EP-DIR-SOP-10021, R0

Characterization and Management of Environmental Programs Waste

Effective Date: 3/22/12

Procedure Owner:	Signature:	Date:
Andy Baumer	/s/Andy Baumer	03/15/12

REVISION HISTORY

Document No./Revision No.	Issue Date	Action	Description
EP-DIV-SOP-10021, R0	3/22/12	Major revisions; Total Rewrite	New document control number assigned; Supersedes SOP-5238

TABLE OF CONTENTS

1. PURPOSE

This Standard Operating Procedure (SOP) delineates the process for characterizing and managing waste generated during Compliance Order on Consent (Consent Order) or decontamination and/or demolition (D&D) activities conducted by the Environmental Programs Directorate (ADEP) at the Los Alamos National Laboratory (LANL or Laboratory). For other work performed by ADEP, waste will be characterized and managed according to the appropriate waste characterization plan or this procedure unless specifically waived by the appropriate Project Director, with the consent of the Water Quality & RCRA (ENV-RCRA) and Waste Generator Services (ENV-WGS) Representative.

This procedure is limited to the planning, implementation, and management activities for all wastes generated by the Project, and the preparation, approval, and retention of all required Laboratory documents associated with waste generation, management, and disposal.

Training to this procedure shall consist of reading the procedure and documenting the training in accordance with P781-1, *Conduct of Training Manual*.

2. REFERENCES

This SOP shall be used in conjunction with the most recent revision of LANL documents, policies, or equivalent LANL-approved contactor waste procedures associated with waste management activities. These documents, policies, and procedures include:

- ENV-RCRA-QP-010, Land Application of Groundwater
- ENV-RCRA-QA-011, Land Application of Drill Cuttings
- MAN-5001, User Manual for Waste Profile Charge Code Form
- MAN-5002, User Manual for the Waste Item Inventory (WII) Form
- MAN-5003, User Manual for The Waste Disposal Request (WDR) Form
- P101-14, Chemical Management
- P101-17, Excavation/Fill/Soil Disturbance
- P121, Radiation Protection Requirements
- P151-1, Packaging and Transportation
- P300, Integrated Work Management
- P313, Roles, Responsibilities, Authorities, and Accountabilities
- P330-6, Non-Conformance Reporting
- P322, Issues and Corrective Action Management
- P409, Waste Management
- P781-1, Conduct of Training Manual
- P930-1, LANL Waste Acceptance Criteria
- P930-2, Waste Certification Program
- P930-3, Offsite Shipment of Chemical, Hazardous, or Radioactive Waste
- EP-DIR-AP-10003, Records Management Procedure for ADEP Employees

- SOP-5181, Notebook and Logbook Documentation for Environmental Directorate Technical and Field Activities
- EP-DIR-QAP-0001-Quality Assurance Plan for the Environmental Programs Directorate
- EP-ERSS-SOP-5056, Sample Containers and Preservation
- EP-ERSS-SOP-5057, Handling, Packaging, and Transporting Field Samples
- EP-ERSS-SOP-5058, Sample Control and Field Documentation
- EP-ERSS-SOP-5059, Field Quality Control Samples
- EP-ERSS-SOP-5061, Field Decontamination of Equipment
- EP-ERSS-SOP-5029, Drilling Plan Development
- SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials
- SOP-06.09, Spade and Scoop Method for Collection of Soil Samples
- SOP-06.10, Hand Auger and Thin-Wall Tube Sampler
- TL-007/TL-008/TL-112, Acceptable Knowledge Guidance
- TL-001, Waste Profile Form Guidance
- TL-003, Chemical Waste Disposal Request Guidance

3. BACKGROUND AND PRECAUTION

The Consent Order is an enforcement document signed by the New Mexico Environment Department (NMED), the New Mexico Attorney General, Department of Energy (DOE), and the University of California on March 1, 2005, that prescribes the requirements for corrective action at the Laboratory. The Consent Order contains specific requirements for management of investigation-derived waste (IDW) generated by the Laboratory in the course of corrective action, investigation, and remediation, which are typically implemented through work plans that are prepared by the Laboratory and approved by the NMED.

Other non-Consent Order, waste-generating activities conducted by ADEP include D&D activities and those driven by the Hazardous Waste Facility Permit, such as Resource Conservation and Recovery Act (RCRA) permitted unit closures. This procedure applies to wastes generated during these activities.

Wastes generated by ADEP programs include hazardous waste, New Mexico special waste (NMSW), polychlorinated biphenyls (PCB) waste, low level radioactive waste (LLW), transuranic waste, mixed waste, and industrial and municipal solid waste. Environmental media (e.g., soil, tuff, and groundwater) and other IDW may fall into any of these regulatory classifications.

Documentation and characterization requirements beyond those described in this procedure may exist for the Laboratory's treatment, storage, and disposal (TSD) facilities, or off-site TSD facilities.

Questions concerning the applicability of the requirements of this SOP should be directed to the WPS-LLW Subject Matter Expert. For regulatory assistance, contact the Environmental Protection Division (ENV).

4. DEFINITIONS

NOTE: *A glossary of definitions associated with P409, Waste Management, is available at:* https://policy.lanl.gov/pods/policies.nsf/MainFrameset?ReadForm&DocNum=P409&FileName=P409.pdf. *Waste management-specific definitions not included in the glossary are provided in this section. Other definitions have been modified as needed to clarify the requirements of this procedure.*

Accumulation Start Date — The term "accumulation start date" is the date in which the waste becomes regulated and subject to an accumulation start date. The accumulation start date for various types of wastes is:

- PCB Waste: the date that generator or generator designee (FWMT) receives data that identifies it as a PCB-regulated waste.
- NMSW: the date that the waste container is sealed and ready for transport.
- Radioactive Waste (does not include mixed waste): the date the waste is packaged for storage or transport. If the material is to be land applied, the accumulation start date does not occur until the determination has been made that the material cannot be land applied and data are available to determine that it is radioactive waste.
- RCRA Waste (hazardous waste and mixed waste): the day the waste was first generated, unless it is managed within a drill pit or an SAA. For RCRA waste in drill pits, the accumulation start is the day the waste is removed from the drill pit. For wastes in an SAA, the accumulation start date is the day the waste is removed from the SAA.
- Returned Samples: the day the waste generator or designee (FWMT) receives the returned sample.

NOTE: ***For making a waste determination, see "Generation Date".***

Area of Contamination — A discrete area of generally dispersed contamination which is considered to be equivalent to a RCRA unit. Because an Area of Contamination is equated to a RCRA unit, consolidation or treatment within the Area of Contamination does not create a new point of hazardous waste generation for purposes of RCRA (EPA Office of Solid Waste and Emergency Response, Publication 530-F-98-026).

Contact Waste — Contact waste is material that may have come into contact with contaminated media or debris. Contact Waste includes spent personal protective equipment, contaminated sampling supplies, plastic, dry decontamination and other material that may have come in contact with contaminated media or debris.

Contained-In — Environmental Media and debris contains hazardous waste when:

- It exhibits a characteristic of a hazardous waste; or it is contaminated with concentrations of hazardous constituents that originated from listed hazardous waste.

- Environmental Media and debris is considered to no longer contain hazardous waste when it no longer exhibits a characteristic of hazardous waste or the regulatory agency determines that concentrations of hazardous constituents from listed hazardous waste are below health-based levels based on data submitted by the facility.

Debris — Debris is defined in 40 CFR 268.2 (g) as a "solid material exceeding a 60 mm particle size that is intended for disposal and that is: A manufactured object; or plant or animal matter; or natural geologic material.

Drill Cuttings — Drill Cuttings—Borehole cuttings and core, soil, and rock sediments produced during the drilling, development, and rehabilitation of wells or boreholes.

Data Quality Objectives (DQO) Process —The DQP process addresses the planning cycle for a project from problem statement through the data collection design to make decision about whether or not regulatory thresholds are exceeded.

Environmental Media — Borehole cuttings and core, soil, rock, sediments, surface water, and groundwater that are displaced during corrective action.

Field Waste Management Technician (FWMT) — The individual delegated various aspects of project waste generation and management by the WG. The FWMT is typically accountable for on-site waste management and for the development and/or processing of required waste related documents, forms and records. A qualified FWMT will be able to conduct inspections of RCRA and Radioactive Storage Areas.

Generation Date — For making a waste determination, the term "generation date", is the date the material is generated. This does not include waste generated in drill pits, or Areas of Contamination. For drill pits, the generation date begins when the waste is removed from the drill pit. For Areas of Contamination, the generation date begins when the waste is removed from the boundaries of the Area of Contamination.

Hazardous Constituent (hazardous waste constituent) — (1) a constituent that causes the administrative authority to list the hazardous waste in 40 CFR Part 261, Subpart D, or a constituent listed in Table 1 of 40 CFR Part 261.24; (2) According to the March 1, 2005, Compliance Order of Consent (Consent Order), any constituent identified in Appendix VIII of Part 261, Title 40 CFR (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC] or any constituent identified in 40 CFR 264, Appendix IX (incorporated by 20.4.1.500 NMAC).

Hazardous Waste — 1) solid waste (as defined in 40 CFR 261.2 and incorporated by 20.4.1.200 NMAC) that is not excluded from regulation as a hazardous waste and is a listed hazardous waste (as provided in 40 CFR Part 261, Subpart D, incorporated by 20.4.1.200 NMAC) or a waste that exhibits any of the characteristics of hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity, as provided in 40 CFR Part 261, Subpart D, incorporated by 20.4.1.200 NMAC; 2) the Consent Order defines hazardous waste as any solid waste or combination of solid wastes, which because of quantity, concentration, or physical, chemical, or infectious characteristics meets the description set forth in New Mexico Statutes Annotated 1978, 74-4-3(K) [NMHWA] and is listed as a hazardous waste or exhibits a hazardous waste characteristic under 40 CFR Part 261, Subpart D, incorporated by 20.4.1.200 NMAC. The statutory requirements for hazardous waste management are set forth in RCRA Subtitle C, incorporated by the NMHWA (also see P409).

Industrial Waste — Solid waste generated by manufacturing or industrial processes that is not hazardous waste regulated under Subtitle C of RCRA or radioactive waste (also see P409).

Investigation-derived waste (IDW) — Solid or hazardous waste that was generated as a result of investigation and/or characterization corrective action activities. IDW may include drilling fluids, cuttings and purge water from test pit and well installation; purge water, soil, and other materials from collection of samples; residues from testing of treatment technologies and pump and treat systems; contaminated PPE; and solutions (aqueous or otherwise) used to decontaminate non- disposable PPE (EPA Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992) (also see P409).

Land Application — The placement of drill cuttings, drilling water, purge water, or development water onto land in compliance with ENV-RCRA-QP-10, Land Application of Groundwater and ENV-RCRA-QP-11, Land Application of Drill Cuttings or the reuse of environmental media as described in NMED-approved documents.

New Mexico Special Waste (NMSW) — Solid waste identified in the New Mexico Solid Waste Management Regulations (20.9.1.105. BZ) as requiring unique handling, transportation, or disposal to assure protection of the environment and the public health, welfare, and safety. NMSW includes treated formerly characteristic hazardous waste, asbestos waste, ash, infectious waste, sludge, industrial solid waste, spill of a commercial chemical product, dry chemicals that become characteristic hazardous waste when wetted, and petroleum-contaminated soil.

NOTE: *P409 contains specific requirements for managing special waste*

Pending land application — ENV has approved the land application package and the materials are awaiting placement onto land.

Polychlorinated biphenyl (PCB) — Any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance. (40 CFR §761.3).

PCB Waste — PCB waste is defined at 40 CFR 761.3 as those PCBs and PCB items that are subject to the disposal requirements found at Subpart D, "Storage and Disposal," of 40 CFR Part 761.

PCB Remediation Waste — PCB remediation waste encompasses soil, rags, and other debris generated as a result of any PCB spill not cleaned up under Subpart G but cleaned up under 40 CFR 761.61 (including materials from "old spills") or from other unauthorized disposal. Such waste includes, but is not limited to; Bulk PCB Remediation Waste, Non-Porous Surfaces, Porous Surfaces, Liquid PCB Remediation Waste, Cleanup Waste (also see P409).

- Bulk PCB Remediation Waste: Bulk PCB remediation waste includes, but is not limited to, the following non-liquid materials which are contaminated with PCBs: soil, sediments, dredged materials, mud sewage sludge, and industrial sludge [40 CFR 761.61(a)(4)(i)].
- Non-Porous Surfaces: Non-porous surfaces means a smooth, unpainted surface that limits penetration of liquid containing PCBs beyond the immediate surface. Some examples are as follows: smooth uncorroded metal, smooth glass, smooth glazed ceramics, and high-density plastic that do not absorb organic solvents.
- Porous Surfaces: Unlike non-porous surfaces, porous surfaces do not prevent or minimize penetration of PCBs beyond the immediate surface. Examples are concrete, cement, corroded metal, asphalt, plaster, paint or coating on metal, paper, cardboard.
- Liquid PCB Remediation Waste: Liquid PCB remediation waste [40 CFR 761.61(a)(4)(iv) and (a)(5)(iv)] includes but is not limited to water removed from dewatering of bulk PCB remediation waste, aqueous decantate from sediment, leachate collected from on-site storage of bulk PCB remediation waste, and run-off from fire suppression involving PCBs.
- Cleanup Wastes: Cleanup wastes [40 CFR 761.61(a)(5(v)] include non-liquid cleaning materials and personal protective equipment waste at any concentration. Examples are rags, gloves, booties, and other disposable items. Cleaning solvents, abrasives, and equipment used in cleanup constitute a subcategory of cleanup wastes.

Radioactive Waste — Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in Section 11e (2) of the Atomic Energy Act of 1954, as amended), or naturally occurring radioactive material.

Radiation Control Technician (RCT) — RCT's implement the Laboratory's Radiation Control Program by performing Operational Health Physics coverage. The RCT also verifies that waste packages meet DOT shipping requirements for external contamination, contact, and one-meter dose requirements, through screening and measurements.

Use or Reuse — A material that is either employed as an ingredient in an industrial process to make a product or employed in a particular function or application as an effective substitute for a commercial product.

Waste Generator (WG) — LANL individuals whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation. (40 CFR **§260.10; Title 20** of the New Mexico Administrative Code, Chapter 4, Part 1, Section 100 (20.4.1 .100 N MAC)) (also see P409).

Waste Management Coordinator (WMC) — The individual who meets institutional WMC qualification standard requirements. WMCs provide guidance and oversight for waste management and perform specific duties identified in this procedure (also see P409).

Waste Acceptance Criteria (WAC) — Criteria established by the receiving facility that must be met before a waste is accepted for treatment, storage, or disposal. Waste acceptance criteria may involve the physical form of a waste, a waste's container, its radioactivity, packaging, labeling, etc. (also see P409).

5. REQUIRED DOCUMENTS AND FORMS

Descriptions of commonly used forms required to document waste management activities are listed below. Forms and guidance can be found at http://int.lanl.gov/environment/waste/flst/full_list.shtml

- **Form 1346, Waste Profile Form (WPF)**. A form used by the Laboratory's waste operations group to document the characterization of any solid, hazardous, radioactive, or mixed waste.

- **Form 1973, Waste Acceptance Criteria Exception Form (WEF)**. A WEF is a form that must be submitted if certain Waste Acceptance Criteria requirements are not met (e.g., a waste determination within 45 days, container not filled, expired WDR, etc.)

- **Form FMU64-F224, R1 Green is Clean Material Disposal Request Form**. Green-Is-Clean (GIC) disposal Request Form is used for waste generated in radiological control areas, which includes all non-regulated waste that has been actively segregated as "clean" (that is, non-radioactive) through the use of waste-generator acceptable knowledge.

- **Land Application Data Certification Sheet.** This form is required by ENV-RCRA-QP-10. It must be completed by the Generator or their designee and approved by ENV prior to land application of drilling, development, rehabilitation, and sampling purge waters to ensure the requirements of the NMED-approved NOI Decision Tree, *Land Application of Drilling, Development, Rehabilitation, and Sampling Purge Water,* can be met.

- **Land Application Field Certification Sheet.** This form is required by ENV-RCRA-QP-10. It must be completed by the Generator or their designee after land application certifying that all procedural requirements for land application of drilling, development, rehabilitation, and sampling purge waters were met.

- **Post Land Application Field Certification Sheet.** This form is required by ENV-RCRA-QP-11. It must be completed by the Generator, Project Manager, STR, or their designee at the time of land application of drill cuttings to certify that all procedural requirements were met. Any deviations from the Request for Land Application of Drill Cuttings Form must be documented on the Field Certification Sheet and approved by ENV prior to land application.

- **Request for Land Application of Drill Cuttings Form.** This form is required by ENV-RCRA-QP-11. It must be completed by the Generator or their designee and approved by ENV prior to land application of drill cuttings. It is used to ensure requirements of the NMED-approved NOI Decision Tree, *Land Application of IDW Solids Form Construction of Wells or Boreholes,* can be met.

- **Uniform Hazardous Waste Manifest**. The manifest is used to track hazardous waste shipped from a generator's site to the site of its disposition.

- **Waste Characterization Strategy Form (WCSF)**. The WCSF is a planning and implementation document to be prepared before any waste-generating activity is undertaken. The WCSF is rquire4d for Consent Order work but may be prepared for other ADEP work. The WCSF documents planned field activities and the characterization approach for each waste stream expected to be managed. The WCSF is used to implement the IDW requirements of the work plan. The Laboratory's waste operations group also uses the information provided on this form to support regulatory classifications of ADEP-generated wastes.

- **Waste Disposal Request (WDR) Form**. A form used by the Laboratory's waste operations group to describe packages of waste that require transport and disposition.

- **Waste Profile Charge Code Form (WPCC).** The WPCC form allows for tracking and costing waste disposal at Los Alamos National Laboratory (LANL) based on assignment of valid cost codes to approved WPFs. The WPCC form is separate from the WPF system and allows the owner (usually the generator) to preview their approved Waste Profiles and assign cost codes to the profiles under their ownership.

6. STEP-BY-STEP PROCESS DESCRIPTION

Some steps in the following process must be completed by LANL personnel while others may be completed by subcontractors. A subcontract Exhibit D or Exhibit F must specify whether the subcontractor will provide personnel such as a Field Waste Management Technician (FWMT), Waste Sampling Personnel (SP), or certified Hazardous Materials Packaging and Transportation (HMPT) personnel, as well as whether the subcontractor will complete some of the documentation required by this procedure.

6.1 Area of Contamination Policy

1. Where appropriate, establish an Area of Contamination (AOC) in accordance with this procedure at least 30 days prior to waste generation in the project area. The AOC designation must be approved by NMED prior to implementation.

   NOTE*: The AOC Policy allows certain discrete areas of generally dispersed contamination to be considered RCRA Land Disposal Units and, thus, movement and in-situ treatment of hazardous waste is allowed without triggering land disposal restrictions or minimum technology requirements. However, NMED has not supported establishing an AOC during investigation, remediation or corrective measures projects unless they have specifically approved its use.*

   Investigation and remediation activities will not create a new point of hazardous waste generation if carried out within the NMED-approved AOC. Therefore, the 90-day clock for hazardous waste generation will not be triggered as long as the waste remains inside the AOC boundary. The AOC Policy applies to any hazardous remediation waste (including non-media waste) that is in or on the land. It does not apply to non-hazardous wastes, such as LLW, PCB remediation waste, NMSW, etc. Each of these wastes must be managed in accordance with their specific accumulation requirements.

2. To request an AOC designation, provide the following information to the ENV-RCRA Rep:
   - A schematic showing the boundaries of the AOC (include roads if it will assist in transporting wastes within the AOC).
   - The types and forecasted volumes of wastes that will be managed under the policy.
   - How the wastes will be managed within the AOC boundaries (e.g., in piles with best management controls, in containers, etc.).
   - Whether some of the environmental media will be reused and how the decision will be made for its reuse (e.g., it meets residential soil screening levels).

3. The ENV-RCRA Rep prepares the request for AOC designation and submits to NMED for approval. Distribute copies to the Waste Generator (WG), PM and Waste Management Coordinator (WMC).

NOTE*: For Consent Order-driven work, NMED requires that the AOC designation request be submitted at least 15 days prior to initiation of field activities*.

6.2 Preparation of the Waste Characterization Strategy Form (WCSF)

1. WPS-LLW assigns a WMC.
2. Before preparing the WCSF, the WMC shall:

- Identify all waste streams that are anticipated to be generated by the work.
- Working with subcontractor, identify probable Treatment, Storage, Disposal Facilities (TSDFs) for the waste anticipated to be generated. Identified waste streams should align with probably TSDFs waste profiles whenever possible.
- Identify requirements specified in the work plan, closure plan, or other approved work documents.
- Review available data and source information for the planned work sites to determine how to initially manage wastes (e.g., hazardous, non-hazardous, LLW, etc.). Reference appropriate documents and data that support the initial handling decisions in the WCSF.
- Determine whether existing data meets the requirements for acceptable knowledge (AK), as specified in ENV-RCRA-TOOL-112.0, *Acceptable Knowledge*, for hazardous or radiological constituents. If there is reliable, relevant, and traceable information based on AK, document the AK in the WCSF. If necessary, develop a strategy for sampling and analysis that will complete the characterization for the waste stream.
- If there is no reliable information concerning hazardous or radiological constituents, develop a strategy for sampling and analysis that will identify and quantify all chemicals of potential concern in the waste stream.
- Review the most recent waste acceptance criteria (WAC) for potential receiving TSDFs to ensure that analytical suites identified in the WCSF meet the receiving facilities' WAC.
- WPS-WS shall ensure that radioactive and mixed wastes are covered by an approved Radioactive Waste Management Basis (RWMB). If not, request that the RWMB report preparer update the RWMB.
- If the waste is a category that can be land applied (drilling fluids, purge water, development water, or drill cuttings), review the land application procedures (see Section 5.9) to ensure that the analytical suites identified in the WCSF are appropriate for land application.

6.3 Review and Approve the Completed WCSF

1. Initiate the review, approval, and tracking of the draft WCSF in accordance with procedure SOP-4066, Document Development and Deliverables Compliance Process. Typically, allow a two-week minimum for the review and approval process.
2. The PM, ENV-RCRA Rep, WMC, and WG may review and confirm that the draft WCSF is consistent with the approved work plan along with any "contained in" determinations, Area of Contamination designations, Due Diligence reports, or other provisions approved by ENV-RCRA and/or the NMED. All may provide comments on the WCSF.
3. The PM, ENV-RCRA Rep, and WMC shall approve and sign the final WCSF when comments have been resolved and incorporated into draft WCSF.
4. The WMC and PM shall ensure all field operations personnel are briefed on, and agree to comply with, the WCSF requirements.

6.4 Amendment of the WCSF

1. In the event a WCSF Amendment must be prepared, the author shall ensure that a WCSF prepared under previous versions of this procedure is amended as needed to meet current procedural requirements.

2. The author should amend the approved WCSF under the following conditions:
   - when an unanticipated waste is generated,
   - when an approved strategy for management of a waste stream significantly changes, or
   - when a selected TSDF changes necessitating a change to WAC compliance.

3. When a correction to the approved form is necessary, complete the WCSF Amendment Form (Attachment 1).

4. Submit the WSCF Amendment to the original reviewers as shown in Step 6.4.2, as appropriate, for review and comment.

5. The author shall obtain resolution to all comments and incorporate them into the WCSF Amendment.

6. The original signatories shall approve and sign WSCF Amendment.

NOTE: *When generation of a new waste is the reason for the amendment, the draft amendment must be in review prior to submitting the WPFs to Waste Services. Manager WDP-WS may approve the submittal of the WPF prior to the amendment approval.*

6.5 Waste Management and Documentation

1. Obtain appropriate waste containers with requisite certification and documentation. If the project contract stipulates the subcontractor provide the waste containers, the subcontractor shall provide the WMC with copies of requisite documentation.

   - Personnel will be trained on proper container closure and all packages will be closed according to the manufacturers' instructions.
   - Inspect containers in accordance with DOT standing inspection requirements before use. If the containers have been previously used, ensure they are adequately decontaminated before re-use.
   - Ensure containers are properly marked and labeled and/or meet LANL requirements for free release.
   - Do not use compromised or otherwise damaged containers for waste packaging.

2. If WCSF identifies direct offsite disposal of Radioactive Waste to a Non-DOE TSDF, verify with LANL WPS-LLW that there is an approved Exemption Request in place. If an approved Exemption Request is not in place, supply the required data to WPS-LLW in accordance with ENV-RCRA-TOOL-602.

3. Establish appropriate areas for accumulating/storing waste (e.g., <90 day accumulation area, SAA, Universal Waste Area, Used Oil Area, NMSW Area, radioactive waste staging or storage area) in accordance with P409, Waste Management. Register regulated waste storage areas and provide Site ID Number(s) to the FWMT, WMC, and WG.

   - RCRA waste registration (http://hsr-web2.lanl.gov/~esh19/databases/hwts_form.html)
   - Radioactive Waste Staging/Storage registration (http://hsr-web2.lanl.gov/~esh19/databases/rad_registrationform.shtml).

4. Verify that the registered waste area is properly posted, managed, and inspected, as necessary.

   Ensure no more than 1% free liquid is present in a container containing solid physical form waste, unless identified as containing liquid on the waste profile.

5. Store wastes in new, unused containers, unless specifically permitted to use reusable containers. Reusable containers need to have radiological survey results showing the container is not contaminated and has been released.

6. Perform all necessary inspections, recordkeeping, and reporting requirements for accumulation, staging, or storage areas in accordance with P409, *Waste Management*.

7. Participate in periodic LANL and regulatory agency waste management compliance inspections.

8. If the waste(s) requires sampling for characterization, the SP shall inform the FWMT and WMC of the intent to sample.

9. Collect representative waste samples in accordance with EPA guidance (EPA, 1986. SW-846, Chapter 9 (Sampling Plan)) http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/chap9.pdf or an approved LANL and/or Subcontractor sampling plan.

10. Manage samples in accordance with LANL procedures (EP-ERSS-SOP-5056, Sample Containers and Preservation, EP-ERSS-SOP-5058, Sample Control and Field Documentation).

11. Establish waste management requirements for returned samples, if applicable, based on the approved work plan, WCSF, or waste characterization plan.

12. The Waste Services Manager should perform independent audits of waste management. Inform the WG of any waste management issues.

13. Disposition waste in compliance with regulatory time limits. If regulated waste cannot be dispositioned within required time limits, notify the PM and the ENV-RCRA Rep.

16. Ensure all wastes, materials, or equipment are dispositioned, and not left on-site at the end of project field-work without the prior approval of the appropriate ADEP Program Director.

6.6 Waste Determinations and Documentation

1. Provide the waste Event Numbers and Sample Numbers to the LANL or project data steward.

2. The data steward shall track the analytical or characterization data from sample ID or Event Number.

3. Sample analysis turnaround must be appropriate to meet regulatory accumulation time limits.

4. WES-EDA performs data validation.

5. The data steward may request Automated Waste Determinations (AWDs), as appropriate, and provide analytical data to the WMC for waste determination. The data steward may provide radiological analytical results to waste characterization engineers for LLW waste determination.

6. WPS-WS WMCs shall make waste determinations/characterization within 30 days of the date of waste generation unless otherwise specified in the WCSF. ENV-RCRA may provide assistance in making waste determination, if necessary or requested.

7. If a No Longer Contained-In determination is needed (see Section 2.8), request that ENV-RCRA initiate the No Longer Contained-In request when waste determinations are complete but no later than day 70 of the accumulation time limit or 15 working days before the end of the accumulation time limit, whichever time is less.

8. For wastes in <90-day areas:

   - For wastes in a <90-day area, if a waste determination cannot be made within 30 days, submit a WEF to LANL Waste Services before day 30 of the waste accumulation time limit.

   - If a waste determination is not complete by day 70 or 15 working days before the end of the accumulation time limit (whichever is shorter), request that ENV-RCRA determine whether there is justification to request a <90 day accumulation time limit extension from the NMED. Note that extensions can only be granted if there are extenuating circumstances, which do not include failure to make a waste determination. However, providing NMED with time to review a "contained-in" request is a valid reason for requesting a <90 day accumulation time limit extension. Concurrently, begin contingency planning in the event that the extension request is not granted.
   - At Day 80 of the <90 day clock, if the request for a <90 Day extension is not granted by NMED, prepare to ship as regulated waste prior to expiration of the <90 day clock.

9. Determine whether existing WPF's that are still active can be used for newly-generated wastes. If not, prepare a new WPF in WCATS. If a "contained-in" determination or due diligence review applies to the waste, attach the appropriate document to the WPF. Ensure that required signatures have been obtained on the EP Document Signature Form.

10. Submit the WPF to the WG, ENV-RCRA, Waste Acceptance (all wastes) and Waste Certification Representatives (for radioactive wastes) through WCATS, who reviews, approves and activates the profile.

11. Obtain and complete the offsite TSDF's WPF, and obtain TSDF approval for the off-site WPF, if applicable.

12. WCATS will notify the WMC that an approved LANL WPF is in place for waste shipment. Notify the WG and WMC that an approved off-site TSDF WPF is in place for waste shipment, if applicable.

6.7 Using the "Contained-in" Definition for Wastes

1. Where appropriate, ENV-RCRA will implement the "Contained-in Policy" in accordance with this procedure.

    - Waste that contains a characteristic hazardous waste can only become non-characteristic if it is treated. Some types of treatment may occur on-site but restrictions apply. Coordinate with the ENV-RCRA Rep before treating any wastes. Determination that a waste is no longer characteristic requires no formal approval by NMED. Land Disposal Restrictions (LDR) will still apply to the de-characterized waste (i.e., waste must meet LDR treatment standards before disposal).

    - Regulatory agency approval is required to declare that waste that contains hazardous constituents originating from listed hazardous waste sources (F-, K-, P-, or U-listed) is no longer listed. NMED makes this determination after reviewing data submitted by LANL that shows that the concentrations of hazardous constituents are below health-based levels, such as EPA Drinking Water Standards or NM WQCC groundwater standards.

2. When environmental media and/or debris are contaminated with hazardous constituents from listed hazardous waste, the FWMT or WMC shall submit all applicable data and site information to the ENV Rep for assistance in determining whether concentrations of the hazardous constituents are below health-based levels.

3. If contaminant concentrations are below health-based levels, ENV-RCRA will prepare and submit a request for a No Longer Contained-In approval to NMED on behalf of the project, requesting that NMED determine that the media/debris no longer contains listed waste.

4. ENV-RCRA will provide a copy of the letter requesting "contained-in" approval and the NMED letter approving the 'contained-in" to the WG, FWMT, and WMC.

5. Ensure the No Longer Contained-In determinations approved by NMED are implanted as part of the project's waste management activities. Attach the No Longer Contained-In request and approval letter to applicable WPFs.

6.8 Minimization and/or Recycling of Waste

1. Reduce the volume of waste generated by as much as is technically, legally, and economically feasible.

   - Evaluate environmental media (soil, rock, and well drilling development, rehabilitation, and purge water) for land application, in accordance with ENV-RCRA-QP-010, *Land Application of Groundwater*.

2. Evaluate use of Green is Clean (GIC). GIC waste generated in radiological control areas includes all non-regulated waste that has been actively segregated as "clean" (that is, non-radioactive) through the use of waste-generator acceptable knowledge. Environmental program waste meeting the requirements should be considered for GIC: paper products and cardboard, pieces of low-density wood small enough to fit into the approved containers (e.g., GIC green-striped bags, 2-cubic foot cardboard boxes with or without plastic lining, or other plastic bags or cardboard boxes as approved by the GIC Operations systems engineer); plastic products including common Personal Protective Equipment (PPE); and/or cloth or rags, including nylon and other low-density synthetic fabrics. Small amounts of high-density material such as dirt, dust, or other debris incidentally associated with low-density GIC waste are acceptable. However, dirt and dust contain natural radioactivity that may prevent the waste from passing the verification check. Packaging, barcoding, restrictions and weight requirements for Green Is Clean can be found in the LANL WAC, P930-1, Attachment 12.

3. Report waste minimization and/or recycling efforts to the WG at the end of field operations and in Consent Order-required IDW reports.

   NOTE: *This information is included in an annual report, the Hazardous Waste Minimization Report, which is a requirement of Module VIII of the Laboratory's Hazardous Waste Facility permit.*

6.9 Generator Treatment of Wastes On-Site Prior to Disposal

Certain types of treatment can be conducted in <90 day accumulation areas or in-situ in an Area of Contamination. Treatment in these areas does not require a RCRA permit but must be documented by ENV. Contact ENV before any on-site treatment is conducted.

6.10 Waste Packaging and Transport

1. Verify a LANL Waste Profile Form is active for the waste to be shipped.

2. Verify that an offsite waste profile has been completed and is approved and active for the waste to be shipped, if being disposed in an approved non-DOE TSDF in accordance with P930-3, Off-Site Shipment of Chemical, Hazardous, or Radioactive Waste.

3. Complete the WDR and submit WDRs as required for each waste type in accordance with P930-1, *Waste Acceptance Criteria:*

   NOTE: *Waste generators may request exemptions from or exceptions to the LANL WAC by using Form 1973, Waste Acceptance Criteria Exception Form (WEF). Exemptions or exceptions are requested when a generator cannot comply with a specific WAC or certification requirement, or when a requirement is not applicable.*

4. Notify the WMC and WG when the WDR and Uniform Hazardous Waste Manifest, if required, have been approved.

5. The transporters shall transport wastes in accordance with the off-site receiving facilities' WAC and DOT requirements.

   NOTE: *For wastes managed in a <90-day accumulation or NMSW areas, the WMC must arrange for shipment at Day 80, identified as a compliance driven **RUSH** to Waste Services. At Day 90 of the <90 day clock, if regulated waste is not shipped from the <90 day area, notify the ENV representative and support any actions required by ENV.*

6. Ensure all waste transportation containers for chemical and radiological hazards are labeled in accordance with DOT requirements and P121, *Radiation Protection*

7. Ensure that the DOT rating for maximum container weight is observed.

8. For radioactive waste stored in supersacks to be shipped off-site:

   - Personnel shall be trained in the correct closure of supersacks and all supersacks will be closed in accordance with manufacturers' instructions.
   - Supersacks should be stored on plastic sheeting in a slightly or gently sloped area that will allow precipitation or other moisture to drain. In situations where the WG, WMC and/or PM anticipate the supersacks being stored for three months or more, or during snow or rain events, the supersacks should be stored under tarpaulins or other cover.
   - The WG, WMC, and PM shall determine whether the supersack should be overpacked.
   - Each supersack shall receive a visual inspection to ensure labels are attached and legible, and that the supersack is secure and shows no signs of degradation. Lifting straps and the associated stitching used to attach the straps to the supersacks shall be inspected for integrity.
   - Original LANL Item ID numbers shall remain on the original supersack.
   - All DOT labels shall be applied to the outer overpack.
   - Prior to loading into the overpack, a radiological survey of the outside surface of the supersack shall be performed.
   - Prior to loading onto the truck, a radiological survey of the outside surface of the overpack shall be performed.

9. Ensure the waste to be shipped is in compliance with the approved waste profile.

10 If the waste is going to NNSS or a commercial disposal facility that requires containers to be "sealed" by the generator prior to shipment, record the date the container was sealed in the project notebook.

11. Coordinate waste transportation with the disposal facility in accordance with P930-3, *Offsite Shipment of Chemical, Hazardous, or Radioactive Waste.*

    NOTE: *Transportation shall be by an approved carrier in accordance with DOE's Motor Carrier Qualification Program (MCEP approved).*

12. Notify the WG, WMC, and LANL Transportation Coordinator of scheduled ship/pickup date of waste.

13. Inspect waste containers prior to shipment, and document the evaluation in the project notebook.

14. HMPT personnel complete off-site shipment DOT inspection per DOT checklist.

15. Verify that all shipping containers are secured by the carrier prior to transportation per DOT checklist.

7. RECORDS MANAGEMENT

Submit the following records generated by this procedure to the Records Processing Facility in accordance with EP-DIR-AP-10003, *Records Management Procedure for ADEP Employees*:

- WCSFs and Amendments to WCSFs,
- Related waste management documentation and supporting information (e.g., training, inspection, site registration, waste inventory),
- WPFs and supporting documentation,
- Miscellaneous waste documentation (e.g., IWD, RWP), and
- Waste disposition documentation (e.g., WDR, manifests, Bills of Lading).

NOTE: *For both WCSFs and amendments to WCSFs, the submittals to the RPF must be in final form (i.e., with all signatures by the appropriate reviewers) and must include all attachments (e.g., AK documentation, data summaries, figures, etc.).*

8. ATTACHMENTS

Attachment1 - LA-UR 10-01457, *Waste Characterization Strategy Form Preparation Guidance*

Click here for "Required Read" credit.

ATTACHMENT 1

LA-UR 10-01457

WASTE CHARACTERIZATION STRATEGY FORM PREPARATION GUIDANCE March 2010

For projects managed by Project Management and Site Services (ADPMSS), Waste Stream Characterization Forms (WCSFs) will be prepared in accordance with AP-350-300, Project Design, (http://pmdsharepoint:6129/Lists/Policy%20%20Procedure/AllItems.aspx)

WCSFs for Environmental Program (ADEP) projects will be prepared in accordance with the following guidance.

PREPARATON OF ADEP PROJECT WCSFS:

Prior to preparing the WCSF:

- Identify all waste streams that are anticipated to be generated by the project.
- Identify waste requirements (e.g., analytical suites, conditions for return of environmental media) specified in work plans, closure plans, or other approved work documents.
- Review available data and source information for the planned work sites to determine how to initially manage wastes (e.g., hazardous, non-hazardous, asbestos, low-level waste (LLW), etc.). Reference appropriate documents and data that support the initial handling decisions in the WCSF.
- Determine whether existing data meets the requirements for acceptable knowledge (AK), as specified in P409, *Waste Management Requirements* and P930-1, *Los Alamos National Laboratory* (*LANL) Waste Acceptance Criteria*. If there is some useful information based on AK, develop a strategy for sampling and analysis that will complete the characterization for the waste stream. If there is no useful information, develop a strategy for sampling and analysis that will identify and quantify chemicals of potential concern needed to make a waste determination in the waste stream.
- Review the most recent waste acceptance criteria (WAC) requirements for potential receiving facilities to ensure that analytical suites identified in the Characterization Table (see Attachment 1) in the WCSF meet the receiving facilities' requirements.

- If the waste is a category that can be land applied (drilling fluids, purge water, development water, or drill cuttings), review the land application procedures (to ensure that the analytical suites identified in the WCSF are appropriate for land application.

Meet with the Environmental Protection (ENV-RCRA) representative to discuss the waste streams and obtain a recent example of a completed WCSF. Use the template in Attachment 1 to prepare the WCSF (unless the ENV-RCRA representative approves a different format). Obtain a document number from the project Subcontract Technical Representative or LANL Waste Management coordinator (WMC) and enter it and the WCSF title into the footer section of the WCSF. Provide the following information:

General information:

- Identify the area that the project will impact. If solid waste management units (SWMUs) or Areas of Concern (AOCs) will be impacted, list them in this section.
- Identify the activity type (e.g., decontamination and decommissioning (D&D), well drilling, remediation, investigation, or corrective measures implementation).
- Provide the name of the LANL waste generator or Project Manager.
- List the LANL WMC, the author of the WCSF, and other appropriate personnel.
- Provide the date the WCSF was drafted.

Description of activity: Provide a brief description of the purpose of the Project and the types of wastes expected to be generated.

Relevant Site History and Description: Provide a brief description of investigations, remediation, or corrective measures implementation activities that have occurred to date. If data from previous investigations are adequate to justify that waste be initially handled as non-hazardous, provide a brief justification for each affected potential release site. If adequate data are not available, a written "due diligence" review of available documentation of the sources of contaminants at the site may be prepared and used as justification for initial handling of the waste.

Characterization Strategy: The first few paragraphs of this section will be standard language provided by ENV. The standard language provides general information on how waste and samples will be managed.

Waste Type: Provide a description of each anticipated waste stream and the expected quantities of each waste. For each waste type identify:

- **Anticipated Regulatory Status:** Identify whether each waste stream is expected to be solid, industrial, hazardous, radioactive, mixed, polychlorinated biphenyls (PCBs), New Mexico Special Waste (NMSW), etc.).

- **Characterization Approach:** Describe how each waste will be characterized (e.g., direct sampling, use of investigation data, use of AK, or a combination of these methods). If waste is to be directly sampled, specify when waste will be sampled (generally within 10 days of generation unless the waste is generated in an area of contamination or initially stored in a drilling pit) and the turnaround time for analysis (generally ≤ 21-days) Identify the procedures that will be used to collect samples. Or, the sampling approach can be included as a separate section under each waste type. A list of LANL sampling procedures is included in Table 1 and others may be available. Equivalent, LANL-approved Subcontractor procedures may be used.
- **Storage and Disposal Method:** Describe how each waste will be stored (e.g., containerized, stockpiles with controls), how the waste will initially be managed (e.g., hazardous, non-hazardous, NMSW, LLW, etc.), and the anticipated disposal method (e.g., land application, on-site treatment at Clean Water Act permitted facilities, disposal of LLW at TA-54 Area G, or treatment and/or disposal off-site).

Characterization Table: Complete the characterization table at the end of the WCSF for each waste stream.

Note: *If data are insufficient to make a definitive regulatory classification at the time of WCSF completion, more than one box on the characterization table may be checked, along with an explanation in the text section. The final regulatory classification will be reflected on the WPF. Ensure that the table identifies the suite of analyses required based on site knowledge, information needed by the anticipated receiving facility, or for land application, if applicable.*

After the WCSF is drafted, submit it through the proper channels (e.g., records management) for review and comment. Incorporate comments and obtain signatures.

When a correction to the approved form is necessary, complete Attachment 2, WCSF Amendment Form. Obtain a document number from the project Subcontract Technical Representative or LANL Waste Management coordinator (WMC) and enter it and the WCSF title into the footer section of the WCSF. Ensure the information on Attachment 2 addresses the following:

- The original WCSF title and document number must be in the amendment heading for ease of reference;
- The Reason for Amendment provides the reason for the amendment (e.g., new waste stream not included in the original WCSF or change in the method of management) and provides details on the change(s) necessitating the amendment;
- The Waste Description provides a description of the waste that is the subject of the amendment and the activity generating the waste; and
- Characterization, Management, and Disposal provides a description of how the waste will be characterized and managed, and the anticipated method(s) of storage, treatment, or disposal. If the Characterization Table in the WCSF does not address the waste covered in the Amendment, attach a Characterization Table with the new information to the Amendment.

After the WCSF is drafted, submit it through proper channels (e.g., records management) for review and comment. Incorporate comments and obtain signatures

Table 1. LANL SAMPLING AND ANALYSIS PROCEDURES

Procedure Number	Title
EP-ERSS-SOP-5056	Sample Containers and Preservation
EP-ERSS-SOP-5057	Handling, Packaging, and Transporting Field Samples
EP-ERSS-SOP-5058	Sample Control and Field Documentation
EP-ERSS-SOP-5060	Operational Guidelines for Taking Soils and Water Samples in Explosive Areas
EP-ERSS-SOP-5061	Field Decontamination of Equipment.
EP-ERSS-SOP-5181	Documentation for Waste and Environmental Services Technical Field Activities
P 121	Radiation Protection
SOP-06.09	Spade and Scoop Method for Collection of Soil Samples
SOP-6.10	Hand auger and Thin-Wall Tube Sampler
SOP-06.15	Coliwasa Sampler for Liquids and Slurries.
SOP-06.19	Weighted Bottle Sampler for Liquids and Slurries in Tanks
EP-ERSS-SOP-5059	Field Quality Control Samples
SOP-5139	Sampling Soil and Vegetation at Facility Sites
SOP-5194	Chip Sampling of Porous Surfaces

ATTACHMENT 1	
Waste Characterization Strategy Form (WCSF)	Records Use only Los Alamos NATIONAL LABORATORY EST. 1943

Area of Impact (including Solid Waste Management Unit(s) or Area(s)	
Activity Type:	
Project Manager/ Waste Generator:	
LANL Waste Management Coordinator	
Completed By:	
Date:	
Description of Activity:	
Relevant Site History and Description:	
Characterization Strategy: • Waste #1: *Anticipated Regulatory Status*, *Characterization Approach, Storage and Disposal Method* • Waste #2: *Anticipated Regulatory Status*, *Characterization Approach, Storage and Disposal Method* • Etc.	

CHARACTERIZATION TABLE

Waste Description	Waste # 1	Waste #2	Waste #3	Waste #4
Estimated Volume				
Packaging				
Regulatory classification:				
Radioactive Waste				
Municipal Solid Waste (MSW)				
Waste destined for LANL's SWWS or RLWTF[1]				
Hazardous Waste				
Mixed (hazardous and radioactive) Waste				
Polychlorinated Biphenyls-Contaminated Waste (PCBs)				
New Mexico Special Waste				
Industrial Waste				
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation				
AK: Site Characterization				
Direct Sampling of Waste				
Analytical Testing				
Volatile Organic Compounds (VOCs) (EPA 8260-B)				
Semivolatile Organic Compounds (SVOCs) (EPA 8270-C)				
Organic Pesticides (EPA 8081-A)				
Organic Herbicides (EPA 8151-A)				
PCBs (EPA 8082)				
Total Metals (EPA 6010-B/7471-A or EPA 6020)				
Total Cyanide (EPA 9012-A)				
High Explosives Constituents (EPA 8330/8321-A)				
Asbestos (EPA 600M4)				
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)				
TPH-DRO (EPA 8015-M)				
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)				
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)				
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)				
Gross Alpha (alpha counting) (EPA 900)				
Gross Beta (beta counting) (EPA 900)				
Tritium (liquid scintillation) (EPA 906.0)				
Gamma spectroscopy (EPA 901.1)				
Isotopic plutonium (HASL-300)				
Isotopic uranium (HASL-300)				
Total uranium (EPA 6020)				
Strontium-90 (EPA 905)				
Americium-241 (HASL-300)				
Perchlorates (EPA 6850)				
Nitrates/Nitrites (EPA 300.09-soil or 343.2-water)				
Oil / Grease (EPA 1665)				
Fluorine, Chorine, Sulfate (EPA 300)				
TTO (EPA 8260-B and EPA 8270-C)[2]	**Request VOCs and SVOCs above**			
Total Suspended & Dissolved Solids (TSS) and Total Dissolved Solids (TDS) (EPA 160.1 and 160.2)				
Chemical Oxygen Demand (COD) (EPA 410.4)				
pH (EPA 904c)				
Microtox or Biological Oxygen Demand (BOD)[3]				

Characterization Table (Cont'd)

[1]in addition to other analytes needed to characterize the waste (e.g., VOC, SVOC, total metals), analyze for TSS, TDS, Oil and Grease, gross alpha, gross beta, tritium, and pH for liquids destined for the LANL sanitary waste water system (SWWS). For wastes destined for the RLWTF additional constituents include TTO,TSS, COD, pH, total nitrates/nitrites, and gross alpha, gross beta (not including tritium), and gross gamma **or** the sum of individual alpha-, beta-, and gamma-emitting nuclides.

[2]TTO is the total of volatile organic and semi-volatile organic compound contaminants. Request methods EPA 8260-B (VOCs) and EPA 8270-C (SVOCs).

[3] If Microtox analysis is not available, request BOD.

Signatures	**Date**
Project Manager (Print name and then sign below.)	
Preparer (Print name and then sign below.)	
Waste Management Coordinator (Print name and then sign below.)	
ENV-RCRA Representative (Print name and then sign below.)	
Waste Acceptance Representative (Print name and then sign below.)	
Waste Certification Program Representative (only if radioactive wastes will be generated (Print name and then sign below.)	

ATTACHMENT 2	
Amendment to the WCSF **Title:**	Records Use only Los Alamos NATIONAL LABORATORY EST.1943
Reason for Change	
Waste Description:	
Characterization, Management, and Disposal:	

Signatures	**Date**
Project Manager (Print name and then sign below.)	
Preparer (Print name and then sign below.)	
Waste Management Coordinator (Print name and then sign below.)	
ENV-RCRA Representative (Print name and then sign below.)	
Waste Acceptance Representative (Print name and then sign below.)	
Waste Certification Program Representative (only if radioactive wastes will be generated) (Print name and then sign below.)	

	Los Alamos National Laboratory