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Document Number: WHC-SD-CP-PLN-025, REV 0

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LABORATORY COMPLEX

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* * * * *

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WHC Information Release Administration Specialist:

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FOR THE WASTE SAMPLING AND CHARACTERIZATION FACILITY

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LIST OF TERMS

ALARA	As Low As Reasonably Achievable
AS	Analytical Services
BOWC	Building Operations Waste Control
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
ECO	Environmental Compliance Officer
HMC	Hazardous Material Control
LLW	low-level waste
LO	Laboratory Operating (procedure)
LOI	Letter of Instruction
NSL	Nuclear Spectroscopy Laboratory
NQA-1	Nuclear Quality Assurance
OJT	on-the-job training
QA	quality assurance
QAPI	Quality Assurance Program Index
QAPP	Quality Assurance Program Plan
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
SAR	Safety Analysis Report
SARP	Safety Analysis Report for Packaging
SDAR	Storage/Disposal Approval Record
WAC	Washington Administrative Code
WHC	Westinghouse Hanford Company
WSCF	Waste Sampling and Characterization Facility

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1.0 INTRODUCTION

1.1 PURPOSE

The Solid, Low-Level Waste Certification Plan for the Waste Sampling and Characterization Facility (WSCF) describes the organization and methodology for the certification of the solid low-level waste (LLW) that is transferred to the Hanford Site 200 Areas Storage and Disposal Facilities. This plan incorporates the applicable elements of waste reduction, including up-front minimization, and end product treatment to reduce the volume or toxicity of the waste. The plan also includes segregation of different waste types.

1.2 SCOPE

This Low-Level Waste Certification Plan applies only to waste generated in, or is the responsibility of the WSCF Laboratory Complex. The scope of the plan is derived from the requirements found in the latest revision of WHC-EP-0063, *Hanford Site Solid Waste Acceptance Criteria* and WHC-CM-7-5, *Environmental Compliance Manual*.

1.3 FACILITY DESCRIPTION

The WSCF Laboratory Complex is Westinghouse Hanford Company's newest laboratory for analytical chemistry activities including analysis of low-level radioactive samples for the *Resource Conservation and Recovery Act of 1976* (RCRA) and the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (CERCLA) or Superfund activities. Figure 1-1 is a site plan of the WSCF Laboratory. The WSCF Laboratory comprises about 22,000 ft² of laboratory space containing 62 hoods.

Additional maintenance and office areas have been included in the building for operations support. A mobile office MO-280, located adjacent to the WSCF Laboratory (Building 6266) houses the engineering and administrative support personnel necessary to operate the laboratory facility.

The lower floor of the 6266 building contains the Nuclear Spectroscopy Laboratory (NSL). The primary mission of the NSL is to perform radiological analysis of air sampling filters.

There are two additional structures affecting this plan. The contaminated liquid retention vault contains two 1000 gallon tanks constructed for the accumulation of laboratory inorganic liquid waste. The second structure is a less than 90 day storage area for accumulation of waste not intended to be placed in the vault.

The WSCF supports operations for data collection and mobile sampling which do not generate radioactive waste and will not be addressed in this plan with the exception of display on the facility description figure.

Figure 1-1. WSCF Laboratory.

The WSCF Laboratory Complex supports technical activities performed at the Hanford Site. Wet Chemical and radiochemical analyses are performed to support site operations, including environmental and effluent monitoring, chemical processing, RCRA and CERCLA analysis, and waste management activities. Environmental and effluent samples include liquid effluents, ground and surface waters, soils, animals, vegetation, and air filters.

2.0 ORGANIZATION

2.1 ANALYTICAL SERVICES (AS) AND THE WSCF LABORATORY FACILITY ORGANIZATION

The WSCF Laboratory Complex is within the Hanford Analytical Services organization (see Figure 2-1). The AS organization consists of eight groups: Process Laboratories & Technology, 222-S Analytical Operations, Engineering & Technology Services, Field Analytical Services, Program Management & Integration, Technology & Quality Oversight, Commercial Analytical Services and Low-Level Labs (WSCF). The LLW certification activities will be directed by Environmental Services and Hazardous Materials Control as described in the appropriate sections below.

2.2 RESPONSIBILITIES

2.2.1 Process Laboratories and Technologies

This laboratory operates and provides process chemistry, chemical engineering laboratories, and chemical process technology services to support all Westinghouse Hanford Company (WHC) programs. This group provides technology and engineering integration services and functions as a focal point for chemical technology within WHC.

2.2.2 222-S Analytical Operations

This group manages the 222-S Laboratory Complex in performing Radioanalytical, Inorganic and Organic Chemistry analyses in support of WHC environmental programs and waste management activities. Further operations of this group are as follows.

- Operations Assurance and Support provides an overview function for the 222-S Laboratory Complex with the objective of assuring continuous improvement. This groups functions include coordinating corrective action management, ALARA, safety, drill and self-assessment programs and to ensure appropriate problem tracking and resolution.

2.2.3 Engineering and Technology Services

This provides the engineering and environmental services, work control and planning, chemical standards, and automatic data processing systems required by AS. Further operations of this group are as follows.

- Laboratory Engineering shall provide design support, Operational Test Procedures, engineering studies, and functional design criteria as required for facility modifications. This organization also acts as the cognizant engineering for operation and maintenance of facility equipment (excluding analytical instruments).

Figure 2-1. Hanford Analytical Services.

- Standards Laboratory provides standards and reagents, both radioactive and nonradioactive, to both onsite and offsite laboratories in support of programs such as the Waste Tank Remediation Program.
- Environmental Services is responsible for this certification plan and all other environmental documents, safety analysis reports (SAR), waste handling procedures, and operation specification documents used at the 222-S Laboratory Complex. This group will also develop and modify as necessary all waste handling procedures for the WSCF Laboratory Complex. Environmental Services will monitor the waste volume generated at the WSCF Laboratory Complex and will issue the annual Hazardous and Radioactive Solid Waste forecast. This organization will interact with laboratory management by providing regulatory and environmental compliance directives to ensure that laboratory operations are conducted in compliance with all applicable federal, state and company environmental regulations. They will also act as liaison between the Packaging Development Section, Solid Waste Operations, Solid Waste Management, RCRA Compliance Support, Generator and Waste Acceptance Services and the WSCF Analytical Operations to ensure that procedures and practices adhere to company guidance documents. Environmental Services will also be responsible for providing an oversight function to verify that waste disposal operations at the WSCF Laboratory Complex are performed in accordance with WHC-CM-7-5, *Environmental Compliance*.

Environmental Compliance Officer (ECO) is responsible for the environmental compliance of the WSCF Laboratory Complex. This position is held by the Manager of Environmental Services.

2.2.4 Field Analytical Services

This group shall manage the operation of Sampling and Mobile Laboratories and Special Analytical Studies. Further operations of this group are as follows.

- Sampling and Mobile Laboratories provides RCRA and CERCLA protocol sampling and field screening services to the Hanford Site. This groups services include sampling, packaging, and transportation of soils, water, gases, oils, sludge, tar, concrete, facility effluents, and other such media.
- Special Analytical Studies are responsible for inorganic, organic and radiochemical analytical special studies. This group provides support for laboratory methods development, mobile laboratories, in-situ measurements, and to non-laboratory facilities/sites.

2.2.5 Program Management and Integration

This group provides support to the Analytical Services department including: Planning and coordination between Hanford Site programs and the analytical laboratories, administrative assistance, and documentation control processes. Business plan development and tracking activities are provided at the department level with oversight and review services to the functions. The Laboratory Technical Information Center, developed and maintained by PM&I for both 222-S and low level laboratories, provides regulatory file interface and Quality Assurance document processing. Administrative control, processing, and tracking is provided for all analytical, operating, and administrative procedures.

2.2.6 Technical and Quality Oversight

This group shall be accountable to ensure that appropriate quality assurance requirements are identified and implemented for activities affecting quality. They also verify that activities affecting quality have been correctly performed as they pertain to this plan. Technical and Quality Oversight, in conjunction with Analytical Services Quality Assurance, shall assure that all quality inspection and surveillance activities are performed in accordance with the requirements of WHC-CM-4-2, *Quality Assurance Manual*.

2.2.7 Commercial Analytical Services

This group manages services provided by commercial analytical laboratories to ensure adequate performance, capability, and capacity to meet Hanford Site program needs. This group provides technical support to planning, negotiating, and coordinating activities between Hanford Site programs and the commercial analytical laboratories.

2.2.8 Low-Level Labs

This group manages the Waste Sampling and Characterization Facility (WSCF) and provides analytical laboratory services which include counting room support in stack and room air monitoring and low-level environmental samples; quality assurance oversight of commercial laboratories used for analyzing low-level environmental samples; and process control support to new liquid effluent treatment systems.

In addition, the Facility Manager of the WSCF Laboratory Complex, or a designee, will conduct periodic inspections of the implementation of LLW handling procedures. The results of these inspections and any recommendations for change are reported to the following organizations:

- Laboratory Engineering
- Process Laboratories and Technology

- AS Environmental Services
- Technical and Quality Oversight.
- Building Operations provides operations and Hazardous Material Control (HMC) support to the WSCF Laboratory Complex.
- Building Operations Waste Control (BOWC) shall assay, inspect, package, label, mark, placard and ship waste according to State and Federal regulations and applicable Westinghouse Hanford Company procedures. This organization will provide direction to laboratory personnel on the proper collection, packaging, and management of material from the laboratory's various waste streams. BOWC will interact with laboratory personnel to ensure that all required documentation is complete and will assist laboratory personnel in the proper management of waste. BOWC will interact with Health Physics to obtain surveys of waste packages prior to shipment.
- BOWC Manager shall supervise and direct the handling control of hazardous materials as product form, in process, and as waste in the WSCF Laboratory Complex. The BOWC Manager has the overall responsibility and authority for implementing procedures to ensure that hazardous, radioactive, mixed and non-regulated waste is accumulated, minimized, characterized, packaged, labeled, and temporarily stored according to State and Federal regulations, DOE orders, and Westinghouse Hanford Company procedures. The BOWC Manager shall coordinate the pickup and disposal of waste packages with the appropriate waste accepting organization and facility.
- Radioanalytical, Inorganic and Organic Chemistry are responsible for radioanalytical, inorganic and organic analytical analysis at the WSCF Laboratory Complex.

2.2.9 Generators

Generators shall be trained and qualified to work with hazardous material according to applicable WHC Safety Training, State, and Federal regulations. Specific training requirements are delineated in WHC-CM-5-4, *Laboratories Administration*, Section 4.0, *Training Responsibilities and Definitions*. Laboratory management is responsible for ensuring that all employees receive adequate training and for keeping training records current. All of the above listed organizations shall meet the requirements of the following this paragraph.

- Waste generators shall follow all applicable waste handling procedures and complete a waste inventory sheet for each waste package. Waste generators shall maintain satellite storage areas in accordance with WHC-CM-7-5, Section 7.8.2.2, *Satellite Accumulation Area Requirements*.

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3.0 CERTIFICATION METHODOLOGY

3.1 FACILITY WASTE MANAGEMENT STRATEGY

The WSCF Laboratory Complex will manage waste streams in compliance with Department of Energy Order 5820.2A "Radioactive Waste Management." In addition, radioactive/hazardous (mixed) waste streams will be managed in compliance with applicable RCRA regulations and the requirements of Washington State Department of Ecology (Ecology) under the Washington Administrative Code (WAC) Chapter 173-303 "Dangerous Waste Regulations."

Organizations within the laboratory will identify processes, including maintenance operations and laboratory procedures, that generate radioactive and mixed wastes. The waste streams will be characterized for both radioactive and hazardous constituents using sampling and analysis and/or process knowledge of waste streams. Once waste streams are established and characterized, appropriate handling procedures will be established and used.

Recharacterization of a waste stream will be required following any significant change or modification to a process. Figure 3-1 presents a flow diagram of the WSCF Laboratory's solid and liquid waste streams.

Waste segregation will be employed to ensure that low-level, mixed, and hazardous wastes are separated at the point of generation. This will include separate collection containers in hoods and laboratory rooms. Low-level compactible and non-compactible wastes will also be segregated. The compactible waste will be shipped in appropriate containers to 100-N as part of the 100-N Compaction Program, compaction by commercial means, or as part of a WSCF compactor.

Maintenance activities performed at the WSCF Laboratory Complex by outside crafts (i.e., Kaiser Engineering) can generate low-level, mixed, or hazardous wastes. Outside contractors are provided with a Letter of Instruction (LOI) which details the work to be done and the proper handling of the wastes being generated. Building Operations Waste Control personnel are assigned to assist with the management of wastes generated by outside contractors.

The Quality Assurance Program Index (QAPI) contained in WHC-SD-CP-QAPP-015, *Quality Assurance Program Plan for the WSCF Laboratory Complex*, lists the operating procedures used in the certification process of LLW packages at the WSCF Laboratory Complex. These procedures will include inventory sheets to ensure the physical contents of the package are characterized. Radioactive and hazardous constituents will be identified using process knowledge combined with sampling data to ensure the radioactive and hazardous contents of the waste package are characterized. The packages will be packaged according to instructions detailed in the applicable Storage/Disposal Approval Record (SDAR).

Figure 3-1. Solid and Liquid Waste Flow Diagram for the MSCF Laboratory Complex.

All shipments of radioactive and mixed wastes will be in accordance with applicable Safety Analysis Report for Packaging (SARP) and Department of Transportation (DOT) regulations and requirements. All shipments of hazardous waste will be in accordance with DOT requirements and regulations. The Quality Assurance Project Plan (QAPP) for solid, LLW certification delineates the quality assurance (QA) requirements for ensuring certification of waste packages in accordance with NQA-1 (ANSI/ASME) requirements. The QAPP is defined in Section 4.0 of this plan.

The designation of how waste shall be conducted is discussed in Section 3.4.

3.2 REQUIREMENTS

This plan is for certification of solid LLW, hazardous, mixed and non regulated waste to assure that all waste from the WSCF Laboratory complex meets the waste acceptance criteria for Hanford Site Area Storage and Disposal Facilities as required by DOE Order. This criteria is established in WHC-EP-0063 (current revision), *Hanford Site Radioactive Solid Waste Acceptance Criteria* and WHC-CM-7-5, *Environmental Compliance Manual*. The certification methodology will address the following areas:

- Waste characterization
- Waste designation
- Waste traceability
- Waste segregation
- Waste packaging
- Waste minimization
- Waste management training.

The process of certification remains an integral part of the waste management program. To assure that these areas are properly addressed, an analysis, of the waste streams, is completed as the waste streams are identified. This allows the waste to be classified and then disposed of in a controlled manner. This document contains procedures which apply specifically to the WSCF Laboratory Complex waste handling process and program. The manual is updated as necessary to ensure compliance with State, Federal, DOE and WHC rules and regulations.

3.3 WASTE CHARACTERIZATION

The characterization of waste for the WSCF Laboratory Complex will be presented in the WSCF Laboratory Waste Characterization Plan WHC-SD-CP-PLN-026. This plan will be established to meet the requirements of WHC-EP-0063, *Hanford Site Solid Waste Acceptance Criteria* and WHC-CM-7-5, *Environmental Compliance Manual*.

3.4 WASTE DESIGNATION

The designation of waste at the WSCF Laboratory Complex shall be conducted by an individual who is knowledgeable of the current Washington Administrative Code (WAC) Chapter 173-303 "Dangerous Waste Regulations",

Department of Energy Order 5820.2A "Radioactive Waste Management", and/or applicable RCRA regulations. Waste shall be designated in accordance with the above mentioned documents.

3.5 WASTE TRACEABILITY

Waste Traceability shall be accomplished at the WSCF Laboratory Complex by controlling access to the facility's less than 90-day waste storage areas. Only Building Operations Waste Control employees are allowed access into these areas. Furthermore, inventory sheets shall be utilized when applicable as directed by the Waste Characterization Plan for the WSCF Laboratory Complex WHC-SD-CP-PLN-026. The use of inventory sheets will ensure that there is traceability to the origin of the waste in addition to aiding in the characterization of the physical constituents of the package.

3.6 WASTE SEGREGATION

The WSCF Laboratory Complex personnel shall segregate hazardous from radioactive, and mixed wastes. This will be accomplished by providing multiple waste collection containers for work areas that generate different waste streams. This practice facilitates identification and segregation before the waste is generated. Stream specific procedures will detail how waste segregation is managed. Detailed explanations of specific streams are provided in the Characterization Plan for the WSCF Laboratory complex WHC-SD-CP-PLN-026.

3.7 WASTE PACKAGING

Waste Handling and Packaging Activities. Appendix A in WHC-SD-CP-QAPP-015 lists the procedures that control waste handling in the WSCF Laboratory Complex. These procedures describe how to collect, package, and dispose of the various waste streams. Descriptions of waste handling, packaging and shipping operations for each specific waste stream will be given in WHC-SD-CP-PLN-026. The packaging activities will be performed in accordance with guidance contained in the Safety/Disposal Approval Record (SDAR) received from Site Solid Waste Engineering Support. All packages offered for shipment will comply with the applicable SARP and DOT regulations and requirements.

Only trained and approved personnel shall prepare Radioactive Shipment Records, Waste Storage/Disposal Requests, Hazardous Waste Manifests, or other documents associated with handling and transporting LLW. All shipments of radioactive and mixed wastes will be in accordance with applicable SARP and DOT regulations and requirements. All shipments of hazardous waste will be in accordance with WAC and DOT requirements and regulations.

3.8 WASTE MINIMIZATION

The waste reduction program, which includes the elements of waste minimization and waste volume reduction, are briefly mentioned in this section. The document, WHC-SD-WM-EV-024, Processing and Analytical Laboratories Pollution Prevention Plan, identifies each major waste stream and ranks them in importance and potential for minimization. The Pollution Prevention plan also documents waste minimization accomplishments and future goals.

3.9 WASTE MANAGEMENT TRAINING

The laboratory training requirements and responsibilities are defined in WHC-CM-5-4, *Laboratories Administration*. This document serves as the basis for both formal and on-the-job training (OJT) of laboratory personnel. All applicable classes and criteria for OJT, qualification of analytical laboratory technologists, hazardous material safety, and waste handling procedures are found in WHC-CM-5-4, Section 4.0, *Training Responsibilities and Definitions*. All WSCF Laboratory Complex personnel shall follow Section 4.0 of WHC-CM-5-4 to determine their training requirements.

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4.0 QUALITY ASSURANCE

4.1 ORGANIZATION

The functional organization structure covered under this certification plan is listed in Section 2.0. Technical and Quality Oversight provides laboratory quality control and internal QA support.

4.1.1 Responsibilities

All operational organizations which use the WSCF Laboratory are responsible for the proper performance of activities listed in this certification plan. Proper performance requires trained personnel, approved procedures, and proper equipment. Laboratory personnel are trained following the requirements found in Section 3.9, "Waste Management Training." Procedures identified as Laboratory Operating Procedures (LO) are developed and approved as required by WHC-CM-6-1, *Standard Engineering Practices*, and WHC-CM-5-5 *Operations-General Administration*.

Technical and Quality Oversight or Analytical Services Quality Assurance, in conjunction with Environmental services, is responsible for verifying the operational organizations' compliance with the requirements of this document. This verification is by random surveillance of the laboratory's documentation and surveillance of waste management activities. Laboratory documentation includes training records, inventory certification sheets, approved procedures, and Storage/Disposal Approval Records.

4.2 QUALITY ASSURANCE PROGRAM PLAN

The QAPP for the WSCF Laboratory Complex is presented in the WSCF Laboratory Complex Quality Assurance Program Plan WHC-SD-CP-QAPP-015. This plan is established to meet the requirements of NQA-1-1989, "Quality Assurance Program Requirements for Nuclear Facilities"; WHC-CM-4-2, "Quality Assurance Manual"; DOE Order 5700.6B, "Quality Assurance"; DOE Order 5820.2A, "Radioactive Waste Management"; and WHC-EP-0063, "Hanford Site Radioactive Solid Waste Acceptance Criteria".

4.3 QUALITY ASSURANCE PROGRAM INDEX

Appendix A of the QAPP is the a Quality Assurance Program Index (QAPI).

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5.0 REFERENCES

- ANSI/ASME, *Quality Assurance Program Requirements for Nuclear Facilities*, NQA-1, American National Standards Institute and American Society of Mechanical Engineers, New York, New York.
- CERCLA, *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, as amended Public Law 96-510, 94 Statute 2767, 42 USC 9601, et seq.
- DOE, *Radioactive Waste Management*, DOE Order 5820.2A, U.S. Department of Energy, Washington, D.C.
- Ecology, *Dangerous Waste Regulations*, Chapter 173-303, *Washington Administrative Code*, Olympia, Washington.
- WHC, *Hanford Radioactive Solid Waste Packaging and Disposal Requirements*, WHC-EP-0063, Westinghouse Hanford Company, Richland, Washington.
- WHC, *222-S Waste Minimization Plan*, WHC-SD-EM-024, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Quality Assurance Manual*, WHC-CM-4-2, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Laboratory Administration*, WHC-CM-5-4, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Operations-General Administration*, WHC-CM-5-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Standard Engineering Practices*, WHC-CM-6-1, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, *Quality Assurance Program Plan for the WSCF Laboratory Complex*, WHC-SD-CP-QAPP-015, Westinghouse Hanford Company, Richland, Washington.