.

Post-treatment analyses, such as solvent screen, ensure all wastes are processed such that the resulting mixture is adequately treated. These analyses assure that the waste medium is safe for the next step of waste management and that no chemically attributed adverse impact will occur.

6.2.4.6 PCB Filtration

In this process, PCB contaminated wastewaters are passed through a filtration system. The filter traps the PCB molecule, with other large organic and inorganic compounds.

Pre-treatment analysis, such as pH, percent solids, and PCB's serve to screen out those wastes that are not suitable for this process. The pre-treatment analysis also establishes that all waste constituents are compatible and, together with process controls, ensure that no adverse reactions will occur.

Post-treatment analysis, such as PCB's or solvent screen, ensure all wastes are processed such that the resulting mixture is adequately treated. These analyses assure that the waste medium is safe for the next step of waste management.

6.2.4.7 Oil/Water Separator

In this process, oil and grease contaminated wastewaters are passed through a separator aided by gravity, air flotation and reagents. The majority of the oil and grease is separated from the water.

Pre-treatment analysis, such as the physical form of the oil, polarity and biodegradability serve to screen out those wastes that are not suitable for this process.

Post-treatment analysis, such as percent oil and grease, ensure that all wastes are processed such that the resulting mixture is adequately treated. These analyses assure that the waste medium is safe for the next step of waste management.

6.2.4.8 Dewatering/Filter Press

Liquid waste streams may require solids removal either before chemical precipitation or after solids have been concentrated by the clarifier. The filter press will remove solids and form a cake. This cake will be periodically tested to determine what treatment, if any, may be required prior to landfilling. The liquids will be recycled into the clarifier or back to the treatment tanks for further processing. Most of the removed solids will be treated by stabilization to bind the metals. Post treatment analysis is conducted as needed to assure that the process continues to be effective in meeting the treatment standards.

6.2.5 Bioremediation

In this process, selected contaminants in waste materials are reduced to below regulatory levels by microorganisms. The microorganisms secrete enzymes which will break down the contaminants into elements which can be used for microbial reproduction. The duration of this process can be minimized by providing the optimum nutrients and environmental conditions for the microbial colony.

Pre-treatment analysis will be necessary to determine the concentration levels of the contaminants in the waste. In some instances treatability studies may be required to determine whether certain contaminants are amenable to biodegradation as well as the time-scale to complete the process.

Post-treatment analysis will ensure that the contaminant concentrations in the bioremediated waste are below regulatory levels. The number of verification samples obtained will depend on the waste quantities being treated. In some cases a statistical evaluation of the analytical data from the verification samples will be conducted if concentrations in one or more of the samples exceeds regulatory levels. The procedure for this statistical analysis is outlined in Appendix D.

6.3 Final Disposal

A sampling and analysis program is an integral part of this phase of operation. The results of this program serve to evaluate compliance with site permit constraints and determine safety constraints. Landfill disposal operations generally require only pre-disposal analyses.

The Paint Filter Liquids Test, is an especially important supplemental analyses, to determine the presence of free liquids and must be passed before a waste can be placed in a landfill. Additional supplemental analyses may be requested by facility management including tests to confirm that the wastes to be landfilled are non-reactive. The general approach ensures the proper selection and restriction of hazardous wastes that are disposed of by secure landfilling

7 QUALITY ASSURANCE/QUALITY CONTROL

The following quality assurance/quality control (QA/QC or "quality") information for this facility is being provided as required by 40 CFR Part 270.30(e) and in accordance with the following EPA guidance documents:

- ***Test Methods for Evaluating Solid Waste: Physical/Chemical Methods***, SW-846, Third Edition, Final Update I, U.S. EPA, Office of Solid Waste, Washington, DC, July 1992, Chapter One (available from Superintendent of Documents, Government Printing Office, Washington, DC 20402).

- ***Handbook for Analytical Quality Control in Water and Wastewater Laboratories***, EPA 600/4-79-019, March 1979, U.S. Environmental Protection Agency (U.S. EPA), Environmental Monitoring and Support Laboratory (EMSL), Cincinnati, OH, March 1979 (available from EMSL, Cincinnati, OH 45268).

Quality procedures are applicable to both sampling procedures and analytical techniques. This section does not provide specific performance standards of quality assurance and quality control procedures for individual sampling and analysis techniques. Such specifics are defined on a corporate-wide basis for all company facilities. The specific performance standards are dynamic and are revised as warranted to reflect technological advances in sampling and analytical techniques. These performance standards are described in corporate policies, which are maintained and used at this CWM facility and which are available for regulatory review. Portions of these policies have been summarized in the following sections.

CWMNW will keep onsite a copy of the most current quality assurance/quality (QA/QC) control document for Department inspection and evaluation. This onsite document is a compilation of Waste Management corporate QA/QC procedures along with CWMNW site specific QA/QC procedures. In addition, CWMNW must provide the most recent QA/QC audit documentation that evaluates CWMNW adherence to the written QA/QC requirements found in the QA/QC onsite document. If the Department determines there is not timely and adequate audit documentation, CWMNW must submit a permit modification request to incorporate the QA/QC onsite document as part of the Permit.

7.1 Sampling Program

Sampling procedures for facility operations are described in Section 2.0 of the WAP. The selection of the sample collection device depends on the type of sample, the sample container, the sampling location and the nature and distribution of the waste components. In general, the methodologies used for specific materials correspond to those referenced in 40 CFR Part 261, Appendix I. The selection and use of the sampling device is supervised or performed by a person thoroughly familiar with the sampling requirements.

Sampling equipment is constructed of non-reactive materials such as glass, PVC plastic, aluminum, or stainless steel. Care is taken in the selection of the sampling device to prevent

contamination of the sample and to ensure compatibility of materials. For example, glass bottles are not used to collect hydrofluoric acid wastes.

With some exceptions, bulk and containerized waste shipments are sampled (see Section 5.1.1 of this WAP). Individual container samples that are related may be composited prior to analysis, provided that individual samples are compatible.

7.2 Analytical Program

The company has developed a program of analytical quality control practices and procedures to ensure that precision and accuracy are maintained throughout its laboratories. All company facility laboratories are required to participate in this program. Non-company laboratories employed by the company demonstrate quality control practices that are comparable to the company's program. CWMNW will keep onsite documentation of non-company QA/QC procedures.

Good laboratory practices which encompass sampling, sample handling, housekeeping and safety are maintained at all laboratories.

For any DEQ inspection, CWM must keep at this facility a copy of the current in-house QA/QC procedures used. CWM must also provide copies of any audits performed to assess this facility's use of the current QA/QC for any DEQ inspection. **‡ Rev. 7**

7.3 Conclusion

The aforementioned sampling and analytical quality practices help ensure that the data obtained are precise and accurate for the waste stream being sampled. The analytical results are used by facility management to decide whether or not to accept a particular waste and, upon acceptance, to determine the appropriate method of treatment, storage, and disposal. Results are also important to ensure that wastes are managed properly by the facility and that incompatible wastes are not inadvertently combined. Just as these results are important so is the quality of these results. Thus, the quality of the analytical data, the thoroughness and care with which the sampling and analyses are performed and reported, provides an important basis for day-to-day operational decisions.

A APPENDIX A

A1 ANALYTICAL PROCEDURES

The following analytical procedures are designed to identify or screen waste. They are used by CWM, based upon its operating experience, as rapid but effective means for establishing key decision parameters pertinent to proper waste management.

It should be noted that the information presented in this appendix is generic in character. Therefore, certain test methods are discussed which may pertain to treatment or disposal processes that are excluded from the facility for which the foregoing *Waste Analysis Plan* is presented.

A2 UNIQUE ANALYTICAL PROCEDURES

The following CWM-developed analytical procedures have been found by CWM to provide important information pertinent to certain processes. In some cases, these tests provide information not available from standard analytical procedures found in Section II, which follows. The methods described below are based on ASTM standards or standard procedures recognized by EPA or are based on procedures and protocol formulated by CWM and meet CWM performance standards. These tests provide important operational information.

Percent Acidity - Percent acidity is determined based on "Standard Methods for the Examination of Water and Wastewater," Method 402(d) to a pH of 7 usually using 1N NaOH as a titrant. However, results are reported as a percent of the specific acidic species (e.g., H_2SO_4).

Percent Alkalinity - Percent alkalinity is determined based on "Standard Methods for the Examination of Water and Wastewater," Method 403(d) to a pH of 7 using a back titration technique. However, the results are reported as a percent of the specific alkaline species (e.g., NaOH).

Beilstein Screen - This screen consists of heating a copper wire in a flame until it is red hot, then dipping the wire into a portion of the sample and reheating the wire in a flame. The presence of a green flame during the reheating of the wire is considered a positive and indicates the presence of halogens in the sample.

Bench-Scale Treatment Evaluation - Samples of wastes are combined with samples of other wastes or reagents at predetermined ratios. Further testing may be required in order to confirm that the desired reaction has occurred.

Dissolved Sulfides - An aliquot of waste is mixed with distilled water. The solution/slurry is filtered through filter paper and the resultant filtrate is then analyzed for sulfide. Antimony potassium tartrate and hydrochloric acid are added and the color produced is visually compared with standards.

Heat of Combustion (BTUs) by Near Infrared Reflectance (NIR) Spectroscopy - Heat of combustion is determined by near infrared spectroscopy in a diffuse reflectance mode by placing a properly mixed sample in a diffuse reflectance cell. The instrument produces NIR absorbance spectrum which are converted to a heat of combustion value using a previously defined calibration curve. The method first screens for samples to extract qualitative spectroscopic features from the NIR spectra and then produces quantitative data for heat of combustion using multivariate calibrations.

Metals Screen by X-Ray Fluorescence (XRF) - Waste samples may be prepared, if necessary, by grinding to a specified mesh size. The prepared sample is placed in a sample holder and positioned for reading. Instrument output identifies the presence of several metals for screening purposes. Semi-quantification of selected metals is then possible relative to matrix matched standards.

Microwave-aided Acid Digestion - A portion of sample is weighed into an appropriate microwave digestion vessel and digested using an acid or acid mixture. The vessel is heated in a microwave oven. After cooling, the contents are diluted to volume, filtered and analyzed by appropriate methods.

Microwave-aided Solvent Extraction - A sample portion of a sludge, sediment, soil, solid, or other waste is extracted for organic contaminants, for example, total petroleum hydrocarbons (TPH), using appropriate solvents, for example, hexane and acetone, in a closed vessel microwave heating system designed for solvent extraction. The resulting extract is cleaned up and the contaminants of interest are determined using appropriate methods.

Organics Screen by Immunoassay - A portion of the waste sample is prepared for immunoassay by using appropriate separation procedures (e.g., extraction, filtration, and/or thin layer chromatography). The extract is then mixed and incubated in a step-wise process inside antibody-coated tubes. The mechanics of mixing, incubating and measuring takes about 30 minutes and results in a color change in each tube. The color development is inversely proportional to the concentration of the antibody-specific analyte(s) of interest, for example, herbicides, pentachlorophenol (PCP), pesticides, polyaromatic hydrocarbons (PAHs), or total petroleum hydrocarbons (TPHs).

Percent Organics - To a measured aliquot of sample add a measured amount of xylene (or hexane). The mixture is placed in a boiling flask. A Dean Stark trap is attached to the boiling flask and both are attached to a condenser. The material is then heated and allowed to reflux. Water is then trapped in the Dean Stark trap and the percent water is volumetrically determined. The percent solids is determined on the waste/xylene mixture. The percent organics is then determined by subtracting the amount of water solids from the original sample size or weight and reported in percent.

PCBs by Immunoassay - A portion of the waste sample is prepared for immunoassay by using appropriate procedures (e.g., solvent extraction, filtration, and/or thin layer chromatography). The extract is then mixed and incubated in a step-wise process inside antibody-coated tubes. The mechanics of mixing, incubating and measuring takes about 30 minutes and results in a color

change in each tube. The color development is inversely proportional to the concentration of PCBs.

Peroxide Screen - Peroxide test strips are used to determine the presence of organic peroxides or other oxygen donors (oxidizers) in solvent and aqueous wastes.

Phenol Screen - After extraction and pH adjustment, the sample is mixed with reagents. Phenolic materials react with 4-aminoantipyrine in the presence of potassium ferricyanide at a pH of 10, to form a stable reddish-brown colored antipyrine dye. The generation of color indicates phenolics.

Quick Leach Extraction - An amount of sample is mixed with the appropriate extraction fluid and stirred for a designated time period. After filtration, the pH and/or metals content are determined using the appropriate methods.

Reagent Compatibility Screen - Equal portions of stabilization reagent and waste are mixed. The generation of any unacceptable or adverse reactions are evaluated and noted.

Solvent Distillation - To an appropriate-sized standard flask-condenser distillation setup, a known quantity of sample and boiling chips are added. Heat is applied. During distillation, heat is maintained so that a drop of liquid remains on the thermometer bulb. Temperatures are monitored and volumes of each fraction are collected. Additional testing on one or more fractions may be requested.

Solvent Screen - Uses standard analytical procedures tailored to cover a range of organic compound types for quick screening of common industrial organics.

Stabilization Evaluation - The waste to be stabilized is mixed with at least one combination of cement kiln dust and/or other suitable reagent(s). Heat change (as evidence of curing) which occurs is recorded as the waste/reagent(s) mixture is "setting". The occurrence of any violent reactions of reagent(s) to waste sample is noted.

Solids Ignitability – Modifications to Method 1030 (Appendix F) are as follows:

- *7.1 Preliminary Screening Test* – All materials (unless clearly not a mixture of metallic materials) shall be subjected to the 5 minute flame test under section 7.17. If the sample ignites before 5 minutes elapsed time, normal method procedures are to be followed.
- *7.2 Burning Rate Test* – Under section 7.2.8, all materials (unless clearly not a mixture of metallic materials) shall be subjected to the 5 minute flame test under section 7.1.7. If the sample ignites before 5 minutes elapsed time, normal method procedures are to be followed.

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A3 STANDARD ANALYTICAL PROCEDURES

PARAMETER	METHOD	REFERENCE/METHOD NUMBER
Sample Work-Up Techniques		
General Extractions		
Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test		1/1310A
Toxicity Characteristic Leaching Procedure (TCLP)		1/1311
Metals Acid Digestions		
For flame atomic absorption spectroscopy (AAS) or inductively coupled plasma spectroscopy (ICP)		1/3005A, 3010A
Microwave assisted		1/3015; 2/3030K; 3/D4309, D5258
For graphite furnace atomic absorption spectroscopy (GFAA)		1/3020A
Of sediments, sludges, soils, and oils		1/3050B
-- Microwave assisted		1/3051
Parr acid bomb digestion		3/E886, E926; 6/
Organic Extractions and Cleanups		
Separatory funnel liquid-liquid extraction		1/3510C
Continuous liquid-liquid extraction		1/3520C
Solid phase extraction (SPE)		1/3535
Soxhlet extraction		1/3540C, 3541
Sonication extraction		1/3550B
Waste dilution		1/3580A, 3585
Alumina cleanup		1/3610B, 3611B
Florisil cleanup		1/3620B
Silica gel cleanup		1/3630C
Gel-permeation cleanup		1/3640A
Acid-base partition cleanup		1/3650B
Sulfur cleanup		1/3660B
Sulfuric acid/permanganate cleanup		1/3665A
Elemental Analytical Methods		
Inductively coupled plasma atomic emission spectroscopy (ICP)		1/6010B
Inductively Coupled Plasma Mass Spec/ ICP-MS		1/6020B
Antimony		
Atomic absorption, direct aspiration method		1/7040; 4/204.1
Atomic absorption, furnace technique		1/7041; 4/204.2
PARAMETER	**METHOD**	**REFERENCE/METHOD NUMBER**
Arsenic		

Atomic absorption, furnace technique	1/7060A; 4/206.2
Atomic absorption, gaseous hydride method	1/7061A; 4/206.3
Barium	
Atomic absorption, direct aspiration method	1/7080A; 4/208.1
Atomic absorption, furnace technique	1/7081; 4/208.2
Beryllium	
Atomic absorption, direct aspiration method	1/7090; 4/210.1
Atomic absorption, furnace technique	1/7091; 4/210.2
Cadmium	
Atomic absorption, direct aspiration method	1/7130; 4/213.1
Atomic absorption, furnace technique	1/7131A; 4/213.2
Calcium	
Atomic absorption, direct aspiration method	1/7140; 4/215.1
Atomic absorption, furnace technique	4/215.2
Chromium	
Atomic absorption, direct aspiration method	1/7190; 4/218.1
Atomic absorption, furnace technique	1/7191; 4/218.2
Hexavalent chromium: Co/precipitation	1/7195
Hexavalent chromium: Colorimetric	1/7196A; 2/3500CrD
Hexavalent chromium: Chelation/extraction	1/7197; 4/218.4
Copper	
Atomic absorption, direct aspiration method	1/7210; 4/220.1
Atomic absorption, furnace technique	1/7211; 4/220.2
Iron	
Atomic absorption, direct aspiration method	1/7380; 4/236.1
Atomic absorption, furnace technique	1/7381; 4/236.2
Phenanthroline method (ferrous)	2/3500FeD
Lead	
Atomic absorption, direct aspiration method	1/7420; 4/239.1
Atomic absorption, furnace technique	1/7421; 4/239.2
Magnesium	
Atomic absorption, direct aspiration method	1/7450; 4/242.1
Manganese	

PARAMETER	METHOD	REFERENCE/METHOD NUMBER
	Atomic absorption, direct aspiration method	1/7460; 4/243.1
	Atomic absorption, furnace technique	1/7461; 4/243.2
	Mercury (manual cold/vapor technique)	
	In liquid waste	1/7470A
	In solid or semi-solid waste	1/7471A
	Nickel	
	Atomic absorption, direct aspiration method	1/7520; 4/249.1
	Atomic absorption, furnace technique	1/7521; 4/249.2
	Selenium	
	Atomic absorption, furnace technique	1/7740; 4/270.2
	Atomic absorption, gaseous hydride method	1/7741A; 4/270.3
	Atomic absorption, gaseous hydride method	1/7742; 4/206.3
	Silver	
	Atomic absorption, direct aspiration method	1/7760A; 4/272.1
	Atomic absorption, furnace technique	1/7761; 4/272.2
	Thallium	
	Atomic absorption, direct aspiration method	1/7840; 4/279.1
	Atomic absorption, furnace technique	1/7841; 4/279.2
	Zinc	
	Atomic absorption, direct aspiration method	1/7950; 4/289.1
	Atomic absorption, furnace technique	1/7951; 4/289.2
Organic Analytical Methods		
Gas Chromatography Methods		
	Halogenated volatile organics	1/8010B, 8021B
	Non-halogenated volatile organics	1/8015B
	Aromatic volatile organics	1/8020A, 8021B
	Phenols	1/8040A, 8041
	Phthalate esters	1/8060, 8061A
	Nitrosamines	1/8070A
	Organochlorine pesticides, halowaxes, and PCBs	1/8080A, 8081A
	Polychlorinated biphenyls (PCBs)	1/8080A, 8082, 8/
	Nitroaromatics and cyclic ketones	1/8090, 8091
	Polynuclear aromatic hydrocarbons	1/8100
	Haloethers	1/8110, 8111
	Chlorinated hydrocarbons	1/8120A, 8121

PARAMETER	METHOD	REFERENCE/METHOD NUMBER
Organophosphorous pesticides		1/8140, 8141A
Chlorinated herbicides		1/8150B, 8151A
Gas Chromatography/Mass Spectroscopy Methods		
Volatile organics		1/8240B, 8260B; 7/624
Semi-volatile organics		1/8250A; 8270C; 7/625
Other Organic Methods		
Qualitative infrared (IR) spectroscopy method		1/8410, 8430, 8440; 3/D2621, D4053; 5
GC/FTIR method		1/8410
Heating value, bomb combustion method		1/5050; 3/D240, D2015
Halogen and Sulfur Content		
Chlorine content		3/D808, D2361, D4327
Halogen content		3/D808, D2361, D4327
Sulfur content		3/D129, D3177, D4327
Oil and grease		1/4030, 9070, 9071A; 2/5520; 4/413.1, 413.2
Petroleum hydrocarbons, total recoverable		2/5520F; 4/418.1
Phenolics		1/9065, 9066, 9067; 2/5530, 6420; 4/420.1
Solvent Distillation		4/D86, D1078
Total organic carbon		1/9060; 2/5310; 3/D2579
Screening Methods		
Physical description		3/D4979
Flammability potential screen		3/D4982
Water compatibility		3/D5058C
Oxidizer screen		3/D4981
pH screen		3/D4980
Sulfide screen		3/D4978
Cyanide screen		3/D5049
Commingled liquid waste compatibility test		3/D5058A
Polymerization potential		3/D5058B
Paint filter test		1/9095A
Bulk density and apparent specific gravity screen		3/D5057
Polychlorinated biphenyls (PCBs) screen		1/4020, 9078
Miscellaneous Analytical Methods		
Acidity		2/2310

PARAMETER	METHOD	REFERENCE/METHOD NUMBER

Alkalinity		2/2320

Ammonia	2/4500NH_3; 4/350.3
Anions	
By ion chromatography	1/9056; 3/D4327; 4/300.0
Chlorides	1/9250, 9251, 9252A, 9253; 2/4500Cl^-; 4/300.0, 325.3
Sulfates	1/9035, 9036, 9038; 2/4500SO_4^{2-}; 4/300.0, 375.3
Nitrates	1/9200A, 9210; 2/4500NO_3^-; 4/300.0, 352.1, 353.2
Fluoride	1/9214; 2/4500F^-; 4/300.0, 340.2, 340.3
Bromides	1/9211; 2/4500Br^-; 4/300.0, 320.1
Phosphates	2/4500P; 4/300.0, 365.1/4
Ash content	2/2540G; 3/D482, D3174
Conductivity/conductance	1/9050A; 2/2510; 3/D1125; 4/120.1
Cyanides	
Total and amenable cyanides	1/9010A, 9012A, 9013; 2/4500CN^-C,G; 4/335.1
Dissociable cyanides	1/9213; 2/4500CN^-,I
Flash point	
Pensky-Martens closed-cup method	1/1010; 3/D93
Setaflash closed-cup method	1/1020A; 3/D3278
Cleveland open-cup method	3/D92
Ignitability **‡ Rev. 9**	9/1030
Oxidation/reduction (redox) potential (ORP)	3/D1498
pH measurement	1/9040B, 9041A, 9045C; 2/4500H^+; 3/E70; 4/150.1
Solids	
Total (TS) at 103/105ºC	2/2540B; 4/160.3
Dissolved (TDS) at 180ºC	2/2540C; 4/160.1
Total suspended (TSS) at 103/105ºC	2/2540D; 4/160.2
Fixed and volatile at 500ºC	2/2540E, 2540G; 4/160.4
Specific gravity	2/2710F; 3/D70, D891, D1217, D1429
Sulfide	
Extractable sulfides	1/9031
Soluble sulfides	1/9215; 2/4500S^{2-}
Total sulfides	1/9030A; 2/4500S^{2-}
Viscosity	3/D88, D446, D2983
Water content	3/D95, D3173, D4006, E203

The leading digit of the reference numbers above are keyed to the numbered publications below.

1) *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, Third Edition, U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC, September 1986, as amended by Final Update I (July 1992), Final Update II (September 1994), Final Update IIA (August 1993), and Final Update IIB (January 1995) or more recent edition, update, or revision including Proposed Update III, November 1992.

2) *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, American Public Health Association (APHA), American Water Works Association, Water Environment Federation, 1992, or more recent edition or update (available from APHA, 1015 Fifteenth Street, NW, Washington, DC 20005).

3) *Annual Book of ASTM Standards*, American Society for Testing and Materials (ASTM), 1993, or more recent edition or revision (available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428).

4) *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory (EMSL), Cincinnati, 1979, as revised March 1983, or more recent revision or technical addition (available from EMSL, Cincinnati, OH 45268).

5) "Infrared Analysis Method" in *IERL-RTP Procedures Manual: Level 1 Environmental Assessment*, Second Edition, EPA-600/7-78-201, October 1978, or more recent edition.

6) "Acid Digestion Bombs", *Bulletin 4745*, Parr Instrument Company (Moline, IL 61265), or more recent bulletin.

7) "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", Title 40, Part 136, Appendix A, Code of Federal Regulations, U. S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory/Cincinnati, as amended June 1986, or more recent revision (available from Superintendent of Documents, Government Printing Office, Washington, DC 20402).

8) Bellar, T. A., and Lichtenberg, J. J., "The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils", EPA-600/4-81-045, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory (EMSL), Cincinnati, 1982.

9) “Test Methods for Readily Combustible Solids. Burning Rate Test.” (14.2.2.5). Recommendations on the Transport of Dangerous Goods. Fifth Revised Edition. United Nations, New York. 1988. **‡ Rev. 9**

B APPENDIX B

LAND DISPOSAL RESTRICTION SAMPLING

The procedures described herein represent the sampling and analytical procedures established for use at the facility for the treatment, storage and disposal of Land Disposal Restricted hazardous waste, see 40 CFR Part 268.

The Land Disposal Restrictions, 40 CFR 268, have specified the use of "grab" sampling for most of the compliance demonstrations to the Land Disposal Restriction BDAT treatment standards. A grab sample is a single sample or measurement taken at a specific time or over as short a period as feasible.

C APPENDIX C

HOT LOAD IDENTIFICATION AND MANAGEMENT

- CWMNW screens potentially hot loads (PHL). A PHL is any load of potliner (waste code K088), or any load which is observed to be steaming or emitting vapors, or any stabilized waste, whether stabilized by CWMNW, a generator, or another treater.

- A temperature measurement performed upon receipt of a PHL is the screen used by CWMNW. An infrared thermometer, thermocouple, thermometer, or other appropriate device is used for making the measurement. Temperature measurement results are recorded in the operating record.

- Any hot load which is 170º F or hotter may not be landfilled until it cools to less than 170ºF.

D APPENDIX D

STATISTICAL ANALYSIS OF VERIFICATION SAMPLES OF LAND DISPOSAL RESTRICTED WASTES

Chemical Waste Management of the Northwest will take a grab sample, or grab samples, of each batch of hazardous waste treated for land disposal restricted treatment levels. Results from the sampling and analysis will be evaluated in accordance with this appendix and guidance found in Guidance on Demonstrating Compliance With the Land Disposal Restrictions (LDR) Alternative Soil Treatment Standards Final Guidance [EPA530-R-02-003 July 2002].

Chemical Waste Management of the Northwest may, and will usually, take one sample per treated batch. Results of the one sample will initially be evaluated in accordance with Data Evaluation Method No. 1 listed in Table 1 below. Data Evaluation Method No. 1 is simply taking the results of the sampling and analysis and comparing them to the LDR treatment levels. However, if the results are above the LDR treatment levels, then either the waste will be further treated and evaluated, or, more samples will be retrieved and tested. Results from the additional samples must be evaluated using the appropriate statistical Data Evaluation Method listed in Table 1 below on the next page.

APPENDIX D - TABLE -1

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No.	Data Evaluation Method	Appropriate Conditions for Use	Advantages	Limitations
1	Nonstatistical Method	• Useful when sampling and measurement error can be minimized, and the volume of soil is relatively small • Useful when only a rough estimate of the constituent concentration is required	• Simple • Easy to use and understand • Low-cost	• Only provides a "point estimate" of the constituent concentration • Does not provide information about variability • Does not quantify the uncertainty associated with the estimate
2	Simple Exceedance Rule	• Analytical quantitation limit must be less than the treatment standard	• Simple, easy to use and understand • Easy to enforce • Data set can include nondetects	• Requires a large number of samples to provide high confidence that the standard is achieved
3	Tolerance Limit	• Most useful when the analytical quantitation limit is well below the treatment standard and sampling and measurement error are minimal • Data mush exhibit an approximately normal distribution.	• A small number of samples can be used (we recommend at least *four* random samples). • Relatively easy to calculate	• The calculated limit will be very sensitive to the size of the standard deviation relative to the mean
4	Nonparametric Test of Location	• Useful if there are no extreme values in the data sets	• Quick • Simple • Easy to use • Does not require the assumption that the data exhibit a normal distribution. • Can be used with data set that include "nondetects"	• Provides less statistical "power" than Welch's t-Test or the Wilcoxon Rank-Sum test (i.e., the test may indicate the treatment level not achieved , when in fact it has)
5	Welch's t-Test	• Data must exhibit an approximately normal distribution	• Provides more statistical "power" than the test of location if the underlying assumptions for the test are satisfied	• Cannot be used when a large percentage (>20%) of the data are reported as nondetect • Requires more statistical calculations than other methods (e.d., calculation of the mean, variance, and degrees of freedom)
6	Wilcoxon Rank-Sum Test	• Useful when the underlying distribution of the data is unknown or cannot be readily identified • Useful when a significant percentage (>20%) of the data are reported as nondetect	• Easy to compute and understand • Can be used with data sets that include "nondetects"	• Provides less statistical "power" than Welch's t-Test if the data follow a normal distribution or are approximately symmetrical

From EPA Guidance on Demonstrating Compliance With the Land Disposal Restrictions (LDR) Alternative Soil Treatment Standards Final Guidance EPA530-R-02-003.

CWMNW will collect one discreet sample for every 250 tons. **‡ Rev. 7** The interior of the pile will be sampled with the assistance of a backhoe excavator to remove the overlying soil and allow access to the sampling grid in question.

E APPENDIX E

SOLID WASTE MANAGEMENT PLAN

E1 INTRODUCTION

Chemical Waste Management of the Northwest, Inc. (CWMNW) is authorized to accept solid waste under its RCRA Permit (ORD 089 452 353) §II C.5.a.v. This Solid Waste Plan (SWP) details procedures for confirming, assessing, and subsequent storage, treatment, and disposal management of solid wastes accepted at CWMNW.

E2 SOLID WASTE DEFINITION

ORS 459.005 (24) defines solid waste as:

"Solid waste" means all useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid materials, dead animals and infectious waste as defined in ORS 459.386. "Solid waste" does not include:

- Hazardous waste as defined in ORS 466.005.
- Materials used for fertilizer or for other productive purposes or which are salvageable as such materials are used on land in agricultural operations and the growing or harvesting of crops and the raising of animals.

E2.1 Waste Not Managed Under This Plan

Specific wastes managed as RCRA hazardous wastes, TSCA wastes, mixed RCRA and TSCA hazardous wastes, Corrective Action Management Unit (CAMU)-Eligible wastes , Oregon State-only hazardous wastes, wastes that are hazardous under the state of origin, and wastes managed pursuant to a contained-in decision are not managed under this SWP and are managed under other applicable permit conditions, regulations, and agency decisions and not under this plan. Additionally, solid wastes that are accepted, accumulated, stored or processed for future recycling or re-use are also not managed under this SWP.

E2.2 Unacceptable Solid Wastes

This SWP does not authorize the disposal of solid wastes that are:

- Source separated recyclables.
- Whole tires, except as provided in OAR 340-064-0052.
- Used oil as defined in ORS 459A.555, including liquid used oil and used oil purposefully mixed with other materials for the purpose of disposal, but not including cleanup materials from incidental or accidental spills where the used oil spilled cannot feasibly be recovered as liquid oil.
- Hot waste; i.e., wastes at temperatures that pose a substantial fire hazard.
- Bio solids, sewage sludge and septage.
- Discarded or abandoned vehicles.
- Discarded large metal-jacketed residential, commercial or industrial appliances such as refrigerators, washers, stoves and water heaters.
- Lead-acid batteries

E3 PROFILE AND PRE-ACCEPTANCE PROCEDURES

CWMNW only accepts solid waste after receipt of an acceptable, completed waste profile (a sample typical waste profile form is included in Appendix A). CWMNW accepts wastes based on the conditions or limitations of existing permits and applicable regulations, and the waste's compatibility with other wastes being stored, treated, or disposed of at the facility or transferred to another facility.

Pre-acceptance procedures at CWMNW are performed upon receipt or in advance of the initial shipment of the waste. Where pre-acceptance information is not available on the receipt of an initial shipment of wastes, the wastes are held for a reasonable time while that information is gathered and an acceptance decision is made.

E3.1 Profile Procedural Requirements

The following procedures are implemented for each new solid waste stream that is a candidate for delivery to the facility:

E3.1.1 Written and Analytical Information –

CWMNW obtains the following:

- Pertinent chemical and physical data on the waste profile;
- Other supporting documentation such as Material Safety Data Sheets (MSDS), product ingredients, etc.

- A sample, if necessary. A sample may not be required by CWMNW if site management determines that the pre-acceptance documentation provides sufficient information to maintain compliance with permit and operational constraints and that the submittal of a sample would not aid in the management decision process. If necessary, this sample may be obtained by CWM upon receipt of the initial shipment of the waste prior to acceptance

E3.1.2 Facility Conditions –

After reviewing the pre-acceptance information and any data from the laboratory, CWMNW will determine the acceptability of the waste based on:

- The permit conditions for the facility;
- The availability of the proper waste management techniques; and
- The available capacity at the facility.

E3.2 Standard Profiles

3.2.1 "Standard Profiles"

"Standard profiles" may be used for solid waste streams which are:

- Similar in physical and chemical characteristics; and
- Generated by similar industries or processes.

E3.2.2 Process

An analytical database is developed for a specific standard waste profile based on analytical data from waste streams that are representative of wastes from similar industries, processes or historical data. CWM reviews the database and determines whether the individual waste streams are sufficiently similar in physical and chemical characteristics to establish a standard profile. The analytical database developed as discussed above will replace any requirement for a pre-acceptance sample for each individual waste stream.

CWM uses generator provided information to evaluate waste conformance to an established standard profile. A specific waste stream is identified as conforming to an approved standard profile if the individual waste stream information is sufficiently similar to the standard profile. The specific waste stream information must fall within the standard profile database ranges in order to incorporate that waste stream into the standard profile. Standard profiles are a limited subset of a waste stream conceivably expected to fit into a set of defined ranges.

Specific candidate waste streams which, upon review, are identified as conforming to an existing approved standard profile are managed under the waste management decisions specific for that standard profile.

E3.3 Decision Evaluation Logic

Facility management is responsible for the pre-acceptance evaluation decision (that is, whether to accept or reject the waste).

The pre-acceptance evaluation is concluded with documentation of the decision regarding the acceptability of the waste and the proposed method of management. Facility management's technical disposal decisions are based on:

- Management methods available;
- Conditions or limitations of existing permits and regulations;
- Capability to manage the waste in a safe and environmentally sound manner;
- Generator description of the process generating the waste (process knowledge);
- Generator description of the chemical and physical properties of the waste;
- Results of any analyses; and
- Management's technical experience and judgment.

A waste will not be accepted during the pre-acceptance process for one of the following reasons:

- Incomplete or outdated information provided by the waste generator;
- The solid waste category is specifically not authorized by this SWP for acceptance at the facility; or
- The waste cannot be treated, processed, stored, or disposed of at the facility.

3.4 Waste Profile Re-evaluation

A waste profile re-evaluation will be conducted when one of the following occurs:

- A generator notifies CWMNW that the process generating the waste has changed; or
- The results of inspection or analysis indicate that the waste received at the facility does not match the identity of the waste designated on the accompanying manifest or shipping paper or pre-acceptance documentation.

When this occurs, CWMNW will review the available information, and, if existing information is not sufficient, the generator may be requested to:

- Review the current profile;
- Supply a new profile or analysis;
- Submit a sample for analysis; or
- CWMNW may obtain a sample from a shipment of the waste for analysis.

In addition, every two years, a waste profile re-evaluation is conducted. This re-evaluation

process consists of a review of the paperwork to ascertain that the analytical data is accurate and current and that it is sufficient to manage the waste properly as intended. The generator may be asked to review the current waste profile in order to confirm the information. This process, along with a vigilant incoming load screening program, is sufficient to ensure that wastes continue to be properly managed at the facility

E4 INCOMING WASTE SHIPMENT PROCEDURES

E4.1 Purpose

Every solid waste shipment delivered to CWMNW is accompanied by a manifest, shipping paper or pre-acceptance documentation. Each shipment of waste coming to the facility is inspected as described herein before the initiation of any further activity at the facility (except as noted in Section 5.1.1). This inspection serves two purposes:

- It compares the actual waste identity with that described in the pre-acceptance phase and with that listed on the waste manifest, shipping paper or pre-acceptance documentation; and
- It further ensures the proper disposition of the waste to appropriate on-site treatment, storage, and/or disposal.

CWM personnel or a CWM-approved laboratory provide any necessary incoming waste shipment analyses, prior to or in conjunction with, the arrival of the shipment on site. Waste shipments that have arrived at the facility are considered to be in the receiving process until the laboratory or facility management makes a final decision regarding waste acceptability and space availability.

E4.2 Receiving Procedures

Incoming waste shipment identification begins in conjunction with the arrival of the waste at the facility. The inspection of the incoming waste is performed in accordance with the methods and parameters described in this SWP.

E4.2.1 Bulk Waste

Each bulk solid or liquid waste shipment is inspected for conformance with the applicable waste profile and accompanying manifest, shipping paper or pre-acceptance documentation prior to acceptance. Non-conforming bulk waste is set aside for additional evaluation. Acceptance of non-conforming waste is discretionary and depends on discussions with the generator, applicable storage and solidification considerations and other applicable facility constraints.

E4.2.2 Containers and Portable Tanks

- Each shipment is checked against the accompanying manifest, shipping paper or pre-acceptance documentation to verify piece count, condition, and material identification.

- In the event that free liquid is unexpectedly found in any container of an incoming waste shipment and such liquid is not identified on the manifest, shipping paper, pre-acceptance documentation or waste profile sheet, CWMNW will:

    - open the entire shipment of containers for visual inspection for non-conforming free liquid, and
    - document the apparent discrepancy in the operating record and contact the generator to attempt to resolve the discrepancy.

Any sample(s) (composited or individual) collected are then subjected to appropriate analyses. If analytical results are consistent with any manifest, shipping paper and pre-acceptance documentation, the waste may be accepted, at management's discretion, and transferred to the appropriate designated management area.

Upon receiving accepted waste streams in containers, the containers are, at a minimum, visually inspected and the piece count is verified. If inspection results are consistent with the manifest, shipping paper and pre-acceptance documentation, the waste may be accepted and transferred to the appropriate designated management area.

Asbestos and sharps container and portable tank shipments are not opened or sampled. The packaging is inspected for integrity, conformance with any manifest, shipping paper and pre-acceptance documentation and labeling.

E4.3 Incoming Shipment Decision Evaluation Logic

The following major decision points are utilized by facility management to accept or reject a particular solid waste shipment

E4.3.1 Waste identification

The effectiveness of the waste identification step is dependent on one or more of the following components:

- Inspection;
- Sampling;
- Analytical results;
- Pre-acceptance documentation;
- Waste manifest or shipping paper; and
- Facility management's experience and judgment.

E4.3.2 Additional analyses, if necessary

Facility management decides whether additional analyses are required for a particular waste. Further analysis is required if the results indicate unexpected significant information with respect

to pre-acceptance information, or if facility management has reason to suspect that the waste composition has changed.

E4.3.3 An evaluation of whether a waste is found to be in conformance or non-conformance

Facility management will classify the waste shipment as being in "non-conformance" if it is significantly different in composition than the information shown on the waste profile, the pre-acceptance documentation, or any manifest or shipping paper.

Two major criteria are used to arrive at a conformance decision. They are:

- Inspection or analysis indicates significant differences in waste type; or
- The non-conformance changes the originally approved method of management.

Manifest discrepancies or non-conformances that do not fall within these criteria are considered "minor" and the waste is considered to be in conformance. If CWMNW has reason to believe that a minor discrepancy is a continued variation and that a particular waste stream is different than its documented values, the pre-acceptance documentation may be amended.

E4.4 An evaluation of whether wastes found to be in non-conformance can be accepted or should be rejected

Non-conforming wastes may be rejected, or they may be re-evaluated for possible acceptance by the facility. CWMNW management re-evaluates a non-conforming waste for management at the facility generally as follows. CWMNW contacts the generator prior to accepting the previously non-conforming waste. If the generator agrees with CWMNW’s determination, the waste profile and manifest, shipping paper or pre-acceptance documentation will be appropriately drafted or amended and the waste accepted. This procedure is intended to prevent the unnecessary movement of a waste material back and forth between the facility and the generator. The re-evaluation will be based on one or more of the following criteria:

- Discussions with or information from the generator;
- Facility conditions for storage, treatment, and disposal;
- Facility management's judgment; and
- Additional supplemental analyses.

If the above criteria indicate the waste can be accepted and the generator concurs, a new waste disposal decision form is prepared by facility management (if necessary).

A waste may be rejected for one of the following reasons:

- The generator's/transporter's paperwork is not in order;
- A discrepancy cannot be resolved to the generator's and CWMNW's satisfaction;

Regulatory requirements

- A bulk liquid shipment is incompatible (fails a commingled liquid waste compatibility determination) with wastes stored in the impoundments or bulk liquid storage tanks and no other management method is available;
- Adequate storage space is not available; or
- Management's discretion.

Final decisions to accept or reject all or part of a waste shipment is made by facility management. Decisions are made as soon as the facility has collected and considered all necessary information. Management strives to timely complete these decisions. Circumstances (e.g., extreme weather) can cause delays in obtaining the information necessary to make an informed decision on the acceptability of the waste. Under such circumstances, the facility will take appropriate action to facilitate the decision process. During this time, temporary staging locations are determined using the available information. This information (e.g., waste profile, MSDS, etc.) will provide sufficient information to ensure staging with compatible materials.

E4.5 Temporary waste storage

CWMNW management normally makes waste acceptance decisions prior to departure of the transporter from the CWMNW facility. Therefore, rejected waste is normally shipped offsite to the generator or to an alternate location on the same transporter that delivered the waste. Waste that is delivered to CWMNW and not accepted by CWMNW prior to the departure of the transporter will be held in the receiving area of S2 or in the southwestern area of the facility just east of the main entrance gate as applicable. The rejected wastes are held outside of permitted storage areas until an authorized transporter can accept the waste.

E4.6 Solid waste storage

Waste subject to this SWP will ordinarily be directly landfilled or disposed in one of the on-site impoundments. In the event that accepted waste cannot be immediately disposed, then the wastes will be placed in one or more storage areas. Designated areas for storage include storage areas S2, S3, S4, S6, S10 and containment buildings B2 and B4. Additional areas include storage area S5 and other appropriate open areas inside the active area fence. Liquids will be placed on lined areas if there is evidence of leakage.

E4.7 Where rejected waste will be located

Once the final decision has been made to reject part or all of a waste shipment, the rejected wastes are placed in designated rejected waste areas at the facility. Wastes rejected at the S2 storage facility (typically drums, small containers and super sacks) are stored in the southwest area of the building. At S2, red cones are placed on each item of rejected waste or red cones are used to outline the area containing rejected waste. Large containers of rejected wastes (typically intermodal containers) are stored in the southwestern area of the facility just east of the main entrance gate. The rejected wastes are held outside of permitted storage areas until an authorized transporter can accept the waste. The rejected waste will be held outside of permitted storage

until an authorized transporter can accept the waste on behalf of the generator.

E5 Wastes Requiring Special Management

Wastes identified in OAR 340-93-190 will be disposed under the required special provisions:

Agricultural Wastes: Residues from agricultural practices shall be disposed of in a manner not to cause vector creation or sustenance, air or water pollution, public health hazards, odors, or nuisance conditions. Empty pesticide and herbicide containers will be accepted for non-hazardous disposal if they have been triple rinsed and the container crushed. Rinsate will not be accepted.

Construction and Demolition Materials: Construction and demolition waste will be placed so as to not damage the facility liner. Construction and demolition materials will be placed in the landfill in a manner designed to prevent fires and the spread of fires, in accordance with engineering or operations plans required by OAR Chapter 340, Divisions 93 through 96.

Oil Wastes: Oil filters, oil absorbent materials, tank bottoms and oil sludges will be accepted only if the materials are absent of free liquids. More than 25 gallons of petroleum-bearing wastes such as used oil filters, oil-absorbent materials, suspended solids that have settled to the bottom of the tank (tank bottoms) or oil sludges will not be disposed unless all recoverable liquid oils are removed. Special handling precautions will be utilized to prevent fires and pollution of surface or groundwaters.

Infectious Wastes: Material may be accepted if the material has been rendered non-infectious by methods in accordance with ORS 459.386-459.405.

Pathological Wastes: Material may be accepted if the material is rendered non-infectious by methods prescribed by the State Health Division of the Oregon Department of Human Resources.

Sharps: Sharps disposal must either be in rigid, leak-proof, puncture-resistant, red containers which are sealed to prevent loss of contents, or they must be sterilized and processed through a grinding operation in accordance with the State Health Division's approval. Sharps containers will be segregated in an area of the landfill. Other sharps management techniques will be accepted by CWMNW as they are approved by the State Health Division. Sharps containers will not be opened for inspection. The containers will only be inspected for proper labeling, integrity, and conformance with the manifest, shipping paper, and pre-acceptance documentation.

Medical Waste: Waste other than infectious waste will be accepted without special treatment and commingled with other waste.

Asbestos: Material will be managed in compliance with 40 CFR 61.154 and OAR 340-248-

0280. Asbestos bags will not be opened for inspection. The bags will only be inspected for proper labeling, integrity, and conformance with the manifest, shipping paper, and pre-acceptance documentation.

Abrasive Blast Media Containing Pesticides: Material will be accepted and disposed.

Pesticide Treated Wood: Material will be accepted and disposed.

Incinerator Ash: Ash from domestic energy recovery facilities and from domestic solid waste incinerator disposal sites will be accepted into approved monofills meeting 40 CFR 258 and OAR Chapter 340, Division 94.

Incinerator ash may be disposed in specially constructed monofills within the landfill. When completed, the ash inside the monofill will be completely encapsulated by a layer of soil material (soil or stabilized waste that has soil properties). Prior to disposal, an area within the landfill designated for ash monofilling will be prepared by placing 2 feet of soil material on the base and side slopes that will contain the ash. The base and sideslope subgrades for the ash monofill may be comprised of either soil material or the operations layer of the lining system. When the designated ash monofill area is filled to capacity, the ash will be covered with a minimum of 3 feet of soil material before additional waste placement may occur over the top of the ash monofill.

Cleanup Materials Contaminated by Hazardous Substances: Materials that are removed from the site of contamination for treatment and/or disposal elsewhere will be disposed.

Polychlorinated Biphenyls (PCB's): Wastes containing regulated polychlorinated biphenyls will be disposed pursuant to CWMNW's RCRA permit, TSCA Letter of Approval and this SWP.

Animal Carcasses / Parts / Meat and Food By-Products: Animal carcasses, parts, meat and food by-products may be accepted for disposal at CWMNW. The animal carcasses will be distributed within the waste mass and will not be disposed at one concentrated location. If affected by pathogens (including Bovine Spongiform Encephalopathy [BSE] prions), disposal will be contingent upon ODEQ, and Oregon Health Division (OHD) approval. All health and safety precautions as advised by the State of Oregon Department of Human Services, Department of Agriculture, etc., as appropriate, will be implemented in the handling of animal carcasses and animal related wastes.

Animal carcasses, parts, and by-products will be disposed in the landfill in accordance with company policy and the following ODEQ guidelines:

- Animals and animal related wastes will be disposed immediately upon delivery to the facility. To accomplish this, arrangements will be made in advance by the generator prior to delivery to allow the facility sufficient time to adequately prepare for the handling and disposal of the animals and/or animal related wastes. If possible live animals will be slaughtered at the site upon delivery.

- All animal carcasses and animal related wastes will be placed on a minimum of 20 feet in-place solid waste. Whole animal carcasses will be disposed one carcass-layer thick. The animal offal (i.e., viscera and trimmings) will be placed onto a 12-inch layer of Department approved absorbent material (e.g., waste).
- Following disposal, all animal carcasses and animal related wastes will be immediately covered with 3 feet of waste.

Special attention and precautions will be given to vector control during waste disposal operations to prevent vector contact with potentially contaminated carcasses, meat, offal or food by-products.

E6 PROCESS OPERATIONS PROCEDURES

Each movement of a waste within the facility, during which any change in its composition may occur, may make it subject to additional inspection, sampling and analysis to determine appropriate handling and management of the waste. Many of the analyses needed for waste management functions are performed during incoming load identification. These procedures are not repeated unless it is known or believed that the waste characteristics have changed during storage or processing.

E6.1 Treatment

E6.1.1 Treatment Operations

The proper and complete treatment of a particular waste depends on appropriate sampling and analysis during selected phases of the operation. The results of this analytical program serve to determine safety constraints, confirm treatment method selection, and identify the process parameters. Only stabilization of solids with free liquids is anticipated for waste subject to this plan.

E6.2 Specific Solid Waste Treatments

E6.2.1 Stabilization

Stabilization is a process by which waste can be treated to remove free liquids, producing a mixture that passes the paint filter test. In this process, wastes are batch mixed with a suitable stabilizing agent (e.g., lime, cement, kiln dust, fly ash, ground blast furnace slag, Portland cement-based reagents, dirt, etc.).

E6.2.1.1 Stabilization of Wastes Containing Free Liquids

In this process, wastes that are not land disposal restricted are treated solely to stabilize free liquids. Pre-treatment analyses for these wastes consist of the basic inspection performed on the incoming shipments. In addition, a stabilization evaluation may be performed on a pre-treatment sample, known in CWMNW operations as a "sale sample," to ensure the waste's amenability to stabilization and to determine a mix ratio to be used as a guideline when the shipment of that waste material is to undergo stabilization. If an evaluation is not performed on a pre-treatment sample, a previously developed and established mix ratio is identified for use.

After a shipment has been accepted, it will be sent to the stabilization treatment unit for stabilization using the optimum ratio previously identified. Post-treatment analyses consist of the paint filter test. In addition, supplemental analyses may be requested by facility management to further evaluate the suitability of the stabilized waste for landfill disposal. There are no in-process analyses.

On occasion, a solid waste shipment may arrive containing a minimal amount of free liquids. These types of "off-spec" solid waste shipments may be stabilized/solidified at the stabilization unit, in the transportation vehicle and/or in the shipping container prior to land disposal or they may be rejected.

E6.2.2 Solar Evaporation

Surface impoundments are used as a waste treatment method whereby aqueous volume reduction occurs via solar evaporation. Analyses are performed to screen out wastes that are not acceptable for impoundment. Liquid waste compatibility is a required supplemental analyses to be passed before solar evaporation. A liquid waste compatibility is run to determine which impoundment should accept the waste, and the waste is examined for the presence of visible oil and grease.

Solid material in liquid loads is segregated, if possible, in order to prevent unnecessary filling of the surface impoundments. As necessary, the solids will be stabilized to remove free liquids and thereafter landfilled as appropriate.

E7 Intent of SWP

CWMNW operates a hazardous waste management facility that also stores, treats and disposes solid waste pursuant to this SWP. Certain of the actions described in this SWP parallel federal and Oregon law requirements for management of hazardous waste but are not required by the federal and Oregon law requirements for solid waste. CWMNW includes these certain actions in this SWP for consistency of operations at the CWMNW facility but does not intend that these certain actions be enforceable permit requirements. CWMNW intends that the actions in this SWP that are enforceable are those actions necessary to meet the requirements of federal law and Oregon law for storage, treatment and disposal of solid waste and that these requirements, if necessary to be enforced, are to be enforced under the federal and Oregon solid waste laws.

ADDENDUM A

Waste Management Profile

Requested Facility: _____ ❑ Unsure Profile Number: _____
❑ Check if there are multiple generator locations. Attach locations. ❑ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: _____
2. Site Address: _____
(City, State, ZIP) _____
3. County: _____
4. Contact Name: _____
5. Email: _____
6. Phone: _____ 7. Fax: _____
8. Generator EPA ID: _____ ❑ N/A
9. State ID: _____ ❑ N/A

B. BILLING INFORMATION ❑ SAME AS GENERATOR

1. Billing Name: _____
2. Billing Address: _____
(City, State, ZIP) _____
3. Contact Name: _____
4. Email: _____
5. Phone: _____ 6. Fax: _____
7. WM Hauled? ❑ Yes ❑ No
8. P.O. Number: _____

C. MATERIAL INFORMATION

1. Common Name: _____
Describe Process Generating Material: ❑ See Attached

2. Material Composition and Contaminants: ❑ See Attached

1.	
2.	
3.	
4.	
	≥100%

3. State Waste Codes: _____ ❑ N/A
4. Color: _____
5. Physical State at 70°F: ❑ Solid ❑ Liquid ❑ Other: _____
6. Free Liquid Range Percentage: _____ to _____ ❑ N/A (Solid)
7. pH: _____ to _____ ❑ N/A (Solid)
8. Strong Odor: ❑ Yes ❑ No Describe: _____
9. Flash Point: ❑ <140°F ❑ 140°–199°F ❑ ≥200° ❑ N/A (Solid)

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ❑ Yes* ❑ No
Code: _____
2. State Hazardous Waste? ❑ Yes* ❑ No
Code: _____
3. Excluded waste under 40 CFR 261.4 (a) or (b)? ❑ Yes* ❑ No
4. Contains Underlying Hazardous Constituents? ❑ Yes* ❑ No
5. Contains benzene **and** subject to Benzene NESHAP? ❑ Yes* ❑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ❑ Yes* ❑ No
7. CERCLA or State-mandated clean-up? ❑ Yes* ❑ No
8. NRC or State-regulated radioactive or NORM waste? ❑ Yes* ❑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ❑ Yes ❑ No
a. Regulated by 40 CFR 761? ❑ Yes ❑ No
b. Remediation under 40 CFR 761.61 (a)? ❑ Yes ❑ No
c. Were PCB imported into the US? ❑ Yes ❑ No
10. Regulated and/or Untreated Medical/Infectious Waste? ❑ Yes ❑ No
11. Contains Asbestos? ❑ Yes: Friable ❑ Yes: Non-Friable ❑ No

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ❑ Yes ❑ No
Please identify applicable samples and/or lab reports:
2. Other information attached (such as MSDS)? ❑ Yes ❑ No

F. SHIPPING AND DOT INFORMATION

1. ❑ One-Time Event ❑ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: _____
❑ Tons ❑ Yards ❑ Drums ❑ Gallons ❑ Other: _____
3. Container Type and Size: _____
4. USDOT Proper Shipping Name: ❑ N/A
_____

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this Waste Management Profile, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): _____ Date: _____
Title: _____
Company: _____

Certification Signature

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QUESTIONS? CALL 800 963 4776 FOR ASSISTANCE

Last Revised December 23, 2011

ADDENDUM A

Waste Management Profile Addendum

Only complete this Addendum if prompted by responses on Waste Management Profile (page 1) or to provide additional information. Sections and question numbers correspond to Waste Management Profile.

Profile Number: _____

SECTION C

Describe Process Generating Material (Continued from page 1): If more space is needed, please attach additional pages.

Material Composition and Contaminants (Continued from page 1): If more space is needed, please attach additional pages.

5.	
6.	
7.	
8.	
9.	
10.	
	≥100%

SECTION D

Only questions with a "Yes" response on Waste Management Profile (page 1) need to be answered here.

1. EPA Hazardous Waste
   a. Please list all USEPA listed and characteristic waste code numbers:

   b. Is the material subject to the Alternative Debris standards (40 CFR 268.45)? ❑ Yes ❑ No ❑ Unsure
   c. Is the material subject to the Alternative Soil standards (40 CFR 268.49)? → If Yes, complete question 4. ❑ Yes ❑ No ❑ Unsure
   d. Is the material exempt from Subpart CC Controls (40 CFR 264.1083 and 265.1084)? ❑ Yes ❑ No ❑ Unsure
   → If Yes, please select one of the following:
   ❑ Waste has been determined to be LDR exempt [265.1083(c)(4) and 265.1084(c)(4)] based on the fact that it meets all applicable organic treatment standards (including UHCs for D-coded characteristic wastes) or a Specified Technology has been utilized.
   ❑ Waste does not qualify for a LDR exemption, but the average VOC at the point of origination is <500 ppmw and this determination was based on analytical testing (upload copy of analysis) or generator knowledge.
2. State Hazardous Waste → Please list all state waste codes: _____
3. Excluded Waste → Please select which of the following categories apply to your material:
   ❑ Delisted Hazardous Waste ❑ Excluded Waste under 40 CFR 261.4 → Specify Exclusion: _____
   ❑ Treated Hazardous Waste Debris ❑ Treated Characteristic Hazardous Waste → If checked, complete question 4.
4. Underlying Hazardous Constituents → Please list all Underlying Hazardous Constituents:

5. Benzene NESHAP → Please include benzene concentration and percent water/moisture in chemical composition.
   a. Are you a TSDF? → If yes, please complete Benzene NESHAP questionnaire. If not, continue.
   b. What is your facility's current total annual benzene quantity in Megagrams? ❑ <1 Mg ❑ 1–9.99 Mg ❑ ≥10 Mg
   c. Is this waste soil from remediation at a closed facility? ❑ Yes ❑ No
   d. Has material been treated to remove 99% of the benzene or to achieve <10 ppmw? ❑ Yes ❑ No
   e. Is material exempt from controls in accordance with 40 CFR 61.342? ❑ Yes ❑ No
   → If yes, specify exemption: _____
   f. Based on your knowledge of your waste and the BWON regulations, do you believe that this waste stream is subject to treatment and control requirements at an off-site TSDF? ❑ Yes ❑ No
6. 40 CFR 63 GGGGG → Does the material contain <500 ppw VOHAPs at the point of determination? ❑ Yes ❑ No
7. CERCLA or State-Mandated clean up → Please submit the Record of Decision or other documentation to assist others in the evaluation for proper disposal.
8. NRC or state regulated radioactive or NORM Waste → Please identify Isotopes and pCi/g: _____

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Last Revised December 23, 2011

F APPENDIX F

EPA METHOD 1030 – IGNITABILITY OF SOLIDS

OREMET-WAH CHANG
An Allegheny Teledyne Company

Method 1030 Modifications

For the purposes of the SAP for Materials Historically Managed in the Burnback Kiln, *EPA Method 1030 – Ignitablility of Solids* is modified as indicated below. The modifications involve the use of 5-minute applied flame test for all materials unless, in the opinion of the analyst, the sample test material is clearly not a mixture of metallic materials.

Modified Procedures:

7.1 Preliminary Screening Test. All materials (unless clearly not a mixture of metallic materials) shall be subjected to the 5 minute flame test under section 7.1.7. If the sample ignites before 5 minutes elapsed time, normal method procedures are to be followed.

7.2 Burning Rate Test. Under section 7.2.8, all materials (unless clearly not a mixture of metallic materials) shall be subjected to the 5 minute flame test under section 7.1.7. If the sample ignites before 5 minutes elapsed time, normal method procedures are to be followed.

METHOD 1030

IGNITABILITY OF SOLIDS

1.0 SCOPE AND APPLICATION

1.1 This method is suitable for the determination of the ignitability of solids and is appropriate for pastes, granular materials, solids that can be cut into strips, and powdery substances. This method may be used to meet certain regulatory applications; with respect to the characteristic of ignitability in CFR § 261.21, this method may be used, but is not required, to determine whether a solid waste "when ignited, burns so vigorously and persistently that it creates a hazard." If it is impractical to perform the test because of the physical form of the sample, generator knowledge should be used to determine the ignitability hazard posed by the material.

2.0 SUMMARY OF METHOD

2.1 In a preliminary test, the test material is formed into an unbroken strip or powder train 250 mm in length. An ignition source is applied to one end of the test material to determine whether combustion will propagate along 200 mm of the strip within a specified time period. Materials that propagate burning along a 200 mm strip within the specified time period are then subjected to a burning rate test. Materials that do not ignite or propagate combustion as described above do not require further testing. In the burning rate test, the burning time is measured over a distance of 100 mm and the rate of burning is determined. The test method described here is based on the test procedure adopted by the Department of Transportation from the United Nations regulations for the international transportation of dangerous goods and is contained in Appendix E to Part 173 of 49 CFR.

3.0 INTERFERENCES

3.1 In laboratory tests the burning rate of duplicate runs is usually repeatable to within 10%. However, large differences in burning rates may occur if experimental conditions are not held constant. Variation in airflow rates, particle size, and moisture content of the test material will affect test results. Therefore, at least triplicate determinations of the burning rate should be conducted.

3.2 Particle size of test material can affect not only the burning rate, but also the ignition of the material. Therefore, the particle size of the test material should be the same for each test run. The particle size of the test material should be reported in a simple descriptive format (e.g., fine powder, sand, coarse granular).

3.3 Temperature of some test material such as sulfur powder affects the burning rate. For reproducible results, all tests should be performed at approximately the same initial temperature (ambient room or laboratory temperature).

3.4 All tests must be carried out inside a fume hood with the test apparatus situated perpendicular (90°) to the direction of airflow. Airflow parallel (0 °) to the test apparatus results in non-reproducible burning rates.

3.5 The rate of airflow through the fume hood affects the burning rate. Too high an airflow distorts the flame and retards its horizontal propagation. The optimum airflow appears to be in the range of 0.7-1 meter per second.

3.6 Materials that are moisture sensitive (i.e., readily absorb moisture from air) should be tested as quickly as possible after removal from the sample container. All materials should be tested as received by the laboratory.

4.0 APPARATUS AND MATERIALS

4.1 Low-heat conducting, non-combustible, impervious ceramic tile or equivalent material, of approximate dimension of 25 cm x 25 cm x 2.5 cm (the tile must be at least 25 cm in length to support a 250 mm test sample).

4.2 High temperature marker or equivalent marking device for marking ceramic plates.

4.3 Powder Train Mold (see Figure 1) for molding powdered and granular materials for the burn rate test. The material of construction can be aluminum, brass, stainless steel, or plastic. The mold is 250 mm in length and has a triangular cross-section, with a width of 20 mm, and a depth of 10 mm as measured from the bottom of the triangular opening to where the sides meet. On both sides of the mold, in the longitudinal direction, two sheets are mounted as lateral limitations which extend 2 mm beyond the upper edge of the triangular cross-section. This device can be fabricated by most machine shops. The complete burn rate apparatus is available from: Associated Design and Manufacturing Co.; 814 N. Henry Street; Alexandria, Virginia 22314.

4.4 A Bunsen (propane gas and air) burner with a minimum diameter of 5 mm capable of attaining a temperature of at least 1,000°C.

4.5 Stop watch.

4.6 Thermocouple to measure the temperature of the gas flame.

4.7 Thermometer to measure initial temperature of material (i.e., room temperature).

4.8 Anemometer to measure airflow in the fume hood.

5.0 REAGENTS

5.1 No special reagents are required to conduct this test.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 All samples are tested on as-received basis unless requested otherwise. No sample preservation is required, but sample containers should be completely filled and tightly sealed to preserve sample integrity.

6.2 Samples should be tested as soon as possible after removal from the sample container (i.e., samples should not be allowed to dry or absorb moisture for excessive periods or to

lose volatiles). Samples that are chilled or cooled upon receipt to the laboratory should be allowed to equilibrate to the ambient laboratory temperature in the sample container.

7.0 PROCEDURE

SAFETY: Prior to starting the preliminary test, all sample materials must be tested to determine if that material is explosive or extremely flammable. Use a very small portion of material (1 gram or less). If the sample displays explosivity or extreme flammability, do not conduct this test.

7.1 Preliminary Screening Test

7.1.1 The preliminary ignitability test is conducted on all waste materials. On a clean, impervious ceramic tile (Section 4.1), clearly mark a 250 mm long test path. Make another mark at exactly 200 mm from the start of the sample path.

7.1.2 Prepare the test material in its "as received" form by forming an unbroken strip or powder train of sample 250 mm long by 20 mm wide by 10 mm high on the ceramic tile. Use the mold to form the material as in 7.2.3 if appropriate.

7.1.3 Place the ceramic tile with the loaded sample in a fume hood about 20 cm (~8 inches) from the front of the hood and in an area of laminar airflow. Position the sample perpendicular to the airflow. (See Figure 2) The airflow across the perpendicular axis of the sample should sufficient to prevent fumes from escaping into the laboratory and should not be varied during the test. The air velocity should be approximately 0.7 meters/second. Measure the air velocity by an anemometer.

7.1.4 Light the Bunsen burner and adjust the height of the flame (6.5 to 7.5 cm) by adjusting the propane gas and air flows. Measure the temperature of the flame (tip of the flame) by a thermocouple. The temperature of the flame must be at least 1000°C.

7.1.5 Apply the tip of the flame to one end of the sample strip . The test period will depend on the sample matrix as follows:

7.1.6 If the waste is non-metallic, hold the flame tip on the sample strip until the sample ignites or for a maximum of 2 minutes. If combustion occurs, begin timing with a stop watch and note whether the combustion propagates up to the 200 mm mark within the 2 minute test period.

7.1.7 If the waste is a metal or metal-alloy powder, hold the flame tip on the sample strip until the sample ignites or for a maximum of 5 minutes. If combustion occurs, begin timing with a stop watch and note whether the combustion propagates up to the 200 mm mark within the 20 minute test period.

7.1.8 If the waste does not ignite and propagate combustion either by burning with open flame or by smoldering along 200 mm of sample strip within the 2 minute test period (or 20 minute test period for metal powders), the waste is not considered flammable and no further testing is required. If the waste propagates burning of 200 mm of the test strip within

the 2 minute test period (20 minute test period for metals), the material must be evaluated by the burning rate test (Section 7.2).

7.2 Burning Rate Test

7.2.1 The preparation of the test sample for the burning rate test will depend on the physical characteristics of the waste. Wastes that exist in a powdered or granular state are molded in a powder train mold shown in Figure 1. Pasty materials are formed into a rope 250 mm in length with a cross-section of 1 cm^2. All tests for the burn rate test are performed on clean, ambient temperature, ceramic plates.

7.2.2 On a clean, impervious ceramic tile (Section 4.1), clearly mark a 250 mm long test path. Make two additional timing marks at 80 mm and 180 mm from the start of the sample path. The distance between the two marks (100 mm) will be used to calculate the rate of burn in Section 7.2.9.

7.2.3 Tighten the side plates on the mold. For powdered or granular materials: Place the mold on the base plate. Pour the material to fill the triangular cross section of the mold loosely.

7.2.4 Drop the unit from a height of 2 cm onto a solid surface three times to settle the powder. Remove the side supports. Lift the mold off the base plate. Place a clean ceramic test plate with the appropriate timing marks (Section 7.2.2) face down on top of the mold. Invert the setup and remove the mold.

7.2.5 Pasty wastes are prepared by spreading the waste on a marked ceramic tile (Section 7.2.2) in the form of a rope 250 mm in length with a cross-section of 1 cm^2.

7.2.6 Place the ceramic tile with the loaded sample prepared in Sections 7.2.3 or 7.2.5 in a fume hood about 20 cm (~8 inches) from the front of the hood and in an area of laminar airflow. Position the sample perpendicular to the airflow. (See Figure 2) The airflow across the perpendicular axis of the sample should sufficient to prevent fumes from escaping into the laboratory and should not be varied during the test. The air velocity should be approximately 0.7 meters/second. Measure the air velocity with an anemometer.

7.2.7 Light the Bunsen burner and adjust the height of the flame (6.5 to 7.5 cm) by adjusting the propane gas and air flows. Measure the temperature of the flame (tip of the flame) by a thermocouple. The temperature of the flame must be at least 1000°C.

7.2.8 Apply the tip of the flame to one end of the sample strip to ignite the test strip as described in Section 7.1.6 and 7.1.7.

7.2.9 When the test strip or powder train has burned up to the 80 mm time marker, begin timing the rate of combustion with a stop watch. Stop the timer when the burned strip reaches the 180 mm time marker. Record the amount of time (in seconds) required to burn the 100 mm test strip. Calculate the rate of burning by dividing the length of the burn test strip (100 mm) by the total time (seconds). Results of the burn rate test should be reported in mm/sec. Wastes that have a rate of burning of more than 2.2 mm/sec (or burn time of less than 45 seconds for 100 mm) are considered to have a positive result for ignitability

according to DOT regulations. For metals, this time is 10 minutes or less for 100 mm (or a burn rate of more than 0.17 mm/sec).

7.2.10 Report and Calculation Section

Test Material Information

Source of Material: e.g., Company, operation or process
Description of material: e.g., powder or paste, metallic or non-metallic
Particle size: e.g., fine powder, granular, sand, etc.
Preliminary Burning Time: ____ seconds.

Test Conditions

Date of Test:
Temperature of test material (°C):
Air velocity through fume hood (m/s):

Ignitability Test Data				
Test Number	Time (sec) elapsed between application of flame and start of ignition	Burning time over 100 mm (sec)	Burning Rate (mm/sec)	Comments
1				
2				
3				

8.0 QUALITY CONTROL

8.1 All tests must be performed on a clean ceramic plate at room temperature. All samples must have been collected using a sampling plan that addresses the considerations discussed in Chapter Nine of this manual.

8.2 All replicate runs must be at the same initial temperature (ambient laboratory temperature).

8.3 All replicate tests must be run at approximately the same airflow through the fume hood.

8.4 Only materials of the same particle size distribution should be used for all replicate tests.

8.5 The burn rate test must be conducted in triplicate if the preliminary screening test is positive. Any burn rate for non-metallic samples that exceeds 2.2 mm/sec (or a burn time of less than 45 seconds for 100 mm) is considered to have a positive result. For metals, a burn rate of more than 0.17 mm/sec (or burn time of less than 10 minutes for 100 mm) is considered to have a positive result.

9.0 METHOD PERFORMANCE

9.1 An independent laboratory validation was conducted on the robustness of the burn rate test procedure. The materials selected for this evaluation included:

1. A 50/50 mixture of metallic silicon and lead dioxide ($Pb0_2$)
2. Excelsior
3. Dextrin (yellow powder)
4. Sulfur (fine yellow powder)
5. Aluminum metal (coarse)
6. Magnesium metal (coarse)
7. Polyethylene high density (granular)
8. Polyethylene low density (fluffy white powder)
9. Scott fertilizer (32-3-10:N-P-K)
10. JP-4 contaminated soil (approximately 5000 ppm)

Of these materials, the 50/50 mixture of metallic silicon and lead dioxide ($Pb0_2$), elemental sulfur, and excelsior were considered to give a positive ignitability result under the conditions of the test. The remaining materials gave negative (nonflammable) results under the conditions of the test. Several test variables including ignition source, ambient temperature, and apparatus orientation, were studied using these materials. Partial results of this study are summarized in Table 1.

9.2 In another evaluation of the DOT burn rate test, potentially ignitable finishing wastes from the furniture industry were collected and tested for burning rates. Each waste was tested in triplicate to establish a mean value for the burning rate. The results for the flammable wastes are summarized in Table 2.

9.3 In order to evaluate the ruggedness of the DOT burn rate test, select ignitable finishing wastes were split and tested by a state laboratory and an independent contract laboratory. The results of this comparison are summarized in Table 3.

10.0 REFERENCES

1. "Test Methods for Readily Combustible Solids. Burning Rate Test." (14.2.2.5). Recommendations on the Transport of Dangerous Goods. Fifth Revised Edition. United Nations, New York. 1988.

2. DOT Regulation. Appendix E to Part 173 of 49 CFR, Chapter 1 (12-31-91 Edition). pp. 597-598.

3. Flammability (solids). Method A.10. Official Journal of the European Communities. 9/19/84. No. L251/63.

4. "Validation of Ignitability Method For Solids" Foster Wheeler Enviresponse, Inc., Edison NJ., Submitted to the Office of Solid Waste, US EPA, February 1994.

5. Internal Report, (AMFA Report) North Carolina Department of Environmental Health and Natural Resources. (Bill Hamner)

TABLE 1
TEST VARIABLES FOR IGNITABILITY

Material Tested	Test Number	Variable combination[1]	Burn Time over 100 mm (sec)	Burn Rate (mm/sec)
50% Metallic Silicon and 50% Lead IV Oxide	1	ABC	0.84	119
	2	Abc	0.50	200
	3	aBc	0.69	145
	4	abC	0.65	154
Excelsior (wood shavings)	1	ABC	13.45	7.43
	2	Abc	9.14	10.9
	3	aBc	13.37	7.47
	4	abC	13.59	7.36

[1]where:

A-flame ignition
a-hot wire ignition source
B-ambient temperature of 20°C
b-ambient temperature of 100°C
C-orientation of test apparatus of 90° to air flow
c-orientation of test apparatus of 0° to air flow

TABLE 2
BURNING RATES FOR IGNITABLE WASTES

Sample No.	Description of Waste	Burn Time over 100 mm (sec)	Burn Rate (mm/sec)
A2	Segregated Lacquer Dust	4.7	21.3
J2	Segregated Lacquer Dust	4.6	21.7
U	Segregated Lacquer Dust	8.6	11.6
K	Consolidated Lacquer Dust	6.0	16.7
H	Catalyzed Lacquer Dust	6.7	14.9
F	Water Based Lacquer Dust	19.4	5.15
P	Booth Coat-Stain Overspray	12.5	8.0
O	Pallet Covered Cardboard	11.1	9.0
Q	Pallet Covered Cardboard	12.3	8.13

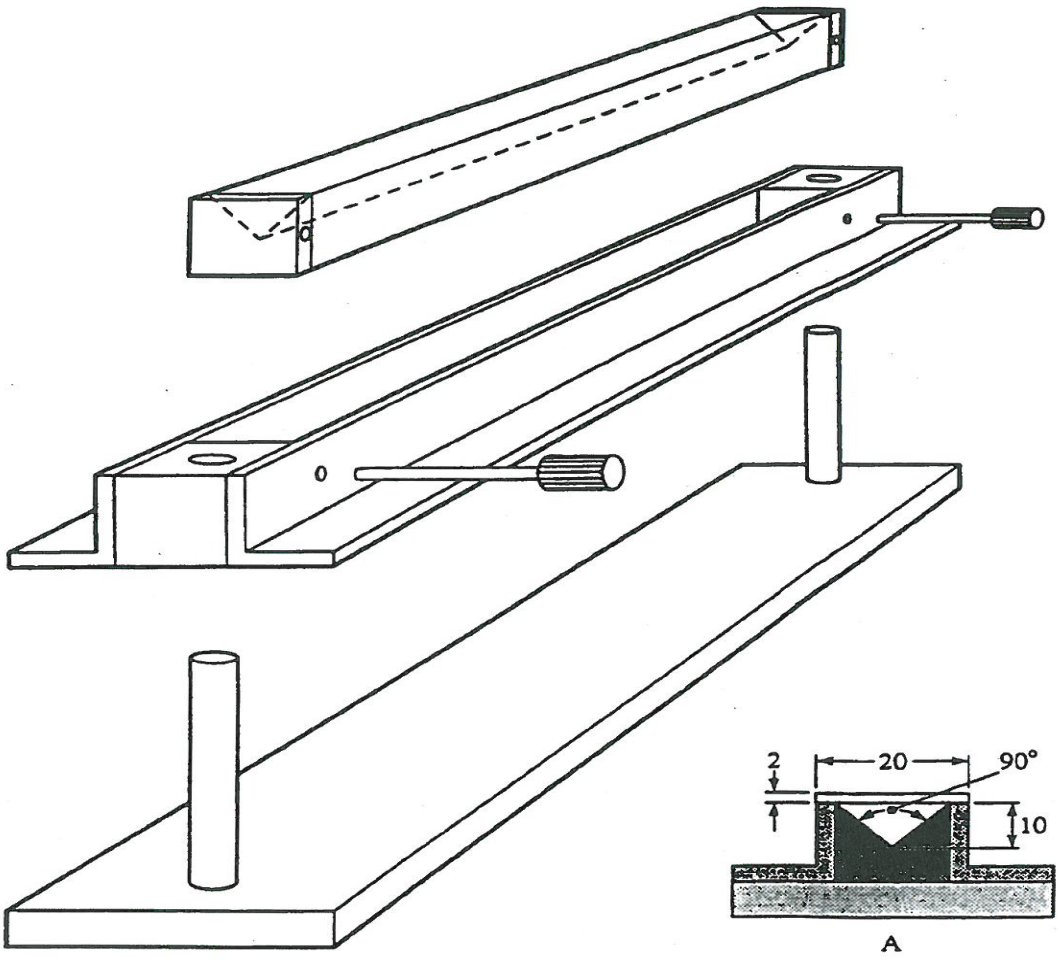
TABLE 3
COMPARISON OF BURN RATES

Sample No.	Description of Waste	Mean Burn Time Over 100 mm in Seconds	
		State Laboratory	Contract Laboratory
A1	Segregated Lacquer Dust	4.7	5
J1	Segregated Lacquer Dust	4.6	4.3
12	Booth Coat-Glaze Overspray	0[1]	0[1]

[1] Waste was found to be nonflammable under conditions of the test.

Figure 1

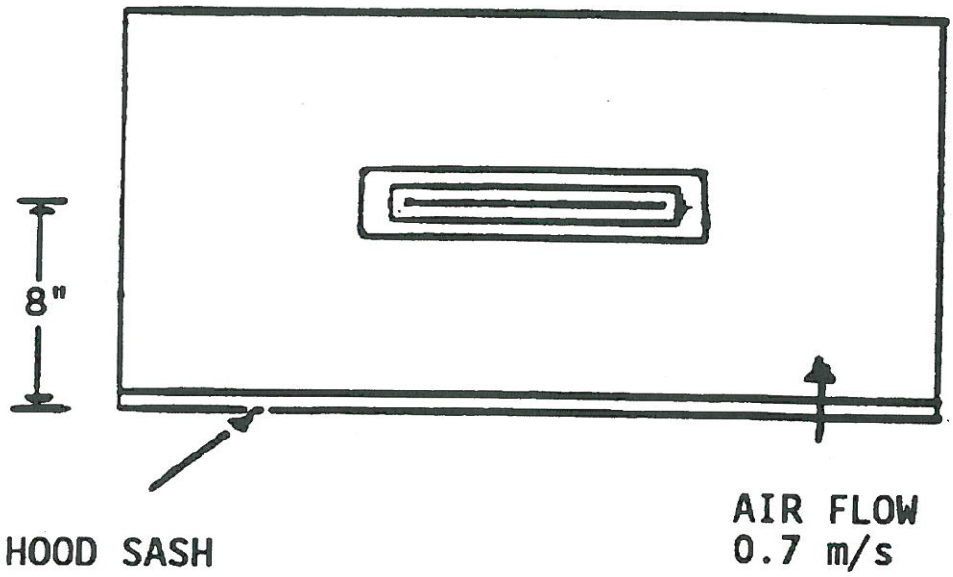
Powder Train Mold



(A) Cross-section of 250 mm long mould

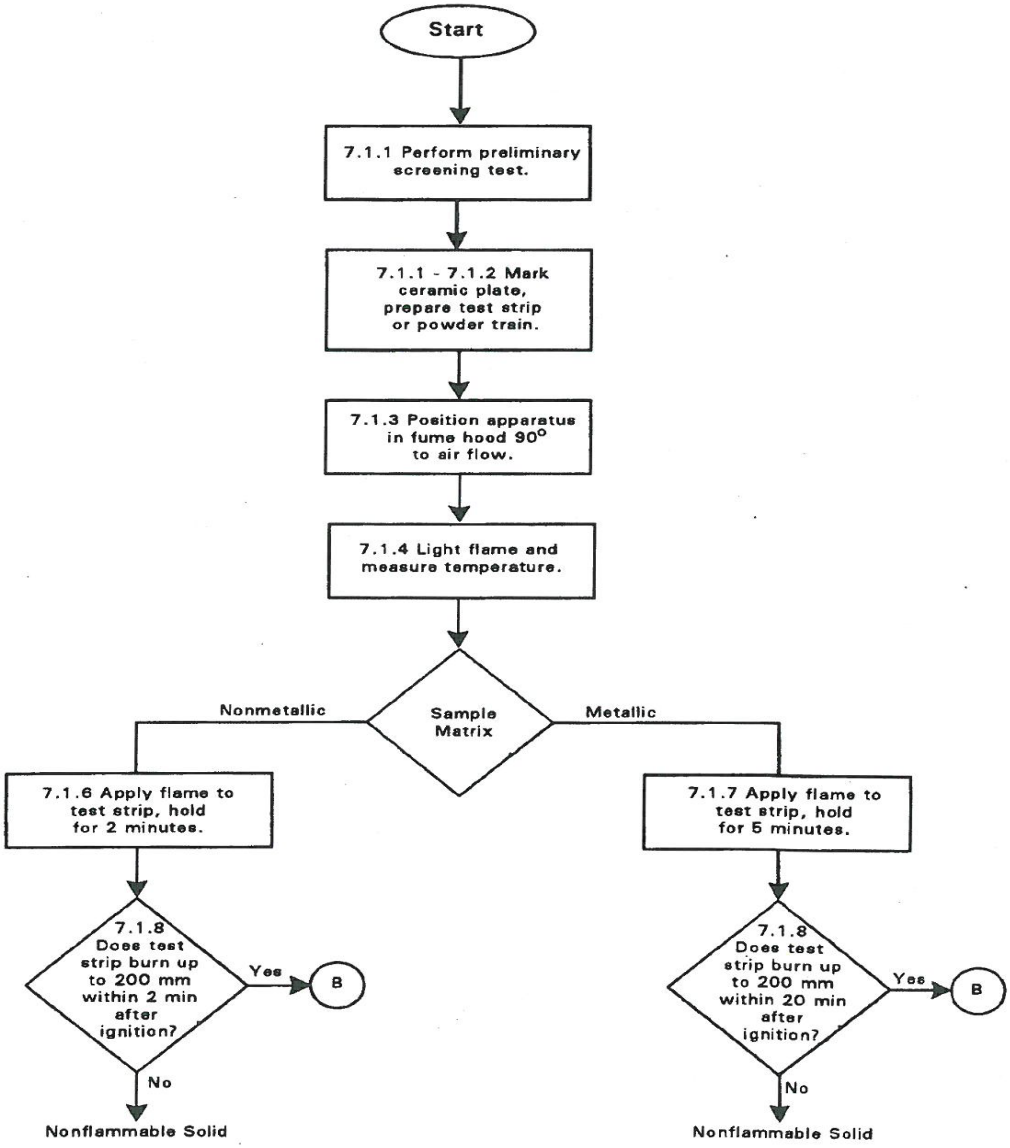
Figure 2

Test Apparatus Position in Fume Hood

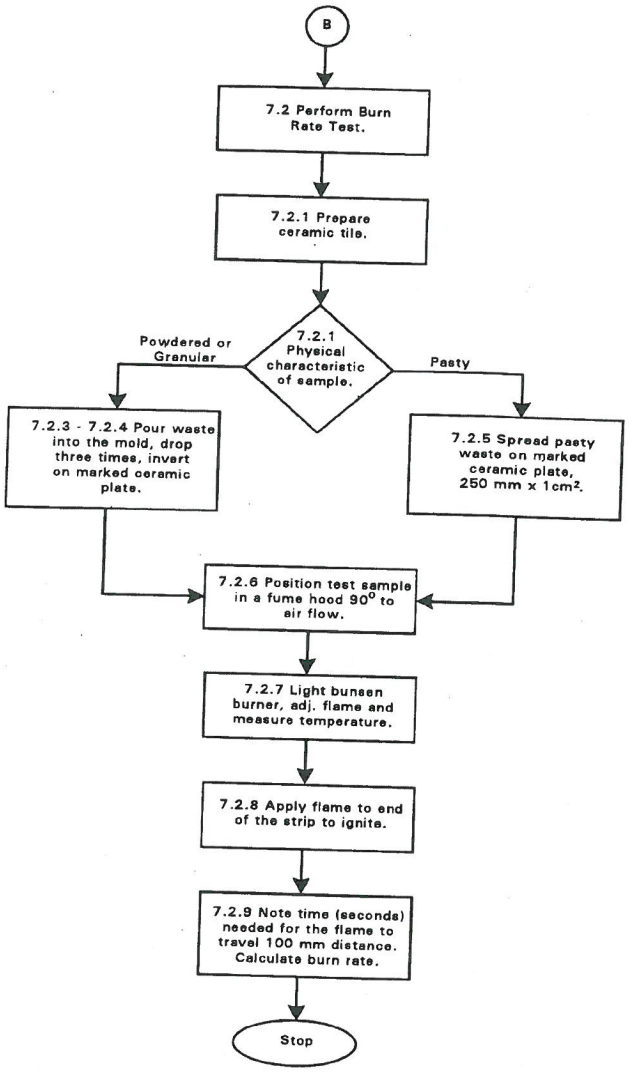


SAMPLE 90° TO AIR FLOW

METHOD 1030
IGNITABILITY OF SOLIDS



METHOD 1030
IGNITABILITY OF SOLIDS



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G APPENDIX G

OREMET – WAH CHANG – METHOD: OWC IMPACT TEST IGNITABLE or REACTIVE SOLIDS

OREMET-WAH CHANG
An Allegheny Teledyne Company

Method: OWC Impact Test Ignitable or Reactive Solids

(rev. 1, July 1999)

Scope and Application

Ignitability Characteristic

This method is suitable for determining the first of two criteria comprising 40 CFR 261.21(a)(2), which defines the hazardous waste characteristic of ignitable solids. Under 40 CFR 261.21(a)(2), the definition of ignitable solids states:

> It is not a liquid and is capable, *under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes* and, *when ignited, burns so vigorously and persistently that it creates a hazard.*

To be considered an ignitable hazardous waste, the waste must exhibit a positive response to both elements of the criteria. That is:

- **Part 1** – At standard temperature and pressure, the waste is capable of causing fire through;

  (a) friction,

  (b) absorption of moisture, or

  (c) spontaneous chemical changes,

  and

- **Part 2** – At standard temperature and pressure, the waste, when ignited, burns so vigorously and persistently that it creates a hazard.

EPA has developed Method 1030 for purposes of evaluating Part 2 of the ignitability characteristic. EPA has not developed a standardized test for evaluating the first part of the ignitability characteristic and none has been published by other agencies. Thus, the first part of the ignitability characteristic remains largely a subjective determination that typically is made based on generator knowledge.

The *OWC Impact Test* may be used to establish a rebuttable presumption that a waste is capable of causing fire through friction under Part 1 of the ignitable solids criteria. Because no approved methods have been officially adopted through the rulemaking process by EPA or DEQ to address Part 1 of the ignitability characteristic, the results of this test method will only be used to create a presumption about whether or not the material is capable of causing fire in the manner described. This presumption may be overcome by other information indicating that, for a particular material, the test is not an appropriate indicator of whether the

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material is capable of causing fire. Such other information may include unique physical properties of the material or information about how the material is typically handled[1].

The method is appropriate for gels, semisolids, powders, turnings, granular material, and solids up to 18 gauge.

Reactivity Characteristic

This method is also suitable for determining the first part of sixth criteria comprising 40 CFR 261.23(a) (shown in italics below), which defines the hazardous waste characteristic of reactivity. Under 40 CFR 261.23(a), a reactive hazardous waste is defined as:

> (a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:
>
> . . .
>
> (6) *It is capable of detonation or explosive reaction if it is subjected to a strong initiating source* or if heated under confinement

The *OWC Impact Test* may be used to establish a rebuttable presumption that a waste is capable of detonation or explosive reaction if it is subjected to a strong initiating force under the sixth criteria of the reactivity characteristic. Because no approved methods have been officially adopted through the rulemaking process by EPA or DEQ to address this portion of the reactivity characteristic, the results of this test method will only be used to create a presumption about whether or not the material is capable of detonation or explosive reaction in the manner described. This presumption may be overcome by other information indicating that, for a particular material, the test is not an appropriate indicator of whether the material is capable of detonation or explosive reaction. Such other information may include unique physical properties of the material or information about how the material is typically handled.

Summary of Method

Condition Simulated by Test. The OWC Impact Test evaluates whether a test material will combust , is capable of causing combustion, detonation, or explosive reaction as a result of friction imparted on the sample by the compressive force caused by a weight dropped on the test material. The OWC Impact Test is designed to aggressively simulate the condition that could be caused if a container of the material is accidentally dropped from a height of 3 feet during normal handling conditions such as loading or unloading operations.

Description of Method. The test method involves the placement of a sample of the test material on a smooth zirconium striking surface 2 inches in diameter, followed by dropping a cylindrical 5 lb zirconium weight (2 inches in diameter) from a height of 16 inches onto the striking surface. The impact of the weight on the striking surface delivers 305 ft-lbs/ft^2 of instantaneous kinetic energy to the test sample material. The kinetic

[1] A nonliquid waste is only hazardous due to ignitability if it can spontaneously catch fire under normal handling conditions and can burn so vigorously that it creates a hazard. (EPA530-R-97-056, PB98-108 111, November 1997). In the original rulemaking (45 *FR* 33108, May 19, 1980), EPA indicated that it "is only interested in capturing the small class of *thermally unstable* solids which are liable to cause fires through friction, absorption of moisture, or spontaneous chemical changes."

energy is instantaneously translated into compressive and frictional forces on the test material. This condition is equivalent to the amount of kinetic energy delivered to waste material at the bottom of a drum from the simulated drum handling event.

The test is performed on duplicate aliquots of the sampled material, with observations made during each run.

The test sample is performed under a laboratory fume hood with air flow in the range of 0.7-1 meter per second (see EPA Method 1030 for description of fume hood settings).

Indications. Presumption of the test sample exhibiting Part 1 of the ignitability characteristic is established by the observance of any visible flames, rapid, or sustained production of sparks[2] [3] during and shortly after impact occurs.

Presumption of the test sample exhibiting the characteristic of reactivity is established by the observance of sample detonation or explosive reaction during and shortly after impact occurs.

Apparatus and Materials

The zirconium striking surface base is fastened into the top center of a square or rectangular block of non-combustible, non-metallic material that provides a foundation for the striking surface. The top surface of the strike plate is elevated 1 inch above the base. The striking block base should be at least 1 ft x 1 ft in dimension, and be anchored to the working surface to provide overall stability to the test apparatus. The zirconium drop weight is equipped with guide eyes and glide rods that provides vertical alignment for the weight drop onto the strike plate and test sample. The glide rods are secured to the base and top of the test apparatus. The test apparatus is open on all sides to allow unobstructed circulation of air around the apparatus.

See the attached drawing of the test apparatus.

Other Equipment:

- Stop watch
- Anemometer to measure air flow in the fume hood

Reagents

No reagents are needed for this test.

Sample Collection, Preservation, and Handling

All test materials should be collected according to the sampling procedures described in an approved Sampling and Analysis Plan (SAP), and on applicable sampling protocols in EPA SW-846, *Test Methods for Evaluating Solid Waste*.

---

[2] "Rapid or sustained production of sparks" means 5 or more sparks emitted at the time of impact, more than 10 sparks during the first 10 seconds after impact, or more than 10 sparks emitted during the final 30 second interval.

[3] Observance of a popping sound in absence of a visible spark is presumed to be indicative of a spark.

All samples are tested on as-received basis. No sample preservation is required, but sample containers should be tightly sealed to preserve sample integrity. Test materials should be stored in such a way as to prevent them from coming into contact with moisture and air.

Samples should be analyzed as soon as possible after being removed from sample containers at standard room temperature (68-72°F) and at ambient pressure.

Procedures

The OWC Impact Test evaluates whether a test material ignites, or has rapid, or sustained emission of sparks capable of igniting the test material.

Preparation of Test Sample:

- Sample preparation methods are contingent on the particle size of the material.
  - For powders, granular material, chips, and turnings predominantly less than 2 inches in length, the 2 inch bottom strike plate should be covered to a depth not to exceed ½ inch. Excess material that sloughs off the strike plate is to be removed from the test apparatus.
  - For samples consisting of turnings predominantly longer than 2 inches in length, test materials are to be snipped to a maximum length of 3 inches and placed onto the strike plate so that ½ inch of the turning extends off each side of the strike plate. The longest turnings are to be placed in the center of the strike plate with progressively shorter turning lengths as turnings are placed towards the edge of the strike plate. Maintain approximately ½ inch turning overhang as the turnings are placed on the strike plate. Form two (2) layers of turnings with the second layer snipped and placed in a similar manner, but perpendicular to the bottom layer.
- When the sample has been placed on the strike plate and sloughed material removed, the sample is ready for the impact portion of the test.
- Holding the drop weight, remove the safety pin holding the weight and slowly lower the bottom of the weight to the 16 inch marker on one of the glide rods. Release the weight from the drop height so that the weight freely falls onto the test sample on the base strike plate.
- Make observations as noted under "Reporting Results."
- After 10 seconds, raise the weight and replace the safety pin to hold the weight in place.
- Make observations as noted under "Reporting Results."
- Remove test sample, wipe clean bottom strike plate, striking surface of drop weight, and base of test apparatus.
- Repeat test on replicate sample.

Reporting Results

For the ignitability portion of the test, the analyst is to record visible evidence of flame, rapid, or sustained production of sparks[4,5] during at the following intervals:

- At the moment immediately following impact,
- The first 10 seconds after impact, and
- The following 30 seconds (40 seconds elapsed time after impact).

The analyst is to record positive (Y) or negative (N) visual indications of flame, or rapid and sustained production of sparks for each interval. Record any other relevant observations (e.g., smoke, noise, light produced or generated during test).

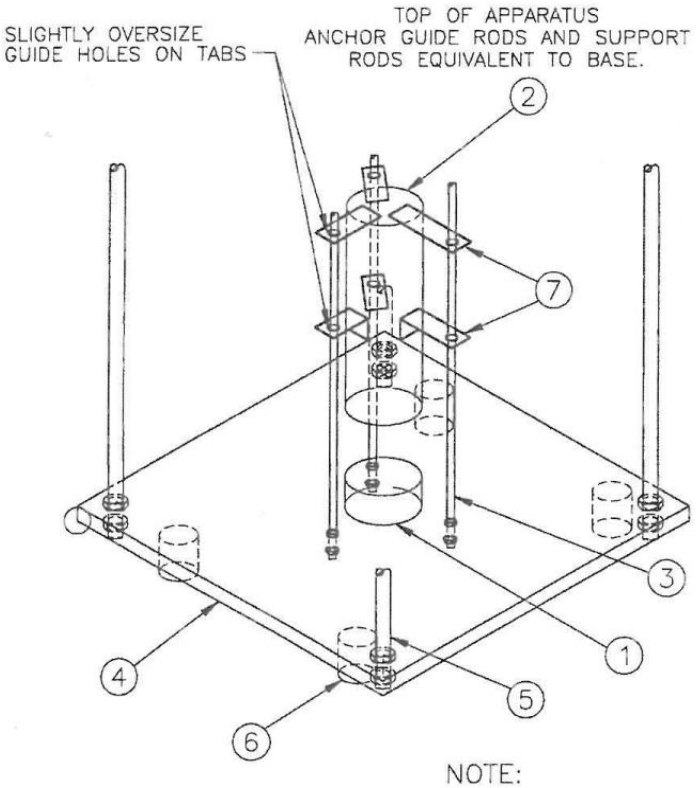
For the reactivity portion of the test, the analyst is to record visible evidence of sample detonation, or explosive reaction at the time of impact and for an elapsed time of 40 seconds after impact. Record any other relevant observations (e.g., smoke, noise, light produced or generated during test).

[4] "Rapid or sustained production of sparks" means 5 or more sparks emitted at the time of impact, more than 10 sparks during the first 10 seconds after impact, or more than 10 sparks emitted during the final 30 second interval.

[5] Observance of a popping sound in absence of a visible spark is presumed to be indicative of a spark.

OWC IMPACT TEST

MATERIAL:
1. (1) STRIKE PLATE 2"ø X 1" TALL
2. (1) 5 LB (Zr) DROP WEIGHT 2"ø X 6.9" TALL
3. (3) 1/4" OR 3/8"ø GUIDE RODS (UNTHREADED EXCEPT AT TOP & BOTTOM).
   TOP LOCK W/NUTS ON BOTH SIDES
4. (1) BASE PLATE 1/2" PLATE X 12" X 12"
5. (4) 3/8" OR 1/2"ø ALLTHREAD SUPPORT RODS
   DRILL THROUGH BASE AND
   TOP LOCK W/NUTS ON BOTH SIDES
6. (4) FEET 1"ø MINIMUM X 3/4"–1" TALL
7. GUIDE TABS 3/4" WIDE



NOTE:
1. SECURE GUIDE RODS. DRILL THROUGH BASE AND TOP. LOCK W/NUTS ON BOTH SIDES.
2. UNIT MUST BE AT LEAST 30" TALL (TOP OF BOTTOM PLATE TO BOTTOM OF TOP PLATE. 16" FREE FALL OF WEIGHT ONTO STRIKE SURFACE

OREMET-WAH CHANG
An Allegheny Teledyne Company

OWC Impact Test for Ignitable or Reactive Solids

Test Material Information	Test Conditions	
Source of Material:	Date of Test:	___/___/___
OWC EMS Waste I.D. Code:	Temperature of Test Material (°C):	
Physical Description of Material: Particle Size:	Air Velocity Through Fume Hood (m/sec):	
	Analysis Performed by:	

Sample Contains: ☐ Powders ☐ Granular Mat'l ☐ Chips ☐ Turnings ☐ Other (specify) _____
Est. Composition: _____% _____% _____% _____% _____%

Sample Is: ☐ Dry ☐ Wet/Moist ☐ Has Oily Film ☐ Other (specify) _____

Sample Materials Were Primarily Turnings: ☐ Yes ☐ No. If Yes, measure gauge thickness: _____
(Note: Turnings are to be snipped into pieces of varying length and placed on the strike plate)

Other remarks:

Impact Test – Run #1

At Impact	Period from Impact to 10 Seconds after Impact	Period From 10 Seconds to 40 Seconds after Impact
Ignitable Indication: ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Reactive Indication: ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Observations: ☐ Smoke ☐ Noise ☐ Light ☐ Other _____	☐ Smoke ☐ Noise ☐ Light ☐ Other _____	☐ Smoke ☐ Noise ☐ Light ☐ Other _____
Comment:		

Impact Test – Run #2

At Impact	Period from Impact to 10 Seconds after Impact	Period From 10 Seconds to 40 Seconds after Impact
Ignitable Indication: ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Reactive Indication: ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Observations: ☐ Smoke ☐ Noise ☐ Light ☐ Other _____	☐ Smoke ☐ Noise ☐ Light ☐ Other _____	☐ Smoke ☐ Noise ☐ Light ☐ Other _____
Comment:		

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OREMET-WAH CHANG
An Allegheny Teledyne Company

OWC Impact Test for Ignitable or Reactive Solids

Conclusion:

Sample - ☐ **Did** ☐ **Did Not** Exhibit Positive Indications of Ignition, Rapid, or Sustained Production of Sparks During Test.

Sample - ☐ **Did** ☐ **Did Not** Exhibit Positive Indications of Detonation or Explosive Reaction During Test.

Other Comments or Observations:

Indications:

Ignitability: During each observation period, does the sample material ignite, or are rapid, or sustained production of sparks observed? If either occur, mark ☒ Yes under indications.

"Rapid or sustained production of sparks" means:

- 5 or more sparks emitted during impact of drop weight on sample.
- 10 or more sparks emitted during the first 10 seconds after impact, or
- More than 10 sparks emitted during the final 30 second interval.

Observance of a popping sound in absence of a visible spark is presumed to be indicative of a spark.

Reactivity: After impact and for an elapsed period of 40 seconds after impact, did the sample undergo detonation or explosive reaction? If either occur, mark ☒ Yes under indications.

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Background Calculations for OWC Impact Test Design

Jeff Dresser, P.E.
Bridgewater Group, Inc.
February 1999

Condition Test Designed to Simulate

The OWC Impact Test is designed to ascertain whether the kinetic energy imparted onto waste material contained in a filled 55-gallon steel drum that is dropped from a height of 3 feet onto a hard surface would cause the sample material at the bottom of the drum to ignite.

Basic Assumptions

A standard 55-gallon drum packaged with sample material weighs 500 lbs. The typical diameter of a drum is 30 inches.

The kinetic energy caused by the free fall is evenly distributed over the bottom surface area of the drum and waste material at the bottom of the drum.

Assume negligible friction.

Calculations

Kinetic Energy

$$K = w \times h$$

where:

K = Kinetic energy (ft-lbs)
w = Weight of object (lbs)
h = Height of free fall (ft)

K = 500 lbs x 3 ft

K = 1500 ft-lbs

Kinetic Energy per Unit Area

$$K_a = K/A$$

where:

K_a = Kinetic energy per unit area (ft-lbs/ft^2)
A = Surface area of impact (ft^2)

Area = $\pi \times d^2/4$

Area = $\pi \times [(30/12)^2/4]$ ft^2

Area = 4.909 ft^2

Therefore;

K_a = 1500 ft-lbs/4.904 ft^2

K_a = 305.6 ft-lbs/ft^2

Test Apparatus Design Conditions

Diameter of striking surface = 2 inches

Area (A) of striking surface = 0.022 ft^2

Assume free fall height (h) of 16 inches (1.33 ft)

Back calculating for weight of object;

$w = (K_a \times A)/h$

w = (305.6 ft-lbs x 0.022 ft^2)/1.33 ft

w = 5.055 lbs

Test Condition Summary

Therefore, the test condition is to drop a 5 lb weight, 2 inches in diameter, a distance of 16 inches onto the 2 inch diameter striking surface that contains the test sample.

If the assumed drum fall height = 5 feet, the strike weight = 8.4 lbs, or the drop height of the 5 lb weight is 26.65 inches.

Drop Weight Calculation

Assume use Zirconium machined to 2" diameter.

Zirconium specific gravity = 6.4

Cross sectional area of weight = $(\pi \times 2^2)/4$

A = 3.14 in^2

Zr unit weight conversions.

SG = 6.4 gm/cm^3 x (2.54 cm/in)^3 x (1 kg/1000 gm) x (2.2 lb/kg)

SG = 0.2307 lb/in^3

Volume of Zirconium to equal 5 lbs.

$W = SG \times V$

$V = W/SG$

$V = 5\ lb/(0.2307\ lb/in^3)$

$V = 21.67\ in^3$

Length of Drop Weight.

$V = h \times A$

$h = V/A$

$h = 21.67\ in^3/3.14\ in^2$

$h = 6.898$ inches