ATTACHMENT 1
WASTE ANALYSIS PLAN

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WASTE ANALYSIS PLAN

1.0 INTRODUCTION

The following describes the methods that shall be used to manage hazardous waste regulated by the Resource Conservation Recovery Act (RCRA), waste regulated by the Toxic Substance Control Act (TSCA), and waste regulated by the Utah Administrative Code (Utah Admin. Code) R315, Environmental Quality, Division of Waste Management and Radiation Control at the Clean Harbors Clive Facility, hereafter referred to as Clive or the Facility.

1.1 Overview

Clean Harbors Clive, LLC, Clean Harbors Aragonite, LCC (Aragonite), Clean Harbors Grassy Mountain, LLC (Grassy Mountain) and Clean Harbors Kimball (Kimball) are all subsidiaries owned by Clean Harbors, Inc. Analytical laboratories operated at the Aragonite, Grassy Mountain, and Kimball facilities may be available to perform analytical work required to receive waste into storage at the Clive facility. Additionally, the Clean Harbors, Inc., Central Profile Group located in Norwell, Massachusetts, conducts waste acceptance procedures for the Clive facility.

The objective of the waste analysis plan (WAP) is to describe the procedures used to obtain sufficient information regarding waste streams to operate the facility in accordance with applicable permit requirements. More specifically, the waste analysis plan ensures that wastes accepted are appropriate for management at the facility and that the wastes that arrive at the facility are the same as those evaluated in the profiling process.

This plan also anticipates that wastes will be generated on-site at Clive and must be managed in accordance with the Permit. On-site generated wastes will be subject to the same waste analysis procedures as wastes accepted from off-site sources except for incoming load procedures which are not required for site-generated waste.

This waste analysis plan addresses the RCRA regulated hazardous waste and TSCA regulated PCB wastes that are managed at the Clive facility in accordance with R315-264-13(a), (b), and (c), R315-270-14(b)(3), and 40 CFR § 761. Clive operates as a hazardous waste and PCB transfer, treatment, and storage facility. Treatment, which occurs infrequently, is conducted in Unit 707.

The purpose of this WAP is to establish necessary sampling methodologies, analytical techniques, and overall procedures for characterization, acceptance, and management of hazardous wastes accepted or generated at the Clive facility.

This waste analysis plan establishes the following:

- The waste profile procedures for determining whether waste streams will be acceptable for management at the Clive facility and for notifying the generator whether their waste will be accepted.
- The waste load acceptance procedures for characterizing the wastes to verify the waste corresponds to the waste profile sheet and the waste manifest and for establishing appropriate management strategies.
- The frequency and methods for sampling and analyzing incoming loads of waste.
- The parameters for which each waste will be analyzed and the rationale for their selection.

This waste analysis plan is supported by Standard Operating Procedures (SOPs) that provide detailed instructions to perform the waste profile review, waste acceptance, sampling, and are incorporated by reference as part of this waste analysis plan. Aragonite, Grassy Mountain, and Kimball laboratory personnel may also use the same SOPs. The SOPs may be required for Utah certification of the Aragonite, Grassy Mountain, and Kimball laboratories and will be followed for compliance with the Permit. The WAP is also supported by the Quality Assurance Plan which is Appendix 1 of this attachment.

1.2 Definitions

The following terms, applied within the WAP, shall have the following meaning:

Accept, Accepted or Acceptance: When it has been determined that a waste shipment received at the Facility conforms to the approved profile (or all discrepancies have been resolved) and the Facility is willing to accept the waste for treatment or storage.

Accuracy: The closeness of a result, or the arithmetic mean of a set of results, to the true, expected, or accepted value.

Analysis: The term "analysis" means any method by which the value of a particular parameter is determined. These methods may include laboratory procedures specified in this WAP or may rely on knowledge of the waste or the process generating the waste.

Analyte: The substance, element, or compound for which a sample is analyzed to determine its presence or quantity. Also known as an analytical parameter.

Analytical Method: A quantitative procedure for determining the specific concentration or characteristic of an analyte or analyte group.

Approve, Approved, or Approval: This term is used in the context of evaluating a profile. Approval of a waste stream profile occurs after all necessary evaluations and analyses have been made and when the generator is notified.

ARA: means the Assistance Regional Administrator of the Office of Partnerships, Regulatory Assistance, EPA Region 8.

Aragonite: Clean Harbors Aragonite, LLC.

Audit, performance: A check on the performance of analysts. Sometimes categorized as a quantitative appraisal of quality.

Bulk Load: The term "Bulk Load" means any individual waste shipment transported to the facility which is too large to be managed through the Container Management Building (e.g., an intermodal container, end-dump truck, tanker truck, railcar, etc.).

Clean Harbors: Parent corporation of the Clive facility.

Clive: Clean Harbors Clive, LLC.

Debris: Debris is solid material exceeding a 60 mm (approximately 2-inches) particle size that is intended for disposal and that is a manufactured object; plant, animal matter; or natural geologic material

Director: Means the Director of the Division of Waste Management and Radiation Control.

EPA: Means the United States Environmental Protection Agency.

Generator: Generator or generator's authorized representative.

Generator Knowledge: If generator knowledge is used to make a hazardous waste determination, information shall be available to substantiate the waste evaluation. Below are examples of information that can be used to make the waste evaluation required under R315-262-11 of Utah Admin. Code. Some or all of these examples or other information can be used to make a hazardous waste determination applying generator knowledge.

1. Generator specific process flow diagram or narrative description of the process generating the waste (should be used in most cases).

2. Chemical makeup of all ingredients or materials used in the process that generates the waste (should be used in most cases).

3. List of constituents that the Facility know or have reason to believe are byproducts or side reactions to the process that produces the waste.

4. Material Safety Data sheets (MSDSs) or Safety Data Sheets (SDS) and/or product labels or substances used in the process that generates the waste.

5. Data obtained from approved methods of sampling and laboratory analysis by a Utah-Certified laboratory.

6. Data obtained from literature regarding waste produced from a similar process using the same ingredients and/or materials.

7. Documentation of product specifications of input materials and output products.

GMF or Grassy Mountain: Clean Harbors Grassy Mountain, LLC Facility.

Hazardous waste: The definition of "hazardous waste" shall be as provided in R315-261-3 of Utah Amin. Code.

Holding Time: The maximum time allowable between time of sampling and time of extraction and analysis, or both.

Infectious Waste: means a solid waste that contains or may reasonably be expected to contain pathogens of sufficient virulence and quantity that exposure to the waste by a susceptible host could result in an infectious disease (Utah Code Annotated Title 19 Section 6 Subsection 102).

Incoming Load: The term "Incoming Load" refers to a load during the period starting when a waste

shipment arrives at the facility through the time when a waste shipment is rejected or accepted. Incoming loads may be placed in a storage unit pending the acceptance procedure.

Kimball: Clean Harbors Kimball, LLC

Laboratory: Laboratory refers to a laboratory certified by the State of Utah's Public Health Laboratory. Also referred to as a Utah-certified laboratory.

Laboratory Manager: The "Laboratory Manager" or however named by certifying agencies, refers to the individual or designee responsible for implementation of the WAP.

NELAP: Means the National Environmental Laboratory Accreditation Program.

Non-hazardous waste: "Non-hazardous waste" refers to "solid waste" as defined in R315-261-2 of Utah Amin. Code which is not also "hazardous waste" as defined in R315-261.3 of Utah Amin. Code.

Parameter: The term "parameter" is a specific material property, such as pH, specific gravity, viscosity, etc.

Particle size: The largest dimension of a portion of a waste.

PCB(s): The term "PCB(s)" refers to polychlorinated biphenyls (PCB(s)) or PCB Item(s) as defined in 40 CFR § 761.

PCB Waste: Means any waste (e.g., mixture of liquid, solid, or sludge etc. or any PCB-containing item) that contains PCBs regulated by 40 CFR § 761.

Pre-acceptance: The period in which a waste stream's acceptability for storage and treatment at the facility is evaluated, is referred to as "pre-acceptance." This is the same as the Profile Approval Period.

Precision: The agreement or repeatability of a set of replicate results among themselves or agreement among repeated observations made under the same conditions.

Pre-treatment: The term "Pre-treatment" refers to the period between acceptance and treatment of the waste.

Profile: Means Waste Profile in electronic or other format that describes a waste or waste stream.

Radioactive: A "Radioactive" material shall be any Byproduct or Source Material licensable by the Utah Division of Radiation Control or the NRC, or any waste found to have a count rate as measured one inch from the surface that exceeds background by three times or more.

Receive or Received: Means when waste passes into the fenced portion of the facility.

Representative sample: Means a sample exhibiting average properties of the whole waste.

Screening Method: A semi-quantitative procedure for determination of the specific concentration, or

characteristic of an analyte or analyte group.

Waste Stream: Waste stream means a waste that is, or can be, identified as a line item on the Uniform Hazardous Waste Manifest from the same source of generation and delivered with the same load. Identical materials with the same waste profile number, that are listed on separate manifest line items only because of container size or type are considered to be the same waste stream.

2.0 IDENTIFICATION OF WASTES TO BE MANAGED

2.1 Wastes Accepted

Materials acceptable for storage at the Clive facility include wastes regulated under the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments (HSWA), Superfund (CERCLA), and the Toxic Substances Control Act (TSCA). Clive may also accept exempt hazardous waste such as household hazardous waste and industrial waste.

2.2 RCRA Wastes

Wastes may be accepted in a variety of physical forms, including liquids, sludges, and solids. The physical nature of some waste may inhibit waste analysis such as steel plates, rocks, glass, etc. Wastes may not arrive in a 100% homogenous form and many waste streams may be a mixture of hazardous wastes codes. Modules 2, 3 and 4 of this Permit identify the wastes and waste codes that are acceptable and prohibited for management in the waste management units at the Clive facility.

2.3 Transfer-Only Waste

Clive may also temporarily (ten days or less) hold wastes manifested to another facility in accordance with R315-263-12. This is referred to as transfer operations. There are no restrictions on waste codes or waste types for transfer operations.

2.4 PCB Wastes

The types of PCB materials accepted for storage and held for transfer operations at the facility are summarized in Table 1. Definitions of the terms used in the table are given. These wastes are regulated under the Toxic Substances Control Act (TSCA) and may be commingled with RCRA-regulated wastes.

Table 1: Summary of TSCA Wastes for Storage		
PCB TYPE	CLASS	TYPICAL PCB CONCENTRATION (DRY WT)
Oil[1]	Liquid	0-90%
Water	Liquid	0-10%
Articles & Capacitors	Solid	20%
Miscellaneous Solids[2]	Solid	0-10%
Soils, Spill Cleanup[3]	Solid, Sludge	< 50%

[1]Oil may be, but not limited to dielectric liquid containing PCB and a chlorinated solvent and is hydrocarbon based.

[2]Miscellaneous solids include gloves, protective clothing, debris, etc.

[3]Soils means dirt, earth, rock.

3.0 WASTE CHARACTERIZATION

This Section describes the procedures that are followed for: approving a waste stream for management at the facility; sampling, analyzing, or inspecting incoming loads to verify the waste shipment; and resolving discrepancies that may occur upon receipt of the waste. Six load acceptance procedures (sections 3.1 through 3.6) are provided because the differences in physical form, packaging, sampling requirements and management options for the many waste types that will be handled at the facility require the ability to sample and analyze a variety of different waste matrices. Section 3.1 describes the procedures for most waste categories. Sections 3.2 through 3.6 describe alternate procedures. Clive will clearly document the waste characterization procedure (i.e., 3.1 through 3.6) utilized for each waste stream accepted at the facility. If more than one characterization procedure applies to a given waste stream, Clive will choose one of the applicable characterization procedures and document the procedure selected.

3.1 Routine Wastes

3.1.1 Profile Approval Process (Routine Wastes)

Before Clive can approve a waste stream for storage and/or treatment at the facility, (1) a generator shall provide a completed Waste Profile Sheet; (2) Clive shall confirm the waste may be managed at the facility pursuant to the terms of this Permit; and (3) Clive shall confirm the waste shipment corresponds to the waste profile sheet and the accompanying waste manifest. The Central Profile Group and Clive review the Waste Profile Sheet to determine acceptability of the waste stream at Clive.

3.1.1.1 *Waste Profile Sheet Review*

Waste Profile Sheets contain information about the generator, physical and chemical characteristics of the waste, process generating the waste, applicable waste codes, applicable DOT shipping name, and a generator certification that the information provided is accurate. At a minimum, the Waste Profile Sheet must provide the following information:

Generator Information

Generator
Address
Facility Contact
Phone #
Generator EPA ID#

General Information

Generating Process
Common Name of Waste
Rate of Generation
DOT Shipping Name
DOT Hazard Class
EPA Waste Codes

Chemical Composition

List of Chemical Constituents and Concentrations

Physical Description

Physical Description
Physical State
Phases/Layering
% Free Liquid

Regulatory Information

Regulated or Licensed Radioactive Waste
Regulated Medical Waste
Dioxin Listed Waste
TSCA Regulated Waste

Generator Certification

Certification signed, actual or electronic, by the generator that the information supplied on the Waste Profile Sheet and any attachments or supplements represent a complete and accurate description of the waste.

<u>Assessment of Clive's Ability to Manage the Waste</u>

Following the review of the Waste Profile Sheet by the Central Profiling Group and Clive personnel, Clive evaluates whether the waste stream may be managed at the facility pursuant to the Permit. Additionally, the evaluation includes a review of:

-Existing storage facilities and capabilities to ensure that the waste material can be satisfactorily managed by Clive in accordance with this Permit or a permitted off-site facility.

-The physical and chemical characteristics of the waste material to ensure that the material is compatible with other wastes present at the facility.

-The waste characterization information and available analytical data to ensure that the waste material does not contain any specific waste codes, compounds, or properties that are prohibited at Clive.

3.1.1.2 *Decision to Receive Waste Stream*

The waste profile decision is recorded electronically in the WINWEB system and includes the Central Profiling Group/Clive personnel issuing the decision with a date/time stamp. Following approval of the waste stream and prior to shipment of the waste, the generator will be notified in writing that the Clive facility has the appropriate permits for and will accept the waste stream in accordance with Condition 2.B. and R315-264-12(b).

If the waste is approved for management at the Clive facility, a unique identification number (the Profile Number) is assigned to the waste stream.

Review of Waste Profile Approval

The waste profile evaluation is repeated when: (1) a generator notifies Clean Harbors or Clive that the process generating the waste has changed (e.g., when the raw materials to the process have changed), (2) if Clive has reason to suspect that the waste is in non-conformance with profile documentation, or (3) at a minimum, annually.

For an annual waste profile recertification, the generator shall notify of any changes in the waste stream or certify in writing that the waste stream has not changed. After a positive review of the generator's certification, the waste profile will be reauthorized. Or if there are changes in the waste stream which do not result in the waste stream being unacceptable, the waste profile will be updated and approved. If there are changes in the waste stream which result in the waste stream becoming unacceptable, the waste profile approval will be canceled, and the generator notified.

3.1.2 Load Acceptance and Handling of Discrepancies (Routine Wastes)

3.1.2.1 *Waste Acceptance Inspection, Samples and Analysis*

Upon approval of the waste profile, the waste may be scheduled for shipment to the Clive facility. Upon arrival at the Clive facility, the accompanying waste manifest is reviewed, and the waste is inspected, sampled, and analyzed (fingerprint) prior to it being accepted or commingled with other waste streams. This serves two purposes. First, it compares the waste characteristics of the actual load with those determined during the waste profile approval process and those listed on the waste manifest. Second, it establishes the characteristics that identify proper management of the waste while at the facility. Clive-generated wastes are not subject to the incoming load procedures described in this Section.

3.1.2.2 *Waste Acceptance Samples Collected at Aragonite, Grassy Mountain, or Kimball*

Incoming load samples collected at Aragonite, Grassy Mountain, or Kimball may be used in lieu of taking samples of the waste when it arrives at the Clive facility only if: (1) The waste stream has an approved waste profile issued by Clean Harbors; (2) Clive has evaluated and documented that the waste may be managed in accordance with this Permit; (3) Clive has received and reviewed the analytical

results from samples collected at Aragonite, Grassy Mountain, or Kimball: (4) Clive has verified in writing that the Aragonite, Grassy Mountain, or Kimball facility collecting the samples complied with the identical sampling methods prescribed in this Permit; (5) the analysis was performed by a State of Utah-certified laboratory for the analytical methods used; (6) Clive confirmed the analytical quality assurance is acceptable; and (7) the analytical results and the waste profile meets the acceptability criteria described below.

3.1.2.3 *Waste Acceptance*

Clive determines the acceptability of the waste based on:

- agreement between the waste profile and the load analyses,
- permit conditions at the facility, which were determined prior to waste shipment, and
- the availability of proper waste management at the Clive facility.

Waste is not officially accepted until the waste has been determined to match the waste profile and the waste manifest and any discrepancies have been adequately resolved and documented.

Discrepancies from Waste Profile

Potential discrepancies for waste shipments include differences in quantity and type between the manifested waste and the waste received. Waste type discrepancies are determined by inspection and by comparing the analyses of the incoming load to the waste profile information and the waste manifest.

Discrepancy in Quantity of Waste

To check for quantity discrepancies, the number of containers, or the weight if it is a bulk shipment, is reconciled with the uniform hazardous waste manifest. The number of containers must be correct; there is no tolerance. The weight of bulk shipments must be within ± 10% of the manifested weight. If discrepancies in the quantity of waste occur, the generator will be contacted by Clive to resolve the difference.

Discrepancy in Type of Waste

Changes in the proper shipping name, additional waste codes, etc. are documented in the operating record. If any of these conditions occur, the manifest is considered discrepant, and actions will be taken to reconcile the discrepancy. If discrepancies of waste type occur, one or more of the following actions may be used to resolve the discrepancy:

The sampling and analytical data are reviewed to verify that they are indeed correct.

- Additional analyses may be necessary to resolve discrepancies or to re-profile the waste. Container shipments with waste discrepancies are sampled as described in Section 4.8. The sample composites are analyzed for the acceptance parameters listed in Table 2. Each bulk liquid, sludge, and solid shipment with waste discrepancies is sampled as described in Section 4.9 and analyzed for the acceptance parameters listed in Table 2. If the container or bulk waste can be managed and is not prohibited at the Clive facility, the waste may then be accepted.

- A Clive facility employee contacts the generator or authorized representative. In cases where the waste is amenable to management at the facility, the discrepancy may be resolved between Clive and the generator, or authorized representative, which may require a new profile for the waste or updating the existing profile. Waste that is not amenable to acceptance by Clive is rejected within ten days of receipt.

Resolution of Waste Discrepancy

The manifest discrepancy resolution between Clive and the generator, or authorized representative, will be noted on the manifest which becomes part of the operating record. If the discrepancy is not resolved within 15 days, the Director of the Division of Waste Management and Radiation Control shall be notified in writing.

Accepted Waste

Upon acceptance, the waste is placed into storage. The wastes may be stored and/or repackaged prior to shipment off-site. Each movement of a waste within the facility, during which any change in its characteristics may occur, makes the waste subject to additional inspection, sampling, and analysis to determine the appropriate handling and management of the waste. All analyses needed for the acceptance and storage functions are performed during incoming load verification. These are not repeated unless it is known or believed that the waste characteristics may change during storage or repackaging.

Prior to any mixing or commingling of any wastes, the wastes in question are subject to compatibility testing as described in EPA-600/2-80-076 or ASTM method 5058-90 Test Method A, prior to being commingled/mixed. If the wastes are compatible, the mixing/commingling may proceed. Incompatible wastes are not mixed/commingled.

3.2 Wastes that Inhibit Analysis

This Section is designed for characterizing wastes where the material is homogeneous and could be sampled, but not easily analyzed. Examples include steel plates, glass, rocks, small identical containers or objects, certain kinds of DOT 1.4, 1.5, and 1.6 explosives, transformer internals (windings, cores), and sealed containers such as capacitors and other sealed electrical devices that have historically contained PCBs. This category of material differs from debris (described in Section 3.3) in that it is homogenous (i.e., the contents of the entire drum or roll-off box is all the same single material). It is limited to material consisting of relatively large objects that could not be readily analyzed. For the purposes of this section, homogenous material such as soils, powders, pellets, etc. are not considered waste that inhibit analysis.

3.2.1 Additional Requirement for Profile Approval Process (Waste that Inhibits Analysis)

The profile approval process for waste that inhibits analysis is the same as that described in Section 3.1.1 except for sampling The generator must also supply a picture or a detailed written description of the waste stream that meet the requirements of ASTM method D4979-89.

3.2.2 Load Acceptance and Handling of Discrepancies (Waste that Inhibits Analysis)

The handling of discrepancies for waste that inhibits analysis is the same as that described in Section 3.1.2.

Prior to accepting the waste, Clive shall inspect the contents of each container or each bulk load for physical appearance. The person inspecting the material will provide a detailed written description or photo or will transmit video to waste acceptance personnel at Clive so that they can easily determine if the waste matches the profile. Other information necessary to properly store the material (e.g., potential incompatibilities) will be obtained and evaluated from the profile information supplied by the generator.

If the waste consists of containers that contain more than four ounces of a material that could be analyzed, a representative sample of the material will be collected and analyzed for the parameters on Table 2 to determine appropriate management and storage of the waste.

3.3 Heterogeneous Debris

Debris differs from the material described in Section 3.2 in that it contains a wide variety of materials. In virtually all situations, debris has one thing in common: non-hazardous materials are contaminated with organic and inorganic hazardous constituents. For example, it may contain a mixture of spill absorbent, Tyvek® suits, rubber booties and gloves, and paper towels. PCB-contaminated "shredder fluff" falls into this category. Items that may not be part of a debris profile include containers containing any liquid. Sampling of waste streams that are subject to technology-based treatment standards identified in R315-268-42 is not required.

3.3.1 Profile Approval Process (Heterogeneous Debris)

The profile approval procedures for heterogeneous debris are identical to those for waste that inhibits analysis (Section 3.2.1).

3.3.2 Load Acceptance and Handling of Discrepancies (Heterogeneous Debris)

The procedures for accepting loads and handling discrepancies involving heterogeneous debris wastes are the same as those for waste that inhibits analysis (Section 3.2.2).

3.4 Off-Specification Wastes

This category of wastes is limited to material that is in its original unopened packaging as a product. The packaging and labeling must still be in good condition so that the contents are easily identified. The Safety Data Sheet (SDS) for the material must also be available.

3.4.1 Additional Requirements for Profile Approval Process (Off-Specification Wastes)

The profile approval process for this category of wastes (Off-Specification wastes) is identical to that for routine wastes (3.1.1) except that the SDS is submitted with the waste profile in lieu of sampling.

3.4.2 Load Acceptance and Handling of Discrepancies (Off-Specification Wastes)

The handling of discrepancies for Off-specification wastes is the same as for routine wastes described in

Section 3.1.2.

Prior to accepting the load, each container is inspected to ensure that the labeling is consistent with the SDS. If containers in the load have been opened, they will be re-opened, and the material will be visually compared to material in one of the unopened containers to ensure the material is the same. This will be documented in the operating record. Other information necessary to properly manage the material (e.g., flash point, potential incompatibilities, etc.) will be obtained and evaluated from the profile information supplied by the generator.

3.5 Transfer Operations

These are wastes that are manifested to a facility other than Clive but are held temporarily (ten days or less) at the facility during transit. The transfer waste may be part of a load for which some of the material is destined for Clive. The waste destined for the Clive facility shall meet the waste acceptance procedures provided in sections 3.1, and 3.2, 3.3, 3.5 or 3.6. When transfer wastes are shipped off-site, the original manifest accompanies the waste. This differs from wastes which are accepted for storage and then subsequently manifested to another facility. A new manifest is created with Clive as the generator in this situation. The Clive facility will comply with the transporter emergency response requirements in R315-263-30 and 31 for these wastes.

3.5.1 Profile Approval Process (Transfer Operations)

No profile approval procedures are necessary.

3.5.2 Handling of Discrepancies (Transfer Operations)

The load is not accepted but rather is held on a temporary basis. There are no requirements for sampling or ensuring waste are comparable to a profile.

When containers are off-loaded from a trailer, the containers will be inspected to ensure they are in good condition.

3.6 PCB-Only Wastes:

These PCB-only wastes are not hazardous waste under State of Utah or Federal RCRA regulations. These wastes include PCB Liquids, PCB Transformers/Bushings, PCB Debris (PPE, rags, wood, paper, gloves, etc. and empty PCB drums) and PCB Capacitors/Light Ballast.

3.6.1 Profile Approval Process (PCB-Only Wastes)

PCB only wastes are categorized according to one of the previous waste categories defined in this plan and follow the profile approval process for that category. The profile also requires the generator to certify that the waste is RCRA non-hazardous PCB-only as defined above.

3.6.2 Load Acceptance and Handling of Discrepancies (PCB-Only Wastes)

PCB-only wastes are categorized according to one of the waste categories identified in this plan and follow the procedures for load acceptance and handling discrepancies as outlined for that category of waste. In addition, PCB wastes will be identified by review of the manifest, shipping papers, visual inspection, labels on containers, and the Waste Profile Sheet supplied by the generator. If regulated PCBs are discovered in a waste whose profile did not identify PCBs as a contaminant, a manifest type discrepancy will exist. The generator will be required to resolve the discrepancy. If the explanation indicates that the waste should have been manifested as PCBs, the applicable portions of the 40 CFR § 761.215 shall be followed, which include filing a "Manifest Discrepancy Report."

Also, during the incoming load evaluation:

-All PCB Containers, PCB Article Containers, and PCB Articles not in containers will be marked with the appropriate PCB Mark (if not already marked by the generator) to comply with the marking requirements of 40 CFR §761.40.

-Each PCB container from a shipment will be visually inspected to verify that it is not leaking. If a leaking container of PCB waste is discovered during the inspection, it will be re-packaged or overpacked to prevent further leakage. The spill area will be decontaminated in accordance with 40 CFR § 761 Subpart G. In addition, the transport vehicle bed will be inspected. In the case of flatbeds or vans carrying PCB wastes, water or other free liquid found on the bed will be collected and managed as PCB waste or treated as a PCB spill and cleaned in accordance with 40 CFR § 761 Subpart G.

Table 2: Storage and Acceptance (Fingerprint) Analyses	
Parameter	**Rationale for Selection**
Physical Description	Used to determine the general characteristics of the waste stream. Also used to ensure correct grouping of wastes for sampling. Also used to detect discrepancies in waste types. Also used to determine which waste characterization procedure will be used. Also used to determine the percentages of the various material types in debris-like wastes.
pH	Used to determine the corrosivity of the waste to ensure proper storage of the waste.
Water Reactivity	Used to determine whether the waste has a potential to react with water to generate heat, flammable gases, or other products. It is also used to help identify prohibited wastes.
Reactive Sulfides Screen	Used to indicate whether the waste produces hydrogen sulfide upon acidification. This information is necessary to avoid storage and mixing incompatibilities.
Ignitability	Indicates the susceptibility of the waste to be ignited. This information is necessary to avoid placement or storage of the waste in inappropriate areas.
Reactive Cyanides Screen	Used to indicate whether the waste produces hydrogen cyanide upon acidification. This information is necessary to avoid storage and mixing incompatibilities.
Oxidizer Screen	A general qualitative test used to determine if a waste is an oxidizer. Oxidizers have the potential to react with a wide range of waste streams and therefore often need to be segregated.
Radioactivity Screen	Used to help identify prohibited wastes.

Table 3: Methods and Tolerance Limits	
Parameter Limits	**Tolerance**
Physical Description	Shall be consistent with profile
Specific Gravity	± 20%
pH Screen	+ 3 pH units, as long the profile pH is >2 and < 12.5. If the profile pH is < 2 or > 12.5, the incoming load sample must be the same.
TLV-Sniff	If > 200 ppm, and destined for landfill, flash point shall be conducted. If TLV-Sniff is <200, the flashpoint is considered > 140°F and it may be disposed in landfill. Shall be < 500 ppm if destined for storage or treatment in tanks.
Water Reactivity Screen	No tolerance: load samples must agree with profile
Reactive Sulfides Screen	[1]Shall be consistent with profile
Reactive Cyanides Screen	[1]Shall be consistent with profile
Ignitability	Shall be consistent with profile, i.e., if profile is reported as being >140°F it must test >140°F.
Radioactivity Screen	No tolerance: load samples shall be less than 40 microR/hr over background unless authorization is obtained as described in the Prohibited Materials section of this Attachment. No explanation is required for wastes profiled with a positive radioactive screen and arriving with a negative screen.
Oxidizer Screen	[1]Shall be consistent with profile
[1] For negative to positive results, the generator shall be contacted for a qualitative explanation of the difference. The answer shall be documented in the facility operating record.	

4.0 WASTE SAMPLING

This Section presents methods utilized to obtain a representative sample of wastes. These methods apply to waste generated off-site as well as facility-generated waste. The specific sampling methods selected are dependent on the nature of the waste and its container.

4.1 Sampling Locations

Samples, including incoming load samples, may be taken from a variety of locations throughout the facility and from containers on the Clive rail spur. Waste may be sampled from drums, roll-off boxes, rail gondola cars, rail tank cars, lugger boxes, tanker or dump-type trucks, etc., or from other locations including containment areas.

4.2 Sampling Methods

The methods and equipment used for sampling vary with the form and consistency of the waste to be sampled. The appropriate representative sampling techniques, devices, and containers are selected from the EPA document, "Test Methods for Evaluating Solid Wastes" (SW-846) or "American Society for Testing and Materials" (ASTM) methods. The approved methods are found in the most current copy of 40 CFR §261.11.

In order to determine the physical and chemical characteristics of a waste, a representative sample is needed. A representative sample is defined as a sample exhibiting average properties of the whole waste.

Sampling accuracy (the closeness of a sample value to its true value) and sampling precision (the closeness of repeated sample values) are the issues of importance. Thus, from both regulatory and scientific perspectives, the primary objectives of a sampling plan are to collect samples that allow accurate and precise measurements of the physical and chemical properties of the waste. If the chemical measurements are sufficiently accurate and precise, they are considered reliable estimates of the chemical properties of the waste. Statistical techniques for obtaining accurate and precise samples are relatively simple and easy to implement. Containers will be sampled in accordance with the sampling SOPs. In random sampling, every unit in the population has a theoretically equal chance of being sampled and measured. Consequently, statistics generated by the sample are unbiased (accurate) estimators of true population parameters. In other words, the sample is representative of the population.

4.3 Traceability

Sample traceability for all internal sampling and analysis by documenting on a sample collection form and laboratory analysis report. This involves the documentation of procedures so that a set of data can be traced back through the analyst, to the person performing the sampling, and then to the waste itself. All samples receive a unique sample identification number to facilitate this process.

4.4 Sampling Personnel

Trained personnel perform sampling in accordance with the sampling methods. The operations manager or designee trains sampling personnel and observes their techniques periodically to ensure a thorough understanding of sample collection, storage, and transportation practices.

4.5 Sample Labels

Sample labels are necessary to provide identification of samples. The labels are affixed to the containers prior to or at the time of sampling. The labels are filled out at the time of collection and contain the following information:

- sample identification
- place of collection
- date and time of collection
- person sampling

4.6 Logbook

All information pertaining to sampling is recorded in a logbook, inspection or receiving report, or electronically. This record includes the following information:

- location of sampling point
- volume of sample taken
- date and time of collection
- sample identification number
- person sampling
- comments or observations
- sampling methodology
- number of samples and physical state

Sampling situations can vary widely; however, sufficient information is recorded to allow someone to reconstruct the sampling conditions without reliance on the collector's memory.

4.7 Sample Preservation

All samples are preserved in accordance with the parameter to be measured, as specified by the analytical method for that parameter. Samples for fingerprint analyses are not preserved and have a shortened holding time.

4.8 Sampling of Containers

The term "container" refers to receptacles designed for transporting materials, e.g., drums and other small receptacles (<120-gallon capacity) and totes (<330 gallons) as opposed to stationary tanks. This Section addresses the sampling of containers smaller than those carrying bulk materials. Sampling of bulk materials in large containers such as rolloffs, tank trucks, rail cars, etc. is addressed in Section 4.9. COLIWASAs, tubes, shovels, drum thieves, and triers are the devices used to sample containers.

A random sampling strategy is employed to sample incoming shipments of containerized waste.

Samples from containers holding the same type of waste may be composited. The following procedure will be used to determine how many containers will be sampled and which samples may be composited.

Each container will be opened and visually inspected. Wastes on a single load that have the same profile number and DOT description) and appear to be of the same waste type may be grouped together. Ten percent (rounded up) of the containers in each of these groups will be sampled as described below. The samples within each separate group may be composited for analysis.

A unique tracking number is assigned to each container.

Samples are taken from locations displaced both vertically and horizontally throughout the waste. For liquids (or liquids with precipitated solids), the sampling person uses a COLIWASA or equivalent. The sampling device is inserted into the container from the top and is pushed down slowly until the bottom of the container is reached. The device is sealed to retain the contents. The contents of the entire sampling device are then transferred to a polyethylene or glass bottle, which is labeled with waste identification information specified in Section 4.5

A trier, shovel or scoop is used to sample containers holding material that is solid. These containers are generally filled with dirt and sludges. Several areas from the container are sampled and composited into a clean bucket where it is mixed and put in a jar in order to ensure a representative sample. The sampling person removes a sample that uniformly represents the waste composition of the container.

4.9 Sampling of Bulk Materials

Where sampling of bulk loads is required, each bulk container (100%) of each load will be sampled as described below.

Bulk solids in roll-offs or end dumps shall be sampled at two locations in the waste container. A trier, thief or shovel is used in order to draw a sample from as deep a cross section as possible at each of the two locations. The samples are composited together so that there is one sample which represents that particular bulk solids shipment.

Bulk liquids in a road tanker are sampled by using a COLIWASA or similar device which can sample vertical anomalies. Bulk sludges are sampled with a device appropriate for the consistency of the material. That may be a COLIWASA, trier, dip tube, thief, etc. Each compartment of tanker trucks is sampled. Compartment samples from the same generator and waste stream may be composited prior to analysis.

Tank trucks without man-ways are sampled through the valve. The valve is flushed prior to the sample being drawn.

The analytical results from a sample from a bulk solid or bulk liquids rail car can be used as the incoming load analysis for the roll-off boxes, end dumps or road tankers that receive waste from a railcar. For example, a rail tanker is sampled, and the sample analyzed. The contents of the rail tanker are then transferred to four road tankers for transport to the Aragonite facility. The analytical results from the rail tanker may be used for the four road tankers received at the Aragonite facility.

4.10 Frozen Waste

Clive will not sample waste that is frozen. Loads may arrive at temperatures which prevent a representative sample from being obtained. Under such circumstances, the waste will be allowed to warm in accordance with the procedures described in Attachment 8, Container Management, until such time as sampling can be performed. Loads that require thawing before sampling may be placed in the Thaw Unit, Unit 105 while awaiting sampling. If an incoming load is placed in Unit 105 for thawing

prior to sampling (i.e., not yet accepted), it still must be sampled, and a decision made regarding acceptance within the ten days of arrival at the facility. If an unaccepted load of waste is placed in Unit 105, the waste location must be documented in the operating record.

4.11 Other Samples

The sampling method for wastes in/on process equipment, containment and containment surfaces, sumps, etc., will vary with the nature of the waste material and will be collected in accordance with this Waste Analysis Plan based on the nature of the waste.

5.0 TEST METHODS

The test methods to measure the parameters discussed throughout this plan are identified in Table 3. The Clive facility can conduct analysis at the site in the fingerprint area located in Unit 101. This area is primarily used to analyze samples of waste associated with the decant operations located in this area. This fingerprint area is classified as a Class C fire hazard laboratory unit under NFPA and shall meet all applicable NFPA requirements. Whenever a waste sample and/or chemicals are present in a fume hood, the exhaust fan shall be running, and the hood sash shall be positioned to ensure that the minimum airflow is maintained.

Typically, incoming load samples and other samples are analyzed at Clean Harbors Aragonite, Clean Harbors Grassy Mountain, the Clean Harbors Kimball facility, or other Utah-Certified off-site laboratory. The samples shall be analyzed by a laboratory certified by the State of Utah for the analytical methods specified in Table 3, including Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, US EPA, 1986 and its updates; American Society for Testing and Materials (ASTM); and EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes; Standard Methods for Examination of Water and Wastewater, Latest Edition; EPA 40 CFR, 136, Appendix A Methods; EPA Contract Laboratory Program, Inorganic SOW and Organic SOW Methods. Where other practical methods are not available, methods have been developed by Aragonite. These methods are described at the end of this section.

The letter following a method number indicates the SW-846 revision of that method. When new method revisions are promulgated by the EPA, they will be implemented within six months of promulgation. Thus, listed method numbers will remain constant, but suffixes (A, B, C, etc.) will depend on the latest EPA revision. Utah-certified laboratories used by Aragonite may have the prior revision designation on their certification as long as the method number reflects that listed in Table 3, analyses are actually performed and reported according to the latest revision, and the lab has applied for, and provided all necessary information to obtain certification for the new revision. If a lab has not yet implemented the update within the six months and it is necessary to use that laboratory, Aragonite may provide justification for using that lab and request a variance from the Director.

Table 4: Analytical Parameters and Associated Methods

Parameter	Method Number	Reference
*Acid-Base Partition Cleanup	3650B	(1)
Acid Digestion of Sediments, Sludges, and Soils	3050B	(1)
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame Atomic Absorption Spectroscopy or Inductively Coupled Plasma Spectroscopy	3010A-MOD	(1)
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Furnace Atomic Absorption Spectroscopy	3020A	(1)
*Alumina Column Cleanup	3610B	(1)
Aluminum (ICP)	6010D	(1)
Antimony (ICP)	6010D	(1)
Aromatic Volatile Organics	8020A	(1)
*Aromatic and Halogenated Volatile Organics	8021B	(1)
Arsenic (ICP)	6010D	(1)
*Arsenic (AA)	7061A	(1)
Ash	D482-87	(2)
Atomic Absorption Spectroscopy	7000B	(1)
Barium (ICP)	6010D	(1)
Beryllium (ICP)	6010D	(1)
Bromide	9056A	(1)
Cadmium (ICP)	6010D	(1)
Calcium (ICP)	6010D	(1)
*Carbamate pesticides (LCMS)	8321B	(1)
Chloride	9253	(1)
Chloride (Ion Chromatography)	9056A	(1)

Parameter	Method Number	Reference
Chlorinated Herbicides	8151A, 8151-MOD	(1), (1)
Chromium (ICP)	6010D	(1)
Cobalt (ICP)	6010D	(1)
Copper (ICP)	6010D	(1)
*Continuous Liquid-Liquid Extraction	3520C	(1)
Fluoride (Ion Chromatography)	9056A	(1)
Fluoride	340.2, 5050	(3), (1)
Florisil Column Cleanup	3620C	(1)
Gas Chromatography	8000D	(1)
Gas Chromatography/Mass Spectrometry for Volatile Organics	8260C	(1)
Gas Chromatography/Mass Spectrometry for Semi-volatile Organics	8270D	(1)
*Gel-Permeation Cleanup (GPC)	3640A	(1)
Heat of Combustion (BTU)	D240-87-MOD	(2)
Ion Chromatography	9056A	(1)
Ignitability Liquid, actual flashpoint, no suspended solids	1020B, 1010A	(1)
Ignitability Liquid, at 140ºF, no suspended solids	8b	(4)
Ignitability Liquid, room temperature	D4982-89	(2)
Ignitability Liquid, actual flashpoint, suspended solids (sludge)	1010A	(1)
Ignitability Sludge, at 140ºF	8b	(4)
Ignitability Solids, room temperature	D4982-89	(2)
Ignitability Solids, at 140ºF	1020B-MOD	(1)
Iron (ICP)	6010D, 6010B, 6010C, 6020A	(1)

Parameter	Method Number	Reference
Lead (ICP)	6010D, 6010B, 6010C, 6020A	(1)
LEL	14	(4)
Liquids, Sludge Compatibility (see note 3)	D5058-90 Test Method A	(2)
Magnesium (ICP)	6010D	(1)
Manganese (ICP)	6010D	(1)
Mercury Cold Vapor (AA)	7470A, 7471B	(1)
Microwave Assisted Acid Digestion of Aqueous Samples and Extracts	3015A	(1)
Microwave Assisted Acid Digestion of Sediments, Sludges, Soils and Oils	3051A	(1)
Moisture (organic liquids)	D1533	(2)
Moisture (Inorganics)	2540B	(5)
Molybdenum (ICP)	6010D	(1)
Nickel (ICP)	6010D	(1)
Nitrate/Nitrite Ion Chromatography	9056A	(1)
Nitrogen, Total	351	(1)
Nonhalogenated Volatile Organics	8015C	(1)
Organic Extraction and Sample Preparation	3500C	(1)
Organochlorine Pesticides	8081B	(1)
*Organophosphorus Compounds by Capillary Column GC	8141B	(1)
Oxidizer Screen	D4981-89	(2)
Paint Filter	9095B	(1)
*PCDD	8280B, 8290A	(1)
*PCDF	8280B, 8290A	(1)

Parameter	Method Number	Reference
PCBs	8082A	(1)
*PCB and Pesticides (GC/MS)	80801B, 8082A	(6)
PCB Wipes	40§761.123, 8082A	n/a
pH Electrometric	9040C	(1)
pH Paper	9041A	(1)
pH Waste	9045D	(1)
pH Solids	9045D	(1)
Physical Description	D4979-89	(2)
Potassium (ICP)	6010D	(1)
Purge-and-Trap	5030C	(1)
Radioactivity Screen	6	(4)
Reactive Cyanide Screen (Spot Test) Confirmation (see note 2)	D5049-90 Test Method A	(2)
Reactive Cyanide Screen (Drager) Prime (see note 2)	D5049-90 Test Method D	(2)
Reactive Sulfide Screen (Spot Test) Confirmation (see note 2)	D4978-89 Test Method A	(2)
Reactive Sulfide Screen (Drager) Prime (see note 2)	D4978-89 Test Method B	(2)
Selenium (ICP)	6010D	(1)
Separatory Funnel Liquid-Liquid Extraction	3510C	(1)
Silica Gel Cleanup	3630C	(1)
Silver (ICP)	6010D	(1)
Sodium (ICP)	6010D	(1)
Sonication Extraction	3550C	(1)

Parameter	Method Number	Reference
Soxhlet Extraction	3540C	(1)
Specific conductance	9050A	(1)
Specific Gravity	D1429-86-MOD	(2)
*Sulfides	9030B, 9031	(1)
Sulfate Ion Chromatography	9056A	(1)
*Sulfur	D1266-87	(2)
Sulfur Cleanup	3660B	(1)
Sulfuric Acid Cleanup	3665A	(1)
Thallium (ICP)	6010D	(1)
Tin (ICP)	6010D	(1)
TCLP	1311	(1)
Total and Amenable Cyanide (Colorimetric, Manual)	9010C	(1)
*Total and Amenable Cyanide (Colorimetric, Automated UV)	9012B	(1)
Total Organic Carbon	9060A	(1)
Total Halogen	5050, 9253	(1)
Vanadium (ICP)	6010D	(1)
Viscosity	D2983-87	(2)
Waste Dilution	3580A	(1)
Water Reactivity Screen (see note 1)	D5058-90 Test Method C	(2)
Zinc (ICP)	6010D	(1)
* Non-Aragonite laboratory only		

TABLE 4: References for Analytical Parameters and Associated Methods

(1) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846 [3rd Edition (November 1986), with current updates]

(2) American Society for Testing and Materials

(3) Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020

(4) Aragonite Methods, when Aragonite methods are modified, Clive must modify their permit to reflect the changes.

(5) Standard Methods for the Examination of Water and Wastewater, Latest Edition, APHA, WEF

(6) Alford-Steven, A.; Eichelberger, J.W. and Budde W.L. Method 680. Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry. Physical and Chemical Methods Branch. Environmental Monitoring and Support Laboratory Office of Research and Development. U.S. EPA, Cincinnati, Ohio 45268. November 1985.

NOTES FOR REACTIVITY SCREENS:

1. A significant temperature change as called out in paragraph 24.8 of ASTM method D5058-90 is defined as ≥15ºC. The test does not apply to wastes already in contact with excess water, nor is a wastewater reactive if the heat generation is due solely to a strong acid/base reaction as verified by pH analysis. Occurrence of the reactions listed in paragraph 24.4 of ASTM method D5058-90 result in failure of the water reactivity test, except that formations of precipitates or emulsions are considered failures only if the ability to mix and pump the resulting liquids is impaired.

2. The test is not required for wastes with pH <6.

3. A temperature rise as called out in paragraph 11.8 of ASTM method D5058-90 is defined as ≥15ºC. Occurrence of the reactions listed in paragraph 11.7 of ASTM method D5058-90 result in failure of the compatibility test, except that formations of layers, precipitation, emulsification, or increases in viscosity are considered failures only if the ability to mix and pump the resulting liquids is impaired.

ARAGONITE METHODS

Radioactivity Screen (Aragonite-6)

All incoming waste shipments will be monitored for radioactivity using a count rate meter with a Geiger-Mueller (GM) detector. The detector window shall have at least a 2.54 centimeters diameter opening utilizing window material of approximately 1.7 milligrams per square centimeter. The detector shall be operated in accordance with the manufacturer's recommended procedures. Detectors shall be calibrated at least annually and after repair.

The detector window shall be placed within one (1) inch (but not in contact) of the sample surface of bulk materials until a steady, time weighted count rate is obtained. Three (3) measurements shall be taken of each sample and recorded.

Results of surveys are to be recorded in terms of counts per minute. Any waste found to have a count rate exceeding background by three (3) times or greater for any measurement shall not be accepted without receiving authorization from the Division of Waste Management and Radiation Control. A background reading shall be taken for each sampling day prior to each sample event and the measurement recorded.

Ignitability Screen for Sludges (Aragonite-8b)

The ignitability screen for sludges is determined using a modified version of EPA SW-846 Method 1010. Instead of an actual flash point determination as outlined in the 1010, the sludge is heated in the test cup to 140˚F. When the temperature in the cup reaches 140˚F, the flame is applied to the sample. A flash/no-flash measurement is determined and recorded as positive or negative. The instrument is calibrated daily at 100^{o} F and 140^{o} F.

LEL (Aragonite 14)

This method is used for the determination of the presence of explosive vapors dissipating from a waste. A quantitative result in % LEL is indicated on the instrument.

Containers of waste are opened enough to insert the probe. The instrument pulls any vapors above the waste into the detectors. Sufficient time must be allowed to clear the air from the sample line. The container is sampled immediately after opening. The probe inlet is placed close to, but not touching, the waste in the container. The result in % LEL is recorded in the logbook. Care must be exercised to ensure that drafts are avoided in the area that is being sampled as this can cause an erroneous result. The test is not to be run on materials that will poison the detector.

The instrument will be calibrated according to the procedures and at the frequency specified by the manufacturer. It will be operated according to the instructions provided by the manufacturer. Daily sensitivity checks and continuing sensitivity checks every twentieth sample will be conducted. The test will not be run with an instrument that is not functioning correctly.