DOE/ID-11000
Revision 8

ICDF Complex Operations and Maintenance Plan

December 2012

DOE/ID-11000
Revision 8
Project No. 23350

ICDF Complex Operations and Maintenance Plan

December 2012

Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office

ABSTRACT

This Idaho CERCLA Disposal Facility (ICDF) Complex Operations and Maintenance Plan describes how the Idaho Cleanup Project conducts operations, winterization, and startup of the ICDF Complex. The ICDF Complex is the centralized Idaho National Laboratory Site facility responsible for the receipt, storage, treatment (as necessary), and disposal of Idaho National Laboratory Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation waste. The ICDF Complex is designed and authorized to accept Idaho National Laboratory CERCLA-generated waste and includes the necessary subsystems and support facilities to provide a complete waste management system. The ICDF Complex comprises the landfill, evaporation ponds (east and west), leachate-collection recovery system, staging and storage areas, decontamination facility, administrative facility, and other systems necessary for operations. This Operations and Maintenance Plan presents the operational approach and requirements for operating the various systems and components that are part of ICDF. Appendix A to this plan identifies the anticipated equipment needs for ICDF operations. In addition, this plan presents the planned operational process, based on an evaluation of the remedial action requirements set forth in the *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13*.

CONTENTS

FIGURES

TABLES

ACRONYMS

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
ALC	acceptable leachate concentration
ALR	action leakage rate
AOC	area of contamination
ARAR	applicable or relevant and appropriate requirement
CAM	continuous air monitor
CERCLA	Comprehensive Environmental, Response, Compensation, and Liability Act
COPC	contaminant of potential concern
DAC	derived air concentration
DEQ	U.S. Department of Environmental Quality
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
HASP	health and safety plan
HDPE	high-density polyethylene
HEPA	high-efficiency particulate air
ICDF	Idaho CERCLA Disposal Facility
ICP	Idaho Cleanup Project
IDAPA	Idaho Administrative Procedures Act
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IWTS	Integrated Waste Tracking System
LCRS	leachate-collection recovery system
LDR	land disposal restriction
LDRS	leak detection and recovery system
LLW	low-level waste

NESHAP	National Emission Standards for Hazardous Air Pollutants
O&M	operations and maintenance
OU	operable unit
PCB	polychlorinated biphenyl
PLC	programmable logic controller
PLDRS	primary leak detection and recovery system
QA	quality assurance
RadCon	radiological control
RAO	remedial action objective
RAWP	remedial action work plan
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RD/CWP	remedial design/construction work plan
ROD	record of decision
RWP	radiological work permit
SAP	sampling and analysis plan
SLDRS	secondary leak detection and recovery system
SLERA	Screening Level Ecological Risk Assessment
SRPA	Snake River Plain Aquifer
SSC	structure, system, and component
SSSTF	Staging, Storage, Sizing, and Treatment Facility
TED	total effective dose
TSCA	Toxic Substances Control Act
WAC	waste acceptance criteria
WAG	waste area group
WTF	waste tracking form

ICDF Complex Operations and Maintenance Plan

1. INTRODUCTION

This Operations and Maintenance (O&M) Plan is part of the remedial action work plan (RAWP) documentation for the Idaho CERCLA Disposal Facility (ICDF) Complex at the Idaho National Laboratory (INL) Site. The ICDF Complex was constructed southwest of the Idaho Nuclear Technology and Engineering Center (INTEC) at Waste Area Group (WAG) 3, Operable Unit (OU) 3-13. As shown in Figure 1-1, INTEC is located in the south-central portion of the INL Site.

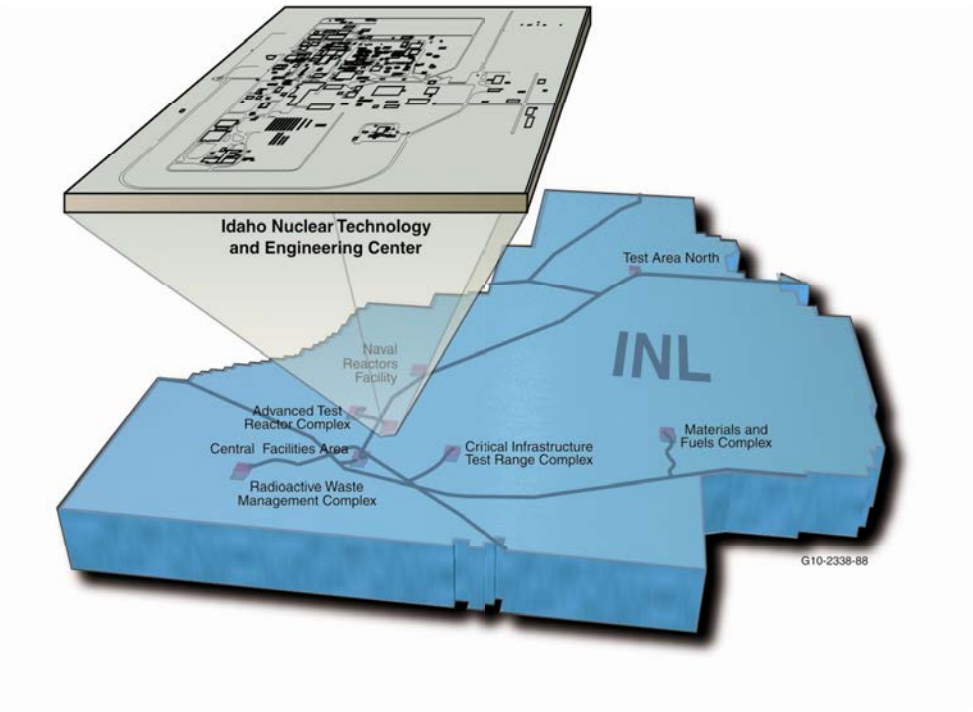

Figure 1-1. Location of the Idaho Nuclear Technology and Engineering Center at the Idaho National Laboratory Site.

The U.S. Department of Energy Idaho Operations Office (DOE-ID) authorized a remedial design/remedial action for INTEC to satisfy the requirements of the *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13* (DOE-ID 1999). That Record of Decision (ROD) selected "Removal and On-Site Disposal" as the remedy for OU 3-13, Group 3, "Other Surface Soils." To support this remedy, the ROD required that an on-Site landfill be constructed to receive Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.) remediation waste generated at the INL Site. The ICDF Complex is the on-Site facility designed and constructed to implement the ROD requirements.

The ICDF Complex is located near the southwestern corner of INTEC and, as shown in Figure 1-2, is immediately west of the previous INTEC percolation pond area. The ICDF Complex, including a buffer zone, covers approximately 16.2 ha (40 acres), with a landfill disposal capacity of approximately 389,923 m^3 (510,000 yd^3). The components of the facility include the landfill disposal cells, evaporation ponds, and the Staging, Storage, Sizing, and Treatment Facility (SSSTF), which includes the following structures, systems, and components (SSCs):

- Administration trailer
- Scale
- Decontamination building (with treatment area)
- Contaminated-equipment pad
- Staging and storage areas, which include the bulk soil staging pad, full container storage area, truck-in-transport area, polychlorinated biphenyl (PCB) storage unit, and full and empty container queues, among others.

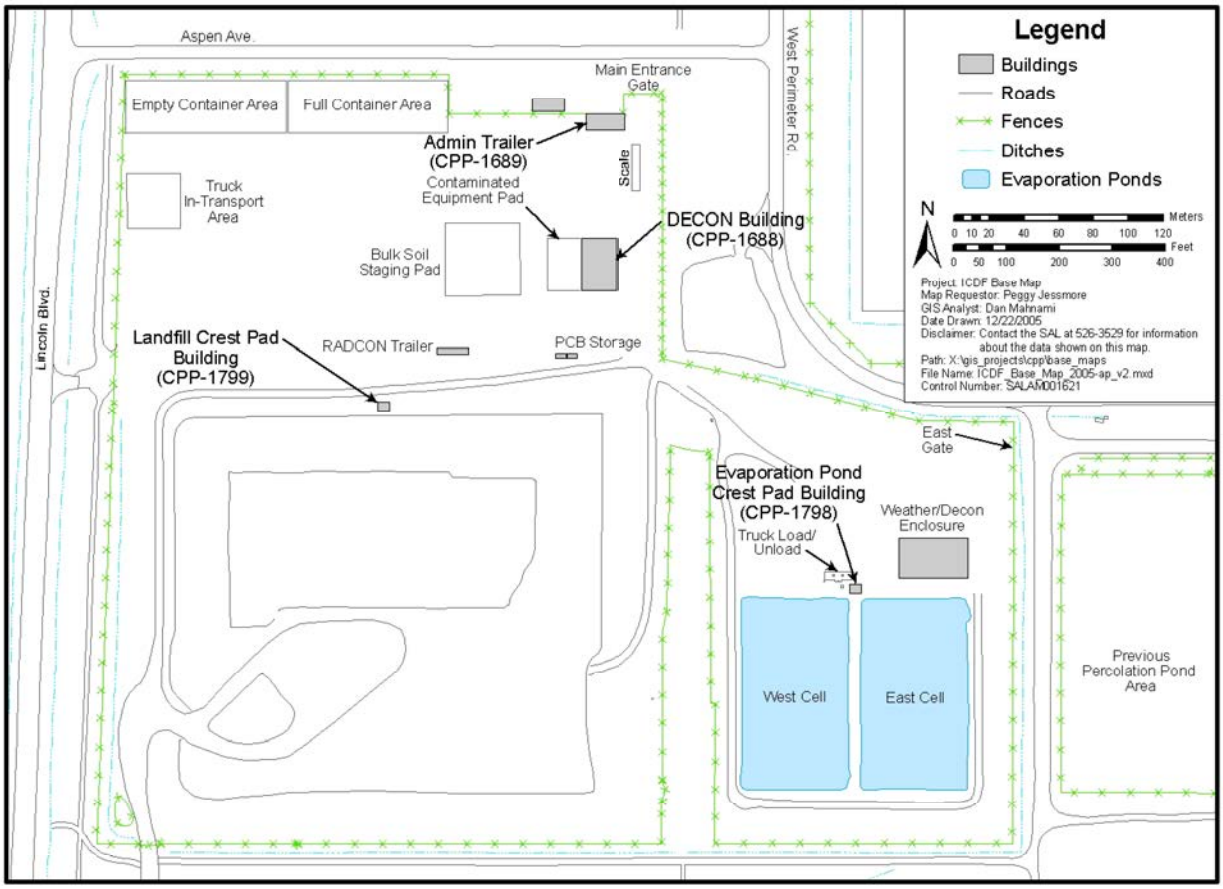

Figure 1-2. Approximate location of the ICDF Complex components.

The ICDF Complex continues to serve as the consolidation point for CERCLA-generated waste within INL Site boundaries. In addition to receiving WAG 3 waste, the landfill also receives CERCLA-generated waste from outside WAG 3 that meets the land disposal restriction (LDR) requirements, in accordance with the waste acceptance criteria (WAC) included as Section 5 of the ICDF Complex WAC (DOE-ID 2012a). (Waste generated within the WAG 3 area of contamination [AOC] that has not triggered placement is not required to meet LDR criteria.) Placement is defined in U.S. Environmental Protection Agency (EPA) Directive 9347.3-O5FS, "Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions" (EPA 1989). The ICDF landfill meets the substantive requirements of the following landfill design and construction requirements:

- Resource Conservation and Recovery Act (RCRA) Subtitle C (42 USC § 6901 et seq.)

- Idaho Hazardous Waste Management Act (HWMA 1983)
- DOE O 435.1 Chg 1, "Radioactive Waste Management"
- Toxic Substances Control Act (TSCA) (15 USC § 2601 et seq.).

Detailed information regarding the design and construction of the landfill can be found in the *INEEL CERCLA Disposal Facility Remedial Design/Construction Work Plan* (DOE-ID 2002a).

The ICDF Complex evaporation pond is designated as a RCRA corrective action management unit in the OU 3-13 ROD, and is the management location for ICDF leachate and other aqueous waste generated in support of CERCLA activities. In addition, WAG 3 AOC aqueous waste types (e.g., purge water) may be managed in the evaporation pond, in accordance with the ICDF evaporation pond WAC, included as Section 6 of the ICDF Complex WAC (DOE-ID 2012a). Detailed information regarding the design and construction of the evaporation pond can be found in the *INEEL CERCLA Disposal Facility Remedial Design/Construction Work Plan* (DOE-ID 2002a).

Additional facilities provide waste-handling operations for the ICDF Complex. These operations include such activities as receiving, staging, storing, treating, and repackaging incoming waste, as necessary, for disposal in the ICDF landfill or an off-Site facility, or management in the ICDF evaporation pond. Detailed information regarding the design and construction of these facilities can be found in the Remedial Design/Construction Work Plan (RD/CWP) for the WAG 3 SSSTF (DOE-ID 2002b).

This O&M Plan is necessary to ensure compliance with regulatory requirements that provide protection of human health and the environment for the ICDF Complex. This plan has been developed in accordance with EPA fact sheet, "Operations and Maintenance in the Superfund Program" (EPA 2001), to describe activities and procedures within the ICDF Complex that satisfy OU 3-13 ROD requirements.

This O&M Plan compiles detailed procedures that are developed and revised, as necessary, as the operations staff gain experience, gather information, and revise processes and equipment throughout the operating lifecycle of the facility. Detailed operating procedures that supplement the operating procedures contained in this O&M Plan also are prepared. The detailed procedures integrate the performance requirements and operating criteria of DOE-ID and contractors to ensure safety and efficiency in operation of the ICDF Complex.

Several other documents have been prepared to describe the operation of specific portions of the ICDF Complex and must be used concurrently with this plan. Section 1.4 of the ICDF Complex RAWP (DOE-ID 2012b) identifies additional documents that provide supplementary detail regarding ICDF Complex operations.

1.1 Purpose and Organization

The purpose of this O&M Plan is to describe the actions to be employed by the Idaho Cleanup Project (ICP) at the ICDF Complex.

This plan was constructed as recommended by the EPA fact sheet, "Operations and Maintenance in the Superfund Program" (EPA 2001). The information contained in this plan has been organized into the following sections:

- Section 1, "Introduction," presents O&M Plan synopsis, organization, ICDF Complex facility descriptions, and operation overviews.

- Section 2, "ICDF Complex Operational Organization," presents personnel organization, job descriptions, and training requirements.
- Section 3, "Operational Limits and Environmental Monitoring," presents operational limits and monitoring requirements, including discussions addressing WAC, Idaho Administrative Procedures Act (IDAPA) standards, National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR 61), risk, groundwater, radiological controls (RadCon), action leakage rate (ALR), environmental monitoring and sampling, and sampling and analysis quality assurance (QA).
- Section 4, ICDF Complex Operations," presents detailed descriptions of operations at the facility including waste tracking, CERCLA remediation site activities, waste shipment and delivery, ICDF Complex access, seasonal winterization/startup, decontamination and treatment operations, evaporation pond management, leachate management, decontamination, treatment, waste staging, startup testing, and waste management.
- Section 5, "Waste Unit Designation and Operational Approach," presents the waste management, unit designation, standards, and operational requirements for waste treatment, staging, and storage areas.
- Section 6, "Equipment Maintenance," presents discussions addressing grounds and perimeter maintenance, equipment maintenance, facility maintenance, and spare parts and special tools.
- Section 7, "Facility Configuration Control," presents discussions addressing the management of drawings, procedures, modifications, and records for the ICDF Complex.
- Section 8, "Inspections," presents discussions addressing the various inspections, including ICDF Complex, landfill, evaporation pond, decontamination building (with treatment area), waste storage, and tank inspections.
- Section 9, "Notification and Submittals," presents notification requirements for spills and releases, sampling event notifications and data submittals, operational reports, and emergency response and alarm condition notification and reporting.
- Section 10, "Records Management," presents discussions addressing the records management requirements for the ICDF Complex.
- Section 11, "References," provides a list of references for this O&M Plan.

Appendix A, "Equipment and Spare Parts Lists," provides a tabulation of the equipment used for ICDF Complex operations. The equipment is categorized by whether it is considered permanent or temporary.

1.2 ICDF Complex Components Description

Major components of the ICDF Complex include the landfill disposal cell, evaporation ponds, administration building, weigh scale, and decontamination building with treatment systems. Figure 1-2 presents the ICDF Complex layout. (Additional information is available in the *Remedial Design/Construction Work Plan for Waste Area Group 3 Staging, Storage, Sizing, and Treatment Facility* [DOE-ID 2002b] and the *ICDF Remedial Design/Construction Work Plan* [DOE-ID 2002a]).

The ICDF landfill disposal cell is designed primarily for soils and other solid waste types, whereas the ICDF evaporation pond is designed for aqueous waste. The ICDF Complex provides centralized receiving, staging, storage, packaging, and treatment operations for waste from various INL Site CERCLA remediation/removal and investigation sites prior to the waste's disposal in the ICDF landfill or evaporation pond or shipment off-Site.

All ICDF Complex activities take place within the WAG 3 AOC to allow flexibility in managing WAG 3 waste consolidation and remediation without triggering LDRs or other RCRA requirements, in accordance with the OU 3-13 ROD. The ICDF landfill and evaporation pond accepts only low-level waste (LLW), mixed LLW, hazardous waste, and limited quantities of TSCA waste types (e.g., PCB waste and asbestos) for disposal. Definitions of LLW, mixed LLW, hazardous waste, and TSCA waste are provided in Table 3-1 of the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2006). Other waste not meeting the ICDF landfill WAC specified in Section 5 of the ICDF Complex WAC may be received, stored, treated, or packaged at the ICDF Complex prior to shipment to an off-Site disposal facility (as discussed in detail in Section 4).

Waste destined for disposal at the ICDF Complex consists of contaminated soil; debris; aqueous waste; investigation-derived waste, which includes waste generated by CERCLA investigations (e.g., drill cuttings, purge water, soils, and debris); PCB waste; and asbestos. Waste that is disposed of in the ICDF evaporation pond includes:

- ICDF Complex leachate
- Decontamination water
- Treatment system washdown water
- Water from CERCLA well-purging, -sampling, and -development activities
- Other WAG 3 AOC liquid waste that meets the ICDF evaporation pond WAC specified in Section 6 of the ICDF Complex WAC (DOE-ID 2012a).

In addition, secondary waste generated from O&M activities (e.g., waste from decontamination activities, personal protective equipment, used equipment, filters, and other similar waste) is disposed of in the ICDF landfill or evaporation pond, as appropriate. More detail on waste types is provided in the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2006).

At the end of the operational life of the ICDF Complex, its facilities will be decontaminated and decommissioned, and all contaminated equipment will be disposed of in the ICDF landfill. After this process, the remaining buildings and equipment will be removed or used for future projects.

1.2.1 Administrative Facilities

The administrative facilities include a scale and an administration ("admin") trailer with an office area, a public use area, restrooms, and utility rooms to support activities involving waste receipt, paperwork (electronic or hardcopy format) verification, and determination of the immediate destination of waste shipments. Access into the ICDF Complex for personnel and visitors is gained through the Administrative Office Trailer (CPP-1689), as shown on Figure 1-2. Administrative functions include:

- Weighing and verifying waste coming into or going out of the ICDF Complex
- Determining waste disposition and destination
- Administering treatment verification and other quality control activities
- Processing and maintaining required records associated with the waste disposition
- Performing overall management functions.

The scale is located adjacent to the administration trailer and is used to weigh waste transport vehicles entering and leaving the ICDF Complex. The scale may also be used to weigh other transport vehicles in support of the ICP. (Section 1.2.1.1 contains more information regarding the scale and its functions.)

Waste receipt and paperwork (electronic or hardcopy format) is verified in accordance with the requirements of the appropriate WAC. Information from incoming waste shipments is entered into the waste tracking system by close of business the next working day. Entries into the waste tracking system includes information such as the shipment's weight and waste verification (i.e., reviewing the waste to verify that it matches the waste identified on the accompanying paperwork by confirming such information as the waste description and the number and type of containers in the shipment). Immediate destinations are determined by identifying a specific disposal or storage location for the waste. Destinations include disposal in the landfill, the evaporation pond, or staging and/or storage prior to shipment for off-Site disposal, as necessary.

The administration trailer functions as the location of the operations planning meetings, ongoing facility and operations training, and where electronic information is accessed. All waste data are backed up on a real-time basis on a remote server to prevent loss of records in case of fire or other catastrophic events at the ICDF Complex.

1.2.1.1 Scale. The scale is located immediately south of the administration trailer. All waste shipments coming into the ICDF Complex are weighed and documented at this location. Tare weights of permanent, reusable equipment (e.g., transport trucks and roll-on/roll-off containers) are obtained initially, and tare weights of other haul vehicles are obtained, if necessary, when the vehicles leave the ICDF Complex. Weigh data are recorded into the waste database in the administration trailer. The scale has a capacity of 100 tons, is calibrated to National Institute of Standards and Technology Handbook 44 standards (Butcher et al. 2012), is accurate to within ±0.2% of reading, and accommodates standard commercial tractor-trailer units.

1.2.1.2 ICDF Complex Waste Tracking System. A waste tracking system is necessary to process waste through the ICDF Complex and to a final destination. This tracking system offers multiple functions. It permits the waste-generating site personnel to submit a request to send waste to ICDF. As part of this request, the generating-site personnel submit the Material Profile. From the Material Profile, a determination is made as to whether the waste meets the WAC for the ICDF Complex. If the waste meets the WAC, the waste units are assigned an Integrated Waste Tracking System (IWTS) tracking number, in the form of a barcode and unique number, that is printed for tracking and disposition processes. The unique number follows the waste unit through the ICDF Complex and into the landfill, evaporation pond, storage/staging, or off-Site disposal.

Waste may be sent directly to the landfill or evaporation pond, moved through the stabilization process, or sent off-Site. Entries are made in a log to record the movement of waste through the ICDF Complex. Entries may be either in an electronic or hardcopy log. Finally, location coordinates of the waste in the landfill are entered into the IWTS. PLN-914, "Waste Tracking Plan for the Idaho CERCLA Disposal Facility Complex," provides further detail regarding the waste tracking system.

1.2.2 Decontamination Building

NOTE: *The decontamination building is currently in warm standby condition. Facility deficiencies exist that will have to be corrected before the decontamination building may be used for decontamination, treatment, or stabilization of any wastes. This building has gone through partial closure, and administrative controls are in place that prohibit staging or storage of wastes within the building.*

The decontamination building is an engineered metal building, located near the landfill entrance. It provides an equipment decontamination area and an area for the treatment, if necessary, of small volumes of waste prior to disposal in the landfill. Figure 1-3 shows the building floor plan. The building is qualified under the Uniform Building Code Type IIN construction, which stipulates noncombustible materials. The decontamination building has been designed to meet the substantive requirements of 40 CFR 264.1101(b); design details are provided in the SSSTF RD/CWP (DOE-ID 2002b).

Decontamination is available for waste transport vehicles, waste containers, and other tools and equipment as required. Before leaving the ICDF Complex, equipment and trucks are surveyed to meet free-release criteria for radiological contamination. Any equipment that has not been decontaminated and is no longer in use is stored on a contaminated-equipment pad adjacent to the decontamination building. (Section 1.2.3 describes the pad in more detail.)

Dry decontamination of equipment is the preferred method; however, in circumstances where dry decontamination is not effective in removing the radiological contamination, wet decontamination methods are used. Dry decontamination is accomplished by scraping or brushing visually dirty areas with dedicated hand tools. After the contamination is removed from the equipment, the debris is collected and returned to the landfill for disposal. Any secondary waste types generated are managed using the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2006).

Wet decontamination is accomplished using high-pressure water sprayers and manual methods, as required. After decontamination, containers and equipment are surveyed and returned to normal use, or stored at the empty container area until they are required for use. Secondary waste (e.g., sludge from the oil-and-water separator) is disposed of in the ICDF landfill.

The decontamination wash water resulting from these activities drains to a sump located adjacent to the decontamination building, through an oil/water separator, and is then pumped directly to the evaporation pond. Sections 1.2.3.1, 1.2.3.2, and 1.2.4 provide additional detail on these processes.

Waste requiring treatment prior to disposal is delivered to the treatment area in the decontamination building or placed in a staging area until the next treatment campaign. Nondebris waste is transferred into a mixing system where appropriate treatment blends (e.g., cement, water, or other reagents) are added. After blending is complete, the mix is transferred into a waste container, sampled, and staged for disposal. Treated waste that meets the ICDF landfill WAC is disposed in the landfill. Debris is treated by microencapsulation with Portland cement and additives as necessary to meet ICDF landfill WAC requirements. The treatment room has a floor trench that connects to the decontamination area drain system for containment of spills and wash water. The treatment room and equipment also includes a high-efficiency particulate air (HEPA) -filtered dust control ventilation system for worker protection and collection of airborne dust generated during soil treatment operations.

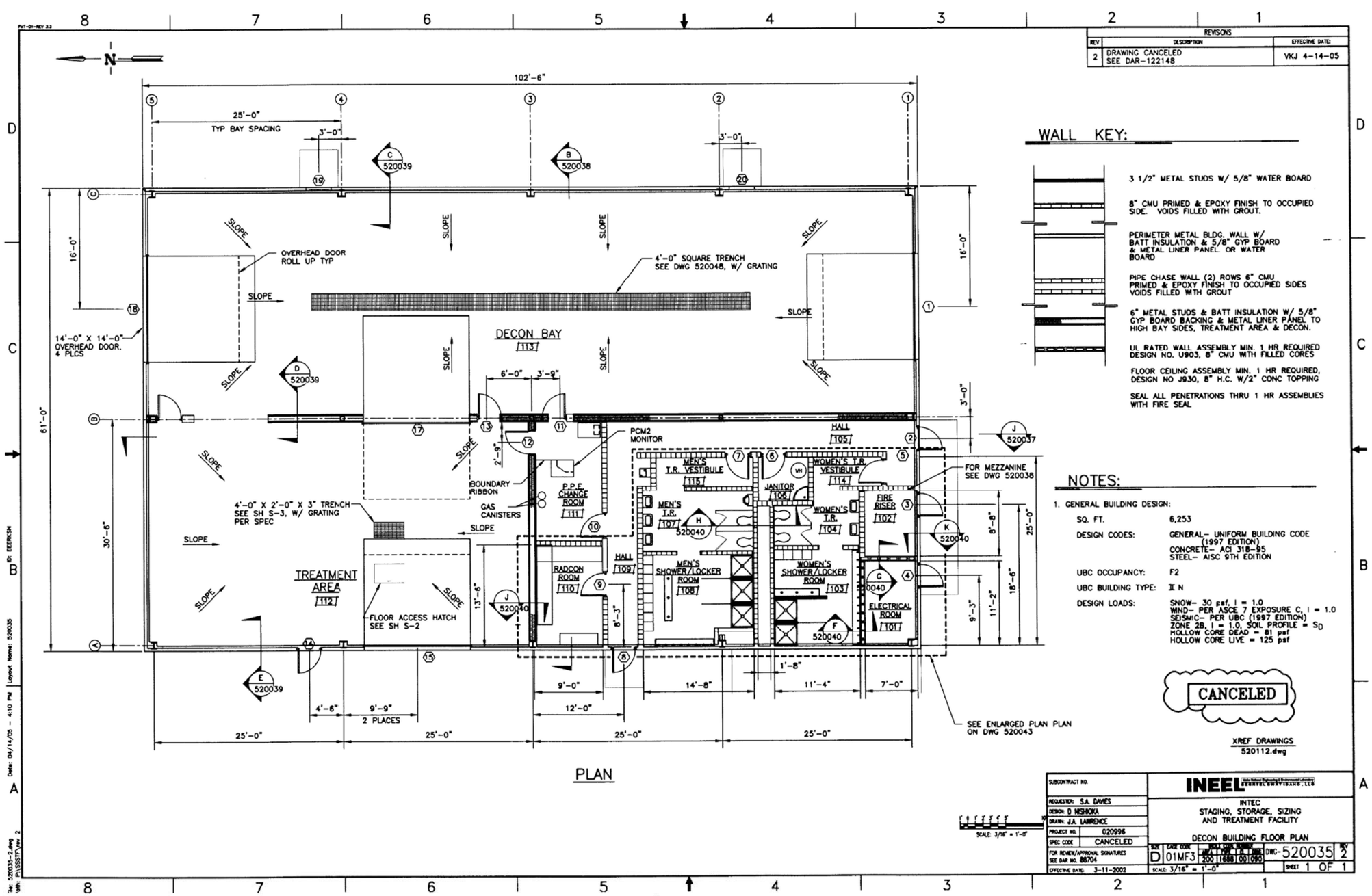

Figure 1-3. Floor plan of the decontamination building.

1.2.3 Contaminated Equipment Pad

The contaminated-equipment pad, located west of and adjacent to the decontamination building, is a 15.2-cm (6-in.) -thick concrete slab, post-tensioned with high-strength cables to attenuate shrinkage and cracking. Additionally, the slab is coated with a waterproof seal. Curbs are placed around the pad, which are sloped to drain into a trench drain that collects and transports drainage to the pump station near the decontamination building. Section 1.2.4 provides additional details on the pump station.

The contaminated-equipment pad may be used for staging and storing contaminated equipment that is no longer in use. In addition to its equipment-staging function, this pad is designed to temporarily store approximately 94,635 L (25,000 gal) of spent fire water from a release inside the decontamination building for contamination control. Spent fire water is transferred to the evaporation pond for disposal.

NOTE: *The contaminated-equipment pad is currently out of service because of deficiencies in the drain system.*

1.2.3.1 Drainage of Contaminated Water. Drain water and storm water on the contaminated-equipment pad are collected in a trench drain. Drainage is directed into the decontamination building, through the concrete P-trap, to collect drainage from the decontamination and treatment rooms. The drain water flows from the 15.2-cm (6-in.) pipe through an oil/water separator, then into a pump station. The drain water is then pumped through a pipe from the pump station to the evaporation pond for disposal. Cleanout of these components is covered by ICDF procedures.

1.2.3.2 Oil/Water Separator. All drain water from the contaminated-equipment pad and the decontamination building discharges into an oil/water separator. The oil/water separator allows the collection of petroleum products and soil particles to settle out. The oil/water separator is designed to provide a water block to separate the outside air from the air inside the decontamination building (similar to the concrete P-trap). A separate vent provides ventilation from the oil/water separator to the surface. In addition, the piping from the drain trenches in the building and storage pad is designed so that the bulk of sedimentation is collected in the trenches and removed from there. Additional information regarding the cleanout of the oil/water separator can be found in ICDF procedures.

1.2.4 Pump Station

The pump station is used to pump contaminated water from the decontamination building to the evaporation pond. It is designed with an inner 1.2-m (4-ft) -diameter high-density polyethylene (HDPE) shell with two submersible grinder pumps configured to operate alternately or together for a surge of drainage water from the contaminated-equipment pad. The two pumps provide redundancy and extend the life of both pumps. Slide rails are placed inside the shell where the pumps can be removed from the outside surface and maintenance personnel do not have to enter the pump station. The pump station discharge piping may be disconnected from ground level so that personnel do not have to enter the sump for maintenance activities.

The pump station shell is placed inside a 1.8-m (6-ft) -diameter concrete vault to be used as the secondary containment system. Any leakage inside the building or collection piping drains into this vault, where detectors monitor the leakage. In the event of leakage, corrective action can be taken to drain the leakage from the concrete vault.

1.2.5 Staging and Storage Areas

The ICDF Complex contains the following staging and storage areas:

- **Bulk soil staging pad—**An asphalt-covered, lined pad for staging of bulk contaminated soils pending treatment or disposal.
- **Full and empty container storage areas—**Separate designated areas within the ICDF for storage of full and empty waste containers. Active areas are delineated by ropes and signs.
- **Truck-in-transport area—**An area designated for temporary storage of waste pending resolution of issues preventing acceptance and disposal of the waste.
- **PCB storage unit—**A 2.4- × 4.9-m (8- × 16-ft) heated metal container with built-in spill containment designated for storage of PCB waste.
- **Queues for full and empty containers—**Areas within ICDF designated for the drop-off and pickup of reusable waste containers.

1.2.6 Waste Treatment

As noted in Section 1.2.2, the decontamination building provides treatment capabilities to treat INL Site CERCLA waste and secondary waste streams generated during ICDF Complex operations. Waste stabilization or treatment may be necessary for solid, aqueous liquid, or sludge. The purpose of treatment is to prepare INL Site CERCLA waste that does not meet the WAC for final disposal in the ICDF landfill or at an off-Site disposal facility. The object of stabilization is to produce a treated waste that (1) reduces the heavy metal leachability to LDR/universal treatment standard concentrations to meet the ICDF landfill WAC and (2) exhibits no free liquid. Aqueous waste that does not meet the evaporation pond WAC (e.g., petroleum-contaminated media from the oil/water separator) may be used for stabilization of soils or held until appropriate on- or off-Site treatment, storage, or disposal is arranged. Main components of the stabilization process are

- Vertical lift tipper (used to lift waste containers and dump them into the treatment unit)
- Mixer unit
- Bulk-bag unloader (for unloading reagent into the mixer unit)
- Container for collecting the treated waste from the mixer
- Air filtration system with baghouse/HEPA filter to collect particulates from the air.

A schematic showing the main components of the process and a brief description and function of each process component is provided in Section 4 of this O&M Plan. Detail about the process operation can be found in ICDF procedures.

Treatment of hazardous debris, subject to 40 CFR 268.45, "Treatment Standards for Hazardous Debris," also is performed at the decontamination building. This treatment uses Portland cement-based microencapsulation for debris waste that requires treatment prior to disposal. Microencapsulation encases the hazardous debris in inorganic materials (e.g., Portland cement concrete) to substantially reduce the exposed surface to potential leaching media. The components to the debris treatment process are the grout hopper/reservoir, positive displacement pump, hose, and box brace. Debris-treatment equipment is portable and can be used in either the treatment area or decontamination bay of the decontamination building. For more detail about the debris treatment process, see Section 4 and ICDF procedures.

Waste sizing is conducted at the CERCLA remediation site to meet the ICDF Complex WAC, as described in the combined WAC (i.e., landfill, pond, and SSSTF) document (DOE-ID 2012a).

Additional information related to waste treatment of soils is provided in EDF-ER-296, "Process and Treatment Overview for the Minimum Treatment Process." EDF-1730, "Staging, Storage, Sizing, and Treatment Facility (SSSTF) Debris Treatment Process Selection and Design," addresses the methods for selecting a debris treatment technology.

1.2.7 Landfill Cells

During the initial operating period, the landfill consisted of Cell 1 (approximately 259 × 122 m [850 × 400 ft]). As Cell 1 was filled, the landfill was expanded with an adjoining second cell constructed to the south. Cells 1 and 2 share common exterior berms, and both the liner and the leachate-collection recovery system (LCRS) of Cell 1 was extended into the new cell. Figure 1-4 shows the layout of the landfill with build-out of the two cells.

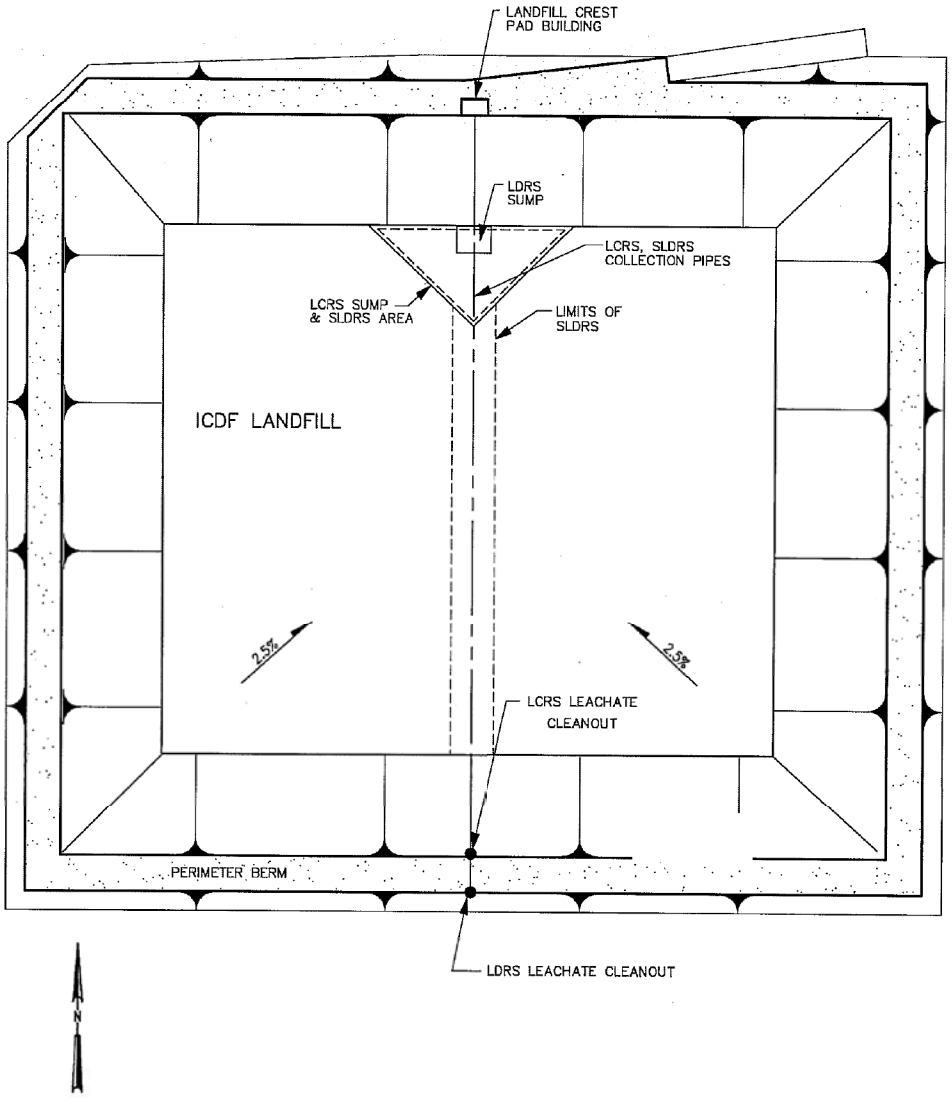

Figure 1-4. Layout of the ICDF landfill.

The landfill was constructed with a multilayered liner and sump system to facilitate drainage and prevent leakage. The side slope liner is the same, with the exception of the substitution of a primary geocomposite drainage layer above the primary geomembrane in place of the gravel drainage layer. The bottom lining system consists of the following components, from top to bottom:

- 1-m (3-ft) -thick operations layer
- 30.5-cm (12-in.) gravel drainage layer
- Geotextile cushion (12-oz nonwoven filter fabric)
- 60-mil textured primary HDPE geomembrane
- Internally reinforced geosynthetic clay layer
- Leak-detection drainage layer geocomposite—leak detection and recovery system (LDRS)
- 60-mil textured secondary HDPE geomembrane
- 1-m (3-ft) -thick low-permeability compacted soil bentonite liner.

Beneath the bottom liner system, along the centerline of the landfill and leachate-collection sump area, is a secondary leak detection and recovery system (SLDRS). This system is composed of, from top to bottom:

- Separation geotextile
- Operations layer drainage gravel
- SLDRS collection pipe
- Cushion geotextile
- 60-mil textured HDPE geomembrane.

In some areas of the SLDRS, a drainage composite substitutes for the separation geotextile, gravel, and collection pipe. The system drawings (DOE-ID 2002b) and technical specifications (SPC-1476) offer complete construction details of the liner and sump areas.

1.2.7.1 Leachate Collection Recovery System. The LCRS consists of the in-pond drainage/sumps, collection piping, pumps, and the evaporation pond. The purpose of the LCRS is to collect the primary, secondary, and tertiary leachate and to allow for disposition of the leachate collected. Any precipitation that falls within the lined area, including precipitation that falls and collects over the surface of disposal areas, is collected and treated as leachate. The LCRS contains high-and low-flow leachate pumps and access for collection pipe clean-outs.

1.2.8 Evaporation Ponds

The evaporation ponds have a 4.4M-gal capacity and accept aqueous waste (e.g., leachate and other liquid waste) generated in support of CERCLA activities. The water associated with the waste evaporates, leaving behind solid materials. In the unlikely event that the ponds cannot receive liquid waste (e.g., downtime for maintenance activities or capacity reasons), liquid waste could be removed through the truck loading and unloading station.

The construction of the evaporation pond includes a liner system to prevent infiltration into the surrounding soil. The liner consists of the following layers, from top to bottom:

- Two 60-mil HDPE geomembrane layers (sacrificial and primary). The sacrificial layer is textured HDPE while the primary is smooth.
- Internally reinforced primary geosynthetic clay liner layer.
- 1-m (3-ft) sand/gravel drainage layer to serve a dual purpose as leak-detection drain layer and freeze/thaw protection for the underlying geosynthetic clay liner.
- Geotextile cushion (12-oz nonwoven filter fabric, bottom of ponds only).
- 60-mil textured secondary HDPE geomembrane layer.
- Internally reinforced secondary geosynthetic clay liner layer.
- 30.5-cm (12-in.) -thick base soil layer consisting of natural silt and clay.

On the bottom of the ponds, the 1-m (3-ft) -thick drainage layer consists of a minimum 30.5 cm (12 in.) of material with hydraulic conductivity greater than 0.1 cm/second. A drainage layer geocomposite is used on the side slopes, similar to the landfill. Figure 1-5 depicts the ponds' layout.

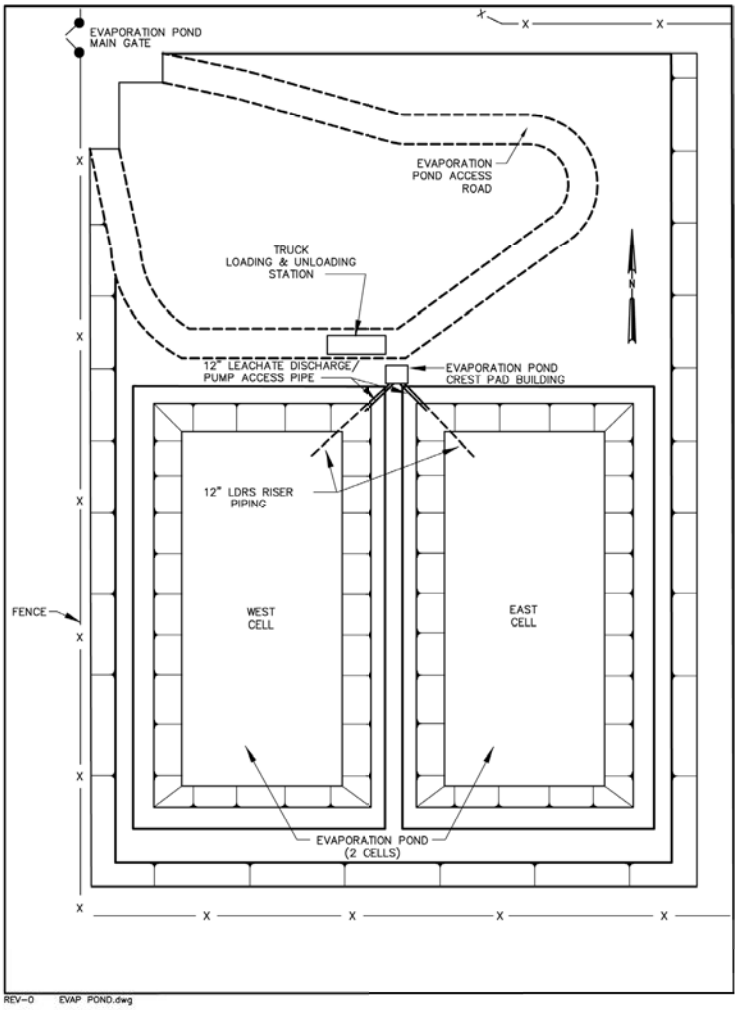

Figure 1-5. ICDF evaporation ponds' layout and component location.

1.2.9 Crest Pad Buildings

The ICDF landfill and evaporation pond crest pad buildings serve as valve-control and monitoring stations for the leachate-handling systems. Two crest pad buildings are included for the facility, one at the top of the northern berm at the ICDF landfill and one on the northern side of the evaporation ponds. Each crest pad building houses (1) the motor control centers for the leachate-handling and transfer pumps and (2) the programmable logic control centers for operation of pumps and monitoring of flows, leachate levels, and pumps. The crest pad building floor slabs were designed as containment sumps to facilitate leachate system operation and maintenance. Figure 1-6 provides a general overview of the foundation layout and elevation views of the crest pad buildings, which were developed from the construction drawings P-205 and P-206 of the crest pad buildings (DOE-ID 2002a). Adjacent to the evaporation pond crest pad is a truck loading/unloading station for off-loading liquid waste hauled by tanker truck or for removal of excess liquid volume from the ponds. Figure 1-7 depicts the truck loading and unloading station.

1.2.10 Groundwater Monitoring System

A groundwater detection monitoring system was installed in the Snake River Plain Aquifer (SRPA) to comply with substantive applicable or relevant and appropriate requirements (ARARs) of 40 CFR 264, Subpart F, "Releases from Solid Waste Management Units," identified in Table 12-3 of the OU 3-13 ROD (DOE-ID 1999). Water samples have been collected from the SRPA and perched water to establish background water quality. Five new downgradient aquifer monitoring wells and one existing upgradient well is used for the SRPA detection monitoring. Further details on groundwater monitoring are provided in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007). Perched water, when present, is monitored for water quality.

1.3 Operational Overview

The following subsections describe the general processes and steps required to move waste from a waste generating site, through the operations and systems of the ICDF Complex, and into the ICDF landfill or evaporation pond for disposal. Note that the steps presented in the accompanying flow charts for these processes are based on the assumption that all waste characterization and Material Profile approvals satisfy the appropriate receiving unit WAC within the ICDF (DOE-ID 2012a).

1.3.1 Process for Waste Destined for the ICDF Landfill

The process for waste destined for the ICDF landfill is shown in the flow chart presented in Figure 1-8. This flow chart includes a basic overview of the waste process after it arrives at the ICDF landfill. The general waste process described is applicable for waste arriving in any form, whether by truck or contained in roll-offs, waste boxes, or other waste forms (e.g., monoliths). Verification sampling is conducted in accordance with the *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c). The information below provides a brief description of each of the steps for waste disposal operations. Note that these processes have been established to facilitate clean operations, as discussed in more detail in Section 4.

1. CERCLA-generated waste from the INL Site is transported to the ICDF Complex. The disposal of waste is based on compliance with the applicable ICDF WAC for each specific type of waste. The waste generator at each CERCLA site is responsible for excavating the waste, obtaining RadCon technician (RCT) release prior to transport, and coordinating the transport of waste to the ICDF Complex.

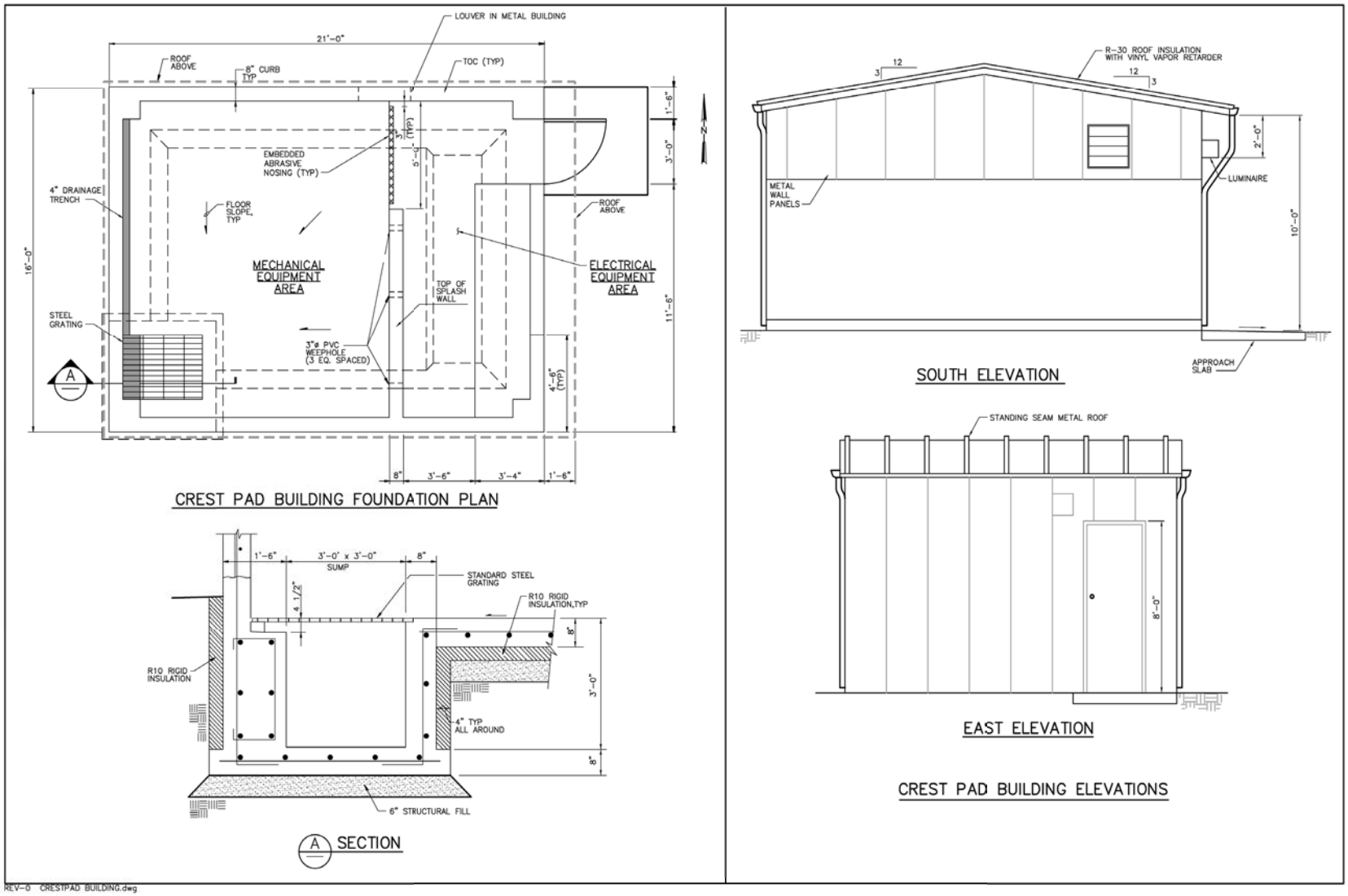

Figure 1-6. Crest pad building foundation elevation views.

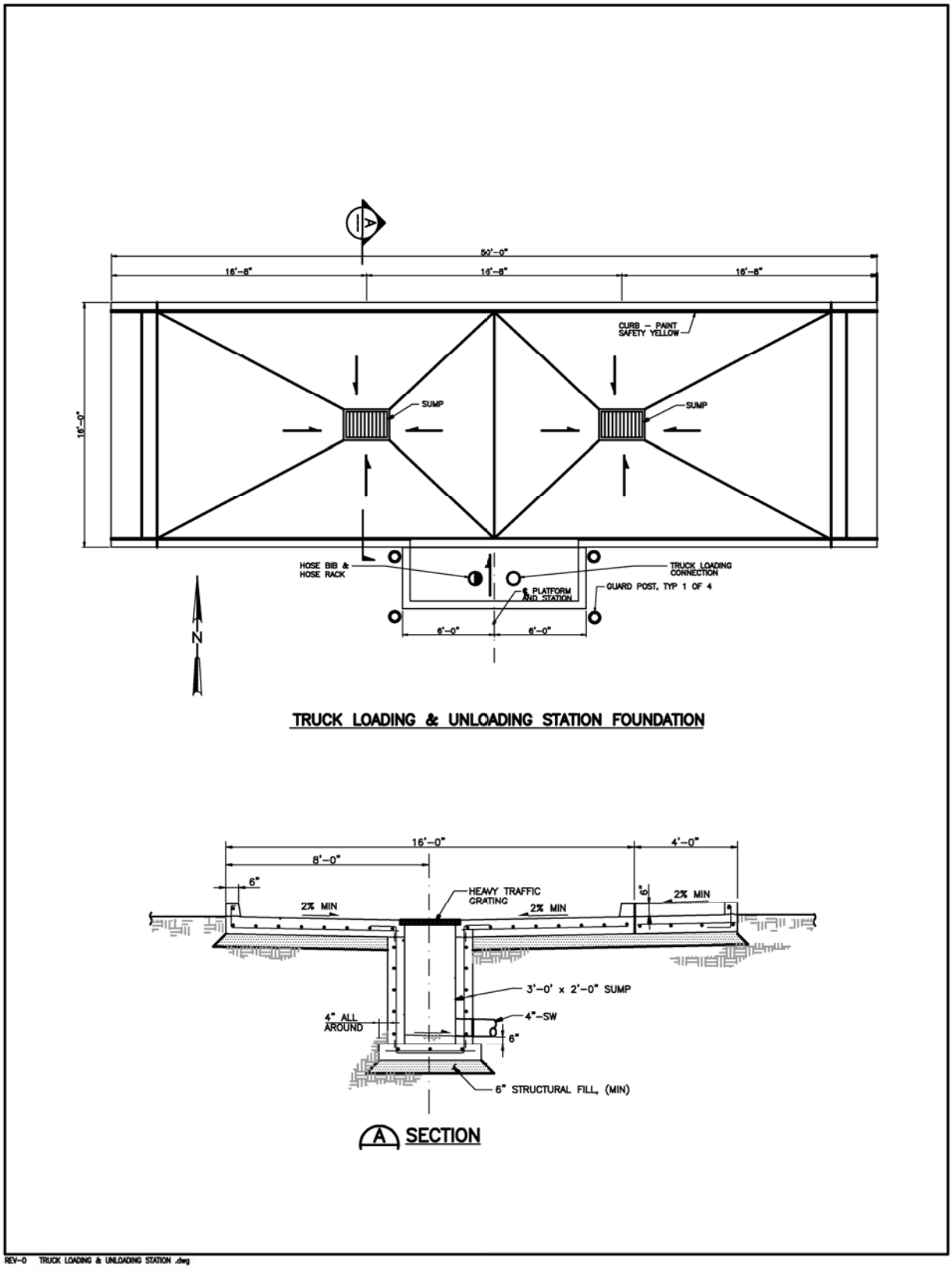

Figure 1-7. Truck loading and unloading station layout.

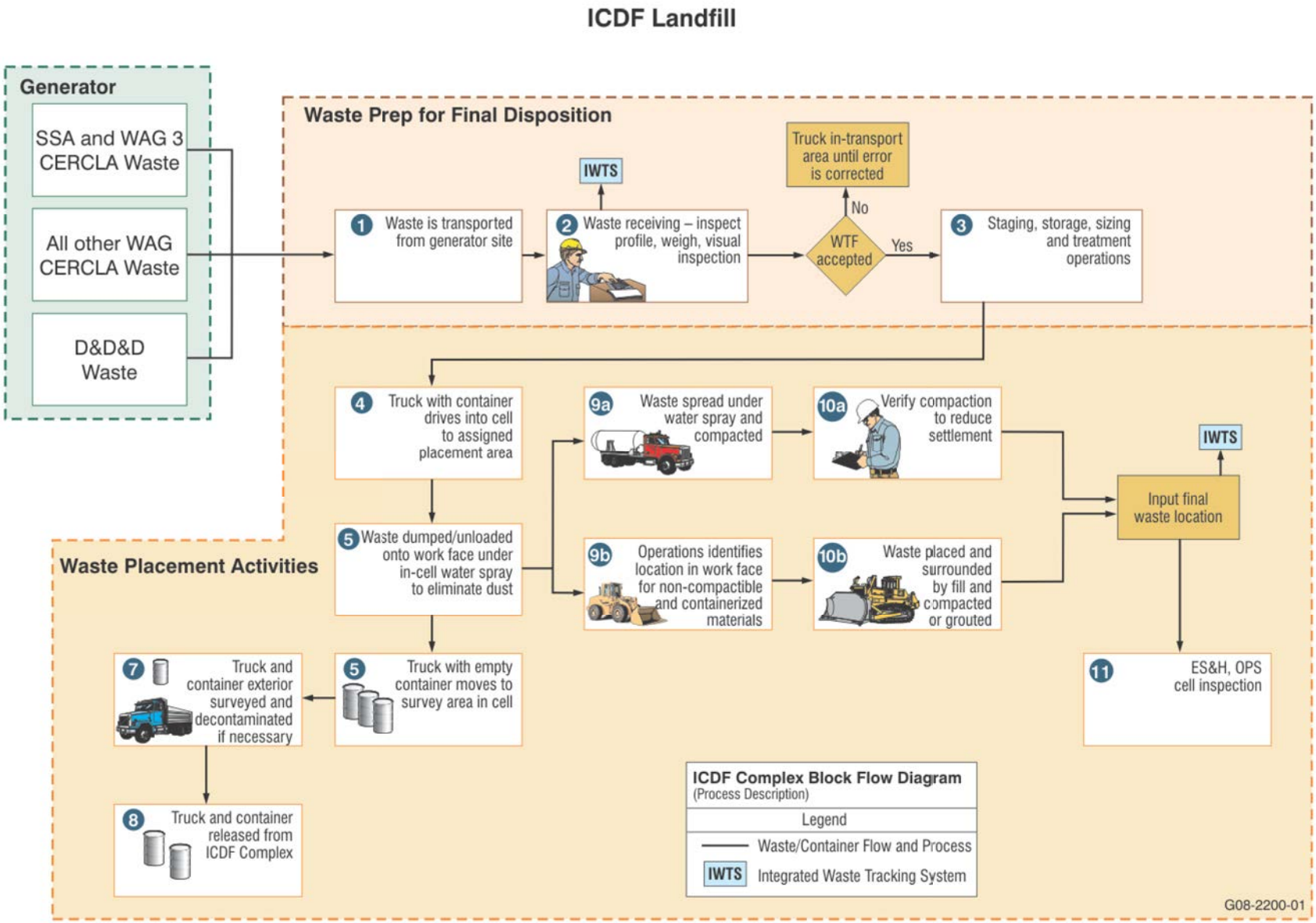

Figure 1-8. Process of waste destined for the ICDF landfill.

2. Waste enters the facility through the gates at the ICDF Complex. Gates and access are controlled by ICDF Complex personnel to ensure that unauthorized access is not allowed.

3. When a waste load arrives at the ICDF Complex, personnel verify that the shipment is scheduled for receipt before accepting the waste. If the ICDF Waste Tracking Form (WTF) (Form 435.95) is not approved for disposal of the waste, the waste is sent to the truck in-transport area until the issue is resolved. If the discrepancy cannot be corrected within 10 working days, the waste is returned to the generator, assuming the shipment back to the generator would not violate U.S. Department of Transportation (DOT) regulations. The return of waste to the generator requires the generating site to have the capability to accept the returned waste. The waste in the truck-in transport area may be moved into ICDF Complex staging or storage areas, as long as the waste meets the criteria for these areas. Waste is weighed and appropriately staged, stored, and treated, as applicable, for ultimate disposal. Note that all waste sizing is conducted at the CERCLA remediation site to meet the ICDF Complex WAC.

4. If the waste is approved for disposal, the truck is directed to the assigned disposal location within the landfill cell. Containerized waste may be staged and transported to the landfill by ICDF Complex equipment.

5. The waste is then unloaded at the work face. Water is used, if necessary, to minimize dust generation.

6. When the truck has finished unloading waste, it is moved forward, away from the active face of the landfill, to a survey area for a preliminary radiological survey.

7. Before leaving the radiological buffer area, the outside of the truck (i.e., gate area, rear tires, and rear truck frame) and empty waste container are more thoroughly surveyed for radiological contamination by an RCT to identify applicable release conditions (e.g., unrestricted or restricted). Contamination above the release criteria on the truck or container is removed by brushing, scraping, or other dry decontamination methods, if possible. Wet decontamination methods (e.g., water spray steam cleaning) may be necessary under certain circumstances (e.g., specific health and safety protocols) and may require special equipment to perform.

8. After meeting the release criteria for radiological contamination established by the RCT, the truck and/or empty waste container is released from the ICDF Complex or placed in the empty container storage area. In circumstances where the tare weight of the truck or the container have not been documented, the truck or container is weighed when leaving the facility or before drop-off at the empty container storage area.

9a. The loose soil waste is spread approximately 30.5 cm (12 in.) thick within the active waste tracking grid(s) and compacted. Additional water is added, as necessary, to aid compaction and reduce voids.

9b. A location at the working face is identified for placement of debris (e.g., containers and drums). Debris is placed and surrounded by compacted soil waste. Depending on the type of debris, recommendations from EDF-ER-286, "ICDF Waste Placement Plan," are followed to ensure adequate compaction of soil waste around the debris. Alternatively, voids within or around containers may be grouted to achieve compaction.

10a. Compaction of soil waste is verified by use of a nuclear density field gauge, or equivalent, at a prescribed fill-yardage frequency.

10b. Compaction of soil waste surrounding the noncompactable and containerized materials is verified by the use of a nuclear density field gauge, or equivalent.

11. Control materials and application of water are used to limit airborne emissions. If necessary, fixatives or temporary covers are used.

12. Weekly inspections and inspections after storms are required by 40 CFR 264.303(b) for the landfill. Inspections following a storm or other event are conducted on the next scheduled working day following a wind-related event (i.e., sustained winds greater than 35 mph) or within 24 hours following a precipitation-related event (i.e., 0.85 in. or more of rain in a 24 hour period). See Sections 4.3.3 and 8 for details.

1.3.2 Process for Waste Destined for the ICDF Evaporation Pond

The process for waste destined for the ICDF evaporation pond is shown in the flow chart presented in Figure 1-9. This flow chart includes a basic overview of the waste process before it arrives at the ICDF evaporation pond. The information listed below provides a brief description of each of the steps for waste disposal operations:

1. Approved liquid waste is transported from other sites. Approved waste types identified in the ICDF Complex WAC for the evaporation pond include:
   a. ICDF landfill leachate.
   b. ICDF operations-generated aqueous waste.
   c. Aqueous waste from SSSTF waste processing and decontamination activities.
   d. Aqueous waste (e.g., groundwater well development, purging, sampling, and decontamination water) generated in support of CERCLA activities. Activities that meet the definition of "support" are identified or otherwise listed in a primary or secondary document or in another CERCLA authorized action, as defined in the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991). This may include activities that support both CERCLA and non-CERCLA objectives.
2. When waste arrives at the ICDF Complex, personnel verify that the shipment is acceptable for receipt:
   a. For waste other than leachate from the ICDF landfill, the specific evaporation pond that receives the waste is recorded on the WTF.
   b. If the WTF is not approved, the waste is sent to the truck in-transport area until the issue is corrected. If the discrepancy cannot be corrected within 10 working days, the waste is returned to the generator, assuming the shipment back to the generator would not violate DOT regulations. The return of the waste to the generator requires the generating site to have the capability to accept the returned waste. The waste in the truck in-transport area may be moved into ICDF Complex staging or storage areas, as long as the waste meets the criteria for these areas.
   c. Liquid waste received at the ICDF Complex is measured either in gallons or weighed and the volume calculated.
3. For waste managed at the evaporation pond truck loading and unloading station, the waste is pumped to the evaporation pond through the evaporation pond crest pad building or directly into the pond using appropriate pumping systems.
4. Leachate from the ICDF landfill sump is pumped to the evaporation pond. The leachate gravity-drains to the leachate-collection sumps where the levels are monitored. A high-flow pump and low-flow pump are installed in the landfill LCRS sump to handle the expected range of leachate during the life of the landfill. The evaporation pond crest pad building includes flow meters and control panels for operation and recording of critical data. Decontamination and washdown water from the decontamination building also is pumped to the evaporation pond through the evaporation pond crest pad building.

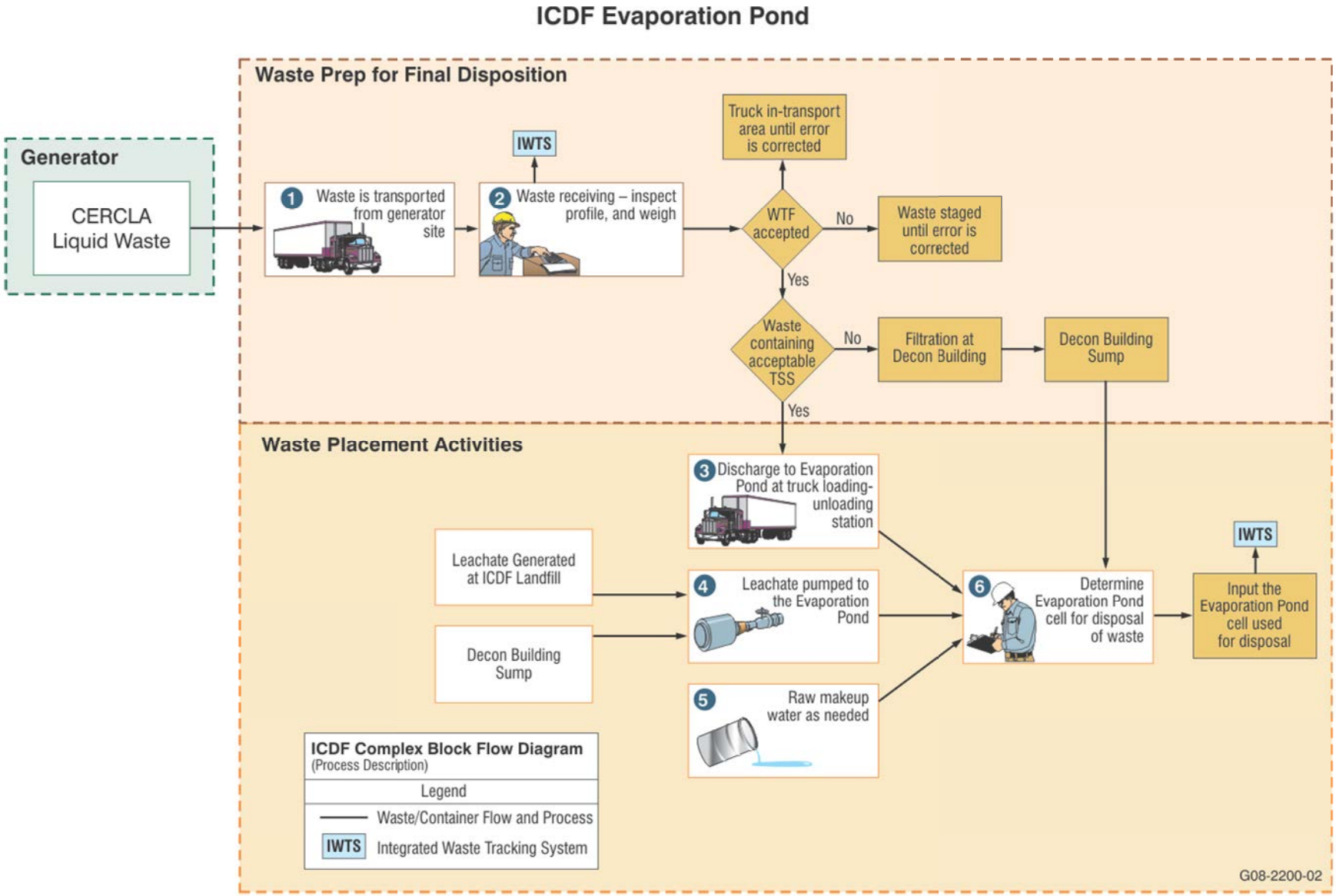

Figure 1-9. Process of waste destined for the ICDF evaporation ponds.

5. Raw water makeup capabilities are provided from the INL Site raw water system to keep the liquid level of the evaporation pond above any potential sediment. The sediment is kept under water to prevent any potential migration caused by drying out and dust generation. Sediment that accumulates in the evaporation pond may be sprayed to move the sediment to the low-point collection area. This minimizes the area of sediment distribution and also minimizes the addition of raw makeup water.
6. The decision is made by operations personnel as to which evaporation pond is active at any one time. The influent piping has the capability to split flows into either evaporation pond.

2. ICDF COMPLEX OPERATIONAL ORGANIZATION

This section discusses the organization, responsibilities, and training for ICDF Complex personnel.

2.1 ICDF Complex Organization Chart

The ICDF Complex management and operations team include the ICDF personnel assigned to operate the facility and to receive, stage, store, size, treat, and/or transport waste. Figure 2-1 is an organizational chart for the ICDF management and operations team. Assigned responsibilities for each position are discussed briefly in the following text.

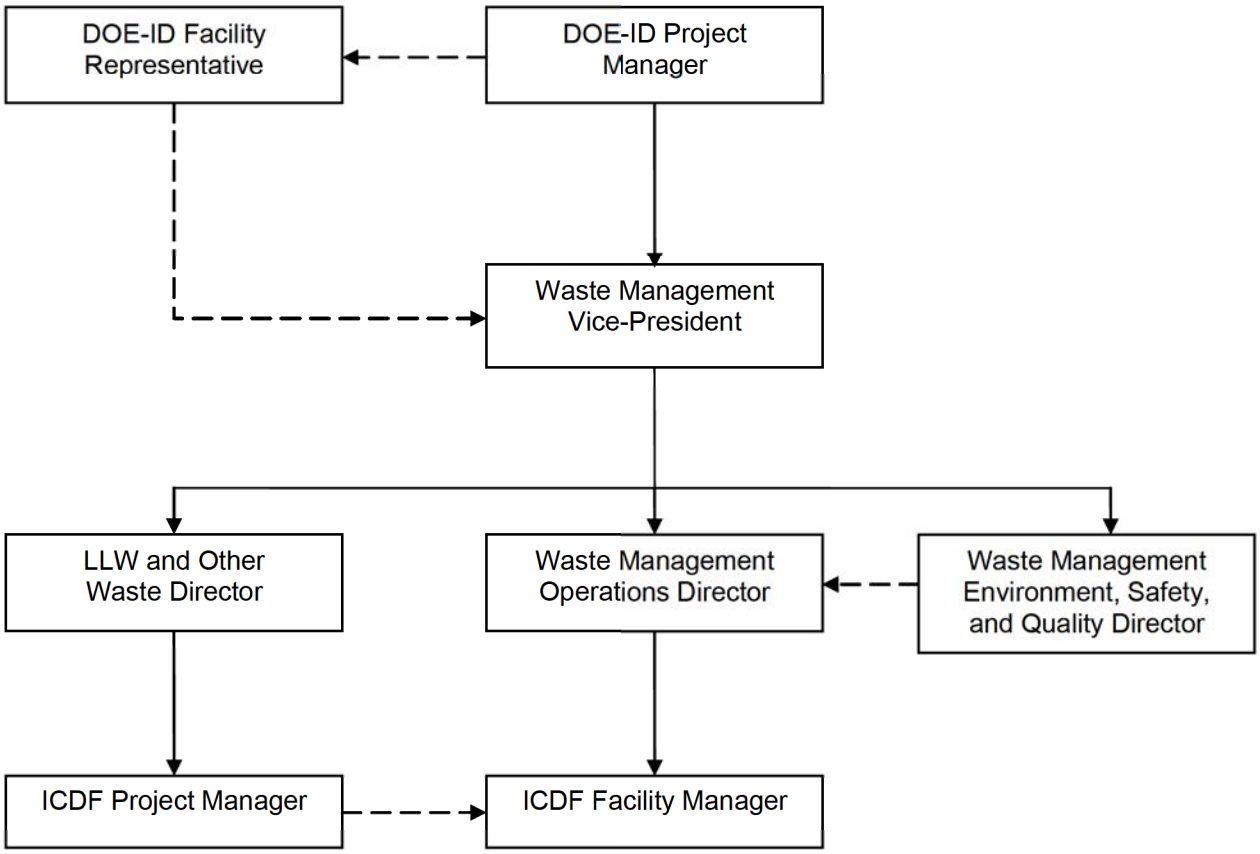

Figure 2-1. Organization chart of ICDF personnel.

2.2 Roles and Responsibilities of ICDF Complex Personnel

The following subsections describe the expected roles and responsibilities of ICDF personnel.

2.2.1 ICDF Management Team

The ICDF management team comprises senior managers who are responsible for establishing the vision and goals for operation of the ICDF Complex. In addition, they are responsible to ensure that the facility operates in a manner that protects the worker, the public, and the environment. The management

team also addresses vulnerabilities (e.g., legal, financial, and security) and is responsible for ensuring compliance with applicable laws and regulations during O&M at ICDF.

2.2.1.1 DOE-ID Remediation Project Manager. The DOE-ID Remediation Project manager is responsible for ensuring that ICDF Complex O&M activities are performed in accordance with the approved O&M Plan. All activities shall be coordinated with the ICP operating Contractor (i.e., CH2M-WG, Idaho, LLC) at ICDF. The DOE-ID Remediation Project manager approves the annual operating and maintenance report.

2.2.1.2 DOE-ID Facility Representative. This position is responsible for U.S. Department of Energy (DOE) oversight of the facility to ensure that the Contractor is operating facilities safely and efficiently (i.e., within the boundaries of those controls invoked in the facility authorization basis); the Contractor's management system is effectively controlling conduct of operations and implementing integrated safety management objectives, principles, and functions; DOE line/program managers are cognizant of the operational performance of facility contractors; and effective lines of communication between DOE and its operating contractors are maintained during periods of normal operation and following reportable events, in accordance with DOE orders and requirements.

2.2.1.3 Waste Management Vice President. The vice president of the Waste Management organization is responsible for the safe operation of all facilities. A more detailed description of these responsibilities is included in the Health and Safety Plan (HASP) for ICDF Operations (ICP 2010).

2.2.1.4 Waste Management Low-Level Waste and Other-Waste Director. The Waste Management LLW and other-waste director is responsible for the overall scope, schedule, and budget for the ICDF Project. Responsibilities also include ensuring that projects are performed in accordance with applicable requirements and that interfaces with external and internal stakeholders are defined and maintained.

2.2.1.5 Waste Management Operations Director. The Waste Management operations director is responsible to ensure that ICDF operations are performed in compliance with applicable requirements and company policies and procedures.

2.2.1.6 Waste Management Environment, Safety, and Quality Director. The Waste Management Environment, Safety, and Quality director is responsible to ensure that ICDF operations are conducted in compliance with applicable safety, radiological, and environmental requirements and company procedures.

2.2.1.7 ICDF Project Manager. As point of contact, the ICDF project manager has overall responsibility for project execution, budgets, and schedule and for ensuring that the project performs in accordance with customer and management expectations. The ICDF project manager is responsible for providing oversight of the day-to-day operations of the ICDF Complex, ensuring the health and safety of all ICDF Complex personnel, and ensuring implementation of:

- Identified regulatory requirements
- All waste tracking requirements
- WAC
- Inspections using personnel trained to the requirements of this plan.

The ICDF project manager and the ICDF Complex facility manager work together to ensure that the ICDF Complex is operated in accordance with this O&M Plan and with the documentation provided in the RAWP (DOE-ID 2012b).

2.2.1.8 ICDF Complex Facility Manager. The ICDF Complex facility manager is responsible for ensuring that the ICDF Complex operates within the approved authorization basis, operates within regulations, and provides protection of human health and the environment. The facility manager defines specific areas of responsibility for other team members. The facility manager also ensures that personnel are trained and qualified for their job assignments, and that ICP and ICDF policies and procedures are followed. The facility manager's responsibility includes implementation of all the requirements of this plan, implementation of O&M requirements, and coordination of O&M activities.

2.3 ICDF Complex Personnel Training

Training is performed to provide information on ICDF hazards and associated controls, procedures, and requirements for access. Personnel assigned to work at the ICDF Complex shall have the 40-hour Hazardous Waste Operations and Emergency Response training, as required by CERCLA regulations. Additionally, ICDF operations personnel are trained to meet the requirements of 40 CFR 264.16(a)(1) and (c) and appropriate ICP training requirements. All ICDF training is developed, conducted, and maintained in accordance with ICP training procedures. These procedures describe the processes that ensure that the ICP workforce is properly trained to work effectively and safely. The detailed outline of this training is found in Table 6-1 of the ICDF HASP and is considered the minimum training per position (ICP 2010).

The facility manager is responsible to ensure that personnel have an adequate level of facility knowledge, including a general overview of the facility, facility-specific hazards, safety, and applicable procedures. Personnel requiring ICDF operations or position-specific qualifications or certifications must complete the necessary training prior to initiating ICDF activities. The supervisor who gives work direction to employees within the ICDF Complex must complete the Occupational Safety and Health Act Hazardous Waste Operations and Emergency Response Supervisor Course in addition to other required training. As appropriate, a qualified instructor or subject matter expert conducts and documents the training, in accordance with ICP procedures.

Operational activities require a prejob briefing conducted by a supervisor or lead person. During this briefing, tasks associated with ICDF operations are outlined, hazards are identified, hazard controls/mitigation are reviewed, personal protective equipment requirements are discussed, waste minimization opportunities are communicated, and questions are answered. Following the completion of operational activities, a postjob briefing may be conducted with particular emphasis on capturing lessons learned and process improvement for future operations.

Additional details for Radiation Worker training are included in Section 3.7 of this O&M Plan, and details concerning other training requirements are included in the HASP (ICP 2010).

3. OPERATIONAL LIMITS AND ENVIRONMENTAL MONITORING

This section of this O&M Plan outlines operational limits that have been developed for the ICDF Complex; describes operational environmental monitoring, inspection or record, and reporting requirements; and describes monitoring that will be performed. The contents of the main subsections are summarized below:

- Section 3.1, "Waste Acceptance Criteria," describes the operational limits that were developed in the ICDF Complex WAC (DOE-ID 2012a).
- Section 3.2, "Idaho Administrative Procedures Act," describes the concentration guidelines and operational mass limits that have been modeled and established in EDF-2237, "IDAPA Air Compliance Demonstration for the ICDF Complex." Operational mass limits based on air-emission and dispersion modeling are used to schedule waste streams into the ICDF Complex to maximize operational flexibility while maintaining compliance with the appropriate IDAPA standards (IDAPA 58.01.01.585 and .586).
- Section 3.3, "National Emission Standards for Hazardous Air Pollutants," summarizes the modeling that was performed for the ICDF Complex previously and reasserts the operational goal of less than 1 mrem/year that has been established for the ICDF Complex. Annual calculations will be performed to determine the NESHAP contribution from the ICDF Complex for inclusion in the INL Site annual NESHAP report. The method for completing these calculations is presented in the following: "NESHAP Compliance Demonstration for the ICDF Complex," (EDF-2236) and "Annual Emissions Reporting Methodology for the Idaho CERCLA Disposal Facility" (EDF-9993).
- Section 3.4, "Ecological Risk," summarizes the analysis that was previously performed in the Screening Level Ecological Risk Assessment (SLERA) (EDF-ER-311) and provides monitoring data needs for evaporation pond water and sediments.
- Section 3.5, "Short-Term Risk," summarizes the results of a short-term risk assessment for workers and public receptors associated with the ICDF Complex (EDF-ER-327). The risk assessment evaluated exposure to ICDF Complex operators and the public for modeled concentrations of radioactive and nonradioactive hazardous substances representative of the ICDF landfill, the evaporation pond, and the decontamination building. The assessment also considers the exposure with regard to the landfill and evaporation pond WAC concentration guidelines specified in the ICDF Complex WAC (DOE-ID 2012a) as a method to assist in determining a bounding limit for a proposed visitor.
- Section 3.6, "Groundwater," provides a summary of the groundwater remedial action objectives (RAOs) established for the ICDF Complex in the OU 3-13 ROD (DOE-ID 1999), describes how RAOs were modeled in the various components of the ICDF Complex design, and refers to other sections or documents that describe how groundwater RAOs will be demonstrated for the ICDF Complex.
- Section 3.7, "Radiological Controls," describes the RadCon program that has been developed at the INL Site and is implemented during operation of the ICDF Complex.
- Section 3.8, "Action Leakage Rate," provides a summary of the ALRs that have been calculated for the ICDF landfill and evaporation pond. A discussion is provided regarding the comparison of the ALRs to actual sump flow rate data.
- Section 3.9, "Environmental Monitoring and Recordkeeping," provides a summary table of all ICDF Complex operational ARARs that have monitoring, inspection, report, or recordkeeping requirements. This section also summarizes the environmental monitoring—including groundwater

monitoring, waste verification sampling, treated waste sampling, and O&M sampling at the ICDF Complex—that is performed as part of the ICDF Complex operations. This section refers to the appropriate documents for additional details about the monitoring program for a particular media or data need.

- Section 3.10, "Sampling and Analysis/Sampling Quality Assurance," summarizes the sampling plans that have been developed and are implemented during ICDF Complex operations. Quality assurance for the data collected in accordance with the sampling plans is also presented.

3.1 Waste Acceptance Criteria

The ICDF Complex WAC was developed and established as part of the SSSTF RD/CWP (DOE-ID 2002b) and the ICDF RD/CWP (DOE-ID 2002a).

Based on limits established in the ICDF Complex WAC (DOE-ID 2012a), 40 CFR 264, Subparts BB and CC, do not apply to the operation of the ICDF Complex. This is based on the WAC limiting the organic concentrations in waste to less than 10% by weight; this limit is an exception to 40 CFR 264, Subpart BB, per 40 CFR 264.1050(b). Additionally, the ICDF Complex WAC limits the volatile organic concentration to less than 500 ppm by weight; this limit is an exemption from 40 CFR 264, Subpart CC, per 40 CFR 264.1082(c)(1).

3.1.1 ICDF Complex Waste Acceptance Criteria

The ICDF Complex WAC document provides the basis for the types and quantities of waste allowable for receipt, staging, storage, sizing, and treatment at the ICDF Complex; provides packaging and radiological criteria; and sets the criteria for waste to be treated at the treatment unit. Implementation of the ICDF Complex WAC ensures compliance with the OU 3-13 ROD (DOE-ID 1999) and provides protection of human health and the environment, including the SRPA.

3.1.2 ICDF Landfill Waste Acceptance Criteria

The ICDF landfill WAC (Section 5 of the ICDF Complex WAC [DOE-ID 2012a]) specifies the chemical and radiological WAC for waste that is slated for disposal in the landfill. The landfill WAC is a critical component of the entire ICDF design. The WAC have been developed, based on modeling assumptions, so that waste placed in the ICDF landfill will not cause groundwater in the SRPA to exceed either maximum contaminant levels, a hazard index of 1, or 10^{-4} cumulative risk levels, which are defined as RAOs in the OU 3-13 ROD (DOE-ID 1999). Modeling to support the WAC development was documented in EDF-ER-275, "Fate and Transport Modeling Results and Summary Report." Compliance with the requirements of the landfill WAC will ensure protection of human health and the environment, including the SRPA.

In addition, projected chemical and radiological concentrations of landfill leachate were compared with published manufacturer's compatibility data and other project testing to ensure that waste placed in the landfill would not damage either the natural or synthetic components of the landfill liner system. The results of this comparison are presented in EDF-ER-278, "Liner/Leachate Compatibility Study."

Finally, the landfill WAC were established by considering other regulatory requirements, including ARARs for the ICDF landfill. Examples of these requirements include, but are not limited to, the following:

- Waste cannot exceed 10 nCi/g total transuranic isotopes

- Waste cannot be greater than Class C, as defined by 10 CFR 61, "National Emission Standards for Hazardous Air Pollutants"
- Total volatile organics in the evaporation pond cannot exceed 500 ppm by weight, which limits the waste concentrations in the landfill so that leachate concentrations do not exceed the requirement
- Total PCBs cannot exceed 500 mg/kg
- Waste from WAGs other than WAG 3 must meet LDRs.

The ICDF Complex WAC provides the following guidance for tracking waste entering the ICDF Complex for ultimate disposal to the landfill to determine what percentage of the WAC limit has been used to date (DOE-ID 2012a):

1. Each waste load or container will have a Container Profile identifying the substances and concentrations contained in the waste. This Container Profile may be the same as the Material Profile, but will not exceed the concentrations in the Material Profile.
2. The mass of each constituent placed in the landfill will be calculated for each waste load or container using the information from the Container Profile (weight × concentration for each constituent).
3. A database or spreadsheet will be kept identifying each constituent and the cumulative mass of each constituent placed in the landfill. The ICDF Waste Tracking Plan (PLN-914) describes the tracking process in more detail.
4. A running inventory will be maintained of the total mass of each constituent disposed of in the facility. The total mass received for each substance will be compared to the total mass limit of the substance identified in the WAC. This comparison for each substance will provide an indication of how much of the WAC limit has been used by the actual substances in the waste. In addition, average concentrations of the constituents in each container or waste load will be checked against concentration-based criteria.

It is important to note that although concentration guidelines for landfill waste acceptance are provided in the ICDF Complex WAC, the operational limit is the total contaminant mass or activity, unless other operational concentration-based limits (established elsewhere in Section 3 of this O&M Plan) are provided. The landfill concentration guidelines are provided in the ICDF Complex WAC for the ease of the ICDF Complex user in determining whether a particular waste stream may be acceptable.

3.1.3 ICDF Evaporation Pond Waste Acceptance Criteria

The ICDF evaporation pond WAC (Section 6 of the ICDF Complex WAC [DOE-ID 2012a]) was developed to provide the basis for the limiting concentrations of radioactive and nonradioactive contaminants in the ICDF evaporation pond. The aqueous waste types include leachate from the ICDF landfill, WAG 3 purge and development water from monitoring well drilling operations, and secondary aqueous waste generated through ICDF Complex operations. Other CERCLA-generated liquid waste may be managed in the ICDF evaporation pond, subject to meeting the WAC. Compliance with requirements of the ICDF evaporation pond WAC ensures protection of human health and the environment.

The ICDF evaporation pond WAC was developed in a similar fashion to the ICDF landfill WAC by evaluating liner compatibility concentrations and other regulatory requirements (ARARs) that provide a concentration limit for the aqueous waste managed in the pond. Groundwater RAOs were not evaluated for the evaporation pond WAC because the analysis performed for the ICDF landfill WAC would also be

protective for the evaporation pond. The comparison performed to determine the limiting concentration for the evaporation pond is presented in EDF-ER-274, "Leachate/Contaminant Reduction Time Study."

To evaluate liner compatibility, chemical and radiological concentrations of leachate were compared with published manufacturer's compatibility data and other project testing to ensure waste placed in the evaporation pond would not damage either the natural or synthetic components of the evaporation pond liner system. The results of this comparison are presented in EDF-ER-278, "Liner/Leachate Compatibility Study."

The evaporation pond WAC were also established by considering other regulatory requirements that are ARARs. Examples of these requirements include, but are not limited to, the following:

- Waste containing greater than 10 nCi/g, as expressed in liquid units (10 nCi/mL or 1E+07 pCi/L) of transuranic radionuclides, is prohibited from disposal at the ICDF evaporation pond.
- Direct disposal of PCB waste is prohibited. Although unlikely, PCBs may be a component of the ICDF leachate. As a corrective action management unit for the ICDF leachate, the evaporation pond may accept F039 (landfill leachate) waste.
- Hazardous waste with greater than 500 ppm volatile organic compounds is prohibited.
- Hazardous waste with organic concentrations greater than 10% by weight is prohibited.
- Waste containing greater than 1% chelating compounds by weight is prohibited.
- Spent nuclear fuel and high-level waste are prohibited.

3.2 Idaho Administrative Procedures Act

Ambient air standards for the Idaho Department of Environmental Quality (DEQ) are administered by IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho." ARARs for the ICDF Complex are tabulated in IDAPA 58.01.01.585, "Toxic Air Pollutants Non-Carcinogenic Increments," and IDAPA 58.01.01.586, "Toxic Air Pollutants Carcinogenic Increments."[a]

Air emission and dispersion modeling was performed to develop ICDF Complex waste concentration guidelines and operational mass limits that maximize operational flexibility and meet IDAPA standards (IDAPA 58.01.01.585 and .586). Facilities in the ICDF Complex modeling included the treatment unit, landfill, and evaporation pond. Modeling assumptions, methodology, input parameters, and results of the analysis are included in EDF-2237, "IDAPA Air Compliance Demonstration for the ICDF Complex."

For the modeling, a list of constituents was prepared that included only those substances with values listed in both the design inventory (EDF-ER-264) and IDAPA 58.01.01.585 and .586. Two computer models were used to develop the concentration guidelines: *WATER9* (EPA 2008), for modeling of emission rates for volatiles and semivolatiles, and *ISCST3* (EPA 1995a), for dispersion modeling of volatiles, semivolatiles, and nonvolatiles as particulate.

The modeling effort used an iterative process based on an assumed initial concentration and a list of required input parameters for each model. The initial concentration was modified upward or downward depending on results of the subsequent modeling. The *WATER9* model was run for the volatile and semivolatile constituents, with the resulting modeled emission rates used as inputs to the *ISCST3*

a. As promulgated in December 1999.

dispersion model. Nonvolatiles were modeled directly using *ISCST3*. This iterative process was continued until a modeled concentration of approximately 95% of the IDAPA-listed concentration was achieved. These modeled concentrations established the waste concentration guidelines required to meet the IDAPA limits.

The modeling resulted in a particulate-based concentration guideline for the ICDF landfill, a volatilization-based concentration guideline for the landfill, and a volatilization-based concentration guideline for the ICDF evaporation pond. The smaller of the landfill concentration guidelines was carried forward for further analysis, as was the evaporation pond concentration guideline. These modeled concentration guidelines were then compared with the respective WAC guideline concentrations (DOE-ID 2012a) for each constituent. Modeled concentration guidelines were considered to be within WAC guidelines for a given constituent if the modeled value was greater than the WAC guidelines.

Mass-based operating limits were calculated using the emission-based concentration guidelines and the loading rates for the landfill and evaporation pond. In some cases, the emission-based concentration guidelines were below the WAC-guideline concentrations. Two limits are specified—24-hour maximum and annual average—to reflect the IDAPA air toxic regulations for noncarcinogens (24-hour standards) and carcinogens (annual standards), respectively. A complete listing of the mass-based operating limits is included in EDF-2237.

Table 3-1 lists those constituents with modeled concentration guidelines below their corresponding WAC guideline concentrations. Included in this table are the WAC guidelines, modeled concentration guidelines, and the final annual and 24-hour operating limits. Operating limits for all modeled constituents are included in EDF-2237.

For constituents that were operationally limited for a single facility (e.g., either the landfill or the evaporation pond), the input concentrations for the ICDF landfill and ICDF evaporation pond were adjusted and remodeled to balance the loading between the facilities. This was done to eliminate operationally limited conditions, where possible.

Where the constituent had WAC-based limits for both facilities (e.g., 1,1-dichloroethene), both WAC limits were used as the initial basis for the load-balancing emissions model to demonstrate compliance with the IDAPA standards. In cases where no ICDF evaporation pond WAC guideline was specified (e.g., hexachlorobutadiene), the ICDF landfill WAC limit was used as the initial set value for the load-balancing emission modeling, with the ICDF evaporation pond concentration guideline adjusted accordingly to meet the IDAPA standards.

Controls and tracking requirements for WAC-limited constituents are discussed in the respective sections of the ICDF Complex WAC (DOE-ID 2012a). Modeled operational limits below WAC values indicate that additional waste tracking and/or operational controls may be required, in accordance with the ICDF Waste Tracking Plan (PLN-914).

Operational controls may be required for benzidine, benzo(a)pyrene, hexachlorobenzene, hexachlorobutadiene, ethyl cyanide (as cyanide), hexachlorocyclopentadiene, mercury, and naphthalene, which are operationally limited for the landfill and/or evaporation pond, based on a comparison of modeled-concentration guidelines to WAC guidelines. Operational controls may be required to ensure that the mass-based operational limits are not exceeded. Operational controls include, but are not limited to, storage or staging of waste; staggering, over time, of loads transported to the ICDF landfill; increased soil coverage for loads with operationally limited constituents; treatment of soils (e.g., grouting); and other types of controls evaluated on a case-by-case basis.

Table 3-1. Summary of IDAPA emission-based operating limits for operationally limited constituents.

Compound (CAS No.)	Waste Acceptance Criteria Guideline Concentrations		Guideline Concentrations[a]		Mass-Based Operational Limits	
	Landfill[b] (mg/kg)	Evaporation Pond[c] (mg/L)	Landfill (mg/kg)	Evaporation Pond (mg/L)	Landfill[d] (kg/day)	Evaporation Pond[e] (kg/day)
Carcinogens (annual limit)						
Benzidine (92-87-5)	1.72E+01	1.00E+04	1.72E+01	3.88E+03	9.92E+00	5.74E+00
Benzo(a)pyrene (50-32-8)	1.05E+02	2.00E+03	1.05E+02	3.11E+02	6.06E+01	4.60E-01
Hexachlorobenzene (118-74-1)	1.14E+01	No limit	8.25E+00	6.00E-02	4.76E+00	8.88E-05
Hexachlorobutadiene (87-68-3)	2.07E+01	No limit	2.07E+01	4.86E+04	1.19E+01	7.19E+01
Noncarcinogens (annual limit)						
Ethyl cyanide (as CN [cyanide]) (107-12-0)	3.31E+04	1.00E+04	4.14E+03	6.90E+04	2.39E+03	1.02E+02
Hexachlorocyclopentadiene (77-47-4)	1.14E+01	No limit	1.14E+01	2.15E+04	6.58E+00	3.18E+01
Mercury (7439-97-6)	9.45E+03	5.00E+05	1.28E+02	6.75E+02	7.40E+01	9.99E-01
Naphthalene (91-20-3)	4.25E+02	No limit	4.25E+02	1.00E+06	2.45E+02	1.48E+03
Noncarcinogens (24-hour maximum limit)						
Ethyl cyanide (as CN [cyanide]) (107-12-0)	3.31E+04	1.00E+04	2.50E+03	4.17E+04	3.66E+03	6.17E+01
Hexachlorocyclopentadiene (77-47-4)	1.14E+01	No limit	3.42E+02	6.84E-01	5.00E+02	1.01E-03
Mercury (7439-97-6)	9.45E+03	5.00E+05	7.74E+01	4.07E+02	1.13E+02	6.02E-01
Naphthalene (91-20-3)	4.25E+02	No limit	1.10E+05	2.17E+04	1.61E+05	3.21E+01

Note: A complete list of operating limits for all IDAPA-listed constituents is included in EDF-2237.

a. Values shown have landfill concentrations set at the WAC guideline concentrations. The evaporation pond concentrations have been maximized but are still below WAC guideline concentrations.

b. Taken from Table A-1 of the ICDF Complex WAC (DOE-ID 2012a).

c. Taken from Table A-1 of the ICDF Complex WAC (DOE-ID 2012a).

d. These values were calculated using the annual (or 24-hour) concentration guidelines (mg/kg) × (1,500 kg/m^3) × (503 yd^3/day) × (0.7646 m^3/yd^3)/(1E+06 mg/kg).

e. Mass-based operational limits are based on an annual (or 24-hour) average daily leachate rate of 391 gal/day. These concentrations were calculated using the annual (or 24-hour) concentration guidelines (mg/L) × (391 gal/day) × (3.785 L/gal)/(1E+06 mg/kg).

CAS Chemical Abstract Service
ICDF Idaho CERCLA Disposal Facility
IDAPA Idaho Administrative Procedures Act
WAC waste acceptance criteria

3.3 National Emission Standards for Hazardous Air Pollutants

NESHAP is published in the *Code of Federal Regulations* at 40 CFR 61. The relevant standard for the ICDF Complex operations is Subpart H, "National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities" (40 CFR 61, Subpart H). The regulation states the following:

> Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year.

Radionuclides are contained in CERCLA remediation waste destined for the ICDF Complex. Activities associated with the collection, handling, and disposal of these waste types are anticipated to release low amounts of radionuclides into the ambient air. Potential NESHAP emissions from the ICDF Complex operations (EDF-ER-290) were estimated, and the emission estimates were modeled to show the impact to the nearest public receptor. The results of the analyses show the ICDF Complex operations will have an impact of less than 0.05 mrem/year, below the NESHAP standard of 10 mrem/year.

Compliance with the NESHAP standard will be evaluated on an annual basis in conjunction with INL on a Site-wide basis. To ensure that the ICDF Complex is not a major factor in changing INL Site NESHAP status, an operational goal for the Complex will be set at less than 1 mrem/year. This will be met through operational constraints, as outlined in the ICDF Complex WAC (DOE-ID 2012a). Emissions from the ICDF Landfill will be calculated on an annual basis, as described in EDF-2236, "NESHAP Compliance Demonstration for the ICDF Complex," and emissions from the evaporation ponds during normal operations and from spray-evaporation will also be calculated on an annual basis, as described in EDF-9993, and the addition of both will be included in the INL Site annual NESHAP report. If the operational goal of 1 mrem/year is ever exceeded, the Agencies (i.e., DOE, EPA, and DEQ) will be notified.

EDF-2236 and EDF-9993 use EPA's "Compilation of Air Pollutant Emission Factors," AP-42 (EPA 1995b) to estimate NESHAP emissions from the following ICDF Complex-related activities:

- Unloading contaminated soil (EDF-2236)
- Landfill operations (EDF-2236)
- Evaporation pond processes (EDF-9993)
- Decontamination building operations (EDF-2236).

For each of these activities, a final weight (pounds) of total suspended particles is determined and used for the necessary NESHAP calculations.

3.4 Ecological Risk

A SLERA was performed and is presented in EDF-ER-311. The approach of the assessment was to evaluate the landfill soil for exposure to terrestrial receptors and to evaluate the evaporation ponds for both terrestrial (drinking water) and aquatic receptors. The assessment approach summarized below was used to evaluate WAC and to direct and focus monitoring to be performed at the ICDF Complex. In 2011, the monitoring of the sediments was reevaluated in EDF-10072.

3.4.1 Summary of Ecological Risk Assessment

The SLERA was based on modeled contamination levels in the soil and leachate in the evaporation ponds and for the ICDF Complex during its operational period. Methods were very conservative, as were the modeled inventories. The concentrations used in this SLERA were from the Design Inventory (EDF-ER-264) and/or the CERCLA Waste Inventory Database Report (DOE-ID 2000).

Exposure parameters used in the assessment were adapted to better represent the conceptual site model for the ICDF Complex. For the landfill site, the exposure duration for each species was reduced to more realistically reflect the individual receptor's potential use of the site. Conversely, the presence of water in the evaporation ponds and other related structures (e.g., buildings) was expected to encourage use by selected species. As discussed in EDF-ER-311, the ingestion of water was evaluated in conjunction with the exposure evaluated at the landfill. For all contaminants, the maximum concentration anticipated to be in the surface water was evaluated. It is expected that this will overestimate the exposure because contaminants of potential concern (COPCs) and radiological COPCs in the ponds should go to equilibrium, with the sediment reducing the concentrations.

Both terrestrial and aquatic receptors were assessed. However, aquatic organisms (e.g., fish and other benthic organisms) were not assessed because this facility is not considered a natural water body. When evaporation pond operations are discontinued, the ponds will be eliminated as a source of drinking water for those species present at the INL Site. The deer mouse, mule deer, coyote, Townsend's western big-eared bat, mourning dove, sage grouse, red-tailed hawk, and bald eagle were selected as terrestrial receptors. The mallard duck and spotted sandpiper are included as aquatic receptors for assessment at the ICDF evaporation pond. These species, although modeled as having a limited use of the facility, are the risk drivers because of the exposure from aquatic sources.

For radiological COPCs, DOE Headquarters has recently developed frameworks, methods, and guidance for demonstrating protection of the environment from the effects of ionizing radiation. DOE-STD-1153-2002, "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," is approved by the DOE Office of Environmental Management (EH-4) for interim use by DOE program and field elements in evaluating doses to biota. This technical standard provides dose evaluation methods that can be used to meet protectiveness requirements.

The DOE standard provides a general screening concentration that allows the evaluation of radionuclides in water, collocated sediments, and soils for both the aquatic and terrestrial system. This standard is used for those radiological COPCs that have both leachate and soil concentration. It is well accepted that sediment and water contaminant concentrations will come to equilibrium within a system. For this analysis, calculating a sediment concentration from the water is not appropriate, as this will be the leachate concentration estimated over 15 year of operation. Therefore, for this assessment, the water concentration, summed over all years of operation, is considered conservative regarding the dose that receptors using the ponds would receive. Generic biotic concentration guides are used within each system. A sum of fractions approach was used in comparing radionuclide concentrations in environmental media to the biotic concentration guides contained in the standard lookup tables. None of the three radionuclides detected in both the leachate and soil exceeds the standards criteria.

As discussed in the SLERA, hazard quotients and hazard indexes were primarily used to assess risk. In summary, the results indicate that Kr-85 was the only radionuclide with hazard quotients greater than or equal to 1.0 for internal exposure. This radionuclide is a chemically inert gas that was conservatively assumed to be present in the inventory. However, it is highly unlikely that it will be present in the soil at the concentrations modeled because of its volatility. Additionally, Kr-85 has no concentration factor for feed-to-tissue uptake to develop a realistic exposure assessment because it is a

gas and would mainly present an inhalation risk. Also, the half-life for this radionuclide is 10.8 years, and it is not anticipated to remain at the concentrations modeled throughout the lifetime of the ICDF Complex. Based on this rationale, Kr-85 was eliminated as a concern and is considered to present minimal risk.

Concentrations in the evaporation ponds were compared to acceptable concentrations. This comparison indicates that sulfate and vanadium concentrations in the evaporation ponds could potentially reach concentration levels of concern to ecological receptors.

The SLERA also presents a qualitative discussion of risk to receptors of special concern (EDF-ER-311). It indicates that, of the INL Site's sensitive bird species, the burrowing owl and bald eagle were rarely sighted at the wastewater ponds in the INTEC area and that exposure to other species should be limited. The Cieminski (1993) study indicated that there was no apparent relationship between the number of small mammals captured and the distance of the trap from the pond. The pygmy rabbit and Townsend's western big-eared bat were not sighted at wastewater ponds. The sagebrush lizard has been sighted in the area; however, the quality of the habitat is spotty. The disturbance in the area surrounding the ICDF Complex should significantly reduce any use of this area. Sagebrush lizards prefer rock outcrops (which do not exist in the area) and were more likely to be found in the undisturbed sagebrush areas along the northern and western sides of the INTEC facility (DOE-ID 2001).

3.4.2 Acceptable Concentrations for Water in the ICDF Evaporation Ponds

Acceptable concentration levels for water in the evaporation ponds can be based on acceptable leachate concentrations (ALCs). The ALCs for use at the ICDF Complex were developed for those COPCs identified in EDF-ER-274. DOE-STD-1153-2002 was used to provide ALCs for radionuclide COPCs. Table 3-2 presents the initial values considered acceptable in each media for the radionuclide contaminants of concern.

Table 3-2. Acceptable media concentrations for selected radionuclides.

	Biotic Concentration Guides			
	Aquatic Receptors		Terrestrial Receptors	
Radionuclide	Water (pCi/L)	Sediment (pCi/g)	Water (pCi/L)	Soil (pCi/g)
I-129	2.7E+04	NA	5.4E+06	6.E+03
Tc-99	5.40E+05	NA	3.42E+06	4.E+03
U-238	2.16E+02	NA	5.4E+05	2.E+03

NA not applicable

For nonradiological COPCs, the SLERA assessed the mallard and spotted sandpiper for the development of ALCs. The rationale and development of the ALCs are presented in Appendix A of the SLERA.

The ALCs presented in Table 3-3 can be used to determine if the concentrations of contaminants in the evaporation ponds are within an acceptable level. Ambient water quality is considered protective of 95% of aquatic receptors (including fish and other benthic organisms) in a natural water body. Ambient water quality criteria would be too conservative for the evaporation ponds, however, because it is not considered a natural water body. After the ICDF mission is accomplished, the evaporation ponds will be

Table 3-3. Acceptable contaminant concentrations for use at the ICDF evaporation ponds.[a]

Contaminant of Potential Concern	Fraction of Total Water Body Concentration in Water Column (unitless)	Fraction of Total Water Body Concentration in Benthic Sediment (unitless)	Acceptable Leachate Concentration (mg/L)	Modeled Concentrations (mg/L)	Ambient Water Criteria (ug/L)
Arsenic	6.43E-01	3.57E-01	6	1.53	340
Boron	—	—	—[b]	40.7	—
Calcium	—	—	—[c]	4.86	—
Chlorine	—	—	—[d]	16.6	19
Magnesium	—	—	—[c]	0.25	—
Phosphorus	—	—	—[e]	6.8	—
Potassium	—	—	—[c]	0.089	—
Selenium	9.05E-01	9.50E-02	0.07	0.073	5.0 (13–186)
Sulfur	—	—	—[d,e]	373	—
Vanadium	5.11E-02	9.49E-01	3	3.48	—
Zinc	4.60E-01	5.40E-01	8	0.031	120

— indicates that no information is available or that no value was calculated.

a. Concentrations below ALCs or ambient water quality criteria will be protective of ecological receptors using the evaporation pond.

b. Boron toxicity and ambient water quality criteria are lacking. See the discussion in Section A-1 of EDF-ER-311.

c. Toxicity reference values are not available to establish an ALC for calcium, magnesium, or potassium. However, these COPCs are essential nutrients and are not considered toxic except under extremely high concentrations (10 × background).

d. Because a soil-water partition coefficient (K_d) value was not available for chlorine or sulfur, an ALC could not be calculated.

e. Toxicity reference values were not available for establishing ALCs for phosphorus or sulfur.

ALC acceptable leachate concentration
COPC contaminant of potential concern

eliminated as a source of drinking water for those species present on the INL Site. However, until that time, the evaporation ponds will be used by both waterfowl and terrestrial receptors as a water source. The ALCs were developed to be protective of both terrestrial and aquatic receptors. This includes the deer mouse, mule deer, coyote, Townsend's western big-eared bat, mourning dove, sage grouse, red-tailed hawk, and bald eagle, as terrestrial receptors, and the mallard duck and spotted sandpiper as aquatic receptors. A concentration of a contaminant in the evaporation ponds below either the ALC or ambient water quality criteria would be considered protective of ecological receptors.

3.4.3 Acceptable Concentrations for Water in the ICDF Evaporation Ponds

In 2011, EDF-10072 reevaluated the monitoring requirements for the sediments in the ICDF evaporation ponds. In 2002, the screening-level ecological risk assessment (EDF-ER-311) performed to determine the potential for adverse effects on ecological receptor populations did not address the exposure to sediment. Instead, the EPA default sediment quality criteria were used. EDF-10072 determined that the default sediment quality criteria are not appropriate for use at the ICDF ponds because planned closure of the pond will destroy that aquatic community. Rather, organisms that drink from the pond or consume aquatic organisms are a more appropriate endpoint species because they may be impacted from a source of toxic exposure. Table 3-4 presents the acceptable sediment concentrations developed in EDF-10072.

Table 3-4. Acceptable sediment concentrations for ICDF evaporation ponds (EDF-10072).

Contaminant	Acceptable Sediment Concentration (mg/kg)
Antimony	1.16E+01
Arsenic	2.04E+02
Barium	1.02E+04
Beryllium	1.04E+02
Cadmium	4.00E+01
Chromium	2.35E+04
Cobalt	1.44E+03
Copper	2.91E+03
Lead	5.57E+02
Manganese	1.01E+04
Nickel	3.33E+02
Selenium	2.80E+01
Silver	4.83E+02
Thallium	7.84E+00
Vanadium	8.23E+01
Zinc	2.33E+04

3.4.4 Monitoring Recommendations for Ecological Receptors

As a management practice, soil fixative or clean soil will be used on the landfill waste surface prior to winter shutdown to control dust and erosion. This soil fixative or clean soil should limit exposure of the contaminated soil to ecological receptors to acceptable levels, based on the results of the SLERA. Plants were not assessed in this ecological risk assessment because it was assumed that all vegetation growth within the waste disposal areas would be hindered during the operational period. Specifically, during operation of the landfill, the area where deposition of contaminated soil occurs will be kept clear of vegetation. Although erosion control will be maintained using plants, the areas vegetated will be on the sides of the landfill and should not have contact with contaminated soil. Postoperationally, the ICDF landfill will be capped with a robust cover with a middle section designed to eliminate biointrusion (i.e., burrowing animals and root intrusion).

The ponds were built with bare, steep shorelines, and conditions are maintained to limit nutrient enrichment and vegetation. The Cieminski (1993) study evaluated pond characteristics that were more or less favorable to wildlife. Table 3-5 lists the characteristics to be considered in management of wastewater ponds, in order of importance.

Table 3-5. Pond characteristics to discourage or encourage wildlife use of constructed ponds, listed in order of importance (Cieminski 1993).

	Effect on Wildlife Use	
Characteristic	Discourage	Encourage
Surface area	Minimize	Maximize
Invertebrates	Minimize	Maximize
Shrub cover	None	Maximize
Bare shoreline	(species dependent)[a]	
Shoreline slope	Steep	Low
Shoreline length	Minimize	Maximize
Emergent vegetation	No	Yes
Fencing	Yes	No
Height of berms	High	Low
Length orientation	Northwest-southeast	Southwest-northeast

a. Bare shoreline discourages use by ruddy ducks, American coots, Brewer's sparrows, white-crowned sparrows, and chipping sparrows, and encourages use by spotted sandpipers, Wilson's phalaropes, western sandpipers, and Brewer's blackbirds.

A summary of the ecological data collected under the Long-Term Ecological Monitoring Plan (VanHorn and Haney 2007), as directed by the OU 10-04 ROD (DOE-ID 2002c), may be found in the *Operable Unit 10-04 Long-Term Ecological Monitoring Report for Fiscal Years 2003 to 2008* (DOE-ID 2012d). Based upon that summary, the CERCLA Agencies have agreed that no further ecological work is required.

Characterization of contaminant concentrations in water and sediment is performed using the standard sampling methodology (lower detection limits for ecological receptors than the standard Contract Laboratory Program method). From these results and the assessment of use by biota in the area, risk assessment results from the permitting process can be verified. However, it is important to note that the use of concentration data from collocated surface water and sediment samples is preferred and results in a less conservative, more realistic evaluation.

3.5 Short-Term Risk

A short-term risk assessment for workers and public receptors associated with the ICDF Complex is presented in EDF-ER-327, "INEEL CERCLA Disposal Facility Short-Term Risk Assessment" (Appendix E of the RAWP [DOE-ID 2012b]), in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), commonly referred to as the National Contingency Plan. The risk assessment considers and compares exposure to ICDF Complex operators and the public to modeled concentrations of radioactive and nonradioactive hazardous substances representative of the ICDF landfill, the evaporation ponds, and the decontamination building. The assessment also considers the exposure in regard to the landfill WAC concentration guides as a method to assist in determining a bounding risk for the proposed visitor. The time period bounding the risk assessment is the operational life of the ICDF Complex. This assumes a 15-year design life of the landfill disposal cell and decontamination building and a total of 45 years for the evaporation pond. The latter period includes the 15-year operational period, plus an additional 30 years of ICDF postclosure operation to handle any leachate that may be generated following final cover of the landfill.

The risk assessment includes a range of exposure scenarios that capture various receptors associated with the ICDF Complex. Included are five Radiation Worker II exposure scenarios, four exposure scenarios for the general employee radiation training worker, two entry exposure scenarios for a member of the public, and one general-public exposure scenario, as shown in Figure 3-1.

The results of the radiological and nonradiological risk evaluations for the various exposure scenarios and associated groups are discussed further in the following sections. It should be noted that as low as reasonably achievable (ALARA) and standard health and safety practices will be used to ensure target risk levels are not exceeded. All exposure scenarios are within the acceptable target risk levels, with the exception of the following four ICDF Complex exposure scenarios:

- Landfill laborer: 15 rem/year exceeds the target risk level of 5 rem/year
- Landfill truck driver: 6.6 rem/year exceeds the target risk level of 5 rem/year
- Evaporation pond operator: hazard index of 4 exceeds the target risk level of an hazard index of 1
- ICDF Complex visitor: 0.044 rem/year exceeds the target risk level of 0.015 rem/year.

The ICDF Complex operators and other ICP employees will maintain personnel exposures ALARA based on ICP safety and RadCon management practices (see Section 3.7). Additional monitoring or operational limits are not required beyond those defined for the WAC.

3.5.1 Summary of Risk Estimates for Radiation Worker II Exposure Scenarios

A summary of the total effective doses (TEDs) for radiation exposures, noncancer hazard index, and cancer (excess lifetime cancer risk [ELCR]) risk estimates for nonradiation exposures are presented in Table 3-5 for each of the identified radiation-worker exposure scenarios.

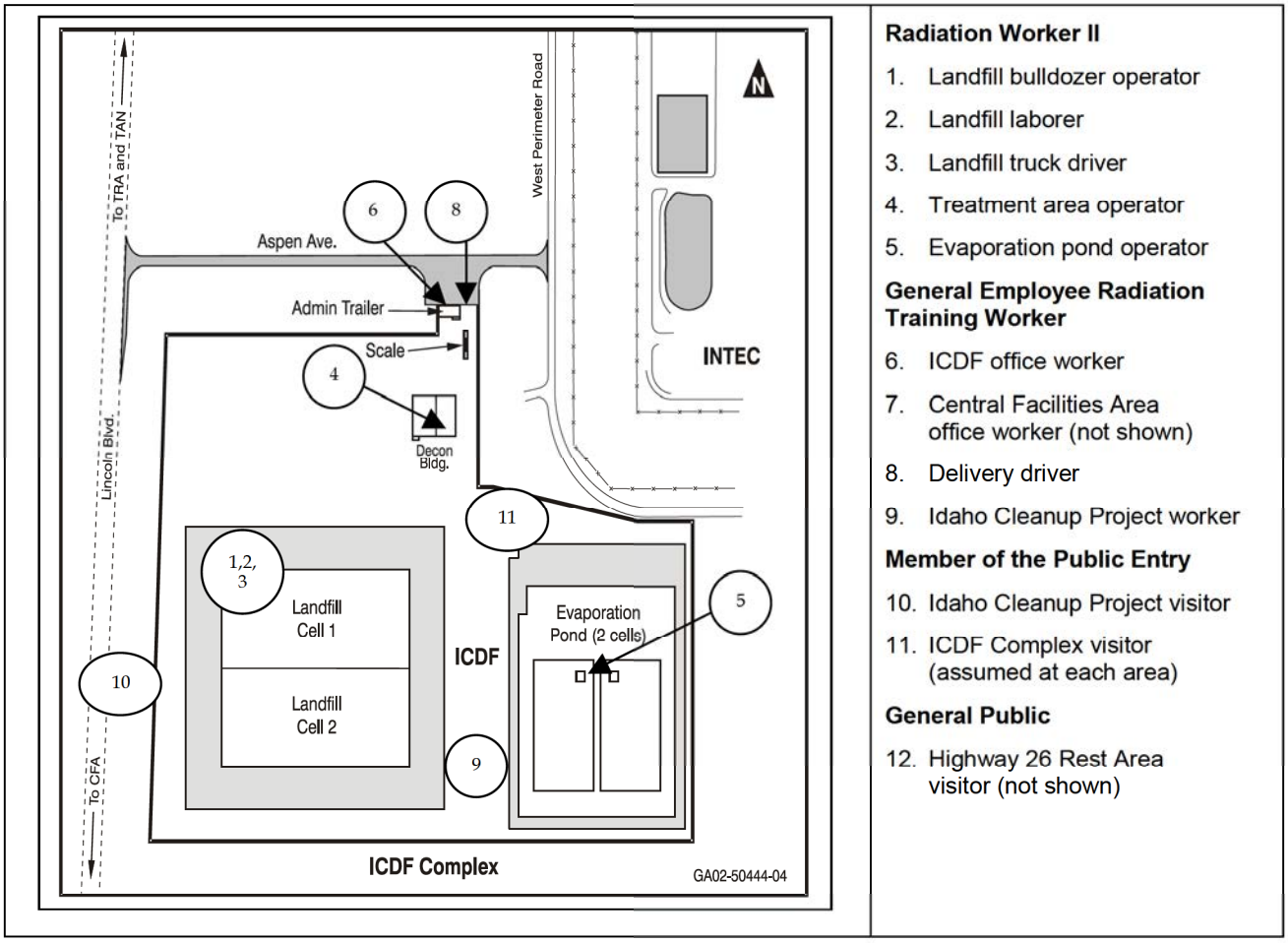

Figure 3-1. ICDF Complex exposure scenario showing locations of exposed individuals.

Table 3-5. Summary of total effective dose and risk estimates for radiation-worker exposure scenarios.

	Radiation	Nonradiation	
Exposure Scenario	Total Effective Dose (rem/year)	Noncancer Hazard Index	Excess Lifetime Cancer Risk
Landfill bulldozer operator	4.4E+00	4.0E–01	8.0E–06
Landfill laborer	1.5E+01	4.0E–01	8.0E–06
Landfill truck driver	6.6E+00	4.0E–01	8.0E–06
Treatment area operator	3.6E–02	9.0E–01	1.0E–05
Evaporation pond operator	1.9E-02	4.0E+00	1.0E–07
Target levels	**5.0E+00**	**1.0E+00**	**1.0E–04**

With the exception of the landfill laborer and truck driver, the TEDs for each receptor evaluated under the radiation-worker exposure scenarios are less than the maximum radiation dose limit of 5 rem/year. The TED for the landfill laborer and truck driver exceeds the radiation dose limit of 5 rem/year.

It is important to note that the TED values calculated for the landfill laborer are based on unmitigated risk. Under no circumstances will radiation workers be allowed to exceed the regulatory limit of 5 rem/year for occupational exposures. Section 6.0 of EDF-ER-327 summarizes the approach for mitigating risk at the INL Site to administrative levels as far below the regulatory limits as reasonably achievable.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. With the exception of the evaporation pond operator, the potential hazard index for noncancer effects is less than or equal to 1 for all ICDF Complex exposure scenarios. The hazard index for noncancer effects for the evaporation pond operator is 4; the primary contributors to noncancer risk are 2-nitroaniline, 3-nitroaniline, and 4-nitroaniline. The project HASP adequately addresses mitigation measures associated with these constituents (ICP 2010).

3.5.2 Summary of Risk Estimates for General-Employee-Radiation-Training-Worker Exposure Scenarios

Table 3-6 presents a summary of the TED for radiation exposures, noncancer hazard indexes, and ELCR risk estimates for each of the identified general-employee exposure scenarios.

Table 3-6. Summary of total effective dose and risk estimates for nonradiation-worker exposure scenarios.

	Radiation	Nonradiation	
Exposure Scenario	Total Effective Dose (rem/year)	Noncancer Hazard Index	Excess Lifetime Cancer Risk
ICDF office worker	<1.0E-03	<1.0E-02	5.0E-09
Central Facilities Area office worker	<1.0E-03	<1.0E-02	3.0E-12
Delivery driver	<1.0E-03	<1.0E-02	4.0E-09
INL Site worker (e.g., power line management)	8.0E-03	2.0E–02	3.0E-07
Target levels	**1.0E-01**	**1.0E+00**	**1.0E-04**

ICDF Idaho CERCLA Disposal Facility
INL Idaho National Laboratory

The TED for the nonradiation-worker exposure scenarios is less than the radiation dose limit of 0.1 rem/year. It is important to note that the TED values calculated for the nonradiation-worker exposure scenarios are based on unmitigated risk. In no event will site workers be allowed to exceed the regulatory limit of 0.1 rem/year for occupational exposures. Section 6 of EDF-ER-327 summarizes the approach for mitigating radiation risk at ICP to administrative levels as far below the regulatory limits as reasonably achievable.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential hazard index for noncancer effects is less than 1 for each nonradiation-worker exposure scenario.

3.5.3 Summary of Risk Estimates for Member-of-the-Public-Entry Exposure Scenario

A summary of the TED for radiation exposures, noncancer hazard index, and ELCR risk estimates for the escorted-member-of-the-public-entry exposure scenario is presented in Table 3-7.

The TED for the ICP visitor is below the radiation dose limit of 0.015 rem/year. The ICP visitor was assumed to be exposed to the entire ICDF-landfill-WAC-constituent concentrations. The TED for the ICDF Complex visitor exceeds the radiation dose limit of 0.015 rem/year. The ICDF Complex visitor was assumed to be exposed to the design-inventory-constituent concentrations only. The WAC-constituent concentrations, in some instances, are many orders of magnitude greater than the design-inventory-constituent concentrations.

The TED values calculated for these exposure scenarios are based on unmitigated risk. Section 6 of EDF-ER-327 addresses the controls that will be implemented to ensure that visitors will be within the dose constraints.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential hazard index for noncancer effects is less than 1 for each nonradiation exposure scenario.

Table 3-7. Summary of total effective dose and risk estimates for member-of-the-public-entry exposure scenario.

	Radiation	Nonradiation	
Exposure Scenario	Total Effective Dose (rem/year)	Noncancer Hazard Index	Excess Lifetime Cancer Risk
INL Site visitor	7.0E–03	<1.0E-02	3.0E–08
ICDF Complex visitor[a]	4.0E–02	9.0E-02	1.0E–07
Target levels	**1.5E–02**	**1.0E+00**	**1.0E–04**

a. Visitor exposure will be controlled to target level.

ICDF Idaho CERCLA Disposal Facility
INL Idaho National Laboratory

3.5.4 Summary of Risk Estimates for the Unrestricted-General-Public Exposure Scenario

The unrestricted-general-public exposure scenario considers exposure to a visitor located at the Highway 26 Rest Area. This unrestricted exposure scenario is a qualitative analysis based on the results of the ICP-visitor scenario. The ICP visitor is in proximity to the ICDF Complex and shares the same source inventory and concentrations as the exposed individual at the Highway 26 Rest Area. The TED for the ICP visitor is less than the radiation dose limit of 0.015 rem/year. Because the rest area is considerably farther (5.6 km [3.5 miles]) from the ICDF landfill than the ICP visitor (300 m [984 ft]), and exposure decreases with distance, dose estimates calculated for the ICP visitor would also be considered protective of the Highway 26 Rest Area visitor.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential hazard index for noncancer effects is less than 1 for each nonradiation.

3.6 Groundwater

To ensure protection of groundwater, the ICDF Complex RAOs presented in the OU 3-13 ROD (DOE-ID 1999) require maintaining caps over the closed ICDF landfill to prevent the release of leachate to the underlying groundwater, which would result in exceeding a cumulative carcinogenic risk of 1×10^{-4}, a total hazard index of 1, or applicable State of Idaho groundwater quality standards (i.e., maximum contaminant levels) in the SRPA.

Operationally, the landfill limits that have been established to ensure protection of groundwater are contained in Section 5 of the ICDF Complex WAC (DOE-ID 2012a). Extensive contaminant fate and transport modeling provided the basis for developing groundwater RAO-based waste soil contaminant concentrations for the ICDF landfill. The groundwater RAOs for this activity are the maximum contaminant levels promulgated under the Safe Drinking Water Act, risk-based concentrations derived from a cumulative 1×10^{-4} ELCR, and risk-based concentrations derived from a hazard index of 1 for noncarcinogens in the SRPA. To demonstrate that the RAOs for the groundwater would be met, maximum contaminant levels were set in the SRPA, and concentrations were back-calculated to develop the maximum concentrations allowable in the landfill (EDF-ER-275).

The SRPA beneath the ICDF Complex was previously contaminated from other sources at INTEC. Monitoring of the unsaturated zone, as described in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007), is used in cooperation with the results from SRPA monitoring to determine if there has been a release from the ICDF Complex, or whether contaminant concentrations may be the result of other contamination sources.

Compliance with RAOs has already been designed through the development of acceptable landfill WAC limits, modeled in EDF-ER-275 and presented in Section 5 of the ICDF Complex WAC (DOE-ID 2012a). The waste tracking process, described in PLN-914, tracks the cumulative mass (which can be used to calculated total percentages) of contaminants in the landfill to ensure that the landfill WAC limits are maintained.

The ICDF Complex demonstrates meeting the established groundwater RAOs by implementing the *ICDF Complex Groundwater Monitoring Plan* and using the monitoring results to assess compliance with maximum contaminant levels, cumulative 1×10^{-4} ELCR, and an hazard index of 1 for noncarcinogens in the SRPA. Landfill performance evaluations through leakage monitoring are also presented in the Groundwater Monitoring Plan and the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2012e) and helps ensure compliance with the RAOs by detecting releases from the landfill at the earliest point in time. The groundwater and leak-detection monitoring that are performed to demonstrate compliance with the RAOs are further described in Section 3.9 of this O&M Plan and in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan*.

In addition to the groundwater monitoring system, a SLDRS was constructed under the primary LCRS of the landfill to provide an early warning of leachate breaching the liner systems in place. This allows for more timely corrective action than would be attained by monitoring the groundwater alone.

3.7 Radiological Controls

The RadCon program implemented at the ICDF Complex is in compliance with applicable codes, standards, and DOE orders, principally 10 CFR 835, "Occupational Radiation Protection." These are implemented by the ICP RadCon Manual (PRD-183) and procedures comprising the *Radiation Protection Procedures Manual* (Manual 15B).

ICP and DOE-ID policy is to conduct radiological operations in a manner that protects the health and safety of all its employees, contractors, and the general public. This objective is accomplished by ensuring that radiation exposures to workers and the public that releases of radioactivity to the environment are maintained below regulatory limits and that conscious efforts are taken to further reduce exposures and releases to be ALARA. ICP is fully committed to implementing a RadCon program of the highest quality that consistently reflects this policy. This policy is implemented by a radiological protection training program, effective application of radiation exposure control, and radiological monitoring, as well as appropriate use of radiological protection instrumentation and recordkeeping. A description of these elements is provided in the following subsections.

3.7.1 Requirements

The RadCon program is derived from the following applicable codes, standards, and DOE orders, principally 10 CFR 835. These are implemented by ICP policies and the standards listed below:

- 10 CFR 835, "Occupational Radiation Protection"
- 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants"
- DOE O 231.1B, "Environment, Safety, and Health Reporting"
- DOE O 458.1 Chg 2, "Radiation Protection of the Public and the Environment"
- ANSI N323A-1997, "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments"
- AIHA Z88.6-2006, "Respiratory Protection – Respirator Use – Physical Qualifications for Personnel."

3.7.2 Radiation Protection Program and Organization

Line management organizations have the overall authority and responsibility to implement and comply with the ICP radiation protection program and to ensure that workers are adequately protected from radiological hazards. The Environment, Safety, Health, and QA organization has overall authority and responsibility for developing and maintaining the ICP radiation protection program. This authority and responsibility is delegated to the RadCon organization, which is directly responsible for providing program direction to the line management organizations. Dosimetry and instrumentation resources are provided by the RadCon organization. Groups reporting to the local area environmental, safety and health manager provide operational radiological protection coverage to line organizations. These groups provide RCT and radiological engineer support. The RCTs, radiological engineers, and other safety professionals interface through safety and health program development, reviews of work planning documents, and job hazards analyses. Staffing levels for radiation protection personnel are determined and maintained as required by specific radiation protection needs and the need to maintain an effective radiation protection program. Day-to-day implementation and application of the ICDF Complex radiation protection program is under the direction of RadCon first-line management and staff members assigned to the project.

Excellent performance in RadCon policy is evident when radiation exposures are maintained well below regulatory limits and contamination is minimal, radioactivity is well controlled, and radiological spills and uncontrolled releases are prevented.

3.7.3 ALARA Policy and Program

Federal law and DOE require the ALARA concept to be implemented in the company's RadCon program. This requirement is implemented through ICP policies and procedures for RadCon.

The ALARA process is an approach to RadCon that reduces and controls individual and collective radiation exposures of the workforce and the public. Management is committed in all activities to reducing any safety or health risks associated with hazardous substances, including ionizing radiation. This policy applies to the TED. All exposures are maintained as far below the limits set by DOE as social, technical, economic, practical, and policy considerations permit. Management is responsible for promoting ALARA awareness and for reducing and keeping radiation exposures ALARA.

Management uses the following methods to achieve ALARA objectives:

- Allocating the appropriate technical, administrative, and supervisory resources necessary.
- Appointing a system of ALARA committees to provide focus and direction for reducing radiological exposures.
- Appointing an ALARA coordinator to oversee and evaluate efforts and provide technical assistance to identify needed improvements.
- Establishing and tracking ALARA goals with consideration to the projected work scope for organizations and for individuals with consideration to their job functions.
- Aggressively pursuing those activities—concepts, and methods, including cost/benefit analyses—that result in compliance with ALARA goals and objectives.
- Ensuring that preparations for high-radiological-consequence work include an evaluation of the use of equipment mockups, work area photos, and videotapes to minimize the working time required in the actual radiation and contamination fields. The cost for these materials should be justified by dose-reduction benefits.

Routine dosimetry reports show organizational dose totals, which include individual employee dose totals and ALARA goals, and flag those employees projected to exceed or who have exceeded their ALARA goal. Reports and graphs are provided to facility managers for review of the ALARA status of personnel they supervise.

3.7.4 Radiological Protection Training

ICP-wide policies establish the requirements to ensure that personnel have the training to work safely in and around radiological areas and to maintain their individual exposures and the exposures of others ALARA.

Visitors to the INL Site receive training or are escorted (with approval from RadCon manager) by a fully trained and qualified employee if they enter radiological areas.

3.7.4.1 Radiological Worker and General Worker Training. The plans and procedures for radiological worker and general worker training are found in ICP policies and procedures for radiological protection. Facility management ensures that all individuals receive appropriate training in RadCon for their work assignments. All individuals requiring access to radiological areas receive radiological worker training, which covers facility-specific technical and practical training and stresses their responsibilities for safely working with radioactive materials. The training emphasizes the nature of radiological conditions and control of radiation exposure and follows the DOE standardized core training materials.

The level of training is based on each employee's category of involvement with radiological work and meets the requirements of 10 CFR 835.901, "Radiological safety training."

Personnel who may routinely enter a controlled area and may encounter radiological barriers, postings, or materials receive General Employee Radiological Training. Radworker I or II may be substituted for General Employee Radiological Training.

3.7.4.2 RadCon Personnel Training. All RadCon personnel meet the requirements and are trained according to the terms and conditions of 10 CFR 835.901 and ICP company policies and procedures. The RCT qualification consists of:

- Standardized DOE core course training material
- On-the-job training in accordance with the qualification standards of ICP company policies and procedures
- Passing scores on both final comprehensive written examination and final oral examination board.

Individuals performing duties as RCTs are retrained and qualified in accordance with DOE core course requirements every 2 years. Limited or subdivided qualifications for RCTs are issued if associated provisions are identified in the qualification program.

Each employee is trained in the principles of the Voluntary Protection Program, which is intended to motivate each employee to take the responsibility for their own safety and the safety of their fellow workers. The ultimate goal of the Voluntary Protection Program is to create a workplace free from injury and illness. In addition, each employee is empowered with stop work authority, which allows each employee to stop any work that he or she feels is unsafe or is not proceeding according to an approved procedure.

3.7.5 Radiation Exposure Control

The following subsections discuss the methods for controlling radiation exposure.

3.7.5.1 Administrative Limits. Radiation exposure limits are based on requirements contained in Subpart C of 10 CFR 835, "Standards for Internal and External Exposure," and ICP company policies and procedures. An administrative control level (ACL) has been established for ICP. For nonaccident conditions, ICP management must give prior written approval for doses greater than the ICP ACL. The administrative limit imposed by DOE is intended to keep worker exposure less than 2 rem/year. DOE Headquarters management must give prior written approval for doses greater than 2 rem/year, but a worker will not be authorized to receive an exposure greater than 5 rem/year. In addition, radiation workers have assigned ALARA goals. The dose limits and ALARA goals are implemented in ICP procedures and apply to occupational radiation dose, which excludes doses from background, therapeutic and diagnostic radiation, medical radiation, and participation as a subject in medical research programs.

3.7.5.2 Radiological Practices. The requirements of 10 CFR 835, supplemented by ACLs and ALARA goals, establish the external radiation exposure limits.

Management specifies the responsibilities and requirements necessary to ensure that exposure of employees and visitors to radiation from all sources is ALARA and, in all cases, compliant with federal requirements. Management also has the responsibility for maintaining the documentation of the facility-specific ALARA program. The documentation demonstrates compliance with 10 CFR 835.101, "Radiation protection programs." All controlled areas, radiological areas, and radioactive material areas are posted in compliance with 10 CFR 835 and ICP procedures.

Radiological areas are determined, and their boundaries marked and posted in accordance with 10 CFR 835, as implemented by ICP procedures. Work is controlled by use of radiological work permits (RWPs) and other approved radiological work procedures. Appropriate RadCon practices are specified in the RWP. These practices vary widely, depending on specific circumstances.

Areas within the ICDF Complex may be designated as radiation areas, contamination areas, soil-contamination areas, high-contamination areas, airborne-radioactivity areas, or radiological-buffer areas, as conditions warrant. These designations are generally not permanent, but are dynamic and flexible in relation to ongoing operations and changing radiological conditions. The boundaries of these areas are adjusted, as needed (increased or decreased), to reflect the actual radiological conditions.

Work in radiological areas is typically controlled using the RadCon Information Management System. This is a network-based data storage system that builds, provides, and maintains an extensive history of job-specific details related to a given RWP and work order/ALARA task. RWPs are generated and tracked using the RadCon Information Management System, and doses are tracked on the system through electronic personal dosimeters.

3.7.5.3 Dosimetry. As implemented by ICP procedures, 10 CFR 835 establishes the policy, requirements, and training necessary for monitoring external and internal exposures. These procedures specify implementation of the external and internal dosimetry programs.

External dosimetry includes monitoring personnel radiation exposures from sources external to the body, including personnel monitoring, area/environmental monitoring, and facility and personnel accident monitoring. External personnel monitoring includes penetrating and nonpenetrating radiation contributions to a person's whole body and extremities, as appropriate. Thermoluminescent dosimeters are used to monitor external exposure. Each employee entering a RadCon area is responsible for wearing the assigned thermoluminescent dosimeters. In addition to the thermoluminescent dosimeter, electronic-integrating pocket dosimeters and/or ionization chamber direct-reading pocket dosimeters may be used. The RadCon organization analyzes all external dosimetry used at the INL Site.

Individuals working at nuclear facilities are categorized by job tasks and exposure potential, and those that exceed the bioassay trigger level are included in the bioassay program. Employees who are likely to receive intakes resulting in a committed effective dose greater than 100 mrem undergo initial, periodic, and termination baseline whole-body counts or bioassays, as appropriate. Employees who may receive intakes resulting in a measurable committed effective dose that is less than 100 mrem in a year may also be assigned to participate in routine or special bioassay sampling under the direction of the facility internal dose coordinator.

A radiological engineer assesses the radiation dose received from internally deposited radioactive materials on the basis of any bioassay results (whole-body count or biological samples). The assessment is documented and submitted to the Dosimetry Group, which manages the bioassay program and maintains a summary of dose equivalents received from external and internal results.

3.7.5.4 Respiratory Protection. ICP procedures provide guidelines for selecting respiratory protection equipment for protection against airborne radioactivity. These procedures incorporate the requirements of ANSI Z88.2-2006, "Respiratory Protection – Respirator Use – Physical Qualifications for Personnel." Respirators for radiological exposure-control purposes are controlled, issued, and inspected in accordance with ICP procedures. All personnel who use respiratory equipment are formally trained and qualified.

3.7.6 Radiological Monitoring

As implemented by ICP procedures, 10 CFR 835 specifies the requirements and limits that ensure control of radiological conditions and radioactive material. Radiological monitoring and control of the conditions at facilities are performed to ensure that these limits are not exceeded.

3.7.6.1 Control of Personnel Contamination. External monitoring of the whole body for beta-gamma and/or alpha contamination is required of each person upon exit from a contamination area. Only those trained as radiation workers are permitted to monitor (frisk) themselves or others. The contamination limits, survey methods, and appropriate responses to personnel contamination are specified in 10 CFR 835, as implemented by ICP procedures.

Workplace monitoring is provided on both a real-time basis and through programs established to identify trends. Real-time monitoring is designed to detect and provide alarms when unusual increases in radiation or airborne radioactivity occur. The alarm alerts personnel to take immediate action to prevent or mitigate their individual exposure to the threat.

3.7.6.2 Area Airborne Radioactivity Monitoring System. Requirements of the airborne radioactivity monitoring program and implementing procedures are contained in ICP procedures. Air monitoring is performed when an individual is likely to receive an exposure of 40 or more derived air concentration (DAC) hours in a year or as necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed. Continuous air monitors (CAMs) or portable air-sampling equipment is used where persons without respiratory protection are likely to be exposed to concentrations exceeding 1 DAC or where there is a need to warn individuals of unexpected increases of airborne activities greater than 1 DAC. ICP procedures contain the detailed implementation requirements of the airborne radioactivity monitoring program, including the responses to high airborne radioactivity in work areas.

3.7.7 Radiological Protection Instrumentation

Properly selected, operated, maintained, and calibrated radiological instrumentation is employed at facilities to implement an effective RadCon program. ICP procedures specify the requirements for radiological instrumentation. The ICP RadCon Manual (Companywide Manual 15B) defines the criteria for selection, design, procurement, and installation of radiological instrumentation. ICP procedures provide calibration and operational check requirements.

Portable RadCon instruments are calibrated, maintained, and repaired at the INL Health Physics Instrument Laboratory. These instruments are used to identify and help control radiation, contamination, and airborne radioactivity at its source. Most of these instruments generally will be used interchangeably within various areas of the ICDF Complex. Fixed instruments are calibrated, maintained, and repaired on location using approved procedures. The following instruments are used at the various facilities, as appropriate:

- CAMs and/or portable air-sampling equipment are used to monitor areas with potential for airborne radioactivity. CAMs or portable air samplers are required in areas that could generate airborne levels greater than 1 DAC or where a need exists to alert potentially exposed workers to unexpected increases in the airborne radioactivity levels.
- During waste-handling operations, CAMs or portable air-sampling equipment will be used to identify and/or characterize any airborne radioactivity releases from the ICDF landfill, evaporation pond, and decontamination or treatment activities. Portable air sampling is the preferred air-monitoring method at the landfill and evaporation ponds. Portable air-sampling instruments allow greater flexibility to sample areas of concern and changing wind direction versus fixed

locations for CAMs, which may not always be in the wind path. Air samples will be taken downwind of the dumping activities to monitor for any airborne releases, in accordance with ICP procedures. Samples will also be taken in areas protected from the prevailing winds to establish background levels. These samples may be taken with either low-volume (giraffe) or high-volume (grab) air samplers.

- Personnel-contamination monitors are used with survey stations to monitor external contamination on employees and equipment at control points near exits from radiological buffer areas.
- One personnel-contamination monitor will be positioned in the personal protective equipment change room of the decontamination building for personnel to perform whole body surveys at the exit from radiological buffer areas and other radiologically controlled areas, including exits from ICDF Complex areas. A stationary Geiger-Mueller counter or scintillation survey instrument will be located in the same area to survey tools or other items and for use when the personnel-contamination monitor is out of service for calibration or maintenance. Portable instruments will be placed in appropriate locations within the ICDF Complex for periodic personnel and equipment surveys. All personnel signed in on an RWP are expected to perform a final exit survey when leaving the ICDF Complex.
- Portable alpha monitoring instruments are used for field survey of surfaces and personnel.
- Beta-gamma monitoring instruments, which include a variety of portable beta-gamma detectors and suitable rate meters, are used for both surface and personnel monitoring.
- Low background gas flow proportional alpha-beta counters are used to count contamination smears and air filters. Most can be programmed to automatically change samples and store the results in a computer-linked database.
- At least one proportional counter will be positioned in the RadCon room of the decontamination building to analyze radioactivity on smears from the ICDF Complex.
- Other specialized instruments (e.g., neutron detectors) also may be used.

3.7.7.1 Calibration and Control. Calibration and control of portable radiological instrumentation provided by the Health Physics Instrument Laboratory conforms to ANSI N323A-1997, "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments." The standards used for calibrating instrument functions, including electronic and flow meter standards and radiation calibration sources, are directly or indirectly traceable to National Institute of Standards and Technology standards.

Portable instrumentation is calibrated before initial use, after maintenance or adjustment, following any modification or alteration that may affect instrument response, and at intervals not to exceed 1 year. Calibration is performed on other radiological instruments (nonportable or fixed), as required by ICP and facility-specific procedures. The current calibration label, showing the date when calibration is due, is attached to portable instruments.

The calibration status (including due date) of fixed instruments and instrumentation systems is tracked.

3.7.7.2 Operational Checks. A source check is performed on portable radiological instrumentation weekly. Before use by an RCT, a response check is performed to verify that the instruments respond properly to radiation.

Before use, each portable survey meter is visually examined for defects, current calibration dates, and battery conditions, if the instrument has a built-in battery check. Any instrument suspected of

providing incorrect in-service measurements is removed from service, pending a satisfactorily passed source check or calibration. Operational checks are also performed on fixed instrumentation for proper operation, as appropriate.

Radiological instrumentation found to be defective (e.g., fails the source check) is tagged out of service to prevent inadvertent use and segregated until properly repaired, calibrated, or disposed of.

3.7.7.3 Safety Precautions for Using Radiological Instrumentation. Only personnel formally trained in the use of portable radiological instrumentation are allowed to use this equipment. As a minimum, training consists of a lecture on instrument use and the meaning of its measurements, a demonstration of its proper handling, and a period of supervised use.

3.7.8 Radiological Protection Recordkeeping

Radiological protection records generated by a facility include, as a minimum, those items listed in 10 CFR 835. Inventory, survey, exposure, and air-monitoring records are maintained to provide a history of radiological conditions. Records that document the appropriateness, quality, and accuracy of methods, techniques, and procedures in use during any given period are maintained per Section 6 of ANSI N13.6, "Practices for Occupational Radiation Exposure Records Systems."

ICP company policies and procedures provide direction on the development, management, and retention of records. Categories of radiological records include

1. RadCon policy statements
2. RadCon procedures
3. Individual radiological doses
4. Internal and external dosimetry policies and procedures
5. Personnel radiological training
6. ALARA records
7. Radiological instrumentation test, repair, and calibration records
8. Radiological surveys
9. Area monitoring dosimetry results
10. RWPs
11. Radiological performance indicators and assessments
12. Radiological safety analysis and evaluation reports
13. QA records
14. Radiological incident and occurrence reports
15. Accountability records for sealed radioactive sources
16. Records for release of material to controlled areas
17. Reports of loss of radioactive material.

All radiological records are retained until DOE authorizes final disposition.

3.7.8.1 Dose Tracking. Tracking of exposures for workers is conducted in accordance with the ICP RadCon Manual. Dosimetry reports show organizational dose totals. In addition, individual employee dose totals and ALARA goals are listed, and the names of employees who are projected to exceed, or who have exceeded, their ALARA goal are flagged.

Active employees are provided with an annual report of their dose. Upon request from a terminating employee, exposure records are provided as soon as the data are available, but not later than 90 days after termination. A written estimate of the radiation dose received by the terminated employee can be provided at the time of termination, if requested. Monitoring results, including zero dose, are reported to each visitor within 30 days of determining the results. Upon request, any individual may receive a current radiation dose record. Detailed information concerning any individual's exposure is available, upon request by the individual, consistent with the provisions of the Privacy Act (59 FR 46522).

The ICP Radiation Dosimetry program retains official records of individual radiation doses. Individual dose records are normally retained for 75 years and will be retained as directed to support epidemiological studies. Records retained and reported are sufficient to support recalculation of doses at a later date.

3.7.8.2 Airborne Radioactivity Monitoring Records. Facilities retain airborne radioactivity monitoring records to provide a chronological historical record of the conditions under which personnel were exposed. This complies with Section 5 of ANSI N13.6. Air monitoring records that document the appropriateness, quality, and accuracy of methods, techniques, and procedures in use during any given period are kept in accordance with Section 6 of ANSI N13.6. Where applicable, facilities retain records in accordance with DOE requirements and RCRA permit requirements.

3.7.8.3 Annual Radiation Dose Reports. Individual occupational dose records and records used to assess individual doses are generated and maintained to provide appropriate reports to the employee and management and to comply with DOE or procedures in accordance with DOE O 231.1B. Records are readily available for all current employees.

Official records of radiation exposure doses also are retained. Dose assessment calculations and methods are retained by RadCon personnel.

Special investigations are used to estimate the dose received by an individual (external and internal) when the exposure cannot be determined by normal means. Investigation reports become part of the dose record. After an investigation, the responsible facility manager may determine that a critique report or occurrence report is required for further investigation and corrective action.

3.8 Action Leakage Rate

The ALR for the ICDF landfill was calculated in EDF-ER-269, "Leachate Generation Study." The calculated ALR for the ICDF landfill is 1,380 gal/day. The ALR is 1,590 gal/day for each ICDF evaporation pond (west and east). The ALR for the ICDF evaporation ponds was calculated in EDF-ER-280, "Landfill Leachate Collection System Design Analysis."

During operations of the ICDF Complex, ICDF Complex personnel must convert the weekly flow rate from the landfill LDRS and from the LDRS from each evaporation pond to a flow rate with the units of gal/day. These flow rates will be compared to the ALR for the landfill or the evaporation pond. Section 9 details the steps that are required if the calculated ALR is exceeded.

After the final ICDF landfill cover has been placed, ICDF Complex personnel must convert the monthly, quarterly, or semiannual flow rate from the landfill LDRS and from the LDRS from each evaporation pond (while they remain after closure of the landfill) to a flow rate with the units of gal/day. Whether the conversion is performed using monthly, quarterly, or semiannual flow rates depends upon whether the previous volumes in the sumps have been below the operating levels of the pumps, as described in 40 CFR 264.302, "Action leakage rates." Flow rates from the landfill primary leak detection and recovery system (PLDRS) and the evaporation pond LDRS will be compared to the ALR for the landfill or the evaporation pond. Section 9 details the steps that are required if the calculated ALR is exceeded. The pump will operate to remove leachage as long as there is sufficient head. Further response actions are not identified for ALR exceedence and will be determined on a case-by-case basis, in cooperation with the Agencies.

3.9 Environmental Monitoring and Recordkeeping

CERCLA determines the applicable environmental compliance requirements in the ROD through the identification of the ARARs. The ARARs that apply to the ICDF Complex appear in Section 12.2.3 of the OU 3-13 ROD (DOE-ID 1999). Table 3-8 presents a matrix for those ARARs involving environmental monitoring/inspection or record/reporting operational requirements. Table 3-8 indicates the specific section and document that demonstrates compliance with each operational monitoring/inspection or record/reporting ARAR. The ARARs that address design or construction or ARARs for operations that do not include environmental monitoring/inspection or record/reporting requirements are not included in this table. Further discussion of ARAR compliance for ICDF Complex operations is provided in Section 4.14 of this O&M Plan.

In addition to describing the operational requirements for monitoring/inspection or record/reporting, this section describes the environmental monitoring that will be performed for the ICDF Complex. Types of environmental monitoring that will be performed at the ICDF Complex to obtain data necessary to operate the ICDF Complex in compliance with environmental requirements include the following:

- Air emissions compliance calculations (i.e., NESHAP)
- Groundwater monitoring
- Other aqueous sampling (e.g., evaporation pond, landfill LCRS, and pump station)
- Evaporation pond sediment sampling.

The environmental monitoring sections below briefly describe the purpose of the various types of environmental monitoring and direct the reader to a referenced document for additional information.

No storm water sampling from the storm water ditches will be performed as part of ICDF Complex operations. The good housekeeping practices that are described in this O&M Plan (e.g., keep areas free of debris, free of weeds, covering staging piles, and dust control measures for waste) will help the storm water collection ditches remain contamination-free. As a best management practice, an annual radiological survey of the accessible portions of the storm water collection/trench system will be performed to demonstrate that the "good housekeeping" practices designed into ICDF operations are effective in controlling the spread of contamination from the facility.

Table 3-8. ICDF Complex operational monitoring and recordkeeping requirements.

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.01.585	Rules for the control of air pollution in Idaho – HAPs	Calculations will be performed using information contained in IWTS (described in PLN-914) based on actual hazardous concentrations in waste received. Operational limits have been established for waste receipt to ensure HAPs and TAPs limits are not exceeded.	INL Site annual IDAPA emissions report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of this O&M Plan IDAPA Air Compliance Demonstration (EDF-2237)
IDAPA 58.01.01.586	Rules for the control of air pollution in Idaho – TAPs	Calculations will be performed using information contained in IWTS (described in PLN-914) based upon actual hazardous concentrations in waste received. Operational limits have been established for waste receipt to ensure HAPs and TAPs limits are not exceeded.	INL Site annual IDAPA emissions report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of this O&M Plan IDAPA Air Compliance Demonstration (EDF-2237)
40 CFR 61.92 40 CFR 61.93	NESHAP for radionuclides from DOE facilities, emission monitoring, and emission compliance	Calculations will be performed using information contained in IWTS (described in PLN-914) based upon actual radionuclide concentrations in waste received. Operational limits have been established for waste receipt to ensure NESHAP limits are not exceeded.	INL Site annual NESHAP report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of this O&M Plan NESHAP Compliance Demonstration (EDF-2236 and EDF-9993)
IDAPA 58.01.05.008 (40 CFR 264.14 (a), (b), (c))	Site security	Fence will be inspected to confirm it is in good repair.	Fence inspection checklists will be maintained in the ICDF Complex project records.	Section 4 of this O&M Plan Section 8 of this O&M Plan Section 10 of this O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.15 (a), (c))	General inspection requirements	Routine inspections will be performed to identify malfunctions, deterioration, operator errors, and discharges which may lead to the release of hazardous constituents or threat to human health.	General inspection checklists will be maintained in the ICDF Complex project records.	Section 8 of this O&M Plan Section 10 of this O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.92)	Groundwater protection standard	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97(g) will be maintained in the ICDF Complex project records.	*ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007)
IDAPA 58.01.05.008 (40 CFR 264.93)	Hazardous constituents	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97(g) will be maintained in the ICDF Complex project records.	*ICDF Complex Groundwater Monitoring Plan*
IDAPA 58.01.05.008 (40 CFR 264.97)	General groundwater monitoring requirements	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97(g) will be maintained in the ICDF Complex project records.	*ICDF Complex Groundwater Monitoring Plan*
IDAPA 58.01.05.008 (40 CFR 264.98)	Detection monitoring program	Groundwater detection monitoring as outlined in 40 CFR 264.98.	Agencies will be notified if there is an indication of statistically significant increase; compliance monitoring may be invoked.	ICDF Complex Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003a)
IDAPA 58.01.05.008 (40 CFR 264.301)	Leachate depth over the liner does not exceed 30.5 cm (12 in.) during normal operating conditions. Significant storm events (greater than 2.16 cm [0.85 in.] of precipitation) and/or abnormal events resulting in a surge will be drawn down to less than 30.5 cm within 72 hours.	Requirements for Leachate Collection Recovery System, and Leak Detection System.	No record/report required.	Section 4 of this O&M Plan Section 8 of this O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.309(a) and (b))	Surveying and recordkeeping	No monitoring/inspection required.	Must maintain an operating record, which includes a map of the exact locations and dimensions, including depth of each cell with permanently surveyed benchmarks, and the contents of each cell and the approximate location of each hazardous waste type within each cell.	Section 4 of this O&M Plan Section 10 of this O&M Plan Waste Placement Plan (EDF-ER-286) Waste Tracking Plan for the ICDF Complex (PLN-914)
IDAPA 58.01.05.008 (40 CFR 264.310(b)(1)(4)(5) and (6))	Closure and postclosure care	Weekly inspection of leak-detection system. Continue to monitor groundwater.	Record amount of liquids after closure at least weekly. Continue recordkeeping described in groundwater monitoring plan.	Section 9 of the RAWP (DOE-ID 2012b) Section 8 of this O&M Plan *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007)
IDAPA 58.01.05.008 (40 CFR 264.302)	Landfill ALR	Weekly calculations of average daily flow rate for each sump.	Record of the daily average flow rate and the comparison to the ALR.	Section 3 of this O&M Plan Section 4 of this O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.553)	Temporary units	Inspections will be performed as required based upon the waste in the area.	Waste volume within the unit, entry dates of the waste.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 4 of this O&M Plan Section 5 of this O&M Plan Section 8 of this O&M Plan Section 10 of this O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.554)	Staging piles	Inspections will be performed as required based upon the waste in the area.	Waste volume within the unit, entry dates of the waste.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 4 of this O&M Plan Section 5 of this O&M Plan Section 8 of this O&M Plan Section 10 of this O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264, Subpart I)	Use and management of containers	Weekly inspections of storage areas and containers.	Maintain inspection checklists.	Section 8 of this O&M Plan Section 10 of this O&M Plan
IDAPA 58.01.05.008 (40 CFR 264, Subpart DD)	Containment of hazardous waste within the building Maintain primary barrier free of significant cracks, gaps, or other deterioration Maintain level of stored-treated waste not to exceed the height of the containment wall Control movement of hazardous waste out of the building Control fugitive emissions	Weekly inspection of data gathered from monitoring equipment and leak-detection equipment. Inspection to certify compliance with requirements. Weekly inspection of facility's operating record. Weekly inspection of containment building and area immediately surrounding containment building for release.	Maintain record of all inspections and certifications in facility operating record. Maintain record of all repairs conducted. Record any discovery of condition that would lead to or has caused a release of hazardous waste. Notify Agencies of any release. All repairs and construction must be certified by a qualified registered professional engineer. Maintain record of waste flow-through.	Section 4 of this O&M Plan Section 8 of this O&M Plan Section 9 of this O&M Plan Section 10 of this O&M Plan Waste Tracking Plan for the ICDF Complex (PLN-914)
IDAPA 58.01.05.008 (40 CFR 264.221)	Surface impoundments	Leak detection monitoring system. Weekly inspections. Inspections after storms.	Sump levels and pond level readings. Certification of design and monitoring systems. Record amount of liquid removed from leak-detection sump at least once each week. Calculate average daily flow rate for each sump at least weekly.	Section 4 of this O&M Plan Section 8 of this O&M Plan Section 10 of this O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.552)	Corrective Action Management Units	Leak detection monitoring system. Weekly inspections. Inspections after storms.	Sump levels and pond level readings. Certification of design and monitoring systems. Record amount of liquid removed from leak-detection sump at least once each week. Calculate average daily flow rate for each sump at least weekly.	Section 4 of this O&M Plan Section 8 of this O&M Plan Section 10 of this O&M Plan
IDAPA 58.01.05.008 (40 CFR 264, Subpart F)	Releases from Solid Waste Management Unit (groundwater monitoring)	Monitoring in accordance with 40 CFR 264.92, .93, .95, .97, and .98.	Records and reporting in accordance with 40 CFR 264.92, .93, .95, .97, and .98.	Section 3 of this O&M Plan *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007)
IDAPA 58.01.05.00 (40 CFR 264, Subpart G)	Closure-postclosure	Monitoring for postclosure will be in accordance with the detailed ARARs cited above.	Survey plat filed with the local zoning authority.	Section 9 of the RAWP (DOE-ID 2012b) Section 8 of this O&M Plan Section 10 of this O&M Plan

ALR	action leakage rate
ARAR	applicable or relevant and appropriate requirement
DOE	U.S. Department of Energy
HAP	hazardous air pollutant
ICDF	Idaho CERCLA Disposal Facility
INL	Idaho National Laboratory
IWTS	Integrated Waste Tracking System
NESHAP	National Emission Standards for Hazardous Air Pollutants
O&M	operations and maintenance
RAWP	remedial action work plan
TAP	toxic air pollutant

3.9.1 Air

No environmental air monitoring will be performed for the ICDF Complex to monitor NESHAP or IDAPA compliance; any air monitoring that would be performed would be to obtain health and safety data and will be conducted at the discretion of the ICDF Complex health and safety officer. Necessary radiological air monitoring for the ICDF Complex is provided in Section 3.7 of this O&M Plan.

Evaluations demonstrate that the ICDF Complex and associated remediation operations will not contribute to emissions of toxic, hazardous, or radioactive air pollutants above regulatory limits when the operational limits described in Section 3.2 and 3.3 of this O&M Plan are implemented. Therefore, calculations of emissions from the ICDF Complex will be conducted to demonstrate compliance with the applicable standards. The calculations of emissions compliance from the ICDF Complex operations for NESHAP and IDAPA will be based on the waste inventory data contained in the waste tracking system database (described in PLN-914). These air-compliance calculations will be performed to demonstrate that ICDF Complex operations are protective of human health and the environment; air-compliance calculations will be conducted for toxic, hazardous, and radioactive air pollutants.

Toxic and hazardous air pollutant compliance requirements can be calculated on a daily basis by tracking the quantity of toxic air pollutants disposed of in the landfill and evaporation pond. Using the operational limit information presented in Section 3.2 and in EDF-2237, toxic and hazardous air pollutant emissions will be maintained at less than the IDAPA standards.

NESHAP compliance calculations will be conducted annually for the ICDF Complex; these calculations will be a component of the annual INL Site NESHAP report. EDF-2236 and EDF-9993 provide the approach for the NESHAP calculation, which is based on tracking the quantity of radionuclides disposed of in the landfill and evaporation pond, respectively.

3.9.2 Groundwater

Groundwater monitoring requirements for ICDF Complex operations are provided in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007). The Groundwater Monitoring Plan discusses regulatory requirements and all aspects of groundwater sampling and analysis, including sample locations, frequencies, handling, analytes, QA/quality control, and analytical techniques. The Groundwater Monitoring Plan also specifies data validation, reporting, and data and waste management.

Groundwater monitoring will be conducted for the ICDF Complex in the SRPA and in the unsaturated zone beneath the ICDF Complex to determine whether ICDF waste disposal operations have resulted in a release of contaminants to the environment beneath the landfill or evaporation pond that exceed RAOs in the SRPA. The *ICDF Complex Groundwater Monitoring Plan* provides the sampling schedule, frequency, and analyte list for groundwater monitoring of the SRPA and perched water. Six SRPA wells are monitored in the vicinity of the ICDF Complex, including one upgradient monitoring well and five monitoring wells that were installed south of the ICDF Complex. Six perched water wells were installed at the locations shown in the Groundwater Monitoring Plan. There are up to three completions in each perched water well to add to the existing system of perched monitoring wells within WAG 3. Background samples have been collected from the SRPA wells and from the three perched water wells that were not dry. Water levels will be checked in the perched water wells during routine monitoring of the SRPA wells. The Agencies will be contacted to discuss whether sampling is warranted if any of the following water measurements occur:

- At least 30.5 cm (12 in.) of water is found in a shallow perched water monitoring well
- At least 61 cm (2 ft) of water is found in a middle perched water monitoring well
- At least 1 m (3 ft) of water is found in a deep perched water monitoring well.

All samples will be collected in accordance with the *ICDF Complex Groundwater Monitoring Plan*.

The groundwater monitoring program will continue throughout the active life of the ICDF Complex and through the ICDF Complex closure period. The active life of the ICDF Complex is estimated to continue for 10 to 15 years, beginning in 2003 (although current DOE-ID initiatives may accelerate the operational schedule). The closure period for the ICDF Complex is estimated to continue 30 years past discontinuation of waste disposal at the ICDF Complex (through 2048). Monitoring of the ICDF landfill following the closure period will be conducted in coordination with the long-term monitoring of the broader INTEC facility and ROD requirements to ensure that RAOs are maintained in the SRPA beyond the year 2095.

3.9.3 Other Aqueous Sampling and Evaporation Pond Sediment Sampling

In addition to groundwater monitoring, the LCRS, PLDRS, and SLDRS are monitored, as outlined in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2012e). It is important to be able to detect a release from the ICDF landfill at the earliest point in time. Leachate monitoring serves this purpose by detecting contaminants leaching from the landfill and can be used as a line of evidence to determine whether increased concentrations in groundwater are the result of a release from the ICDF landfill or another source. The LCRS monitoring data are used to assess performance of the landfill. As part of the landfill leak-detection efforts, LCRS sampling will include the same baseline constituents that are required in *ICDF Complex Groundwater Monitoring Plan*.

In addition to the LCRS monitoring described above, the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* addresses the collection of liquid and sediment samples from the evaporation pond and the Pump Station (CPP-1688). The evaporation pond WAC provide the basis for the limiting concentrations of radioactive and nonradioactive constituents that may be present in the aqueous waste in the evaporation pond. Compliance with the evaporation pond WAC, defined in Section 6 of the ICDF Complex WAC (DOE-ID 2012a), ensures protection of human health and the environment. Liquid and sediment samples collected from the evaporation pond are used to assess operations and provide supplementary data for leak-evaluation programs. Data collected from the samples of evaporation pond liquid are also used to support the annual NESHAP compliance calculations for the ICDF Complex. Evaporation pond liquid and sediments are sampled and analyzed for arsenic, selenium, vanadium, and zinc to address ecological issues described in Section 3.4 of this O&M Plan. Evaporation pond liquid is sampled to determine whether concentrations exceed the operational limits established to ensure compliance with IDAPA 58.01.01.585 and .586 requirements for toxic air pollutants. Details of the evaporation pond sampling are contained in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan*. A summary report will be issued annually to the Agencies documenting the estimated I-129 flux from the ICDF Landfill to the Evaporation Ponds.

Field parameters (i.e., pH, specific conductance, and temperature) are also analyzed from liquid samples collected from the LCRS sump, PLDRS, SLDRS, and evaporation pond.

The *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* also describes liquid and sediment sampling of the Pump Station to assess operational limits.

3.10 Sampling and Analysis and Sampling Quality Assurance

Each of the plans for the ICDF Complex concern different operational or compliance areas. These plans are described in the following subsections and address the collection of data of known quality, as required by EPA and DEQ for ICDF Complex operations.

3.10.1 Operational and Monitoring Sampling and Analysis Plan

The *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* describes the ICDF Complex periodic sampling of the landfill leachate through the LCRS, evaporation pond water and sediment, and the pump station (near the decontamination building). These data are used to assess and predict the performance of the landfill (including QA of the waste disposed of in the landfill), as well as to determine worker safety issues for O&M. The data are used to track waste inventory in accordance with the ICDF Complex WAC (DOE-ID 2012a) and to monitor contaminant concentrations relative to operational limits. In addition, these data are also used for routine monitoring for worker exposure risk, for performing NESHAP calculations, and for monitoring ecological COPCs.

3.10.2 ICDF Complex Groundwater Monitoring Plan

The *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007) includes monitoring of the groundwater wells installed in the SRPA. Samples are collected from the groundwater monitoring wells to monitor releases from the ICDF landfill and evaporation pond. The ICDF detection monitoring program uses either prediction intervals, as allowed in 40 CFR 264.97(h)(3), or control charts, as allowed in 40 CFR 264.97(h)(4), to evaluate the groundwater monitoring data for statistically significant evidence of contamination. The specific method to be used for each constituent will be determined from the results of the background sampling and existing literature on constituent distributions.

3.10.3 Waste Verification Sampling and Analysis Plan

The *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c) defines the verification sampling and analysis required for various types of waste destined for the ICDF Complex for soil waste disposed of in the landfill. Verification sampling and analysis of the waste is the independent confirmation that the waste is within the applicable Material Profile and below the associated WAC.

3.10.4 Sampling and Analysis Plan for Staging, Storage, Sizing, and Treatment Facility Waste Stabilization Operations

The objective of the Sampling and Analysis Plan (SAP) for SSSTF Waste Stabilization Operations (DOE-ID 2003b) is to ensure that all stabilized soils meet 40 CFR 268.49, "Alternative LDR Treatment Standards for Contaminated Soils," prior to disposal in the ICDF landfill. Two sampling and analysis tasks are described in this SAP, based on the treatment unit operational practices and data requirements for the stabilization of waste soil. Samples of stabilized soil from treatability studies are collected and analyzed to verify the stabilization mixture and process prior to waste delivery to the treatment unit. Sampling and analysis of the stabilized soils is also conducted, using the sampling frequency in the plan for the batches of soil following treatment, to confirm the results of the stabilization process.

NOTE: *As stated in Section 1.2.2, the SSSTF is in warm standby and administrative controls are in place to prohibit staging or storage of wastes within the building.*

3.10.5 Quality Assurance

The four plans above were prepared in accordance with the QA Project Plan for WAGs 1, 2, 3, 4, 5, 6, 7, 10, and Removal Actions (DOE-ID 2009). The QA Project Plan meets EPA requirements for project QA and quality control, including the standard laboratory analytical methods used for sample analysis and field collection methods (e.g., sample-holding times, sample sizes, and preservation).

SAP development employed the data quality objective process, a systematic planning tool developed by EPA for establishing criteria for data quality and for developing data collection designs. The seven iterative steps of the data quality objective process yield a set of principal study questions and decision statements that must be answered to address a primary problem statement. For the SAPs, the process ultimately facilitated the development of sampling designs that will allow decisions to be made within specified decision error limits.

4. ICDF COMPLEX OPERATIONS

This section addresses operation of the ICDF Complex. It is subdivided into 14 relevant areas that cover waste tracking, predisposal and landfill operations, evaporation pond and leachate management, startup testing, and emergency response.

4.1 Waste Tracking

Waste tracking includes submitting and accepting waste into ICDF; waste packaging, shipment, and receipt; tracking inventory and compliance limits; and reporting and corrective action.

4.1.1 Introduction

Waste is tracked at the ICDF Complex using the ICP IWTS. IWTS is used across the INL Site to track hazardous, LLW, and mixed LLW. The system is a replicated client-server application distributed on numerous servers across the INL Site. IWTS is used at the ICDF Complex to track:

- Waste entering the Complex
- Treatment (e.g., microencapsulation, stabilization, and repackaging)
- Disposal (e.g., landfill and evaporation ponds)
- Generation (e.g., personal protective equipment, contaminated maintenance waste, and decontamination waste)
- Off-INL Site shipment (e.g., Energy Solutions of Utah).

This ensures that complete, generation-to-disposition tracking of waste is performed. IWTS provides documentation about the source, waste characterization, and hazardous and radioactive constituents. Tracking of waste destined for disposal at the ICDF Complex begins at the ICDF Complex user's dig site and ends with final disposition (e.g., disposal or off-INL Site shipment). A detailed description of the waste tracking process and IWTS is provided in Appendix C of the ICDF Waste Tracking Plan (PLN-914) of the RAWP (DOE-ID 2012b). An overview of the waste tracking process is provided in Figure 4-1.

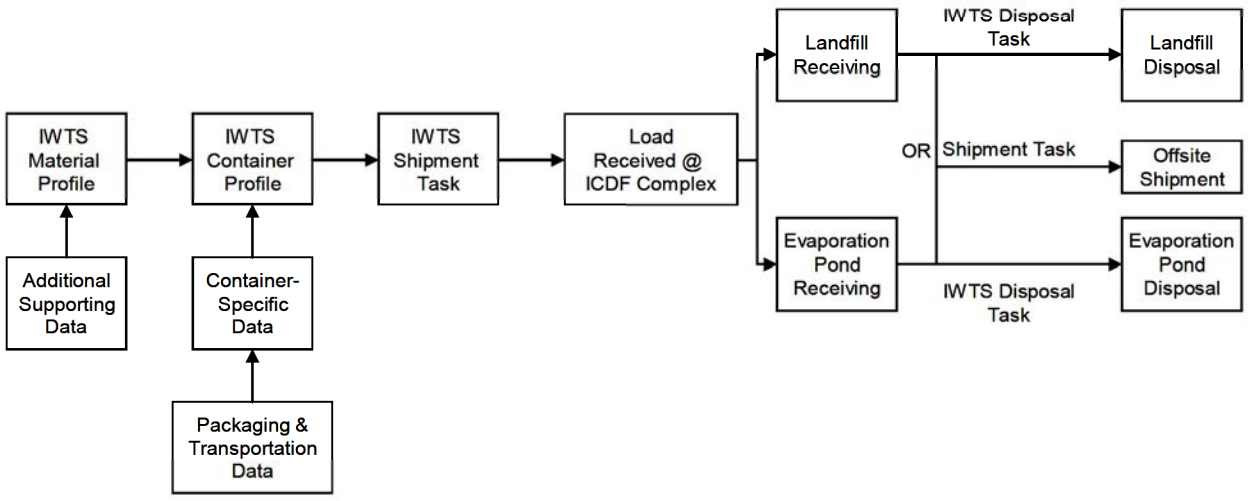

Figure 4-1. ICDF Complex waste tracking process.

Two specific ARARs in the OU 3-13 ROD (DOE-ID 1999) deal with waste tracking (i.e., recordkeeping and surveying requirements), as noted in 40 CFR 264.309:

> The owner or operator of a landfill must maintain the following items in the operating record required under 40 CFR 264.73: (a) on a map, the exact location and dimensions, including depth of each cell with respect to permanently surveyed benchmarks; and (b) the contents of each cell and the approximate location of each type of hazardous waste.

IWTS is used in conjunction with Geographic Information System services to generate a 3-D grid map, which shows the disposition of each load in relationship to the permanent bench marks.

4.1.2 Initiation of Waste into ICDF

Characterization of all waste submitted for acceptance into the ICDF Complex is the responsibility of the ICDF Complex users. The ICDF Complex user may use either acceptable knowledge or sampling and analysis to characterize waste. Acceptable knowledge includes both historical data and process knowledge (DOE-ID 2012c). If process knowledge is used rather than (or in addition to) sampling and analysis, documentation must be provided to demonstrate that the information is sufficient to accurately and completely characterize the waste stream.

Before waste is accepted into the ICDF Complex, an IWTS Material Profile must be completed by the ICDF Complex user and provided to the ICDF Complex management. In addition, the waste must be on the ICDF Complex schedule.

All ICDF Complex users must provide long-term and operational project schedules to ICDF Complex management and operations for planning purposes. Information necessary for the long-term schedules includes, at a minimum, the estimated start date, completion date, waste volume, general class of waste, primary waste forms, and any anticipated need for treatment at the ICDF Complex.

4.1.3 Waste Acceptance into ICDF

The ICDF Complex user completes an IWTS Material Profile for each waste stream. The Material Profile documents all chemical, radiological, and physical characteristics of a waste stream. IWTS automatically assigns the Material Profile a unique identification number, beginning the process of electronic tracking of the waste.

The Waste Generator Services representative and the ICDF Complex facility manager, or his designated alternate, review the Material Profile and electronically accept or reject the waste stream. Once the Material Profile has been approved by ICDF Complex management, the ICDF Complex user has approval to send the waste to the ICDF Complex.

An IWTS Container Profile is used to track individual containers of waste belonging to a waste stream identified by, and electronically tied to, the Material Profile. A container in IWTS is defined as a parcel of waste with a defined volume and weight (e.g., box, roll-on/roll-off, dump truck, or drum). The Container Profile identifies all chemical, radiological, and physical characteristics for each container. These characteristics are entered as specific values bounded by the maximum/minimum ranges of the associated Material Profile.

The ICDF Complex user completes a Container Profile for each container of waste to be shipped to the ICDF. A unique barcode number is manually applied to the container and used as the identifier when the corresponding Container Profile is created in IWTS. This barcode number identifies the physical

container and electronically ties it to the appropriate Container Profile. After both the Material and Container Profiles are approved, the waste is assigned a date for shipment to the ICDF Complex.

4.1.4 Waste Packaging and Shipment

The ICDF Complex user is required to properly package, mark, and label their waste in accordance with the appropriate set of ICDF Complex WAC and DOT requirements (if applicable). In addition, the user is responsible for prearranging the delivery time and date of all waste shipped to the ICDF Complex. The unique barcode number assigned to the container when the Container Profile was created is applied at the time of packaging. All waste packaged for shipment to the ICDF Complex will be visually inspected by IWTS personnel before shipment to ensure:

- Waste matches the approved Material and Container profiles
- Waste does not contain prohibited material (e.g., free liquids)
- Void space requirements are met (if applicable)
- Containers are compatible with waste contents.

Prior to shipping, the ICDF Complex user completes an IWTS Shipment Task. The container barcode numbers, shipping date and time, originating facility, receiving unit, certification/approval, and other container and shipment-specific information are entered on the IWTS Shipment Task. Before the physical shipment leaves the ICDF Complex user's site, necessary updates (e.g., shipment date and time) to the IWTS Shipment Task are input, and the "Execute send" portion of the IWTS Shipment Task is completed. In addition, the individual WTFs are printed for each container on the IWTS Shipment Task. WTFs accompany each container to the ICDF Complex and are turned over to ICDF Complex personnel along with the container. At this time, ICDF Complex personnel complete the "shipment received" portion of the IWTS Shipment Task.

4.1.5 Waste Receipt

Upon arrival at the ICDF Complex, the electronic documentation (e.g., IWTS Material Profile, Container Profiles, Shipment Task) and paperwork (e.g., WTF, Universal Hazardous Waste Manifest, and Bill of Lading LDR Certificate) accompanying each shipment of waste will be checked, as a minimum, for the correct Material Profile number, correct Container Profile numbers, designated number of containers, volume/weight of the waste, adequacy of shipping documentation, and appropriate marking and labeling of containers. Additional verification will be performed on a random basis by ICP oversight. The vehicle is weighed, and the gross weight is recorded on the WTF.

After the shipment has been receipt-inspected, ICDF Complex personnel sign off on the WTF. The shipment is considered received at the ICDF Complex when the load has been receipt-inspected and the proper documentation allows for acceptance of the shipment.

4.1.6 Waste Designation

Once the waste is accepted, various IWTS tasks (e.g., shipment, process, and disposal) are created to electronically transfer and track the waste, depending on whether the waste will be stored, staged, treated, repackaged, or direct disposed. An IWTS shipment task will be used to transfer the waste to a staging or storage area. A IWTS disposal task will be used to transfer waste to the landfill or evaporation pond for direct disposal, and a processing task will be used to transfer waste being treated or repackaged. More detailed information on how the tasks are used for waste tracking is provided below and in Appendix C of the RAWP (DOE-ID 2012b).

4.1.6.1 Waste Staging and Storage. Waste arriving at the ICDF Complex may be staged or stored for a variety of reasons (e.g., awaiting treatment or waiting to be repackaged for off-INL Site shipment). A detailed description of the ICDF Complex's staging and storage areas is provided in Section 5 of this document. Within IWTS, containers are noted as "received" while staged and disposal.

4.1.6.2 Waste Disposal. An ICDF Waste Generator Services representative will be present at the dig site to ensure that waste being packaged for the ICDF is WAC-compliant (e.g., no free liquids and void space requirements are met) and congruent with the corresponding IWTS Material Profile that was reviewed and approved by ICDF personnel. Free-liquid verification procedures are in the *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c).

If the waste meets the ICDF landfill WAC, the waste may be taken from the receiving area directly to the landfill for disposal. An IWTS Disposal Task will be used to track waste being disposed of at the landfill. Disposal of waste that has first been stored, staged, or treated at the ICDF Complex follows the same tracking process. The WTF will accompany the waste to the landfill, and the specific grid where the waste is placed will be noted on the WTF. This information will be added to the IWTS Disposal Task before completion, ensuring that the precise disposal grid coordinate for the waste within the landfill is documented.

Aqueous waste that meets the evaporation pond WAC may be sent directly to the pond for disposition. An IWTS Disposal Task will be used to electronically move the waste from the receiving area into the evaporation pond. The process is the same as described above for the landfill, except that the disposal unit will be the evaporation pond. The cell where the waste is placed will be noted on the WTF for entry into IWTS, similar to the landfill grids. Aqueous waste inputs to the evaporation ponds will be evaluated against available capacity and predicted pond levels prior to acceptance.

If waste is being sent off-Site, an IWTS Shipment Task will be created and executed to track the waste to the appropriate off-INL Site facility.

4.1.6.3 Waste Processing. Upon receipt, waste may be processed at an ICDF Complex treatment unit. Processing options at the ICDF Complex include either stabilization, debris treatment, or repackaging. Waste not meeting the landfill or evaporation pond WAC may be sent to a treatment unit if it meets the treatment unit's WAC (Section 7 of the ICDF Complex WAC). An IWTS process task will be used to electronically transfer waste (e.g., constituents and associated quantities) and any regulatory designations (e.g., EPA codes or underlying hazardous constituents) from an original container into a receiving/destination container. When treatment of the waste is completed, an IWTS Shipment Task will be used if the receiving/destination container is to be placed into storage, and an IWTS Disposal Task will be used if the receiving/destination container is to be sent to the landfill.

Waste being shipped to an off-Site treatment, storage, and disposal facility may require repackaging into containers that meet DOT packaging requirements or the off-Site WAC. Waste may be removed from its original container and placed in an appropriate new container, or the original container may be over-packed into a new container. This work may be conducted in the decontamination building treatment area or decontamination bay or other appropriate locations in the SSSTF, on a case-by-case basis, subject to Agency (i.e., DOE-ID, EPA, and DEQ) concurrence. An IWTS process task will be used to track waste being repacked.

4.1.7 Inventory Tracking and Compliance Limits

Inventory histories for all ICDF storage, staging, treatment, and disposal locations will be used to provide real-time data on the current inventory and to ensure compliance with facility limits (e.g., operational, WAC). Location-specific inventories are maintained by physical properties (e.g., individual container identification number, total container count, and total volume and weight),

radiological properties (e.g., fissile material and individual radionuclides and activities), and chemical properties (e.g., constituents and amounts). Accurate inventory tracking relies on the timely creation and completion of transactions (e.g., IWTS shipment and disposal tasks).

Numerous compliance checks have been built into IWTS, including:

- **Physical inventory checks—**include gross and net weight, gross and net volume, and container count.
- **Radiological inventory checks—**include fissile material, reportable quantities, less than DOE Category III, and user-defined nuclides.
- **Chemical and other inventory checks—**include threshold quantities, threshold planning quantities, reportable quantities, flammable material, and user-defined materials.
- **Operational inventory checks—**include LDRs, IDAPA, NESHAP, groundwater contaminants of concern, and transuranic radionuclide concentration.

Limit-compliance reports have been prepared for each of the limits identified above and are available for the various locations at the ICDF Complex. Limit evaluations are electronically stored for each task and provide objective evidence demonstrating limit compliance.

4.1.8 Reporting

IWTS contains many standardized reports accessed directly in the software. These reports deal with the day-to-day operations of the ICDF Complex (e.g., inventories, limit compliance, and process and disposal activities for specified locations). Other reports (e.g., regulatory-driven or management-level reports) are obtained through Microsoft Access or Web-based applications. Section 9.2.2, "Nongroundwater Monitoring Data Submittals and Notifications," of this document describes required reports for the ICDF Complex that may be supported by IWTS data.

4.1.9 Corrective Action

Noncompliant waste received at the ICDF Complex requires appropriate resolution before waste acceptance. Resolution alternatives include, but are not limited to, correction of the noncompliant condition at the ICDF Complex, conditional acceptance of the waste at the ICDF Complex, temporarily (e.g., not to exceed 10 working days) placing the waste in the truck in-transport holding area until resolution of the issue, or returning waste to the generating WAG. A waste specialist will be contacted prior to returning waste to the generating WAG to ensure all regulatory issues are appropriately considered.

If, upon receipt inspection of the shipment, documentation is incomplete or incorrect, the waste is moved to the truck in-transport holding area inside the ICDF Complex fence, pending resolution. The waste may be held in this area for up to 10 working days before being sent to a compliant staging or storage unit, or being returned to the generating WAG.

ICDF Complex management will work with the generating WAG to resolve noncompliant conditions in a timely manner. Resolution may include contacting the generating WAG to correct discrepancies on the Material Profile, obtaining more information, and correcting mislabeling. In addition to immediate resolution of the noncompliant conditions, further steps will be taken to determine the underlying cause of the problem and to implement corrective actions, as necessary, to prevent recurrence. Recurrence of noncompliant shipments from a generating WAG may result in rejection of the Material Profile and termination of shipments until the issues have been resolved.

4.1.10 Records Management

All records are kept on file at the ICDF Complex, as outlined in the FFA/CO, pending turnover to the ICP. Records are periodically turned over to the ICP for input into the Electronic Document Management System. This relieves the ICDF operating contractor of the need for extensive records storage facilities. The records and documents that are kept and maintained include IWTS Material and Container Profiles and supporting documentation, map/cell locations of waste, shipping documentation, inspection records, tank records, groundwater monitoring data, environmental compliance monitoring data, and asbestos-TSCA waste records. Detailed information on the ICDF Complex records management system is provided in Section 10 of this document.

4.2 Waste Loading and Transportation Requirements

This section pertains to waste loading and transportation requirements within the confines of the ICDF Complex. Before loading containerized waste, the container is inspected to ensure that it is in good condition and has no visible cracks, holes, bulges, substantial corrosion, or other damage that could compromise integrity of the container. If a dump truck or roll-on roll-off container is used to transport soil or soil-like material, a liner is installed to prevent the release of hazardous constituents and to prevent contamination of the bed or container. Liners may not be necessary for debris or rubble. Alternatively, when the shipment will not traverse public roads, the bed of the truck or container may be sealed to prevent contamination spread during shipment and the truck/container decontaminated after completion of the remediation.

ICDF Complex health and safety procedures for handling containers shall be invoked, and appropriate slings and lifting devices shall be used for packages loaded with a crane. Waste containers are loaded so that containers holding incompatible waste types are separated by the proper means. During loading and transportation, containers remain closed unless it is necessary to remove or add waste from the container.

Containers shall not be handled in a manner that will cause leakage. If a container is breached during loading or transportation, appropriate spill control measures are invoked, and waste is transferred from a leaking container to a container with good integrity.

When loading containers other than roll-on/roll-off boxes and end dumps, the containers must be configured on the transport vehicle for safe unloading by a forklift or crane (if using roll-on/roll-off boxes, the box is already placed on the transport vehicle prior to arrival at the remediation site). Once containers are loaded, the load is inspected to ensure that container markings are clearly visible and display the estimated gross weight, radiological information, container number, CERCLA stickers, and other applicable information. The WTF is transported with the load to the appropriate location, and the location is recorded.

4.3 Predisposal Operations

4.3.1 Waste Receiving and Inspection

Waste received at the gate is verified through a combination of inspections of the incoming shipment and cross-checks against the Material Profile. The minimum checks include the Material Profile number, container number, types and labeling of containers, container integrity, and transporting equipment.

Depending on the amount and type of characterization data provided by the generator, verification samples may be taken at the dig site in accordance with the *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c). The purpose of these samples is to verify the waste is

within the Material Profile and ultimately the WAC and to ensure the waste is as expected (i.e., no new contaminants are identified).

4.3.2 Waste Stabilization and Treatment

The process for soil stabilization is shown as a general schematic in Figure 4-2. A complete design was submitted in the SSSTF RD/CWP (DOE-ID 2002b). The treatment process is designed to treat contaminated soil and aqueous liquids and sludges. CERCLA waste types with RCRA metals, as contaminates of concern, are stabilized using a treatment recipe derived from treatability studies. The purpose of stabilization is to produce a treated soil to meet the following criteria:

- Reduce the heavy metal leachability to LDR/universal treatment standard levels to meet the ICDF landfill WAC
- Exhibit no free liquid
- Exhibit a friable or crumbly consistency to allow easier post-treatment handling of the waste.

The process schematic identifies the main components of the stabilization process and shows how these components are connected. The key components of the process include the vertical lift tipper, the mixer unit, bulk bag unloader, catch container, and baghouse/HEPA filter. The information presented below provides a brief description of the soil stabilization process and key components.

- **Vertical lift tipper (e.g., National Bulk Equipment, Inc. Model 21-800)—**Waste soil contained in engineered boxes (typically 4 × 4 × 8 ft or 2 × 4 × 8 ft) is loaded onto the vertical lift tipper assembly. The tipper is equipped with a screen to separate out more than 15.2 cm (6 in.) of material. The tipper raises the box and inverts it 180 degrees to dump the soil into the mixer. Successive dumping operations may be required to release most of the soil, depending on soil type and moisture content.

- **Mixer unit (e.g., Besser Mixing Technology MSO 3700 Twin Shaft Gemini)—**Once the soil is loaded into the mixer, an operator adds the treatment reagents, based on the weight of the soil and the specific treatment recipe. The treatment recipe varies, depending on the contaminants being treated and the soil types. Reagents may be added by hand through ports in the mixer, pumped in through ports in the top of the mixer, or added using the bulk bag unloader. Mixing and reaction times are determined by the treatment recipe. The mixer is a very efficient twin-shaft counter-rotating mixer that can achieve homogeneous mixtures in only a few minutes. The efficiency of the mixer ensures that the entire volume of soil is exposed to the treatment chemicals to achieve effective treatment.

- **Catch container—**After the treatment is completed, the batch is discharged into a catch container through a bottom-mounted discharge gate. The discharge gate is then closed, and the catch container is removed and replaced with another empty catch container in preparation for the next batch.

- **Baghouse (e.g., Besser Model 60-7000A)—**Dust generation is controlled by a dual-stage control system consisting of a baghouse (first stage) followed by HEPA filtration system (second stage). The ventilation points for the process are located at the key points where dust will be generated: at the soil box discharge to the mixer, at the reagent discharge to the mixer, and at the mixer discharge to the roll-on/roll-off. Dust collected by the baghouse is injected into the mixer and treated with a subsequent batch of soil. Baghouse dust collection and injection is conducted in a closed system to minimize worker exposure and release of contaminated dust.

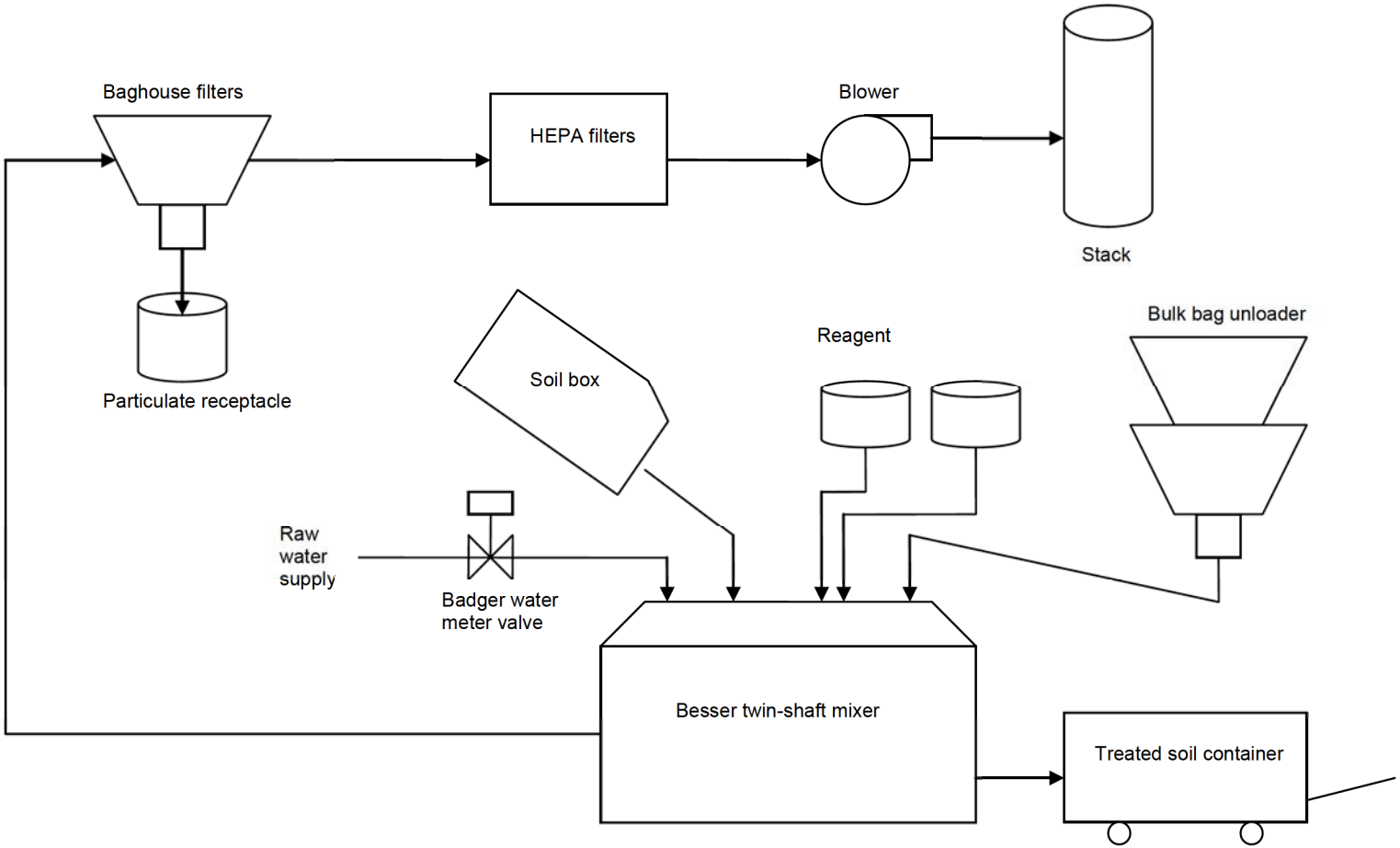

Figure 4-2. Process schematic for soil treatment.

Treatment of liquids and sludges occurs by adding the liquids and sludges to waste soil in the mixer unit. Bulk loads of waste liquids and sludges are transferred from bulk transport containers to an operations tank located at the treatment unit. The liquids and sludges are added to the mixer unit by way of a stand-alone transfer pump and pipe assembly. The quantity to be added to the waste soil is determined by treatability studies or batch treatment operations. The goal is to add a low quantity of liquid or sludge so there is no detrimental effect on the treatment formulation for the soil.

Treated soil is sampled according to the SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003b) to ensure that the soil meets the LDRs and free-liquids rule prior to being sent to the landfill for disposal. The material removed by the screen is collected in a debris box and processed through the debris treatment process described in Section 4.3.5. Whenever the waste stabilization treatment process is employed, the final matrix carries all appropriate waste codes and is sampled and analyzed to ensure that applicable 40 CFR 268 standards are met.

NOTE: *As stated in Section 1.2.2, the SSSTF is in warm standby and administrative controls are in place to prohibit staging or storage of wastes within the building.*

4.3.3 Waste Storage

Waste requiring storage pending treatment and/or disposal is placed in specified areas at the ICDF Complex. Containers holding incompatible waste types are separated by proper means, and containers remain closed unless it is necessary to remove or add waste to the container. Weekly inspections and inspections after a significant storm event are performed and documented for storage areas containing waste. A significant storm event is defined as greater than or equal to one-half of the 25-year, 24-hour event, which is 2.16 cm (0.85 in.) of rain in a 24-hour period and/or sustained winds greater than 35 mph, as measured at the INTEC Grid 3 National Oceanic and Atmospheric Administration station. Appropriate spill-control measures are invoked when a container has been breached, and spill notifications and paperwork are completed, as required.

4.3.4 Waste Staging

Waste staging is used to facilitate operation of the ICDF Complex. Waste staging refers to temporary holding of remediation waste with an immediate intent of processing. Remediation waste may be staged while awaiting treatment, repackaging, testing, and/or disposal while remediation of other waste proceeds. This is anticipated to improve the efficiency of remediation of INL CERCLA sites.

Staged waste may be in containers, tanks, or stockpiles, though only solid, nonflowing waste will be placed in stockpiles. The ICDF Complex contains several staging areas, each with a specific purpose or activity as discussed in Section 5. Waste may be staged either in bulk or containers, depending on material and origination. Remediation waste from within the AOC may be staged in containers or stockpiles. Containerized and stockpiled remediation waste in staging areas are managed to meet the standards and operational requirements described in Section 5. Verification of compliance to Section 5 will be performed through routine inspections of staging areas.

4.3.5 Debris Treatment

If treatment of hazardous debris subject to 40 CFR 268.45, "Treatment Standards for Hazardous Debris," is required, treatment will be performed at the decontamination building. All debris entering the treatment process must meet the definition of debris in 40 CFR 268.2(g). Portland-cement-based microencapsulation was selected as the debris treatment process, as described in EDF-1730 and in DOE-ID (2002b). This process is an EPA-approved alternative treatment technology listed at

40 CFR 268.45. Microencapsulation encases the hazardous debris in inorganic material (Portland cement) to substantially reduce the surface exposure to potential leaching media. This treatment process will be performed in a nonintrusive manner to reduce exposure potential to those workers conducting the treatment. The components of the debris treatment process are the grout hopper/reservoir, positive displacement pump, hose, and box brace. Debris treatment equipment is portable and may be used in either the treatment area or decontamination bay of the decontamination building.

Portland-cement-based grout will be used for microencapsulation of the hazardous debris. A flowable grout is needed to fill debris boxes without removing the box lids or handling the debris. Properties of grout considered during the selection phase included:

- Low quantities of bleed water as setting occurs
- Low shrinkage to minimize cracks and voids
- Adequate strength to minimize potential for cracks during box handling
- Low unit weight in order to minimize the box weight.

Table 4-1 provides examples of grout mixtures that may be used. Mix No. 1 does not include sand. It is very flowable, but will have more potential for bleed water, shrinkage, and shrinkage cracks. It has been used for previous projects, and its properties are fairly well understood.

Mix No. 2 contains pumice sand. It has better properties, but is less flowable. The mix design is only a starting point for trial mixes. No testing has been performed to verify that the material proportions are appropriate. Tests will be required prior to use of Mix No. 2.

Table 4-1. Grout mixes for the debris treatment process.

	Estimated Batch Weights	
Material	Mix No. 1 (lb)	Mix No. 2 (lb)
Water	800 (96 gal)	433 (52 gal)
Cement (Type I/II)	680	320
Fly ash	1,600	640
Pumice sand	None	1,400
High-range water reducer	6 (approximate)	8 (approximate)

The quantity of water and high-range water reducer will vary to adjust the flowability of the grout mixture. The quantity of lightweight sand will need to be adjusted based on the specific gravity of the sand.

Trial mixes of the grout will be tested in simulated debris boxes to ensure that the grout will flow around the debris as required.

The information below provides a brief description of the steps for debris treatment:

- The box containing the hazardous debris will be placed in a debris box brace.
- The box and brace will be moved to the working area. The box lid will be removed.

- Once inside a contamination control tent in the decontamination bay, two holes will be cut into each end on the top of the box. The grout mixer/pump will be positioned nearby. The operator will ensure that the holes breach the plastic liner on the inside of the box.
- The debris will be visually inspected to verify that it matches the Material Profile.
- The nozzle of the grout pump will be inserted into the debris, and a flowing cement grout will be slowly pumped into the box until the grout rises to within 10 to 15.2 cm (4 to 6 in.) of the box top.
- The cement grout will then be allowed to set overnight. A second layer will then be placed on the first layer to "top-off" the container. Again, the box will be allowed to set overnight.
- Once set, the lid will be reinstalled, and the box will be taken to the landfill for disposal or placed into storage for later disposal when weather and scheduling permit.

4.3.6 Waste Repackaging

The policy of the ICDF Complex is that waste being shipped off-Site will not be accepted for permanent storage at the ICDF Complex. However, instances may occur where it may be necessary to repackage the waste at the ICDF Complex. In such cases, waste being shipped to an off-Site treatment, storage, and disposal facility may require repackaging into containers that meet DOT shipping requirements. Waste may be removed from its original container and placed in an appropriate new container or may be "over-packed" into the new container. This work will be conducted in the decontamination building or other approved area on a case-by-case basis, subject to Agency concurrence.

4.3.7 Aqueous Waste Storage

As defined, tank and tank systems include aboveground tanks located in the ICDF Tank Storage Area and belowground tanks, including ICDF Complex sumps and oil/water separators that are components of the ICDF Complex. These tanks will contain aqueous waste destined for treatment and/or disposal in the ICDF evaporation pond. Tanks and tank systems are managed to ensure they are compatible with the characteristics of the waste placed in them and to ensure that incompatible waste types are not placed in the same tank and/or tank system or in an unwashed tank and/or tank system that previously held an incompatible waste type.

For those tank systems that do not have a leak-detection system, an inspection schedule has been developed and will be followed. All deficiencies/problems resulting from inspections will be documented and communicated to the appropriate ICDF Complex facility manager.

4.3.8 Waste Shuttle Requirements

As stated in Section 2 of the RAWP (DOE-ID 2012b), the routine daily movement of soil or soil-like waste into the landfill can be accomplished through two basic mechanisms: dump trucks disposing directly into the landfill or roll-on/roll-off containers that will be placed in queuing areas awaiting disposition. Waste is moved from the queuing area at ICDF to the dump face, where the waste is off-loaded. Queued waste may include bulk soils that are dumped at the work face, as well as containerized waste, PCB waste, asbestos, and monoliths. Specific activities include:

- The water truck applies water to the haul road throughout the operations shift, as required.
- The appropriate truck (depending on the waste form of staged waste) proceeds to the queuing area and loads the waste containers for delivery to the disposal cell.

- Prior to loading the waste container, the driver examines the area around the container for leakage or any other concerns.
- Waste Generator Services or the driver (if Waste Generator Services is not represented) verifies that the bar code on the container matches the WTF and determines if special considerations exist for waste shipment.
- The driver then proceeds to the disposal cell and backs into position, as directed by the off-loading coordinator at the dump face.
- The off-loading coordinator then reviews the WTF for the load. If all is in order, the container is prepared for off-loading. If specialized equipment is required for off-loading, it will be positioned to minimize contamination.
- Once the truck has been off-loaded, a survey for radiological contamination is performed (Section 4.9.5.5).
- The off-loading coordinator enters the location of the waste disposition on the WTF and gives the WTF to the ICDF Weigh Master no later than the end of the shift to ensure timely entry into IWTS.
- The driver then proceeds to the empty-container section of the queuing area and offloads the empty container; however, if a dump truck is used, the driver returns to the dig site.
- For containers, the driver picks up another container from the full-container queue and proceeds as previously described.

4.3.9 Decontamination

Dry decontamination activities (e.g., brushing) are used if contamination is discovered. If these procedures are not effective, the equipment may be moved to the decontamination building or other appropriate area, on a case-by-case basis and subject to Agency concurrence, and wet procedures are used, as necessary. Radiological and hazardous contaminants on waste transport vehicles, waste containers, and miscellaneous equipment will be removed, as needed. A high-pressure water sprayer is used to wash contaminated trucks, containers, and equipment, and after verification of decontamination, they are returned to normal use or staged for future use. All trucks and equipment leaving the ICDF Complex will be verified to be in compliance with the Site radiological free-release criteria. Equipment to be used again will be staged for future use at a suitable location. Water from the decontamination facility is drained through an oil/water separator to a pump station and then pumped directly to the evaporation pond. An alarm system notifies operators of a possible pump malfunction.

Decontamination activities may also occur at other locations (e.g., landfill pit, evaporation pond truck unloading area, or any one of the staging/storage areas). In each case, all waste generated would be tracked in IWTS and any free liquids contained and packaged.

4.3.10 Quality Assurance Sampling of Treated Waste

Sampling to confirm the treatment process for each source of waste is conducted in the manner described in the remainder of this section.

The waste stabilization process, as currently envisioned, involves the batch treatment of individual soil boxes or containers at the ICDF Complex. As treatment progresses for a series of waste batches, the treated batches are combined into a larger container (expected to be a 10-yd^3 roll-on/roll-off container) for handling prior to disposal. Composite samples representing approximately 20 yd^3 or two containers, whichever is less, are generated through the collection and compositing of subsamples from each of the individual treatment batches that are combined into the larger containers. It is expected that five treatment

batches will be combined into a larger container. However, the actual number of treatment batches may vary for each container.

The collection of representative composite samples from the containers proceeds in the following progression for the treatment campaign associated with each different source of waste:

1. For containers 1–10, five composite samples are collected from containers 1–2, 3–4, 5–6, 7-8, and 9–10
2. For containers 11–42, a composite sample is collected from two containers chosen randomly out of every four containers (either the first two or the last two containers)
3. For containers 43 through completion of the treatment campaign, a composite sample is collected from two consecutive containers chosen randomly from every 10 containers
4. Finally, a composite sample is collected from the last two containers of each treatment campaign.

In applying the decision rules presented in Section 2.5, "Decision Rule," of the SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003b), the sampling results from each composite sample collected from a container are considered to be only representative of the container sampled and all unsampled containers generated following the last sampled containers. An example of this approach would be that the sampling results from containers x and x+1 would be considered representative of containers x and x+1 as well as containers not sampled between the previous sampling event and the sampling of container x. Should the sampling results from a container indicate that the treated soils in that container meet the alternative LDR treatment standards for contaminated soil (as described in Decision Rule 1 or 2 in Section 2.5 of DOE-ID [2003b]), then that container and all containers represented by that sample, are considered to have met the alternative LDR standards. Should the sampling results from a container indicate that the treated waste does not meet the treatment standards (Decision Rule 3 in Section 2.5 of DOE-ID [2003b]), then the waste in that container would be subject to retreatment, alternate treatment, or alternate disposal. The unsampled containers represented by the failed container would be resampled—as though the sampling campaign were beginning again—starting with container number 1. Thus, should containers x and x+1 fail the treatment standard, then the containers not sampled between the previous sampling event and the sampling of container x would each be sampled (and again be subject to the decision rules). This would be followed by randomly collecting a composite sample from two consecutive containers for every four containers for the next 32 containers, similar to the sampling described in #2 above for containers 11–42. This would be followed by the same sampling routine of collecting a random composite sample from two consecutive containers for every 10 containers for the remaining treatment campaign, similar to #3 described above, with the final two containers also being sampled. The frequency of waste sampling may be changed, if deemed necessary, because of unexpected changes in waste characterization. Alternate disposal may be at another facility or by approval, as outlined in Section 2.2.1 of the ICDF Complex WAC (DOE-ID 2012a).

NOTE: *As stated in Section 1.2.2, the SSSTF is in warm standby and administrative controls are in place to prohibit staging or storage of wastes within the building.*

Finally, as each treatment campaign ends and waste soil from a new site or source is received at the ICDF Complex, a new waste treatment campaign will be considered to have started, and the sampling progression described above will be restarted with the first container.

4.3.11 Use and Management of Containers

ICDF Complex users are required to use containers that are deemed acceptable in the appropriate WAC for the waste stream. Filled waste containers will be inspected according to the appropriate inspection procedure.

4.4 Sampling Procedures

4.4.1 Verification Sampling

Verification requirements are described in detail in *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c). The purpose of this guidance is to provide the assurance that the Material Profile accurately reflects the contents of the waste stream and that key parameters in the waste do not exceed the limits of the Material Profile. Key parameters have been identified as those that impact ICDF operations or limit acceptance of waste in the landfill, as defined by landfill WAC and/or operational limits. Final checks on waste placed in the ICDF will be performed as part of leachate QA sampling rather than through verification. Leachate QA sampling is addressed in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2012e).

4.4.2 Treatment Sampling Procedures

The following list represents the sequence of events that will occur after the stabilization process has been initiated:

1. Facility Operations personnel will stage the waste for sampling.
2. Following treatment of the waste or treatability study sample, a sample will be obtained for analysis.
3. For treatability study sampling, a simple grab sample will be collected from the resulting treated waste.
4. For full-scale treatment sampling, a grab subsample will be collected from each treatment batch that is to be combined in the larger containers, as described in Section 4.3.10. Once all subsamples have been collected from the combined batches, the subsamples will be composited through thorough mixing in a stainless steel bowl, using only stainless steel mixing tools.
5. The composite stabilized waste sample material or grab sample from treatability studies will be placed into bottles that are labeled with the corresponding sample identification numbers, using the sample identifiers in Section 4.1. Sample material will meet the size requirements for toxicity characteristic leaching procedure analysis in accordance with "SW-846 Method 1311, Toxicity Characteristic Leaching Procedure (TCLP)" (capable of passing through a 9.5-mm standard sieve) (40 CFR 261.24).
6. Depending on the radiological activity, material must be shipped to the appropriate laboratory.

Stabilized waste samples are shipped as soon as possible to the analytical laboratory, accompanied by a chain-of-custody form and appropriate shipping paperwork. The requester will coordinate the procurement of required packaging, if a cooler will not suffice for the levels of radioactivity anticipated (if activity exceeds that for limited-quantity shipments). The laboratory will be contacted for notification of delivery. Upon receipt of the sample, the laboratory will check for damage to the sample container and check for discrepancies between the chain-of-custody and the sample-label information. The person receiving the laboratory sample will sign the chain-of-custody form indicating receipt and transfer of custody of the samples.

4.5 Discrepancy Resolution

In the event that a discrepancy is discovered by ICDF Complex personnel, corrective measures will be initiated. The type and level of action taken is related to the type and level of the discrepancy. These measures can range from field changes caused by unforeseen field conditions to DOE reportable incidents.

Corrective actions will be developed and implemented, addressing deficiencies or problems identified during facility operation. Action levels and time frames will be based on the potential threat to operational or environmental safety that a discrepancy poses (e.g., a procedure deficiency that could result in a release to the environment would be corrected immediately, while an administrative issue could be corrected over a reporting period). More detailed descriptions of action plans associated with various operational activities are discussed in this plan, as follows:

- Monitoring discrepancies – Section 3
- Action leakage rate discrepancies – Section 4
- Waste tracking discrepancies – Section 4 (also addressed in PLN-914)
- Inspection discrepancies – Section 8
- Reporting and emergency response discrepancies – Section 9.

4.6 Evaporation Pond Management

A number of operational activities are routinely conducted at the evaporation ponds. The following sections discuss expected operations. Liquid waste is discharged into the evaporation ponds by two methods: (1) tank/truck unloading using the truck unloading station and (2) pumped directly from the LCRS, the leak-detection chambers, or the decontamination building pump station.

4.6.1 Tank Off-Loading

The evaporation pond is equipped with an off-loading station that allows for discharge from either a truck or container. The station is on the north end of the ponds. The truck accesses the off-loading station and discharges through a hose into the station. The waste passes through the evaporation pond crest pad building and then into the evaporation pond. Alternatively, liquid waste may be pumped directly to the evaporation pond bypassing the crest pad building. The unloading facility is designed to accommodate a variety of containers. Regardless of container size, there will be two primary methods for unloading—gravity flow or pumping.

The station also can be utilized for loading tanks from the evaporation ponds. This is accomplished through a transfer pump and a specific valve alignment in the evaporation pond crest pad building.

4.6.2 Aqueous Waste from Decontamination and Treatment Facility

The transfer of aqueous liquid waste generated at the decontamination building to the ICDF Complex evaporation ponds will be through the pump station to the evaporation pond crest pad building.

Aqueous waste types generated at the decontamination building include those from:

- Soil stabilization processing and equipment cleaning
- Debris treatment processing and equipment cleaning

- Equipment decontamination and cleaning
- Other aqueous waste (e.g., WAG 3 well purge water) that may contain solids or an oil fraction.

Aqueous waste, regardless of source in the decontamination building, passes through a floor drain and piping system to an oil/water separator and is collected in the pump station sump. Two "grinder" wastewater pumps are located in the pump station sump. Pumps are controlled by a float system located in the sump. Double-walled pipe is installed to prevent leaks into the environment.

4.6.3 Liquid Waste Transfer Between Evaporation Ponds

Transfer of liquids from one evaporation pond to the other may occur for a variety of reasons, including:

- Nonroutine maintenance of the pond liner
- Sediment removal
- Balancing the level in the ponds
- Reducing the risk of wave overtopping
- Emptying a pond because of a leak that cannot be located.

Transfers are accomplished by immersing a pump, hose, and power cable assembly with a boom truck. Discharge may be routed through the evaporation pond crest pad building to use a flow meter/totalizer or by a hose placed in the other pond, and the transfer volume is determined by measuring the pond level.

4.6.4 Evaporation Pond Enhanced Evaporation

To maintain the appropriate evaporation pond levels and remain below the freeboard requirements (see Section 8.3) an evaporation system is used to enhance natural evaporation.

Temporary piping, hoses, nozzles, and sprinklers are used. The evaporation technique may vary, depending on evaporation rates and the amount of aqueous waste being introduced to the ponds.

4.6.5 Evaporation Pond Wash Down

Preventing the airborne release of contaminants from the evaporation ponds is accomplished by washing down any sediment on the exposed portions of the liner on a regular basis, as determined by evaporation rates. This procedure is also implemented to maintain evaporation pond levels during times of high evaporation rates.

Temporary piping, hoses, nozzles, and sprinklers may be used. The wash-down technique, and amount of water used varies, depending on evaporation rates and the amount of aqueous waste being introduced to the ponds.

The volume of water added to the ponds is displayed on a flow meter/totalizer that can be read at the administration trailer or the evaporation pond crest pad building.

4.6.6 Evaporation Pond Low-Point Sump Cleaning

Over time, sediments accumulate in the low-point sump of each pond. The sediment is primarily composed of wind-blown sand and dust. As general guidance, when the sediment layer approaches 30.5 cm (12 in.) deep, it is sampled, removed, and packaged for final disposition. The 30.5-cm (12-in.) depth results in about 7.6 to 11.5 m^3 (10 to 15 yd^3) of material that is handled during cleanout. A combination of operating knowledge and visual observation is used to determine the (approximate) 30.5-cm (12-in.) depth. Sediment level is monitored as part of the weekly facility inspection. All waste generated from sediment removal is tracked in IWTS.

4.6.7 Evaporation Pond Level Control

The inventory of each evaporation pond is tracked through the use of flow totalizers from each discharge location (e.g., detection chambers, decontamination building, and truck unloading station) and water level measurements obtained for each evaporation pond. This information is used to monitor the performance of the ponds. This information also is used to manage pond levels to meet freeboard requirements. On April 21, 2011, approval was received from the Agencies to reduce the ICDF east and west evaporation pond's current freeboard of 61 to 46 cm (24 to 18 in.). This freeboard limit will be periodically monitored (at least annually) to determine if conditions warrant resumption of the 24-in. freeboard requirement.

Operation of the ICDF evaporation ponds will include periodic evaluation of data collected at the ICDF for precipitation, leachate, other liquid contributors, and evaporation rates to assess future pond levels. The results of these evaluations will be used to effectively manage and control the water levels in the ponds to ensure compliance with the established freeboard limit.

After pond construction was completed, a depth indicator was installed in each pond to allow accurate measurement of the fluid level. The as-built drawings are used to calculate the pond volume that corresponds to particular depths. Level transducers were installed to more accurately measure depth. Installation of the level transducers was completed on May 19, 2011.

4.6.8 Evaporation Pond Leak-Detection Chamber Monitoring and Liquid Transfer

The evaporation pond leak-detection chamber monitoring and liquid transfer is performed to ensure that the following actions are implemented:

- Monitor the two leak-detection chambers of the evaporation ponds and remove measurable amounts of liquid, as necessary
- Monitor, record, and archive liquid levels in the leak-detection chambers and the volumes transferred from each chamber to the evaporation pond at least once each week
- Calculate, based on the weekly leak-detection chamber volumes pumped, a leakage rate, and compare it to the ALR limit for the evaporation pond.

The leak-detection-chamber transfer system for each sump is designed to operate in an automatic mode. Manual operation of both pumps is available by a hand switch. Valve alignment will not differ, with the exception of selecting either the west or east evaporation pond as the pump discharge destination.

The instrumentation and control system is programmed to archive the leak-detection chamber level and the volume of liquid pumped from each chamber on a weekly basis.

4.7 ICDF Complex Instrumentation and Control System

The ICDF Complex uses a control and data acquisition system for leak detection, sump-level monitoring, pump control, flow recording, alarming (e.g., heating, ventilating, air conditioning, and CAMs), temperature monitoring for freeze protection, and building intrusion alarms at the coolant pressure boundaries. The system has local indication and control stations. In addition, the system includes a centralized control station that performs data archiving and indication. The control system is self-contained except for a link into the main INTEC facility. The system supplies information required to meet regulatory requirements and to efficiently operate and maintain the ICDF Complex.

The ICDF Complex is composed of four "buildings" (from the control and data acquisition viewpoint): the ICDF evaporation pond crest pad, landfill crest pad, decontamination building, and administration trailer.

The major components of the ICDF Complex instrumentation and control system include field instruments, discrete and analog input/output modules, programmable logic controllers (PLCs), human-machine interfaces, and the communications to connect each of these components. The field instrumentation includes sensors and transmitters, which collect and communicate data, and motor starters, which allow physical actions to be taken based on these data. The input/output modules provide an interface between the field instrumentation and the PLCs. This interface allows data received from the field instrumentation to be assigned to variables (inputs) and provides a path for variables from the logic to initiate actions in the field (outputs). The PLCs utilize the data inputs and programmed control logic to monitor conditions in the field and initiate appropriate actions in the form of alarms or outputs to field devices. The human-machine interfaces consist of local operator interfaces at each PLC location and a central control station located in the administration trailer. The central control station receives data from all of the PLCs in the ICDF Complex. All of this equipment is connected through a communication network. In order to get alarm information into the main INTEC facility, a pair of modems is connected through a dedicated phone line. The modems are configured to monitor communications and, if communications are lost between the ICDF Complex and the main INTEC facility, to generate an alarm in the main INTEC facility.

The ICDF Complex control system monitors operations of the decontamination building, the conditions of the evaporation pond, and the conditions of the landfill. Most of the control system functions involve the monitoring of levels, flows, and alarms within the ICDF Complex. This allows the ICDF operators to account for any normal or abnormal event in the operation of the Complex. The operators can check the status of the operating conditions at their convenience. Should an alarm condition occur, the controls will immediately notify the operators, who initiate the appropriate corrective actions. Alarm conditions are also transmitted to the high-level waste operations Distributed Control System in INTEC. This Distributed Control System displays in a continuously occupied control room, which is necessary because the administration trailer will not be occupied continuously. In addition to monitoring, many of the operating conditions of the Complex will be archived (e.g., monitoring data on levels and flows).

NOTE: *Alarm activation in the administrative trailer and the INTEC high-level waste control room is checked annually, in accordance with ICDF procedures.*

Further information regarding the instrumentation and control system is contained in Drawings 624641 (IN-201) and 624642 (IN-202), the process and instrumentation diagrams for the ICDF Complex landfill and evaporation ponds.

4.8 Leachate Management

This subsection discusses the monitoring and transfer of landfill leachate to the evaporation pond.

4.8.1 Landfill Leachate Monitoring and Transfer to Evaporation Pond

Landfill leachate monitoring and transfer are performed to ensure that the following elements are implemented:

- Ensure that the leachate depth over the primary liner of the landfill does not exceed 30.5 cm (12 in.) during normal operating conditions. Ensure that surges caused by significant storm events (more than 2 cm [0.85 in.] of precipitation) and/or abnormal events are drawn down to less than 30.5 cm (12 in.) within 72 hours.
- Monitor the sumps and transfer the leachate from the leachate sump, as necessary, during the active life and closure period. Record and archive this information.
- Assess the leachate volumes at least once each week during the active life and closure period, and record and archive this information.
- Calculate a leakage rate, based on the weekly leak-detection-chamber volumes pumped, and compare that to the ALR limit for the landfill. Immediately notify the facility manager and implement the Landfill Action Leakage Response Plan if the ALR has been exceeded.

The transfer system for each sump is designed to operate in an automatic mode; however, manual operation also is an option. A level transducer will control the starting and stopping of each pump. Individual flow monitor/totalizers will measure the flow, and the PLC will monitor and record the data. Sample ports are installed on each line for regular sampling of the leachate. The leachate may be directed to either one of the evaporation ponds through the positioning of two manual valves in the evaporation ponds crest pad building.

Each of the leachate pumps (with flexible discharge pipe, level transducer cable, and power cable) is placed in its respective sump by lowering it on a permanent cable through a riser pipe from the landfill crest pad building.

4.9 Landfill Operations

This section addresses the landfill operations at the ICDF Complex. Specific requirements and implementation steps are identified for the disposal of waste in the landfill, as well as the support activities such as maintenance of the facility, including haul roads, dust control, radiological boundary control, radiological survey, and decontamination. The following subsections provide a summary description of the operations of the landfill at the ICDF Complex.

4.9.1 Haul Road Management

A clean haul road provides access to the landfill dumping peninsula for either roll-on/roll-off trucks or dump trucks, with direct access into the landfill. The peninsula will be sized and configured as necessary to accommodate the ongoing facility operations, taking into account waste types and weather conditions. The haul road is maintained with a width and slope appropriate to the operations being conducted to allow safe access to and operation within the landfill. The haul road is graded and maintained during landfill operations. Traffic control signage is posted on all haul roads.

The dump peninsula is moved throughout the landfill during operations. Construction of the peninsula is similar to that of the haul road. The dimensions of the peninsula vary, depending on the waste types being disposed, and will allow for access to different dump faces, depending on wind direction.

4.9.2 Traffic Control

Traffic control is implemented by placing and maintaining signage (i.e., stop, yield, and directional) on the haul roads, at the dump face peninsula, and in the queuing area at the ICDF Complex. The signage is intended to keep the flow of vehicles at the ICDF moving in a safe and efficient manner. Barricades also may be used to control traffic, when necessary.

Traffic signage is modified each time changes are made to the haul road system, peninsula, or other roads within the Complex. Also, if changes are identified that will contribute to more efficient operation, supporting signage changes will be made. The signs are portable and free-standing. Personnel driving vehicles into the ICDF Complex are expected to read and follow signs and other official posted directions when entering the Complex or crossing a barricade.

4.9.3 Dust and Contamination Control

Dust and contamination control is implemented, as needed, to control wind dispersal of dust and contaminants (e.g., IDAPA 58.01.01.585 and .586) from the landfill and active areas (access roads) during operations and off-hours through the use of a variety of control mechanisms. Specific activities include:

- Before each operational day begins in the ICDF landfill, water may be applied to landfill access roads and the traffic areas in the dumping peninsula, including the dump face, as a dust suppressant.
- As needed during the operational day, water or dust suppressant is applied to access roads, landfill traffic areas, the dump face area, and the active waste disposal cells to control emissions.
- A soil fixative is applied to all disturbed areas of the waste surface and to the disturbed areas of the dump peninsula and landfill access roads to control dust, as required.
- Water is applied to the waste being compacted and the waste being dumped at the dump face. Water is supplied using portable tanks or by water truck. The purpose of the addition of water to the waste at the time of dumping is to control dust and minimize airborne emissions. Applying water aids waste compaction. Field operations personnel ensure that water is not over-applied to prevent ponding of water in the landfill and to minimize generation of leachate.

4.9.4 Radiation Boundary Control

Radiation boundary control maintains the control boundary that separates the RadCon area from the clean area within the landfill, around the evaporation ponds, and at the decontamination and queuing areas. The main activities include the following:

- Maintaining barriers around the active disposal area in the ICDF landfill; support the location of the barriers with radiological surveys and adjust the boundary, as needed.
- In similar fashion, routinely surveying the evaporation pond areas and the queuing area, evaporation pond crest pad buildings, and decontamination building. Also, establishing barriers, where needed.

- Maintaining an ICDF Complex map (available at the administration trailer and other places, as required) showing the locations of controlled areas.

4.9.5 Landfill Waste Placement

Waste containers are placed in the landfill in accordance with EDF-ER-286, "ICDF Waste Placement Plan." Placement of waste within the ICDF landfill is subject to the following constraints:

- Waste should reach the top of the north end of the landfill as soon as possible to allow access to the landfill from an access road on the north side.
- Access to the landfill floor will be maintained.
- The maximum drop from the dump peninsula will be 1.8 m (6 ft) to preclude the need for fall-protection equipment and procedures.
- The dump peninsula should maintain three dumping-direction options to accommodate changing wind directions.
- An approximate 46-m (150-ft) -wide level lift will be completed adjacent to side slopes before waste is placed further up on the sloped area of the landfill. Doing so provides a buttressing effect to the side-slope liner as waste builds from the bottom to the top of the facility.
- Material size and type limitations placed within 1.5 m (5 ft) of the operations layer are necessary for liner protection.

4.9.5.1 Waste Off-loading/Placement. Most waste shipments received at the ICDF Complex are bulk soils. However, a significant amount comprise other waste types. To accommodate the various waste types, arrangements are made to have necessary equipment at the landfill when the shipments are received for off-loading. Some waste needs to be staged in the cell awaiting the proper placement criteria. When this occurs, waste may not reside in the cell for longer than 7 days without being placed.

The scheduled shipments are reviewed, in advance, to identify unique equipment needs for the off-loading of specific waste shipments.

For bulk-waste soil, the following arrangements will be made:

- Packaging requirements for bulk-waste soils require either a lined container to facilitate a clean off-loading at the dump face or a sealed-bed dump truck to preclude the spread of contamination during transport. Upon arrival at the facility, the container/truck is surveyed by RadCon and the tarp is rolled back to allow easy off-loading. At the dump face, the containers/trucks are off-loaded by raising the container/bed and allowing the soil to slide out.
- To facilitate landfill operations, a compacted base of a given waste stream may be established at the dump face, as described above. Once that base is established, future loads of the same waste stream may be dumped onto the compacted base (to facilitate ramp construction), moved over the compacted base to the desired placement location, and then spread in 30.5-cm (12-in.) loose lifts and compacted within the four-grid limit.
- The waste is spread in 30.5-cm (12-in.) loose lifts, no further than 30.5 m (100 ft) from the dump face, and the location is noted on the WTF (Form 435.95). This information is then entered into IWTS.
- Throughout the process, water is applied, as necessary, to control dust and aid compaction.

For containerized soil waste, the following arrangements are made:

NOTE: *All containers are required to be at least 95% full. If not verified to be more than 95% full, the container is grouted to fill the remaining void space.*

- Containers are off-loaded and placed either in the designated disposal location or in an interim area before being placed in the appropriate landfill grid, after off-loading has been completed. In the latter case, final placement is completed as soon as possible (generally within 48 hours of off-load), and soil waste is placed over the containers and compacted.
- When placed into the landfill, the containers are located, as specified in EDF-ER-286.
- The grid location of the container is recorded on the WTF and entered into IWTS.
- Cargo containers may be opened in the landfill and, following waste form compatibility review, filled with additional compatible debris to further reduce void space prior to grouting.
- Containers may be filled with grout after placement to meet the void space and compaction requirements, as described below. If possible, the containers are crushed by the bulldozer, spread into a lift, and covered with soil waste or clean soil prior to compaction.
- Throughout the process, water is applied, as necessary, to control dust and aid compaction.

For steel containers and drums, the following arrangements are made:

- Steel containers and drums are off-loaded in either the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.
- Steel containers or drums are located, as specified in EDF-ER-286.
- Steel containers and drums are required by the WAC to have less than 5% void space; after placement, they are covered by waste soils and the soils are compacted. All containers not verified to be more than 95% full will be grouted. Containers may be filled with grout after placement to meet void-space and compaction requirements. Cargo containers may be filled with debris, as approved in the ICDF procedures, prior to grouting.
- When grouting metal waste boxes, the following method is used:
  - A plastic tub is placed on top of the waste box and sealed, using a suitable caulk or sealant.
  - The tub is partially filled with grout.
  - A metal "stinger" attached to a backhoe or similar equipment is used to punch a hole in the bottom of the tub and penetrate the top of the metal waste box. (Note: This allows the grout to flow into the box while preventing the spread of airborne contamination.)
  - As the grout flows into the waste box, additional grout is poured into the tub until the waste box is full. The tub is left in place after grouting.

  Unless placed far enough apart to permit compaction of soil between the containers, the interstitial spaces between and under containers is also filled with grout to fill void spaces.
- Throughout the process, water will be applied, as necessary, to control dust and aid compaction.

For large debris, including steel and concrete beams and monoliths, pipes, and culverts, the following arrangements are made:

- This debris is off-loaded in the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.

- Debris is located on waste at least 1.5 m (5 ft) above the top of the original operations layer, 61 cm (2 ft) below the final cap elevation, and spaced as specified in EDF-ER-286, unless other placement criteria are specified based on technical justification.
- The grid location of the debris is recorded on the WTF and in IWTS.
- The beams, monoliths, metal siding and other large building debris are covered by waste soils, and the soils are compacted or the interstitial spaces are grouted to fill the void spaces.
- Throughout the process, water is applied, as necessary, to control dust and aid compaction.

For large and small concrete and building rubble, the following arrangements are made:

- Rubble is off-loaded in the appropriate grid location. Rubble will be spaced so that soil waste can be placed between the rubble pieces to ensure appropriate compaction. Soil waste is placed over the rubble and compacted or the rubble pile is grouted to fill void spaces.
- Throughout the process, water is applied, as necessary, to control dust and aid compaction.

For large containers or vessels, the following arrangements are made:

- The container/vessel is placed such that ports or openings are oriented to the top of the item. At least two ports are required. (Note: If the container/vessel does not have appropriate ports or openings, the generator is required to provide them.)
- One port is fitted with a fitting to allow introduction of grout. Another port is fitted with a HEPA filter to filter escaping air.
- Grout is introduced into the container/vessel until the container/vessel is full, as evidenced by outflow of grout or visual verification.

For asbestos-containing waste, the following arrangements are made:

- Asbestos-containing material (ACM) will only be accepted for ICDF landfill disposal if the material is radiologically contaminated and/or contains hazardous waste constituents and is packaged according to the ICDF landfill WAC. Equipment is used, as required, to off-load the ACM. Delivery to ICDF is prearranged to complete prompt delivery and disposal.
- ACM is placed in a 61-cm (2-ft) -deep formed trench consisting of two berms with a trench between. Previously placed waste will not be disturbed. The asbestos waste is placed in the trench, covered with 15.2 cm (6 in.) of waste soil or a dust suppression agent, and compacted. Placement shall be completed at the end of the operating day or within a 24-hour period while the site is in continuous operation, as required by 40 CFR 61.150.
- Alternatively, ACM may be placed in containers and disposed of as containerized waste, as described above. The containers are placed in an area designated for ACM with the location noted on the placement map. When grouting ACM containers, special care shall be taken to ensure control of asbestos.
- The grid location of the ACM is recorded on the WTF and in IWTS.

4.9.5.2 PCB Management. The ICDF landfill has been designed to dispose of PCB-contaminated debris with levels higher than 500 ppm (DOE-ID 2012a) and soils containing PCBs with levels lower than 500 ppm. Operational requirements for storage, disposal, and recordkeeping for PCB waste are presented in this section. As with all waste, a Material Profile will be required from the ICDF Complex

user. If decontamination practices were used, these must be documented on the Material Profile, including a demonstration that the waste stream is below the 500 ppm WAC limit.

A PCB-compliant waste storage area is located near the decontamination building, as shown on Figure 1-2. PCB waste is stored at this location until the landfill schedule allows for disposal or, if necessary, an alternative disposition pathway is determined. It is possible that PCB waste received at the ICDF will be radioactive as well as PCB-contaminated. If the waste exceeds the acceptable radioactive or PCB concentrations presented in the WAC, the waste will have to be disposed of off-Site. Disposition of PCB-contaminated waste is tracked using IWTS.

4.9.5.3 Waste Compaction and Inspection. Waste compaction is a crucial function in the operation of the landfill. Compaction testing is conducted at intervals of 1,911 m^3 (2,500 yd^3) of disposed waste. The compaction procedure to achieve the equivalence of 90% of ASTM D698, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort," was developed from a matrix of tests conducted on a range of expected soil types. Compaction tests were initially conducted on clean soils out of the landfill area, using equipment anticipated for waste placement and compaction. Three general soil types were tested: fine-grained clayey silts (e.g., Old Alluvium), alluvial sands and gravels, and topsoil (near-surface silty sands).

For each soil type, a 30.5-cm (12-in.) -thick test lift was laid down. A D-9 or similar dozer was driven over the test lift, and compaction was tested by several methods. The test procedure was repeated until the 90% compaction standard or greater was attained. For each type of soil, it was determined that three passes with the D-9 dozer was sufficient to achieve 90% relative compaction. Tests were also conducted to determine whether the Humbolt GeoGauge could be used in place of the nuclear density gauge. Those tests were not conclusive. Should additional testing indicate that the Humbolt GeoGauge is acceptable, the Agencies will be supplied the results of the testing of the GeoGauge for consideration of approval.

To achieve desired compaction, tasks include the following:

- Off-loading soil waste at the dump face.
- Placing debris and packaged waste in the landfill and covering it with soil waste before compaction. Routine operations may involve holding the waste in an interim area in the landfill until conditions allow for correct compaction around the debris. Waste may not be staged in the landfill longer than 7 days while waiting for placement.
- Using a dozer to move the waste away from the dump face and spreading it across the working grid(s). Adding water, as needed, to control dust and aid in compaction.
- Basing the number of dozer passes required to achieve compaction on the soil type, as provided by the generator and discussed above.
- Placing containerized waste or monoliths, surrounding them with soil waste, and compacting the waste and soil using the same techniques.
- Performing a compaction test, after approximately 1,911 m^3 (2,500 yd^3) of waste has been placed, to determine if the compaction procedure is reaching 90% relative compaction, in accordance with the Standard Test Method (ASTM D698). A nuclear density gage (using procedures identified in ASTM D6938) is used to determine in-place compaction.
- Covering asbestos waste with a minimum of 15.2 cm (6 in.) of soil or a dust-suppressant agent and compacting as specified.

- Entering the compaction test results into the operations log. If remedial action is required, based on the test results, it is implemented during the following operations shift.

4.9.5.4 In-Cell Grouting. In the case of a waste item that poses difficulty for compaction, void space, or danger to equipment and personnel, in-cell grouting may be performed, as described above.

4.9.5.5 Radiological Survey Requirements. All vehicles that enter the landfill are surveyed prior to leaving. After off-loading of waste from the vehicle is complete, the container is lowered and the truck moved forward away from the dump face. The RCT performs a radiological survey of the tailgate area, the rear tires, and the rear of the vehicle. If the background measurement is high, the vehicle is moved to a lower background area where a radiological survey can be performed.

If no contamination is detected, the vehicle is released and allowed to return to the ICDF Complex queuing area to off-load the empty container or leave the facility. If contamination is detected, the vehicle will be decontaminated in place, moved to a designated decontamination area in the landfill, or moved to the decontamination building where a more specific survey will be performed to identify the area of the contamination. Decontamination procedures will be implemented to remove the contamination. The results of the radiological survey and decontamination process shall be recorded.

4.9.5.6 Decontamination. Equipment determined to be externally contaminated during the radiological survey is required to be decontaminated prior to exiting the landfill.

Contaminated equipment is moved to a designated decontamination area in the landfill. The equipment is decontaminated with the assistance of an RCT. The initial decontamination effort invokes dry techniques (i.e., sweeping or brushing). More aggressive techniques (i.e., wet techniques including water and/or steam) are used, as required, to remove the contamination and obtain a clean survey that will allow for the release of equipment. If wet techniques are required in the decontamination effort, the equipment is placed on a portable liner, and the liquids are collected and disposed of as waste. If decontamination efforts fail in the landfill, the equipment is placed on a lowboy trailer and moved to the decontamination building.

4.10 Start-up Testing

Start-up testing was completed throughout the ICDF Complex prior to operation. The following sections discuss the start-up tests for their respective equipment.

4.10.1 Pump Tests

Pump testing was a combination of component testing completed during component construction and installation testing. The objective of the testing was to verify that the pumps and associated controls operate as designed. Included in the pump tests were all pumps that remove water and waste from the various ICDF Complex sumps, transfer leachate from the landfill to the evaporation pond, and transfer water between ponds. Specific pumps that were tested include:

- East and west evaporation pond leak detection chamber pumps
- Evaporation pond transfer pump
- Combined sump pump
- Landfill leachate collection and recovery high-volume and low-volume pumps
- Landfill primary leak-detection and recovery pump

- Landfill secondary leak-detection and recovery pump
- Landfill crest pad building sump pump
- Decontamination/treatment building pump station grinder pumps
- Sanitary sewer lift station grinder pumps.

System operation tests verified that the design flow rate is delivered at the appropriate head. In addition, the control system (automatic and/or manual) was demonstrated to be consistent with the design.

4.10.2 Pump Deployment and Retrieval System

The two leachate and four leak-detection chamber pumps were lowered into place through 12- or 18-in.-diameter riser pipes. As part of the initial in-place pump testing, each pump was lowered into position to verify the operability of the system.

4.10.3 Level-Detection Systems Check

The level-detection systems checkout tests addressed all level devices used at the ICDF Complex. Level-detection systems exist in all sumps, each of the evaporation pond leak-detection chambers, and the leachate-collection sump and leak-detection system sump in the ICDF landfill.

4.10.4 Tank Integrity

The tank integrity testing addressed all sumps at the ICDF except those exempted by 40 CFR 264.1(g). Each sump was checked for leak tightness by adding a measurable amount of water to each sump and observing the water level for a specified period of time. If a sump was found to not be leak-tight, repairs were made to correct the problem before final covering and putting the unit in service. The sumps are for emergency use only (e.g., leak-detection sumps). The sumps are inspected at regular intervals, and, if liquids are detected, removal of the liquid is a priority of the ICDF operations. All liquid must be removed within a 72-hour period.

The sumps to be tested include:

- A tank system composed of the concrete P-trap (in the decontamination building), oil/water separator, and the pump station
- Combined sump (west of the evaporation pond crest pad building).

4.10.5 Instrumentation Checkout

Instruments at the ICDF Complex are checked for continuity during installation. Proper operation was verified during the operational checkout. Instruments providing analog readings were calibrated as part of the installation process. Instruments will continue to be calibrated in a calibration lab when possible and in situ when required.

4.10.6 Set-Point Determination for Pump Operation

Start-up tests determined the set points for the various pumps at the ICDF Complex. Each pump and level-detection system were subjected to an integrated test to verify and establish the actual actuation levels for the pumps.

4.10.7 Life Safety Systems and Monitoring Equipment

Prior to facility startup, life safety systems (e.g., fire safety equipment and CAMs) were checked for operation.

4.11 ICDF Complex Access

This subsection discusses the requirements for access to the ICDF Complex.

4.11.1 ICDF Complex Access

The ICDF Complex is considered a Property Protection Area. It is completely surrounded by a fence, with gates and other entrances designed to control entry. Normal employee access to the ICDF Complex is through the administration area and the north gate. ICDF Complex authorized employees have unrestricted access to enter and leave ICDF Complex areas, provided they have current and appropriate training and a DOE-ID-issued ICP badge, as required for their particular work activities.

ICDF Complex employees are required to wear badges and dosimetry, as required by the Job Safety Analysis/RWP, at all times, in plain view, above the waist and below the neckline, unless health and safety considerations prohibit. Personnel who forget their badge must show picture identification to security personnel to obtain a temporary badge denoting proper access authorization. If an employee does not have a picture identification, the employee's manager or designee can be contacted for positive employee identification.

All hand-carried articles brought into the ICDF Complex are required to have identification tags that list, at a minimum, the owner's name, work organization, and work phone number.

ICDF Complex access points are open during normal business hours and closed at the end of the business day. The administration trailer, the entrance security gate, and other gates as appropriate (e.g., evaporation pond gate) are locked/secured at the close of normal working hours. Keys to such things as individual trailers, gates, and file cabinets are issued to ICDF Complex employees on an as-needed basis. All keys are controlled through an established key control program.

4.11.2 Visitor Access Requirements

Visitors to the ICDF Complex are required to be on official business. Visitor access to the ICDF Complex is through the administration area. Visitors are required to sign the visitor log (Form 473.01, "Visitor Traffic Log") at the ICDF administration trailer. Visitors are briefed on the ICDF Complex health and safety issues prior to leaving the administration area.

Visitors are required to wear badges and dosimetry, as appropriate, at all times, in plain view, above the waist and below the neckline. Visitors are checked for the appropriate training and dosimetry, as required for the areas to be entered. Signs and barriers are used to identify and control access to CERCLA work zones, construction areas, and RadCon areas. Visitors who have a badge, but not a need to enter the facility, proof of training, and dosimetry are allowed to enter the uncontrolled areas of the site (e.g., administration area), but are not allowed within the posted exclusion zones. Visitors who enter areas other than uncontrolled areas of the site require an escort. ICDF Complex personnel who have completed the required training can escort visitors. Personnel who have completed escort and the required CERCLA training are allowed to escort other personnel or visitors.

All hand-carried articles brought into the ICDF Complex are required to have identification tags that list, at a minimum, the owner's name, work organization, and work phone number.

Periodic inspections will be performed on packages, boxes, briefcases, backpacks, and similar articles carried by or in the possession of visitors when entering or exiting the ICDF Complex. Routine inspections on these items are not planned as part of ICDF Complex operations. Failure to comply with a random inspection will result in denial of access. Prohibited items identified during an inspection will be confiscated. Prohibited items include, but are not limited to, firearms, ammunition, alcoholic beverages, illicit drugs, explosives, wiretapping or eavesdropping devices, or any dangerous or potentially dangerous instruments or materials likely to cause substantial injury to persons, property, or animals. Site security is contacted in these instances. Investigating and reporting of security incidents is performed in accordance with ICP procedures and guidelines.

4.11.3 Perimeter Control and Inspection Requirements

The perimeter of the ICDF Complex is surrounded by a fence, with gates and other entrances designed to control entry. Signs reading "Danger—Unauthorized Personnel Keep Out" are posted at entrances to the ICDF Complex. All signs are posted in English, are positioned so they can be seen from all approaches, and are sized so they can be read from a distance of 7.6 m (25 ft). Signs and barriers are used to identify and control access to CERCLA work zones, construction areas, and RadCon areas.

A monthly inspection of the perimeter of the ICDF Complex fencing is performed to ensure that the fence is intact and to determine the need to remove accumulated debris. The perimeter inspection also includes a verification of the following:

- Normally used gates (e.g., evaporation pond and ICDF Complex entry gates) are operable and capable of being locked and locks are present and operable
- Normally locked gates and associated locks are operable and remain locked
- Required signs reading "Danger—Unauthorized Personnel Keep Out" are posted at the appropriate locations and can be read from a distance of 7.6 m (25 ft).

4.12 Emergency Response and Alarm Operation

Responses to a number of potential emergency or alarm situations that may occur at the ICDF are discussed in the following subsections.

4.12.1 Loss of Utilities

Loss of utilities includes loss of raw water, electrical power, potable water, or fire water. These are discussed in more detail below:

- **Loss of raw water—**Processing operations in all locations (e.g., decontamination building, landfill, evaporation ponds) would be either restricted or suspended. An ICDF Complex water truck with a spray nozzle may be used to spray any soil in the landfill that requires water for compaction or dust control. The water truck also could be used to complete liner wash-down in the evaporation ponds. Portable water tanks and pumps may also be used in lieu of the facility raw water system.
- **Loss of electrical power—**Decontamination building waste stabilization operations, if being conducted, would stop immediately. All liquid pumping operations would stop. Receptacles for a portable generator are available in each crest pad building to provide power to the leachate and

other sump pumps in the event of an extended outage. A 15-minute uninterruptible power supply will be available for the instrumentation and control system.

- **Loss of potable water—**The administration trailer and change room area of the decontamination building have potable water. An impairment of the system would require placement of drinking water containers and the use of portable restrooms or INTEC restroom and personnel shower facilities until potable water service was restored. The potable water system is from INTEC and has a back-up diesel power generator.
- **Loss of fire water—**The decontamination building has a dry-pipe automatic fire sprinkler system. A fire hydrant is located near the southeastern corner of the landfill and evaporation pond crest pad buildings, but there are no sprinkler systems in the crest pad buildings. An impairment of the fire water system might require that a "fire watch" (to be determined by the ICP fire protection engineer) be established until the system was restored. The fire water system supply is from INTEC and has back-up diesel-powered pumps.

4.12.2 Abnormal Facility Conditions

Abnormal facility conditions include earthquakes, wildland fire, extreme weather, spill/leak response, fire within the ICDF Complex, and plant evacuation/take shelter. Note that ICDF is under the auspices of the INTEC Emergency Communication Center. Evacuation and shelter alarms from INTEC may be heard at the ICDF and shall be responded to accordingly. These alarms originate from the INTEC Emergency Communication System. These conditions are discussed in more detail below:

- **Earthquake—**Stop all operations work and follow instructions from the INTEC Emergency Communication Center. Reentry into processing facilities will be made only after proper management authorizations and radiological surveys have been completed.
- **Wildland fire—**In the case of threat from a wildland fire, or smoke from a fire, follow instructions from the INTEC Emergency Communication Center. This may be a "TAKE SHELTER" instruction or a facility evacuation order from the INL fire department.
- **Extreme weather—**A "TAKE SHELTER" or evacuation order may be given over the INTEC Emergency Communication Center or through the INTEC Emergency Communication Center system in response to high winds, thunderstorm, heavy rain, hail, or snow.
- **Spill/leak response—**Actions will be governed by the ICDF Complex Emergency Response Plan. Instructions to personnel will be relayed through the INTEC Emergency Communication Center.
- **Fire within the ICDF Complex—**Fire alarm pull boxes and other sensors are located in the administration trailer, decontamination building, landfill, and evaporation pond crest pad buildings. Personnel response instructions will be given through the INTEC Emergency Communication Center.
- **Plant evacuation/take shelter—**These events will be announced over the INTEC Emergency Communication Center. Other than the event discussed above, this could be the result of an event at a neighboring facility.

4.12.3 ICDF-Specific Abnormalities

Abnormalities specific to the ICDF could include a worker falling into an evaporation pond, the liner leaking, or a leaking tank or sump. Actions to be taken in such events are discussed in more detail below:

- **Worker falling into an evaporation pond—**Notify the INL fire department for rescue assistance. Utilize available rescue equipment as covered by training.
- **Evaporation pond liner leakage—**Notify ICDF Complex management. Stop liquid additions to the leaking pond. Initiate transfer of the inventory of the leaking pond to the other pond.
- **Landfill liner leakage—**Notify ICDF Complex management. Stop waste placement in the landfill. Initiate investigation into the location and cause of the leak.
- **Tank/sump leakage—**Notify ICDF Complex management. Isolate the tank or sump from sources of liquid. Remove liquid from the tank or sump and conduct repair.

4.12.4 Landfill Leachate Transfer to a Truck

This operation would be used in an emergency situation if the evaporation ponds were not available to accept leachate. Performance of this procedure would allow the ICDF Complex to continue to meet regulatory requirements. The specific relevant requirement is to prevent the hydraulic head over the primary liner of the landfill from exceeding 30.5 cm (12 in.).

Leachate would be transferred by manual control of the Leachate Collection Recovery System pump through the evaporation pond crest pad building to the CPP-2706 truck loading/unloading station.

4.12.5 Landfill Action Leakage Rate Response Plan

Should the landfill ALR be exceeded, the landfill ALR response plan will be developed and implemented. This plan will comply with the provisions of 40 CFR 264.304(a)-(c) and will include, but not be limited to, the following activities:

- Calculation of the daily leakage rate for the landfill leak-detection system
- Schedule of Agency notifications
- Assessments for size, location, and cause of the leak
- Assessments for the impact of the leak
- Short-term corrective actions
- Long-term corrective actions.

Section 9 of this document presents additional information concerning response actions and necessary notifications.

4.12.6 Evaporation Pond Action Leakage Rate Response Plan

Should the evaporation pond ALR be exceeded, the evaporation pond ALR response plan will be implemented. This plan will comply with the provisions of 40 CFR 264.223(a)-(c) and will include, but not be limited to, the following activities:

- Calculation of the daily leakage rate for the evaporation pond leak-detection system
- Schedule of Agency notifications
- Assessments for size, location, and cause of the leak
- Assessments for the impact of the leak
- Short-term corrective actions
- Long-term corrective actions.

Section 9 of this document presents additional information concerning response actions and necessary notifications.

4.12.7 Liquid Transfer from Evaporation Pond to a Tank

Transfer of liquids from one evaporation pond to a truck can be performed through the truck loading/unloading facility. This activity would be performed only if both evaporation ponds were approaching capacity or if circumstances precluded the transfer of liquid from one pond to the other.

4.13 Seasonal Winterization and Startup

This section addresses seasonal requirements for facility winterization and startup operations. The ICDF landfill is operational for bulk soil disposal only during that part of the year that weather permits. Containerized soil may be placed year-round. Debris placement may proceed year-round. The evaporation ponds and the decontamination building will be operational year round. Specific seasonal facility requirements and implementation steps necessary to (1) prevent damage to facilities and equipment from cold weather, (2) ensure continued safe facility operation, and (3) return systems from "preserved" status to fully operational status in support of ICDF Complex normal operations are outlined in the remainder of this section.

4.13.1 Seasonal Winterization

Seasonal winterization activities are completed for ICDF facilities (including the two crest pad buildings, the administration trailer, and other trailers) to prevent damage from cold weather and ensure access of snow removal and safety-related equipment (e.g., fire hoses, motorized fire equipment).

Heating systems are inspected and thermostats are set to appropriate temperatures. Water systems are protected, secondary containment and condensate are drained, and staging, parking, and outlying areas are inspected to identify and relocate items that may hamper snow-removal efforts or prevent the efficient handling of safety-related equipment.

A soil stabilization product (e.g., ConCover or equivalent) is applied to disturbed areas of the landfill using a hydroseeder, as appropriate, in accordance with the manufacturer's recommendation. This product is expected to last 6 months.

Equipment winterization activities associated with the landfill, evaporation pond, and truck loading station are performed. These activities include removal of liquids from various pieces of equipment, temporary lines, hoses and hose bibs, addition of antifreeze to appropriate equipment, pump removal, and relocation and storage of portable equipment and structures (e.g., landfill personnel shed and associated portable toilet).

A snow-removal plan has been developed that identifies the areas from which snow will be removed, the removal methods, and hazards that must be avoided during snow removal. The plan is updated before each winter season.

4.13.2 Seasonal Startup

Seasonal startup activities are performed to return systems from "winterized" status to fully operational status in support of ICDF normal operations. These include inspections and associated repairs, equipment operability checks, relocation of portable equipment and structures, removal of antifreeze, and

resetting of thermostats on heating and air conditioning units. A radiation inspection of landfill areas is performed, as necessary, to confirm no loss of contamination control.

4.14 ARAR Operational Compliance Crosswalk

CERCLA determines applicable environmental compliance requirements in the OU 3-13 ROD (DOE-ID 1999) through the identification of the ARARs. The ARARs that apply to the ICDF Complex appear in Section 12.2.3 of the ROD. Table 4-2 presents an ICDF Complex operations compliance crosswalk for those ARARs involving operational requirements.

At the ICDF Complex, operational compliance is accomplished through a number of mechanisms, including, but not limited to, the following:

- Establishing and monitoring operational limits
- Performing regulatory and ICP-required inspections and audits
- Performing electronic readings of pertinent operational data
- Developing databases for tracking and monitoring
- Establishing alarms in the engineered systems
- Incorporating warning flags into the waste tracking system.

The implementation of each of these mechanisms is discussed in detail throughout this O&M Plan and in the RAWP (DOE-ID 2012b) and its supporting appendixes. Table 4-2 indicates the specific section or document that demonstrates compliance with each operational ARAR.

Table 4-2. Operational compliance crosswalk.

Alternative/ARARs Citation	Description	Comments	Compliance Document
IDAPA 16.01.01.650, 16.01.01.651	Idaho fugitive dust emissions	Will be met during construction through administrative and engineering controls.	NA[a]
IDAPA 16.01.01.585 IDAPA 16.01.01.586	Rules for the control of air pollution in Idaho	Will be met using administrative and engineering controls.	EDF-2237
40 CFR 61.92 40 CFR 61.93	NESHAP for radionuclides from DOE facilities, emission monitoring and emission compliance	Will be met using administrative and engineering controls.	EDF-2236 and EDF-9993
40 CFR 122.26	Storm water discharges during construction	Will be met during excavation and disposal through engineering controls.	NA
IDAPA 16.01.05.006 (40 CFR 262.11)	Hazardous waste determination	Applies if the soils disposed outside of the WAG 3 AOC; applies to soils where a hazardous waste determination has not been made.	PLN-914
IDAPA 16.01.05.008 (40 CFR 264.553)	Temporary units	Applies to temporary (<1 year) storage or treatment units.	ICDF Complex O&M Plan, Section 5
IDAPA 16.01.05.008 (40 CFR 264.554)	Remediation waste staging piles	Excavated soils can be temporarily staged prior to disposal in the ICDF without triggering LDRs or minimum technical requirements.	ICDF Complex O&M Plan, Section 5
IDAPA 16.01.05.011 (40 CFR 268)	LDRs	Applies only to soils from Sites CPP-92, CPP-97, CPP-98, and CPP-99 and soils/debris from outside WAG 3, or soils that have triggered placement.	DOE-ID (2003c), DOE-ID (2003b), DOE-ID (2012a)
IDAPA 16.01.05.011 (40 CFR 268.49)	Alternative LDR treatment standards for contaminated soils	Applies only to soils from Sites CPP-92, CPP-97, CPP-98, and CPP-99 and soils/debris from outside WAG 3, or soils that have triggered placement.	DOE-ID (2003c), DOE-ID (2012a)
IDAPA 16.01.05.005 (40 CFR 261.20 through 24)	Hazardous waste characteristics identification	Applies if the soils are excavated and consolidated to facilitate their management and for soils that are treated or placed in a long-term storage unit.	PLN-914; ICDF Complex O&M Plan, Section 4.1

Table 4-2. (continued).

Alternative/ARARs Citation	Description	Comments	Compliance Document
40 CFR 761.50(a)(5)	PCB disposal requirements	Applies to PCB-contaminated soils and debris.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
40 CFR 761.50(b)(3)	PCB remediation waste	Applies to PCB-contaminated soils and debris.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
40 CFR 761.50(b)(7)	PCB radioactive waste	Applies to PCB-contaminated soils and debris.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
40 CFR 761.50(b)(8)	Porous surfaces	Applies to PCB-contaminated soils and debris.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
40 CFR 761.50(d)(4)	Disposal requirements for PCBs	Applies to PCB-contaminated soils and debris.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
IDAPA 16.01.05.008 (40 CFR 264.14(a), (b), (c))	Site security	Applies to either soils capped in place or consolidated in the ICDF.	ICDF Complex O&M Plan, Section 4.11
IDAPA 16.01.05.008 (40 CFR 264.15(a), (c))	General inspection requirements	Applies to either soils capped in place or consolidated in the ICDF.	ICDF Complex O&M Plan, Section 8
IDAPA 16.01.05.008 (40 CFR 264.16(a)(1), (c))	Personnel training	Applies to either soils capped in place or consolidated in the ICDF.	ICP (2010)
IDAPA 16.01.05.008 (40 CFR 264.92)	Groundwater protection standard	Substantive parts of regulations will be met.	DOE-ID (2007)
IDAPA 16.01.05.008 (40 CFR 264.93)	Hazardous constituents	Substantive parts of regulations will be met.	DOE-ID (2007)
IDAPA 16.01.05.008 (40 CFR 264.95)	Point of compliance	Substantive parts of regulations will be met.	DOE-ID (2007)
IDAPA 16.01.05.008 (40 CFR 264.97)	General groundwater monitoring requirements	Substantive parts of regulations will be met.	DOE-ID (2007)
IDAPA 16.01.05.008 (40 CFR 264.98)	Detection monitoring program	Substantive parts of regulations will be met.	DOE-ID (2007)

Table 4-2. (continued).

Alternative/ARARs Citation	Description	Comments	Compliance Document
IDAPA 16.01.05.008 (40 CFR 264.114)	Disposal and decontamination of equipment, structures, and soils	All equipment will be decontaminated before leaving the ICDF.	DOE-ID (2012b), Section 9
IDAPA 16.01.05.008 (40 CFR 264.301)	Landfill design and operating requirements	ICDF will be designed to meet minimum technology requirements or equivalent.	NA
IDAPA 16.01.05.008 (40 CFR 264.309(a) and (b))	Surveying and recordkeeping	Substantive requirements will be met.	PLN-914
IDAPA 16.01.05.008 (40 CFR 264.310(a)(1)(2)(3)(4)(5))	Landfill closure requirements	Substantive requirements will be met.	DOE-ID (2012b), Section 9
IDAPA 16.01.05.008 (40 CFR 264.310(b)(1)(4)(5)(6))	Landfill postclosure requirements	Substantive requirements will be met.	DOE-ID (2012b), Section 9
IDAPA 16.01.05.008 (40 CFR 264.18(a) and (b))	Landfill location standards	Substantive requirements will be met.	NA
IDAPA 16.01.05.008 (40 CFR 264.302)	Landfill ALR	Substantive requirements will be met.	ICDF Complex O&M Plan, Section 4.12
IDAPA 16.01.05.008 (40 CFR 264.553)	Temporary units	Applicable for soils or liquids that are managed on-Site.	ICDF Complex O&M Plan, Section 5
IDAPA 16.01.05.008 (40 CFR 264.554)	Remediation waste staging piles	Applicable for soils that are excavated and managed on-Site.	ICDF Complex O&M Plan, Section 5
40 CFR 761.75(b)(1)(2)	PCB landfill design requirements	Applicable for PCB-contaminated soils; substantive requirements will be met.	NA
40 CFR 761.79(a) and (b)	PCB container and moveable equipment decontamination requirements	Applicable for PCB-contaminated soils; substantive requirements will be met.	DOE-ID (2012a); ICDF Complex O&M Plan, Section 4.9
IDAPA 16.01.05.008 (40 CFR 264.192)	Design and installation of new tank systems or components	Applies to the decontamination/treatment facility.	NA
IDAPA 16.01.05.008 (40 CFR 264.601)	Miscellaneous units environmental performance standards	Applies to the decontamination/treatment facility.	NA
IDAPA 16.01.05.008 (40 CFR 264, Subpart I)	Use and management of containers	Applies to the decontamination/treatment facility.	ICDF Complex O&M Plan, Section 4.3; DOE-ID (2005); DOE-ID (2012a)

Table 4-2. (continued).

Alternative/ARARs Citation	Description	Comments	Compliance Document
IDAPA 16.01.05.008 (40 CFR 264, Subpart DD)	Containment buildings	Applies to the decontamination/treatment facility.	ICDF Complex O&M Plan, Section 5
IDAPA 16.01.05.008 (40 CFR 264, Subpart BB)	Air emissions standards for equipment leaks	Applies to the decontamination/treatment facility.	ICDF Complex O&M Plan, Section 3.1; DOE-ID (2012a)
IDAPA 16.01.05.008 (40 CFR 264, Subpart CC)	Air emission standards for tanks, surface impoundments, and containers	Applies to the decontamination/treatment facility and evaporation pond.	ICDF Complex O&M Plan, Section 3.1; DOE-ID (2012a)
IDAPA 16.01.05.008 (40 CFR 264.221)	Surface impoundment design and operating requirements	Applies to the decontamination/treatment facility and evaporation pond.	ICDF Complex O&M Plan, Section 4.6
IDAPA 16.01.05.008 (40 CFR 264.552)	Corrective action management units	Applies to the evaporation pond.	ICDF Complex O&M Plan, Section 4.6
IDAPA 16.01.05.006 (40 CFR 262.34(a)(1))	Hazardous waste accumulation time	Applies to the decontamination/treatment facility.	ICDF Complex O&M Plan, Section 5
IDAPA 16.01.05.008 (40 CFR 264, Subpart F)	Releases from solid waste management units	Applies to closure and postclosure of the ICDF Complex.	DOE-ID (2007); DOE-ID (2012b), Section 9; DOE-ID (2003a)
IDAPA 16.01.05.008 (40 CFR 264, Subpart G)	Closure and postclosure	Applies to closure and postclosure of the ICDF Complex.	DOE-ID (2012b), Section 9
IDAPA 16.01.05.005 (40 CFR 261.20 through 24)	Hazardous waste characteristics identification	Applies to soils received from outside the WAG 3 AOC.	PLN-914; ICDF Complex O&M Plan, Section 4.1
16 USC 469 et seq. 36 CFR 65	National Archeological and Historical Preservation Act	Will be met during siting new excavations/construction in previously undisturbed areas.	NA
25 USC 3001	Native American Graves Protection and Repatriation Act	Will be met during siting new excavations/construction in previously undisturbed areas.	NA
IDAPA 16.01.05.005 (40 CFR 261)	Identification and listing of hazardous waste	Substantive requirements will be met for soils received from outside the OU 3-13 AOC.	PLN–914; DOE-ID (2012a)

Table 4-2. (continued).

Alternative/ARARs Citation	Description	Comments	Compliance Document
IDAPA 16.01.05.006 (40 CFR 262.11)	Hazardous waste determination	Will be met for off-WAG 3 materials prior to excavation by characterizing waste from outside the WAG 3 AOC.	PLN–914; DOE-ID (2012a)

a. NA means that the ARAR is not applicable to the operational functions at the ICDF Complex.

AOC	area of contamination
ALR	action leakage rate
ARAR	applicable or relevant and appropriate
DOE	U.S. Department of Energy
ICDF	Idaho CERCLA Disposal Facility
LDR	land disposal restriction
NESHAP	National Emission Standards for Hazardous Air Pollutants
O&M	operations and maintenance
OU	operable unit
PCB	polychlorinated biphenyl
WAG	waste area group

5. WASTE UNIT DESIGNATION AND OPERATIONAL APPROACH

Several areas designated in the ICDF Complex that facilitate operations of the ICDF Complex include:

- Staging and storage areas
- Decontamination building
- Truck in-transport area.

This section describes the waste units (i.e., staging and storage areas, decontamination building, and truck in-transport area) and the operational approach for each.

In addition, an empty-container staging area has been set aside to facilitate ICDF Complex operations. The empty-container area may hold empty containers that meet free-release criteria (e.g., roll-offs and waste boxes). The empty-container staging area is not a waste storage or staging area; therefore, it is not further discussed in Section 5.1.

The ICDF landfill and evaporation pond are also considered waste units of the ICDF Complex. The location and design standards for these units are provided in the ICDF RD/CWP (DOE-ID 2002a). The operational conditions associated with operation of the ICDF landfill and evaporation pond are provided in other sections contained within this O&M Plan.

5.1 Staging and Storage Area Unit Designations

Waste consolidated within staging piles, operated in accordance with 40 CFR 264.554, "Staging piles," are not considered storage, and placement will not occur, provided the waste is removed within 2 years of the date that the waste was moved into the staging pile. This operational approach is important because it allows the ability to stage CERCLA waste when the ICDF landfill is not operational as well as the ability to stage solids requiring treatment pending availability of the treatment.

The use of storage and staging areas allows sufficient flexibility to operate the ICDF Complex. These waste units are within the fenced boundaries of the ICDF Complex. The staging areas are managed in accordance with 40 CFR 264.554, and the storage areas are managed in accordance with 40 CFR 262.34(a)(1). Stored containerized waste meets the substantive requirements of 40 CFR 264, Subpart I, " Use and Management of Containers," and aqueous waste stored in tanks will meet the substantive requirements of 40 CFR 264, Subpart J, "Tank Systems." Storage areas are shown in Figure 5-1. Profile cross sections of the bulk soil staging area within the ICDF Complex is shown in Figure 5-2.

ALARA practice may be implemented depending on the waste, and waste will be stored, as necessary, using the dense pack configuration, resulting in only one side being visible.

The staging and storage areas for the ICDF Complex are designed and operated to satisfy the standards discussed in the remainder of this section.

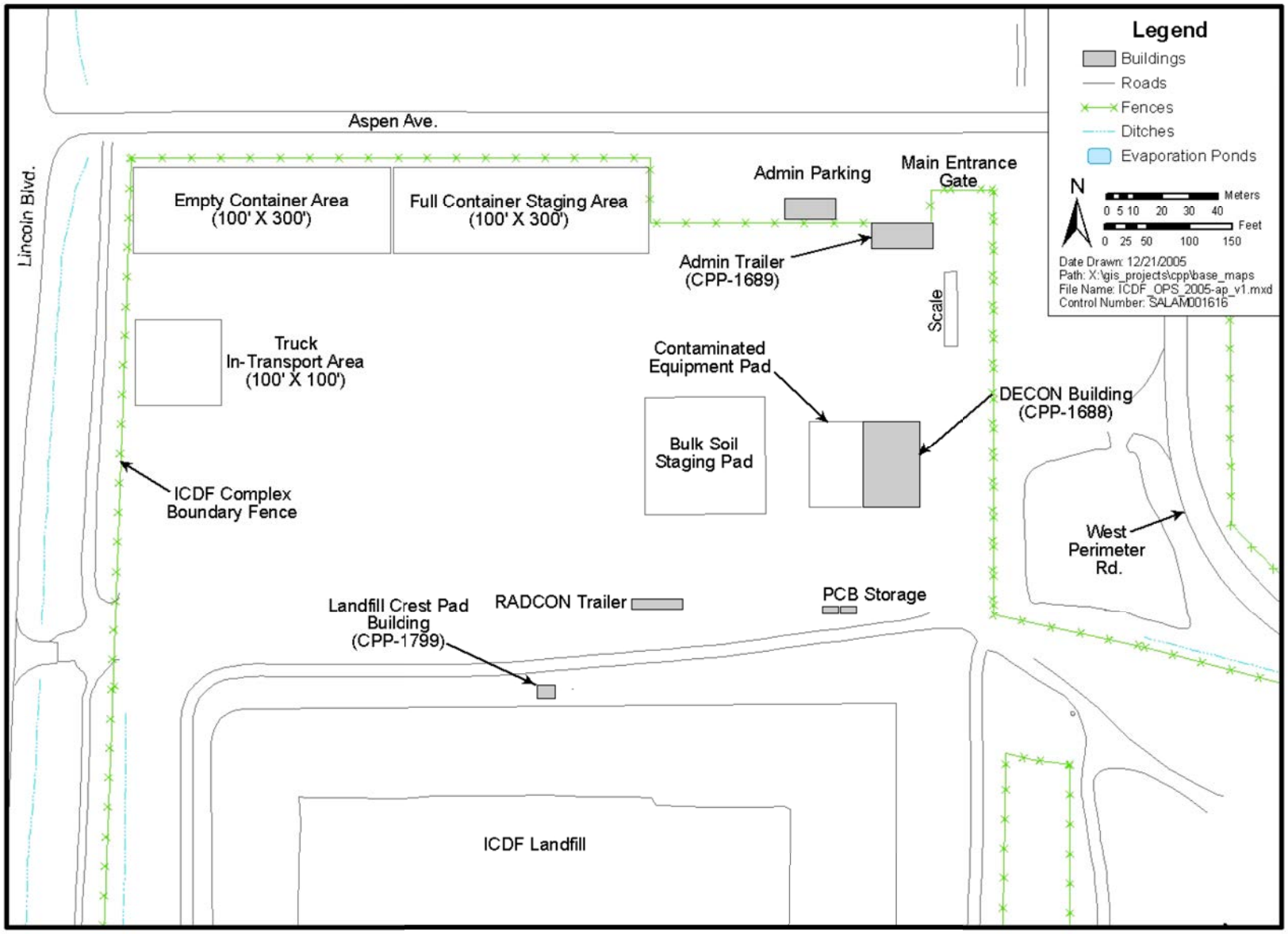

Figure 5-1. Site map and storage and staging area designation.

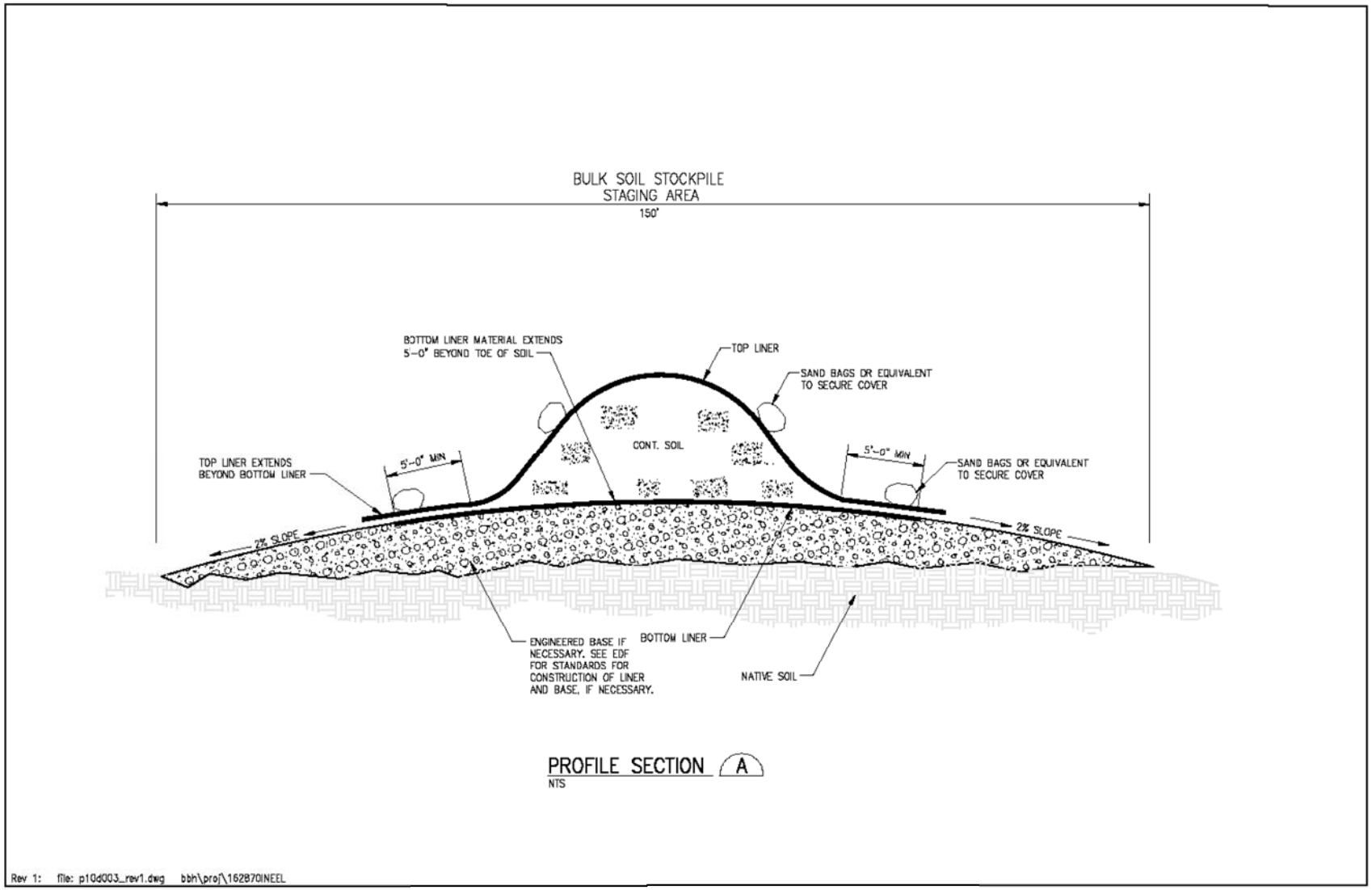

Figure 5-2. Profile section for waste storage and staging areas.

5.1.1 Location Standards

The following location standards have been identified for the staging areas:

- **Location at the ICDF Complex—**The staging and storage areas designated are within the limits of the ICDF Complex, as identified in the ICDF Complex RAWP (DOE-ID 2012b).
- **Number—**Two staging areas: full container staging area, bulk soil stockpile staging area; and one storage area: PCB storage unit, are established to facilitate ICDF Complex operations.
- **Physical location—**Approximate locations of the staging and storage areas are shown in Figure 5-1. A profile cross section of the bulk soil staging area within the ICDF Complex is shown in Figure 5-2.

5.1.2 Design Standards

A prefabricated storage container is located at the ICDF Complex for storage of PCB waste. This container is an enclosed portable unit with a steel roof and walls. The footprint of the storage area is approximately 8 × 16 ft (128 ft^2), with a usable storage capacity of approximately 21 m^3 (750 ft^3). The prefabricated container has loading ramps that will be connected following placement, and a built-in spill containment sump.

The following standards apply to the design of the waste units:

- **Hydrogeologic conditions—**are the same throughout the ICDF Complex; therefore, all areas will utilize the same design.
- **Fenced areas—**The areas will be within the fenced area of the ICDF Complex.
- **Boundaries—**The area will be roped off, fenced, or posted with appropriate signs.
- **Physical dimensions—**Approximate dimensions of the staging areas are shown in Figure 5-1.
- **Base material—**The base of the staging area is the same as the base of the ICDF Complex infrastructure, which, as shown in Figure 5-2, includes sloped compacted gravel. Additional information regarding the liner material is provided in an engineering design file that discusses alternatives for protection of staging area liner systems (see run-on run-off controls).
- **Independent professional engineer certification—**An independent professional engineer certification will be obtained for any tank(s) within a storage area, in accordance with the requirements of 40 CFR 264, Subpart J.

5.1.3 Operational Conditions

- **Designation—**Staging and storage areas are designated by this O&M Plan (Figure 5-1). Operation of the staging and storage areas are described in ICDF procedures.
- **Waste tracking—**This O&M Plan provides for waste tracking throughout the ICDF Complex. Waste tracking in the staging and storage areas is performed in accordance with PLN-914.
- **Waste management in staging piles—**The waste will not be added or removed during inclement weather (e.g., periods of precipitation, high winds). The working face and liner with waste soils will be covered at the end of each work day.
- **Time limits—**The time limit for staging waste is 2 years per waste stream; it is then disposed of or moved to an appropriate storage location. A request for a 180-day extension of the time limit may be submitted to the Agencies, provided sufficient and accurate information is included with the request

that demonstrates the continued operation of the staging area would not pose a threat to human health and the environment, and is necessary to ensure timely and efficient implementation of remedial action. Waste placement and LDR issues may be applicable after the 2-year time period.

- **Permitted waste types—**Solid, nonflowing waste types are permitted in the staging areas. Storage areas are designated (Figure 5-1) to receive aqueous waste.
- **Incompatible waste types—**Incompatible waste types may not be stored in close proximity.
- **Consolidation of waste—**
  - Nonflowing waste types may be consolidated within containers (e.g., roll-on/roll-off, drum, and waste box) within a staging area
  - Waste may be consolidated within a designated staging area in soil piles on liners. Operational controls applied, as described in ICDF procedures.
- **Run-on/run-off control—**Adequate run-on/run-off control is provided as part of the ICDF Complex design. Soils in the waste staging piles are to be managed in a manner to eliminate any potential run-on/run-off from entering the staging pile, or run-off from contacting the soils, thus eliminating the need to contain run-off. The staging piles will be designed (Figure 5-2) as follows:
  - The soils pile shall be placed on an impervious liner. There will be at least a 2% slope away from the soil waste pile to ensure proper drainage.
  - The bottom liner material for the soil shall be of sufficient strength/design to withstand the planned staging and subsequent removal of soils. The technical specifications will be established in an EDF that discusses alternatives for protection of staging area liner systems that will include requirements for base material and equipment restrictions, if necessary.
  - The bottom liner will extend at least 1.5 m (5 ft) beyond every edge of the waste soil pile.
  - An impervious man-made material (cover) shall be used to cover the soil piles at all times that the soil is not being actively managed (e.g., placing, sampling, or removing waste). The cover must extend beyond the bottom liner and be secured to ensure that the staging pile soils are not exposed to the wind, precipitation, or elements.
  - The cover shall be an impervious material sufficient to withstand site conditions (e.g., sun, wind, cold, heat, and movement to expose or cover the working face).
- **Fugitive dust control**—Staging piles that contain bulk waste will be covered with a tarp or impermeable material.
- **Inspections—**Section 8 of this O&M Plan describes inspection requirements for the staging and storage areas.
- **Containers—**Section 4 of this O&M Plan describes management of containers in staging areas.
- **Closure—**At the close of the active life of the ICDF Complex, all staging and storage areas will be closed in accordance with Section 9 of the RAWP (DOE-ID 2012b). Documentation of removal of the waste and elimination of the threat of release to the environment will be required.

5.2 Decontamination Building (CPP-1688)

The decontamination building was designed and is operated as a containment building in accordance with 40 CFR 264, Subpart DD, "Containment Buildings." The following sections detail the location, design standards, and operational conditions for the decontamination building.

5.2.1 Location Standards

The decontamination building is located within the fenced area of the ICDF Complex, north of the landfill. There are no regulatory location standards for the decontamination building, in accordance with 40 CFR 264, Subpart DD.

5.2.2 Design Standards

The decontamination building has been designed to meet the following requirements:

- **Completely enclosed** with a floor, walls, and a roof to ensure containment of managed waste.
- **Designed and constructed** of materials of sufficient strength and thickness to support the waste.
- **Free-standing building** designed to withstand daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls.
- **HEPA and air-filtration systems** that provide an effective barrier against fugitive dust emissions.
- **Manage hazardous waste** containing free liquids or treated with free liquids, including:
  - Primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier.
  - A liquid collection and removal system has been designed to drain liquids into the collection system and minimize the hydraulic head as soon as practical. A pump will discharge the waste into the evaporation pond through the pump station.
  - A secondary containment system is part of the building design. This system is constructed with a bottom slope of 1% or more and is constructed of a granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/second or more and a thickness of 30.5 cm (12 in.) or more, or constructed of geonet drainage materials with a minimum transmissivity of 3×10^{-5} m^2/second. A liner is also present.
- **Independently qualified, registered professional engineer certification** was obtained for the decontamination building.

NOTE: *Because of facility deficiencies, the decontamination building (including the contaminated-equipment pad) is in warm standby status at this writing. There are no plans to perform repairs at this time. However, routine facility inspections are performed, as required.*

5.2.3 Operational Conditions

The decontamination building is operated to ensure that the following conditions are met:

- **Incompatible hazardous waste** or treatment reagents will not be placed in the unit or its secondary containment if they could cause the unit or secondary containment system to leak, corrode, or otherwise fail
- **Decontamination building** is kept free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier
- **Level of the stored/treated hazardous waste** within the containment walls of the unit is maintained at a height less than the height of the decontamination building walls
- **Waste is tracked** through the unit using IWTS. Decontamination and rinsate is collected in the treatment room sump and decontamination bay trench and sent to the evaporation pond

- **Dust emissions** within the building are controlled through the HEPA filtration and air filtration system
- **Notifications** are performed in accordance with Section 9 of this O&M Plan
- **Inspections** are performed in accordance with Section 8 of this O&M Plan.

5.3 Truck In-Transport Area

The truck in-transport area has been identified within ICDF. The approximate location is shown on the ICDF plot plan. The purpose of this area is to allow for truck parking until resolution of waste acceptance can be negotiated with the ICDF Complex user. Should conditions arise that prevent the off-loading or transportation of containers, the vehicle may be parked inside the truck in-transport area. Under normal conditions, this will not exceed 10 working days. If the discrepancy cannot be corrected within 10 working days, the waste will be returned to the generator, assuming the shipment back to the generator would not violate DOT regulations. The return of the waste to the generator will require the generating site to have the capability of accepting these returned waste types. If conditions arise that require the truck to remain at the ICDF Complex for more than 10 working days, the waste may be transferred into one of the approved staging or storage areas, provided the waste meets the requirements of the waste management area.

6. EQUIPMENT MAINTENANCE

ICDF Complex maintenance is part of the ICP maintenance program, which includes preventive, predictive, and corrective maintenance that ensures the availability and reliability of plant SSCs important to safe and productive facility operations. SSCs are classified, based on their importance in compliance with the ICP authorization basis, the unacceptability of their failure, and the likelihood that repetitive maintenance will be required. SPC-1476 identifies the key equipment, the basis for the maintenance strategy, calibration requirements, and the rationale for spare parts.

6.1 Equipment Maintenance

Maintenance of ICDF Complex equipment falls into three categories that are discussed in the following sections:

- Preventive and predictive maintenance
- Corrective maintenance
- Calibrations.

ICDF-installed equipment includes leachate pumps, transfer pumps, level-sensing devices, flow meter/totalizers, truck scale, and the PLC computer system. Mobile equipment includes trucks, roll-on/roll-off containers, bulldozer, loaders, forklifts, a water truck, and other similar equipment.

A more detailed list of equipment for ICDF Complex operations is provided in Appendix A of this document. Management of the waste generated by maintenance activities is guided by the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2006), which can be found as Appendix G of the RAWP (DOE-ID 2012b).

6.1.1 Preventive Maintenance

Appropriate preventive maintenance/predictive maintenance tasks are selected for SSCs, based on the importance of their classification and a cost-benefit analysis focused on optimizing the life of the SSCs. Maintenance versus replacement, based on predictive maintenance techniques, is evaluated for cost-effective use, especially for SSCs that must be reliable and available for safe operations and mission accomplishment. When justified by a cost-benefit analysis, preventive maintenance tasks are established on a frequency to anticipate and correct conditions prior to SSC breakdown. SSCs for which preventive maintenance/predictive maintenance tasks are not cost-effective are allowed to run to failure, with the concurrence of Facility Operations.

6.1.2 Corrective Maintenance

Corrective maintenance is the repair or rework of failed or malfunctioning equipment to restore the intended function or design condition. This maintenance does not result in a significant extension of the expected useful life of the equipment. When corrective maintenance is performed, the condition that causes failure in the equipment is analyzed to determine the cause of failure and to identify the proper corrective actions to prevent recurrence.

6.1.3 Instrument Calibration

The goal of a calibration program is to ensure that instrument readings are correct to within a determined tolerance. ICP has a calibration program based largely on NCSL Z540.3-2006, "Requirements

for the Calibration of Measuring and Test Equipment." For the purposes of this section, the term "instrument" can also be interpreted to mean "instrument loop." An instrument loop is a group of instruments used to obtain a measurement. The major characteristics of the calibration program are as follows:

- Instruments have a calibration interval determined and then documented in a database.
- Instruments are on a recall system that informs the instrument owner when the instrument is due for calibration.
- Instruments found out-of-tolerance are evaluated for possible actions. For example, if the instrument was used to develop information for a report, the report may need to be recalled or revised. Another possible action may be to decrease the calibration interval.
- The standard used is tracked. If a standard is found out-of-tolerance, then the instruments that were calibrated using that standard can be checked to ensure they are within tolerance.
- Standards generally have an accuracy four times better than the instrument. For example an instrument with an accuracy of 1% will be calibrated using a standard with an accuracy of 0.25% or better.
- Calibration results (i.e., as-found and as-left instrument readings or settings) are kept for reference.

Most calibrations involve comparing a standard to an instrument, with adjustment made to the instrument if necessary. Nonadjustable instruments (e.g., float switches) also are included in the calibration program. While not a true calibration, instrument operation is verified at a set interval and records are kept.

Data in the calibration program are controlled. New entries and changes to the calibration database are reviewed. There are two review levels, with set-point and range changes reviewed to a greater extent than other requested changes.

If an instrument is found out-of-tolerance and cannot be brought into tolerance or if an instrument has failed, it is taken out of service. When an instrument is taken out of service, labeling is installed to inform the operators that the reading should not be used.

Calibration of the truck weigh scale will be performed annually.

6.2 Facility Maintenance

6.2.1 Building Maintenance

Routine maintenance activities for the administration trailer, decontamination building, and landfill and evaporation pond crest pad buildings are performed by the ICP. These activities include repairs to doors, windows, flooring, plumbing, roofs, and interior walls.

6.2.2 Heating, Ventilating, and Air Conditioning

The administration trailer is supplied with a central heating and air conditioning system. The landfill and evaporation pond crest pad buildings are equipped with radiant heaters and wall-mounted air conditioners to maintain a temperature range compatible with instrumentation requirements. The decontamination building has radiant heaters in all rooms with no provision for cooling. Maintenance of these systems is primarily achieved through the program of seasonal planning for winter and summer.

Winterization tasks include inspecting all heaters, cleaning enclosures to remove dust and debris, replacing filters, performing functional tests of heating units and thermostats, and covering evaporation pond crest pad building wall-mounted air conditioners. Preparations for summer, to be completed between April and June, include removing any covers installed for winter, inspecting air conditioners, cleaning enclosures, changing filters, and performing functional testing of units and thermostats.

6.2.3 Electrical Systems

Electrical switch gears, transformers, motor control centers, and circuit breakers are inspected by qualified craft persons on a frequency based on predictive maintenance evaluations. Repairs will be made, as needed. The frequency of inspections is determined by manufacturer's recommendations and/or Site maintenance program policies.

6.2.4 Lighting

An operational check of lighting systems are made monthly. This includes the interior and emergency lighting inside all permanent buildings and any exterior light fixtures. Repairs or bulb replacements are made, as needed. A work order may be prepared to correct lighting deficiencies noted in other facility inspections or by the operations staff by using the ICP maintenance program.

6.2.5 High-Efficiency Particulate Air Filtration Systems

There are two HEPA filtration systems in the decontamination building. One services the decontamination bay and the other services the treatment area. Each system contains four prefilters and eight HEPA filters. A Site-wide program is responsible for the in-place testing of HEPA filters. Only trained and certified personnel perform in-place testing. HEPA systems are tested after installation, modification, repair, and at least annually thereafter.

Operational conditions/observations that require the involvement of the ICP HEPA Filter/Ventilation Group include the following:

- High differential pressure of 5-in. water gauge or greater
- Reduction in differential pressure indicating a breach
- Occurrence of a fire or an off-normal chemical release into the ventilation system
- Apparent air flow restrictions
- Any suspected problems with the filter system.

HEPA testing and filter changeout is performed in accordance with Section 10 of ASME N510, subject to concurrence by the FFA/CO Agencies. If wetting is suspected, the filters will be evaluated and replaced as necessary in accordance with applicable ICP procedures.

Servicing exhaust fans, drive motors, and instrumentation will be based on predictive maintenance evaluations. Corrective maintenance will be performed through the ICP maintenance program.

6.2.6 Treatment Equipment

Treatment equipment includes a box tipper, mixing unit with discharge capability, stabilization agent feeding apparatus, fugitive dust control equipment including prefilters and a bank of HEPA filters, and a grout mixing and injection unit for debris treatment. Additional equipment may include pallet jacks or other equipment for moving containers.

Preventive maintenance activities include lubrication of bearings and rollers, changing gearbox fluids, and inspection and replacement of filters.

6.2.7 Water Systems

The ICDF Complex has three types of water sources from INTEC: potable water, fire water, and raw water. All are branch connections from INTEC systems with isolation valves at the connection points.

Other than periodic flow tests and inspections of the fire protection post-indicator valves and hydrants, no regular ICDF maintenance activities are anticipated.

6.2.8 Sanitary Sewage System

Sanitary sewage is collected from the administration trailer and decontamination building in a common sump equipped with two pumps and ultrasonic level instrumentation. Sewage is transferred under pressure to a sewer main inside INTEC. The pump control panel has a trouble alarm light. Maintenance of the sanitary sewer system outside the ICDF boundary is the responsibility of INTEC Utility Operations.

6.2.9 Evaporation Pond Lining System

The liner repair instructions are presented in the Technical Specifications for the ICDF (SPC-1476). Relevant sections include the following:

- Section 02371—Separation and geotextile cushion repair
- Section 02661—Sacrificial and primary geomembrane repair
- Section 02667—Primary and secondary geosynthetic clay liner repair.

6.3 Grounds and Perimeter Maintenance

Monitoring grounds and perimeter fences is accomplished through weekly landfill and evaporation pond inspections. Maintenance activities include the following:

- Repairing fences
- Repairing/replacing warning or directional signs
- Removing weeds and debris from storm run-off ditches
- Removing vegetation and debris from around fences and buildings for fire prevention
- Performing general housekeeping of storage areas and equipment pads
- Removing snow from access routes, equipment pads, and storage areas
- Placing and spreading snow-melt or dry sand in pedestrian traffic areas.

6.4 Spare Parts and Special Tools

The preparation of spare parts lists and special tool requirements were accomplished as the manufacturer's data were received. The facility engineer and facility manager reviewed the complete spare parts list and identified those parts or tools that should be added to the material inventory system. Procurement, storage, and use of spare parts is in accordance with the ICP company procedures.

Spare parts that can directly impact the protectiveness of the remedy are listed in Appendix A (Table A-2) of this document.

7. FACILITY CONFIGURATION CONTROL

An effective operational configuration management program involves the consistent identification of items requiring configuration control, management of requirements and documentation applicable to the items, and control of changes to those items.

The cumulative benefits of a configuration management program include increased safety and reliability, improved environmental protection, and a reduced potential for extended shutdowns through:

- Improved availability and retrievability of accurate information to support safe, sound, and timely, decisions related to design, construction, fabrication, maintenance, and operations
- Enhanced worker safety by providing assurance that equipment will perform as intended and by reducing exposures to unknown hazards caused by equipment being in the wrong configuration
- Increased efficacy by ensuring the prompt availability of needed information, thereby preventing errors and resultant rework, reducing duplication of effort, and improving scheduling and planning estimates.

7.1 Physical Equipment

Equipment and piping that are installed as permanent fixtures in operating facilities must be labeled to ICP standards. Components requiring labeling include valves, major equipment, switches, circuit breakers, fuse blocks or fuse locations, instruments and gauges, buses and motor control centers, electrical cabinets, room doors, emergency equipment, fire protection equipment, and piping. Operations procedures identify equipment as it is labeled in the facility.

Labels are placed on, or as near as possible, to the equipment to be labeled. The label will be oriented in a manner that is easy to read and should not interfere with equipment operation or obscure indicators. Piping is labeled to indicate the fluid contained and the normal flow direction.

Equipment information and specific data for each item determined to be under configuration management are entered into the configuration management database. These data include the location of the item, manufacturer, safety category, service status, associated drawings, and any associated documents.

7.2 Drawings

Drawings are developed, assessed, and maintained to ensure they portray technically correct and approved design information in support of O&M. Drawings are controlled by the Site-wide Electronic Document Management System. Changes to a drawing may only be made using the document revision form process. If the drawing is included in a primary document under the FFA/CO, the change must also receive concurrence from DOE-ID, EPA, and DEQ project managers.

Proposed changes are reviewed and approved according to ICP procedures. The project manager may request additional reviews or approvals by subject matter experts. The completed revision to a drawing is reviewed and approved by the disciplines identified by the project manager.

Drawings are classified as “essential,” “master facility,” or “other” by the project engineer, with concurrence of the project manager.

An essential drawing has been deemed necessary for the safe operation and maintenance of a facility and the protection of workers, the environment, and the public. An example of an essential drawing is a piping and instrumentation diagram, electrical one-line, or an electrical panel schedule. A master facility drawing has been selected, as necessary, for the routine O&M of a facility. A master facility drawing would be a building lighting plan or detailed piping plan. An "other" drawing would be a floor plan or building structure.

An "interim" drawing is used to maintain an essential drawing in the as-built condition during a system modification. An example would be issuing an interim drawing of an electrical panel showing the addition of a new circuit breaker to maintain the as-built condition of the essential drawing until the drawing revision can be issued.

7.3 Instrument Calibrations

ICDF uses the INL-integrated Site-wide calibration program based on NCSL Z540.3-2006. Data for instruments that will be calibrated are maintained in a controlled database. Calibration frequency and tolerances are based on the manufacturer's recommendation and/or applicable national standards.

All calibrated process instruments have a sticker that indicates when the next calibration is due. This information also is contained in the calibration program database.

Radiation measurement instrumentation calibrations are maintained by the Health Physics Instrumentation Laboratory.

7.4 Facility Changes and Modifications

Proposed changes to facilities or systems are reviewed by the engineer to determine if the facility change form process is applicable. The facility change form is the INL Site-wide method for tracking an engineering change. It is used for:

- Describing the proposed engineering change
- Documenting activities associated with the design of the modification
- Authorizing the change
- Identifying required safety and environmental reviews
- Recording the review of the change
- Identifying the document affected by the change
- Tracking the implementation of the change into all affected documents
- Ensuring that the modification is signed off as completed.

The field design change process can also be used for facility modifications.

Routine maintenance activities (e.g., like-for-like replacement of a pump or instrument) do not require a facility change form. Physical changes to a system (e.g., adding a valve or installing a larger pump) do require a facility change form or field design change. Changes to computer systems, hardware and software, are controlled by a separate program that is discussed in Section 7.6 of this document.

If the proposed changes require a change to a primary FFA/CO document, a document revision form will be completed and sent to the Agencies for approval.

7.5 Procedures

ICDF procedures are developed to govern the performance of work at the facility. They are reviewed and approved by the Waste Management Operations director. Modifications to the ICDF procedures require the same level of review and approval as the original.

7.6 Computer Hardware and Software Programs

The data-collection system is based on equipment (hardware) that must be configured (programmed). The configuration, among other things, determines what is displayed on the human-machine interfaces, when alarms occur, what information is archived, how devices are interlocked, and when pumps are automatically turned on. Therefore, it is necessary and proper that the hardware and configuration (software) changes be controlled. The software is controlled in accordance with MCP-550, "Software Management." ICP maintains procedures that require configuration management of software. In addition, the data-collection system has a configuration management plan that deals with the system in detail. From the configuration management plan viewpoint, the system consists of three parts: hardware, software, and set points.

The major system hardware components have been given equipment names.

The hardware is controlled and tracked using an equipment database. Information access (input and removal) requires the completion of a form that is reviewed and approved by a facility engineer.

The configuration access is controlled with two levels of passwords. The passwords prevent unauthorized persons from gaining access to the configuration. The higher password level is the system manager who has access to all parts of the configuration. The lower level of access is instrument technician. This level only allows access to the control set-point values.

NOTE: *Operating considerations may require that operators be allowed access to certain set points. This practice is discouraged, however, and is not general operating practice.*

Copies of the software configuration are required to be kept. Individual changes to the software require completion of a form. The form must be approved before changes to the configuration can be made.

Set points are controlled as part of the calibration program. The calibration information (including set points) is kept in a database. The set points are controlled through the use of forms, which go through an approval process. Once the forms are approved, the calibration information in the database is changed, and the instrument technician can change the value in the ICDF Complex data-collection system configuration.

7.7 Training Qualifications and Records

The Site-wide Training Records and Information Network database maintains the training records for all ICP employees. These data are available to all employees through the ICP intranet. Computer-based training classes are recorded in the Training Records and Information Network as soon as the session is completed. Classroom courses are usually uploaded by the next working day. This allows operations supervision to easily confirm the qualification status of employees. Notification is also sent to the facility training coordinator of qualifications that are coming due for all staff. The ICDF Complex HASP, Table 6-1, lists the training requirements by position (ICP 2010).

7.8 Document Control Records Management

Management of records is performed by a Site-wide system. A Uniform File Code list has been developed for the proper filing and retention of record material. This system is utilized for hardcopy and electronic media. Additional information regarding records management is in Section 10 of this document.

8. INSPECTIONS

This section describes the various inspections that will be performed at the ICDF Complex as a part of routine O&M. The information is subdivided into sections that describe ICDF Complex inspections, landfill inspections, evaporation pond inspections, waste storage/staging inspections, decontamination building inspections, and tank inspections.

8.1 ICDF Complex Inspections

The required inspections for the ICDF Complex are conducted during the facility's operations. These inspections cover all operations of the Complex and are not specific to any one operation. Inspections are performed weekly, unless otherwise noted, and are documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format.

The ICDF Complex perimeter and inside fences are inspected to ensure that fences are in good condition, that there is no buildup of wind-blown material, that gates are functional and closed when not in use, that locks are in working order, and that perimeter warning signs are properly placed and in good condition.

Following a significant precipitation-related storm event (i.e., 0.85 in. or more of rain in a 24 hour period), the following are performed within 24 hours following the storm:

- ICDF Complex access and haul roads will be inspected for severe erosion of roads or embankments (defined as measurable gullies and erosion channels deeper than 15.2 cm [6 in.]), for evidence of spills, and for adequate drainage, to ensure that the roads are in a condition to allow safe operation
- The ICDF Complex storm water runoff control ditches are inspected to ensure the following:
  - Ditches are free of obstructions
  - Culverts are open and free of solid material
  - Drainage is not impeded
  - Runoff is being directed to the intended areas
  - There is no evidence of severe erosion to the ditches, culvert headwalls, or evidence of overflow from the ditches.

The ICDF Complex is inspected daily for effectiveness of dust-suppression controls.

Further detail regarding the ICDF Complex inspections can be found in the ICDF procedures. It should be noted that these are minimum requirements.

8.2 Landfill Inspections

The required inspections for the ICDF landfill are conducted during the operation of the landfill. Landfill inspections are performed weekly, unless otherwise noted, and following a significant storm event that could impact the safe operation of the landfill (40 CFR 264.303(b)). Inspections following a storm or other event are conductedon the next scheduled working day following a wind-related event (i.e., sustained winds greater than 35 mph) or within 24 hours following a precipitation-related event (i.e., 0.85 in. or more of rain in a 24 hour period) or other event that may impact the safe operation of the Landfill (e.g., a significant earthquake). Inspections are documented through the use of logbooks,

checklists, or other appropriate electronic or hardcopy format. Inspections are performed to determine the following:

- Deterioration, malfunctions, or improper operation of run-on/run-off control systems
- Presence of leachate in the collection and removal systems during operations and closure/postclosure
- Function of level transducers on an annual basis to ensure they are operational
- Proper functioning of the leachate-collection recovery system (40 CFR 264.303) or errors and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15(a))
- Annual survey to reestablish the landfill perimeter
- Effectiveness of soil fixative on exposed waste areas for dust control.

Inspection requirements for the ICDF landfill crest pad building include, but are not limited to, structural elements; heating, ventilating, and air conditioning; sumps; pumps; alarm systems; instrumentation; and mechanical systems. These requirements are detailed in the ICDF procedures.

8.3 Evaporation Pond Inspections

Inspections required for the ICDF evaporation pond are conducted during the operation of the evaporation ponds. Inspections are made weekly and following significant storms, including sustained winds in excess of 35 mph (40 CFR 264.226(b)), and are documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format. Inspections following a storm or other event are conductedon the next scheduled working day following- a wind-related event or within 24 hours following a precipitation-related event (i.e., 0.85 in. or more of rain in a 24 hour period) or other event that may impact the safe operation of the Evaporation Ponds. Inspections are performed for malfunctions and deterioration, improper operation of overtopping-control systems, water level fluctuations, severe erosion or other signs of deterioration of dikes and other containment devices, and discharges that may lead to the release of hazardous constituents or pose a threat to human health (40 CFR 264.15(a); 40 CFR 264.226 (b)(1,2,3)). During these inspections, personnel conduct the following activities:

- Inspect and record the water level of both ponds (40 CFR 264.226 (d)(1))
- Inspect to ensure that the minimum of 18 in. of freeboard (the distance from the water surface to the top of the berm) is being maintained
- Inspect to ensure the ballast tube system is intact
- Inspect for evidence of liner wind lift in empty areas
- Inspect to ensure the enhanced evaporation system(s) are in position and anchor points intact.

Further detail regarding the ICDF evaporation pond inspections can be found in the ICDF procedures.

Inspection requirements for the crest pad buildings, including but not limited to structural elements; heating, ventilating, and air conditioning; liquid level in sumps; pumps; alarm systems; instrumentation; and mechanical systems; are detailed in the ICDF procedures.

8.4 Waste Storage and Staging Inspections

The required waste storage/staging inspections are conducted during the operation of the waste storage/staging areas as defined in Section 5 of this O&M Plan. Inspections are performed weekly, unless otherwise noted, on the next scheduled working day following a wind-related event or within 24 hours following a precipitation-related event (i.e., 0.85 in. or more of rain in a 24-hour period) or other event that may impact the safe operation of the staging areas. Inspections are documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format. Further details of waste storage and staging area inspections can be found in the ICDF procedures.

Inspections are performed to identify malfunctions and deterioration, operator errors, and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15 (a) and (c)).

Waste storage and staging area inspections are not performed when there is no waste stored or staged within the designated area.

All waste storage and staging areas identified in Section 5 of this O&M Plan are inspected as described in the following subsections.

8.4.1 Area Management

- Aisle space is adequate for personnel and equipment to respond to emergencies and/or conduct inspections
- All waste types are segregated within the area to maintain requirements for compatibility
- Quantities/containers recorded in the operating record equal quantities/containers staged in the area
- Staged wastes have not been staged for more than 2 years, or a justification for the extension has been submitted.

8.4.2 Spills and Leaks

- Areas are inspected for leaks and deterioration (40 CFR 264.174)
- Pads are inspected for integrity.

8.4.3 Containment

- Containers staging liquids have secondary containment or are otherwise prevented from discharging through dikes or berms
- Tarps over soil piles are secure
- Liners under soil piles, where necessary, are placed and functioning to provide isolation of the pile
- Dikes, berms, or pad design restrict run-on precipitation from entering staging areas.

8.4.4 Labeling

- All containers and bulk soil in the waste storage/staging areas are inspected for proper signage and labeling depending upon the waste type
- All container and bulk staging area labels, signs, and marks are visible to the inspector.

8.4.5 Containers

- Containers staged at the ICDF Complex are inspected, at least weekly, for leakage and deterioration (40 CFR 264, Subpart I).

8.4.6 Emergency Response

- Emergency procedures, as defined in the HASP (ICP 2010), are established.

8.5 Decontamination Building Inspections

Required inspections of the decontamination building are conducted during the operation of the decontamination building. As required by 40 CFR 264.1101(c)(4), the decontamination building shall be inspected every 7 days. The decontamination building has been designed to meet 40 CFR 264 Subpart DD, for containment buildings. The building is operated and maintained per 40 CFR 264 Subpart DD. Inspections for the treatment unit within the decontamination building are in accordance with this section. Inspections are recorded in the facility's operating record and entail the following activities:

- Inspect and record data gathered from monitoring equipment and leak-detection equipment, as well as the containment building and the area immediately surrounding the containment building, to detect signs of releases of hazardous waste (40 CFR 264.1101(c)(4))
- Inspect for errors and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15(a)).

Further details regarding the decontamination building inspections can be found in the ICDF procedures.

8.6 Tank Inspections

Required tank inspections are conducted during operation of the ICDF Complex. Daily inspections are performed, if no leak-detection system is installed, for the following:

- Aboveground portions of the tank system, if any, to detect signs of corrosion or releases of waste.
- Crest pad building sumps, pump station, and decontamination building tank system to determine the water level.
- Data gathered from monitoring and leak-detection equipment to ensure that the tank system is being operated according to its design.
- Construction materials and the area immediately surrounding the externally accessible portions of the tank system, including the secondary containment system, to detect erosion or signs of releases of hazardous waste.
- Tanks in the Tank and Container Storage Area, the liquid level in the secondary containment may have small fluctuations in the level because it may have an open top containment. Evaporation, precipitation, and liquid removal should be the only normal contributing factors in the liquid level. If the liquid level in a primary tank deviates from the recorded level, and there was no waste added or removed from the tank, then investigate the suspected leak.

Further detail regarding tank inspections can be found in the ICDF procedures.

8.7 Corrective Actions

Actions that may precipitate releases of hazardous substances into the environment will be corrected within a timeframe proportional to or as determined by the release. For example, sustained overtopping of the evaporation pond resulting from wind-driven spray must be addressed immediately through spill cleanup and reducing pond levels as much as practical. In another example, cracks in a pad adjacent to stored waste should be repaired before using that portion of the pad. Depending on the nature of the stored waste, appropriate interim measures may be necessary before completing the repair (e.g., placement of absorbents and/or increased inspections).

Minor deficiencies are corrected as soon as practical to prevent cumulative effects that could lead to a potential release. For example, observations of labeling deficiencies (e.g., incomplete, illegible, damaged, or missing labels) represent a programmatic problem that must be corrected. Repeated minor deficiencies will be evaluated for root cause, and appropriate actions will be developed to eliminate the cause before the problem can escalate.

9. NOTIFICATION AND SUBMITTALS

During the operational life of the ICDF Complex, numerous notifications and data submittals will be required. The FFA/CO outlines the procedures for submission of such data to DEQ and EPA. The ARARs determine the specific data and notification requirements. In addition to routine data submittals (e.g., annual reports) data must be submitted, as required, in the event of:

- Landfill or evaporation pond leakage, as described in Section 9.1.1
- Tank leakage, as described in Section 9.1.2
- Decontamination building leakage, as described in Section 9.1.3.

The ICDF Complex management will provide verbal notification to the Agencies for those activities outlined in this section that require notification at the time of an incident requiring corrective action. Resulting reports will be made to the regulatory Agencies for these instances. It is the intent of the ICDF Complex management to involve the Agencies in any substantive corrective actions and compliance issues as soon as practical; however, circumstances may arise which require ICDF Complex management to initiate corrective actions immediately. The following is a discussion of events that would require data submittals.

9.1 Spills and Releases

The following sections describe spill and release events that may occur as part of the ICDF Complex operations and the necessary notifications and or submittals for these events.

9.1.1 Landfill or Evaporation Pond Leakage

The LCRS is located immediately above the uppermost composite liner of the landfill liner system, and a leak detection and recovery system (LDRS) is located beneath both composite liners of the landfill. The LDRS is the uppermost leak monitoring system (located just below the primary liner) which will be monitored continually for leaks. Beneath the lower composite (secondary) liner is the secondary leak detection and recovery system (SLDRS). The LDRS must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and postclosure care period. The SLDRS monitors leaks from beneath a portion of the bottom liner system in the area of leachate-collection piping and sump. Only the LDRS has an ALR established for its operation. The ALR sets action levels for performance requirements of the primary liner system.

The evaporation ponds also have a LDRS located between their primary and secondary liners. Like the landfill LDRS, the LDRS for the pond must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and postclosure care period. The LDRS for the evaporation pond has an established ALR, which sets the performance requirements for this system.

A requirement of 40 CFR 264.302(b) is that the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under 40 CFR 264.303(c) to an average daily flow rate (gal per acre per day) for each sump, in order to determine whether the ALR has been exceeded. The average daily flow rate for each sump must be calculated weekly during the active life and closure period, and monthly during the postclosure care period when required under 40 CFR 264.303(c).

If the flow rate into the LDRS of the landfill or LDRS of the evaporation ponds exceeds the ALR for that sump, the ICDF Complex management and DOE-ID must perform the following schedule of Agency notifications:

- ICDF Complex management will notify DOE-ID at the time the flow exceedence of the ALR is identified.
- DOE-ID will provide written notification (e.g., email, fax) to DEQ and EPA that the flow is determined to have exceeded the ALR as soon as practical (not to exceed 7 days) after making the determination.
- DOE-ID will provide written information of the incident to DEQ and EPA, regarding the amount of liquids; possible location, size, and cause of any leaks; and short-term actions taken and planned. The information will be provided within 14 days of the determination.
- DOE-ID, in consultation with DEQ and EPA, will prepare a corrective action plan detailing the results of analyses, actions taken, and actions planned.
- As long as the flow exceeds the ALR, DOE-ID will prepare and submit monthly written notice to DEQ and EPA detailing additional actions taken and actions planned.

9.1.2 Tank Leakage or Spills

Several tanks exist at the ICDF Complex including:

- Pump station
- Decontamination building tank system:
  - Concrete P-trap
  - Oil/water separator
  - Ancillary piping
- ICDF Complex storage tank(s).

A tank system that is part of the ICDF Complex from which there has been a leak or spill or is unfit for use must be removed from service immediately. The contents of the leaking tank may require removal to another tank, or, if acceptable, to the evaporation pond. The ICDF Complex management will report any leak, spill, or release through existing ICP channels. Spill reporting is discussed in the HASP (ICP 2010). In addition, periodic Agency conference calls will discuss upset conditions. If the release has been reported pursuant to 40 CFR 302, that report will satisfy this requirement. A leak or spill of hazardous waste is exempted from the requirements if it is less than or equal to the reportable quantities and immediately contained and cleaned up. The ICDF Complex will use the same spill reporting and reportable quantities that are used throughout the INL Site.

9.1.3 Decontamination Building Leakage

If a release of hazardous waste from the decontamination (i.e., containment) building has been detected, the following actions must be taken by DOE-ID (40 CFR 264.1101):

- A record of discovery must be filed in the ICDF Complex operating record.
- Immediately remove from service the portion of the decontamination building affected by the condition.

- Determine what steps must be taken to repair the decontamination building, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs.
- Notify the EPA and DEQ of the condition and provide a written notice with a description of the steps taken to repair the decontamination building and the schedule for accomplishing the work. Notifications will be performed as soon as practical, but not to exceed 7 days.

Upon completing all repairs and cleanup, DOE-ID must notify the Agencies in writing and provide verification, signed by a qualified, registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with 40 CFR 264.1101(c)(3)(i)(D).

9.2 Sampling Events and Data Submittals

Several routine sampling events will occur at the ICDF Complex, which will require submittals of the data. The routine monitoring, analyzing, and reporting of groundwater data will be conducted for the ICDF Complex. The groundwater monitoring process is discussed in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2007).

9.2.1 Groundwater Monitoring Data Submittals and Notifications

The ICDF Complex conducts a detection monitoring program in the SRPA in accordance with 40 CFR 264.97(g) and the *ICDF Complex Groundwater Monitoring Plan*. The ICDF Complex maintains a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under 40 CFR 264.97(h). For further information regarding the groundwater monitoring programs, see the ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003a) and *ICDF Complex Groundwater Monitoring Plan*. Data submittals and notifications are summarized in Table 9-1.

Although water quality is not part of the detection monitoring program at this time, it also is monitored (concurrently) in the perched water and data reported to the Agencies in accordance with the FFA/CO. During routine monitoring of the SRPA, water levels are checked in the perched water wells. If sufficient water is available, samples are collected in accordance with the *ICDF Complex Groundwater Monitoring Plan*. If the decision is made by the Agencies that it is appropriate to add the perched water wells to the detection monitoring network, the ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003a) will be modified.

9.2.2 Nongroundwater Monitoring Data Submittals and Notifications

In addition to groundwater, other media (e.g., waste soil, pond water and sediment, and leachate) are sampled. Several documents discuss this sampling: the ICDF Complex SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003b), *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2012c), and the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2012e).

NOTE: *As stated in Section 1.2.2, the SSSTF is in warm standby and administrative controls are in place to prohibit staging or storage of wastes within the building.*

Table 9-1 indicates sampling at the ICDF Complex for a variety of purposes, as discussed in the documents referenced directly above. The table provides a summary of the media that are sampled under each SAP and indicates whether a data report are developed and submitted to DEQ and EPA. Sampling data that are collected but not submitted in a report to DEQ and EPA are maintained in the ICDF Complex project records and the data packages will be sent to DEQ and EPA in accordance with Section 19 of the FFA/CO.

Table 9-1. Site sampling and data submittal summary.

Document Where Data Submittal is Required	Sample Area	Sampling Locations	Media Type	Agency Submittal
ICDF Complex Waste Profile and Verification Sample Guidance (DOE-ID 2012c)	INL Site	Varies[a]	Waste soil - source material	Data maintained in ICDF Complex project records[b]
SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003b)	ICDF Complex	Treatment unit by batch	Waste soil - treated material	Data maintained in ICDF Complex project records[b,c]
ICDF Complex Operational and Monitoring Sampling and Analysis Plan (DOE-ID 2012e)	ICDF Complex	Evaporation pond	Pond water and sediment	Data maintained in ICDF Complex project records[b]
	Evaporation pond	Leak Detection Recovery System	Leachate	Data maintained in ICDF Complex project records[b]
	Landfill	Leak Detection Recovery System	Leachate	Data maintained in ICDF Complex project records[b]
	Landfill	PLDRS sump SLDRS sump	Leak detection liquid	Data maintained in ICDF Complex project records[b]
ICDF Complex Groundwater Monitoring Plan (DOE-ID 2007)	SRPA wells	USGS-123, ICPP-1782, ICPP-1783, ICPP-1800, ICPP-1829, and ICPP-1831	Groundwater	Data submitted in accordance with FFA/CO Annual report
	Perched water wells	PW-1, PW-6, ICPP-1781, ICPP-1801, ICPP-1802, ICPP-1803, ICPP-1804, and ICPP-1807	Groundwater	Data submitted in accordance with FFA/CO Annual report

Table 9-1. (continued).

Document Where Data Submittal is Required	Sample Area	Sampling Locations	Media Type	Agency Submittal
ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003a)	SRPA wells	SRPA wells	SRPA water	Upon identification of statistically significant difference – Agency conference call and follow-up report

a. Sampling location is dependent on the source of the material and the key parameter properties.

b. Data will be submitted in accordance with Section XIX of the FFA/CO.

c. As stated in Section 1.2.2, the SSSTF is in warm standby and administrative controls are in place to prohibit staging or storage of wastes within the building.

FFA/CO	Federal Facility Agreement and Consent Order (DOE-ID 1991)
ICDF	Idaho CERCLA Disposal Facility
INL	Idaho National Laboratory
O&M	operations and maintenance
PLDRS	primary leak detection and recovery system
SAP	sampling and analysis plan
SLDRS	secondary leak detection and recovery system
SRPA	Snake River Plain Aquifer
SSSTF	Staging, Storage, Sizing, and Treatment Facility

9.3 Operational Reports

Operational reports are reports that are not submitted to DEQ or the EPA but are kept onsite in the ICDF Complex records. An example of this information is an inspection checklist, as discussed in Section 8, "Inspections." Other information, including dike structural certification, tank certification, and operating record with location of waste, is discussed below.

9.3.1 Waste Generation and Tracking

Documentation of the source of the waste streams and locations in the landfill where the waste was placed is kept in the project files.

9.3.2 Complex Facility Operations

Records of daily ICDF Complex facility operations must be kept. Examples of record topics are sample/shipping and field instruments calibration/standardization.

9.3.3 Individual Units (Landfill, Evaporation Pond, Staging Area)

Examples of individual units for which reports are prepared include evaporation pond dike structural certification, tank certification, and instrument inspection checklists. These, and any other operational reports, are kept in the project files.

9.4 Emergency Response and Alarm Operation

The ICDF Complex personnel are prepared to respond to many different kinds of emergencies. The following are general descriptions of actions the ICDF Complex management/personnel perform to demonstrate emergency preparedness:

- Ensure that personnel are dedicated and trained to investigate and report events and conditions effectively and in a timely and unbiased manner
- Ensure that the timely and appropriate response action to stabilize and mitigate the event is appropriate and commensurate with training and qualification
- Categorize and make notifications to designated organizations and the Agencies, if required
- Prepare investigation and notification reports and provide event-closure and root-cause information to correct the condition and prevent recurrence
- Provide lessons learned and address additional training needs, as needed.

10. RECORDS MANAGEMENT

10.1 Introduction

Section 10, "Records Management," provides guidance for ICDF personnel and supporting interfaces responsible for the generation and preservation of records documenting ICDF operations, policies, decisions, procedures, and essential transactions. It focuses on ensuring effective records management procedures are used to capture and protect those records from loss, damage, destruction, or unauthorized revision. This section identifies specific activities required for records inventory, identification, control, turnover, and final disposition. Organizational interfaces, responsibilities, and special considerations also are addressed in this section.

10.2 Purpose, Scope, and Applicability

Section 10 defines the responsibilities, authorities, and interfaces required for consistent care of information, regardless of media used, throughout the ICDF project's life cycle (i.e., creation or receipt, maintenance, storage, and disposition) using the applicable ICP requirements set forth by the FFA/CO. Table 10-1 specifically delineates record management responsibilities.

Table 10-1. Record management responsibilities.

Performer	Responsibilities
ICDF project manager	• Is responsible for the overall effectiveness and cohesiveness of ICDF records regarding regulatory correspondence and monitoring activities • Must read the Reporting and Recordkeeping section in the RAWP (DOE-ID 2012b) and become familiar with all applicable procedures and responsibilities outlined in MCP-557, "Records Management."
ICDF operations manager	• Is responsible for the overall effectiveness and cohesiveness of the ICDF records management activities as described in this section • Must read the ICDF Records Management section in the RAWP (DOE-ID 2012b) and become familiar with all applicable procedures and responsibilities outlined in MCP-557 • Ensures that ICDF operations employees adhere to the requirements of this section of this O&M Plan and applicable governing procedures • Ensures those employees transferring or terminating from the project are aware of their records-transferring responsibilities.
ICDF project administrator	• Serves as the focal point between ICDF and ICP for records management initiatives • Presents new and changed requirements and initiatives promulgated by Records Management to the project manager and ICDF senior staff • Provides technical direction and guidance for record management activities • Is responsible for the oversight and maintenance of this plan at the direction of the ICDF project manager • Coordinates and implements record management initiatives and processes in accordance with this plan with concurrence from his/her manager • Performs the general duties of a qualified records coordinator.

Table 10-1. (continued).

Performer	Responsibilities
ICDF records coordinator	• Obtains all available training in records management, including, but not limited to, the training required under 40 CFR 264.16, as outlined in MCP-557 • Serves as the technical resource for his/her respective organizations on records management processes in accordance with this section and applicable procedures • Maintains records in accordance with this section and applicable ICP requirements and procedures.
Records originators/holders	• Must read the Reporting and Recordkeeping section of the RAWP (DOE-ID 2012b) and become familiar with all applicable procedures and responsibilities outlined in MCP-557 • Ensures that records are forwarded promptly to the ICDF records coordinator for storage and protection • Protects in-process records from loss or damage while in their possession as outlined in MCP-557 • Transfers QA records to ICDF records coordinator using the appropriate records transmittal form.
Procedure originators/modifiers	• Must read the Reporting and Recordkeeping section of the RAWP (DOE-ID 2012b) and become familiar with all applicable procedures and responsibilities outlined in MCP-557.

ICDF Idaho CERCLA Disposal Facility
ICP Idaho Cleanup Project
O&M operations and maintenance
QA quality assurance
RAWP remedial action work plan

10.3 Records Management Interfaces

ICDF project records management interfaces are shown in Figure 10-1. Records managed within the ICP Electronic Document Management System or stored at the ICP Independent Records Storage Facility, constitute the official record copy of ICDF-generated documents and shall be accessible to ICDF project personnel on the appropriate media—either electronic or hard copy.

10.3.1 Records Training

The ICP Records Management Organization trains records coordinators and, as necessary, responsible supervisors/ICDF personnel, records custodians/coordinators, and document originators/owners. The training is consistent with activities being performed by the individual(s) to ensure all ICDF participants understand and comply with MCP-557.

Additional training that is not outlined in MCP-557 but that is required will follow the ICP training organization process and utilize qualified instructors. Training session records will contain the following elements: date of the training session, training attendance record, name of the instructor, a copy of the instructor's lesson plan, a record of the actual training received, and a hard copy of any material distributed during the training session.

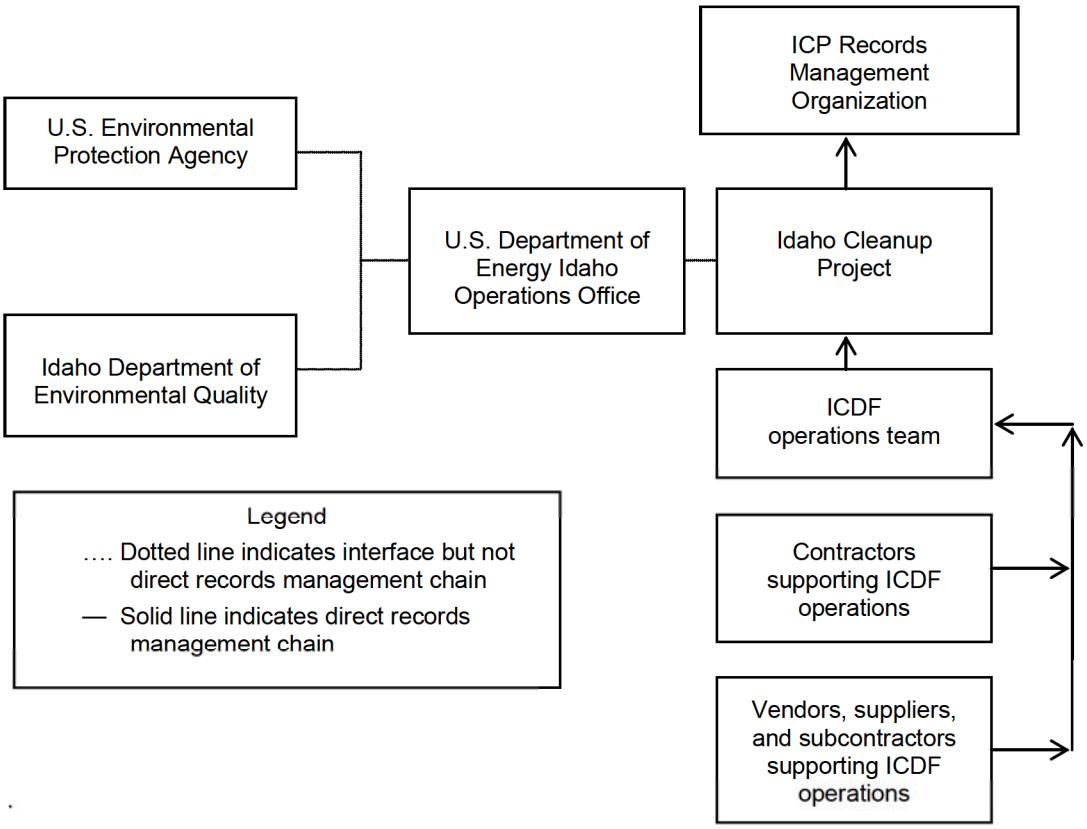

Figure 10-1. ICDF project records management interfaces.

10.3.2 Self-Assessments

Self-assessments are conducted to ensure the technical and quality performance levels of the ICDF record management organization are being maintained consistent with objectives of the ICDF. Any problems and/or discrepant conditions identified during the assessments are analyzed for root cause, tracked, and have necessary corrective actions implemented to restore performance levels.

10.3.3 Records Inventory

All records will be kept on file at the ICDF Complex as outlined in the FFA/CO, pending turnover to ICP Records Management. Records will be periodically turned over to Document Control for input into the Electronic Document Management System. The types of records and documents that are kept and maintained include, but are not limited to, the following:

- Analytical data from groundwater monitoring and sampling
- IWTS material container profiles and supporting documentation
- Map/cell locations of waste
- Spill records
- Shipping documentation
- Inspection records

- Tank records
- Environmental compliance monitoring data
- Asbestos/TSCA waste records.

11. REFERENCES

10 CFR 61, 2012, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, Office of the Federal Register, September 2012.

10 CFR 835, 2011, "Occupational Radiation Protection," *Code of Federal Regulations*, Office of the Federal Register, May 2011.

10 CFR 835, Subpart C, 2011, "Standards for Internal and External Exposure," *Code of Federal Regulations*, Office of the Federal Register, May 2011.

10 CFR 835.101, 2011, "Radiation Protection Programs," *Code of Federal Regulations*, Office of the Federal Register, May 2011.

10 CFR 835.901, 2011, "Radiation Safety Training," *Code of Federal Regulations*, Office of the Federal Register, May 2011.

40 CFR 61, 2012, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 61, Subpart H, 2012, "National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 61.150, 2012, "Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 261.24, 2012, "Toxicity Characteristic," *Code of Federal Regulations*, Office of the Federal Register, September 2012.

40 CFR 262.34, 2011, "Accumulation Time," *Code of Federal Regulations*, Office of the Federal Register, June 2011.

40 CFR 264, Subpart F, 2010, "Releases from Solid Waste Management Units," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264, Subpart I, 2010, "Use and Management of Containers," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264, Subpart J, 2010, "Tank Systems," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264, Subpart BB, 2010, "Air Emission Standards for Equipment Leaks," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264, Subpart CC, 2010, "Air Emission Standards for Tanks, Surface Impoundments, and Containers," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264, Subpart DD, 2010, "Containment Buildings," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.1, 2010, "Purpose, Scope, and Applicability," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.15, 2010, "General Inspection Requirements," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.16, 2010, "Personnel Training," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.73, 2010, "Operating Record," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.97, 2010, "General Ground-Water Monitoring Requirements," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.98, 2010, "Detection Monitoring Program," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.174, 2010, "Inspections," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.223, 2010, "Response Actions," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.226, 2010, "Monitoring and Inspection," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.302, 2010, "Action Leakage Rate," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.303, 2010, "Monitoring and Inspection," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.304, 2010, "Response Actions," *Code of Federal Regulations,* Office of the Federal Register, July 2010.

40 CFR 264.309, 2010, "Surveying and Recordkeeping," *Code of Federal Regulations,* Office of the Federal Register, July 2010.

40 CFR 264.554, 2010, "Staging Piles," *Code of Federal Regulations,* Office of the Federal Register, July 2010.

40 CFR 264.1050, 2010, "Applicability," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 264.1082, 2010, "Standards: General," *Code of Federal Regulations,* Office of the Federal Register, July 2010.

40 CFR 264.1101, 2010, "Design and Operating Standards," *Code of Federal Regulations*, Office of the Federal Register, July 2010.

40 CFR 268, 2011, "Land Disposal Restrictions," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 268.2, 2011, "Definitions Applicable in this Part," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 268.45, 2011, "Treatment Standards for Hazardous Debris," *Code of Federal Regulations,* Office of the Federal Register, August 2012.

40 CFR 268.49, 2011, "Alternative LDR Treatment Standards for Contaminated Soil," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 300, 2012, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, Office of the Federal Register, August 2012.

40 CFR 302, 2012, "Designation, Reportable Quantities, and Notification," *Code of Federal Regulations,* Office of the Federal Register, April 2012.

59 FR 46522, 1994, "Records Maintained on Individuals (Privacy Act)," *Federal Register*, September 8, 1994.

15 USC § 2601 et seq., 1976, "Toxic Substances Control Act," *United States Code,* October 11, 1976.

42 USC § 6901 et seq., 1976, Subtitle C, "Hazardous Waste Management," in "Resource Conservation and Recovery Act of 1976," as amended, *United States Code*, October 21, 1976.

42 USC § 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund)," *United States Code*, December 11, 1980.

AIHA Z88.6-2006, 2006, "Respiratory Protection – Respirator Use – Physical Qualifications for Personnel," American Industrial Hygiene Association, January 2006.

ANSI N323A-1997, 2004, "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments," American National Standards Institute, July 2004.

ASTM D698, 2012, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort," American Society for Testing and Materials, May 2012.

ASTM D6938, 2010, "Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)," American Society for Testing and Materials, May 2010.

Butcher, Tina, Steve Cook, Linda Crown, and Rick Harshman, eds., 2012, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices,* NIST Handbook 44, National Institute of Standards and Technology, 2012.

Cieminski, Karen L., 1993, *Wildlife Use of Wastewater Ponds at the Idaho National Engineering Laboratory*, M.S. Thesis: South Dakota State University, Brookings, South Dakota.

DOE O 231.1B, 2011, "Environment, Safety, and Health Reporting," U.S. Department of Energy, June 27, 2011.

DOE O 435.1 Chg 1, 2001, "Radioactive Waste Management," U.S. Department of Energy, August 28, 2001.

DOE O 458.1 Chg 2, 2011, "Radiation Protection of the Public and the Environment," U.S. Department of Energy, June 6, 2011.

DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory,* Administrative Docket No. 1088-06-29-120, U.S. Department of Energy Idaho Field Office; U.S. Environmental Protection Agency, Region 10; and State of Idaho Department of Health and Welfare, December 4, 1991.

DOE-ID, 1999, *Final Record of Decision Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, Idaho National Engineering and Environmental Laboratory*, DOE/ID-10660, Rev. 0, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare, Division of Environmental Quality, October 1999.

DOE-ID, 2000, *CERCLA Waste Inventory Database Report for the Operable Unit 3-13 Waste Disposal Complex*, DOE/ID-10803, Rev. 0, U.S. Department of Energy Idaho Operations Office, December 2000.

DOE-ID, 2001, *Comprehensive Remedial Investigation/Feasibility Study Assessment for Waste Area Groups 6 and 10 Operable Unit 10-04*, DOE/ID-10807, Rev. 0, U.S. Department of Energy Idaho Operations Office, August 2001.

DOE-ID, 2002a, *INEEL CERCLA Disposal Facility Remedial Design/Construction Work Plan,* DOE/ID-10848, Rev. 1, U.S. Department of Energy Idaho Operations Office, May 2002.

DOE-ID, 2002b, *Remedial Design/Construction Work Plan for the Waste Area Group 3 Staging, Storage, Sizing, and Treatment Facility*, DOE/ID-10889, Rev. 0, U.S. Department of Energy Idaho Operations Office, March 2002.

DOE-ID, 2002c, *Record of Decision Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Operable Units 6-05 and 10-04, Idaho National Engineering and Environmental Laboratory*, DOE/ID-10980, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Environmental Quality, November 2002.

DOE-ID, 2003a, *INEEL CERCLA Disposal Facility Groundwater Detection Monitoring Program: Data Analysis Plan*, DOE/ID-10998, Rev. 0, U.S. Department of Energy Idaho Operations Office, February 2003.

DOE-ID, 2003b, *Sampling and Analysis Plan for SSSTF Waste Stabilization Operations, WAG 3, OU 3-13*, DOE/ID-10924, Rev. 0, U.S. Department of Energy Idaho Operations Office, February 2003.

DOE-ID, 2003c, *Treatability Study Test Plan for Soil Stabilization*, DOE/ID-10903, Rev. 0, U.S. Department of Energy Idaho Operations Office, February 2003.

DOE-ID, 2005, *Idaho CERCLA Disposal Facility Construction Quality Assurance Plan*, DOE/ID-10851, Rev. 4, U.S. Department of Energy Idaho Operations Office, July 2005.

DOE-ID, 2006, *ICDF Complex Operations Waste Management Plan*, DOE/ID-10886, Rev. 1, U.S. Department of Energy Idaho Operations Office, December 2006.

DOE-ID, 2007, *ICDF Complex Groundwater Monitoring Plan*, DOE/ID-10955, Rev. 5, U.S. Department of Energy Idaho Operations Office, August 2007.

DOE-ID, 2009, *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Removal Actions*, DOE/ID-10587, Rev. 10, U.S. Department of Energy Idaho Operations Office, August 2009.

DOE-ID, 2012a, *ICDF Complex Waste Acceptance Criteria*, DOE/ID-10881, Rev. 11, U.S. Department of Energy Idaho Operations Office, September 2012.

DOE-ID, 2012b, *ICDF Complex Remedial Action Work Plan*, DOE/ID-10984, Rev. 2, U.S. Department of Energy Idaho Operations Office, March 2012.

DOE-ID, 2012c, *ICDF Complex Waste Profile and Verification Sample Guidance,* DOE/NE-ID-11175, Rev. 3, U.S. Department of Energy Idaho Operations Office, March 2012.

DOE-ID, 2012d, *Operable Unit 10-04 Long-Term Ecological Monitoring Report for Fiscal Years 2003 to 2008*, DOE/ID-11390, Rev. 1, U.S. Department of Energy Idaho Operations Office, April 2012.

DOE-ID, 2012e, *ICDF Complex Operational and Monitoring Sampling and Analysis Plan*, DOE/ID-11005, Rev. 2, U.S. Department of Energy Idaho Operations Office, January 2012.

DOE-STD-1153-2002, 2002, "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy, July 2002.

Drawing 624641, 2006, "INEEL CERCLA Disposal Facility (ICDF) Landfill Process & Instrumentation Diagram," Alternate ID: IN-201, Rev. 2, Idaho Cleanup Project, November 2006.

Drawing 624642, 2006, "INEEL CERCLA Disposal Facility (ICDF) Evaporation Pond(s) P&ID," Alternate ID: IN-202, Rev. 3, Idaho Cleanup Project, November 2006.

EDF-1730, 2002, "Staging, Storage, Sizing, and Treatment Facility (SSSTF) Debris Treatment Process Selection and Design," Rev. 0, Idaho National Engineering and Environmental Laboratory, March 2002.

EDF-2236, 2003, "NESHAP Compliance Demonstration for the ICDF Complex," Rev. 0, Idaho National Engineering and Environmental Laboratory, February 2003.

EDF-2237, 2004, "IDAPA Air Compliance Demonstration for the ICDF Complex," Rev. 2, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, December 2004.

EDF-9993, 2012, "Annual Emissions Reporting Methodology for the Idaho CERCLA Disposal Facility," Rev. 1, Idaho Cleanup Project, August 2012.

EDF-10072, 2011, "Development of Sediment Concentration Action Limits for the Idaho CERCLA Disposal Facility," Rev. 1, Idaho Cleanup Project, September 2011.

EDF-ER-264, 2005, "INEEL CERCLA Disposal Facility Design Inventory," Rev. 3, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EDF-ER-269, 2002, "Leachate Generation Study," Rev. 1, Idaho National Engineering and Environmental Laboratory, May 2002.

EDF-ER-274, 2005, "Leachate Contamination Reduction Time Study," Rev. 3, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EDF-ER-275, 2005, "Fate and Transport Modeling Results and Summary Report," Rev. 4, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EDF-ER-278, 2005, "Liner/Leachate Compatibility Study," Rev. 3, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EDF-ER-280, 2006, "Landfill Leachate Collection System Design Analysis," Rev. 2, Idaho Cleanup Project, August 2006.

EDF-ER-286, 2008, "ICDF Waste Placement Plan," Rev. 5, Idaho Cleanup Project, May 2008.

EDF-ER-290, 2005, "NESHAP Modeling for the ICDF Complex," Rev. 3, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EDF-ER-296, 2002, "Process and Treatment Overview for the Minimum Treatment Process," Rev. 0, Idaho National Engineering and Environmental Laboratory, March 2002.

EDF-ER-311, 2010, "Screening Level Ecological Risk Assessment for the INL CERCLA Disposal Facility Complex," Rev. 3, Idaho Cleanup Project, January 2010.

EDF-ER-327, 2005, "INEEL CERCLA Disposal Facility Short-Term Risk Assessment," Rev. 2, Idaho National Engineering and Environmental Laboratory, Idaho Completion Project, January 2005.

EPA, 1989, "Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions," Directive: 9347.3-05FS, U.S. Environmental Protection Agency, July 1989.

EPA, 1995a, "User's Guide for the Industrial Source Complex (ISCST3) Dispersion Models," EPA-454/B-95-003a, U.S. Environmental Protection Agency, September 1995.

EPA, 1995b, "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary, Point, and Area Sources," AP-42, Fifth Ed., U.S. Environmental Protection Agency, January 1995.

EPA, 2001, "Operation and Maintenance in the Superfund Program," OSWER 9200.1-37FS, EPA 540-F-01-004, U.S. Environmental Protection Agency, May 2001.

EPA, 2008, *EPA's Technology Transfer Network: Clearinghouse for Inventories and Emission Factors,* http://www.epa.gov/ttn/chief/index.html, U.S. Environmental Protection Agency, Web page updated May 5, 2008; Web page visited October 6, 2010.

Form 435.95, 2007, "ICDF Waste Tracking," Rev. 3, Idaho Cleanup Project, June 2007.

Form 473.01, 2008, "Visitor Traffic Log," Rev. 4, Idaho National Laboratory, April 2008.

HWMA, 1983, "Hazardous Waste Management Act of 1983," Idaho Code Sections 39-4401 et seq.

ICP, 2012, *Health and Safety Plan for Idaho CERCLA Disposal Facility Operations*, INEEL/EXT-01-01318, Rev. 6, Idaho Cleanup Project, March 2012.

IDAPA 58.01.01, 2012, "Rules for the Control of Air Pollution in Idaho," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, March 2012.

IDAPA 58.01.01.585, 2011, "Toxic Air Pollutants Non-Carcinogenic Increments," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 2011.

IDAPA 58.01.01.586, 2001, "Toxic Air Pollutants Carcinogenic Increments," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, March 2001.

Manual 15B, 2012, *Radiation Protection Procedures*, Rev. 190, Idaho Cleanup Project, October 2012.

MCP-550, 2012, "Software Management," Rev. 25, Idaho Cleanup Project, November 2012.

MCP-557, 2012, "Records Management," Rev. 15, Idaho Cleanup Project, May 2012.

NCSL Z540.3-2006, 2006, "Requirements for the Calibration of Measuring and Test Equipment," National Conference of Standards Caborations, August 2006.

PLN-914, 2008, "Waste Tracking Plan for the Idaho CERCLA Disposal Facility Complex," Rev. 2, Idaho Cleanup Project, July 2008.

PRD-183, 2012, "Radiological Control Manual," Rev. 20, Idaho Cleanup Project, July 2012.

SPC-1476, 2006, "ICDF Landfill and Evaporation Pond Remedial Design/Construction Work Plan – Approved for Construction," Rev. 4, Idaho Cleanup Project, May 2006.

VanHorn, Robin and Thomas Haney, 2007, *Long-Term Ecological Monitoring Plan for the Idaho National Laboratory*, Rev. 3, Idaho Cleanup Project, October 2007.

Appendix A

Equipment and Spare Parts Lists

Appendix A

Equipment and Spare Parts Lists

A1. EQUIPMENT LIST

Operations at the ICDF Complex includes work in both contaminated (hot) and clean (cold) areas. Some of the equipment items are permanently placed in the landfill or other areas that are contaminated. Although some of the equipment items (e.g., forklift) used during operations work in both areas, pieces of equipment are allowed to leave the hot area on condition of a release by the appropriate environment, safety, and health personnel.

The equipment list shown in Table A-1 includes typical equipment and is not meant to be all-inclusive. The list includes only equipment that was purchased following construction of the ICDF Complex. All items of equipment (e.g., pumps and valves) are shown in the engineered drawings. The drawings have been submitted in the appropriate remedial design/construction work plan.

Table A-1. Idaho CERCLA Disposal Facility equipment list (permanent and temporary).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Landfill Operations			
Track-type tractor (D-9 dozer)	X		
Backhoe loader w/thumb	X		
Wheel loader	X		
Road grader			X
Cargo container (equipment storage units)	X		
Forklift(s) with capacity as required	X		
Nuclear density gauge	X		
Hoisting/rigging equipment			X
ProGuard SB Hydro Seeder	X		
Daily (ProGuard SB)	X		
Winter (ConCover SW)			X
Roll-truck with hoist	X		
Roll-on/roll-off containers with tarps			X
Water truck	X		
Passenger vehicles			X
Hot-water pressure washer			X
Portable canopy or shed for pit personnel safety			X
Porta-Potty	X		
Personal computer	X		
Laser printer (black and white)	X		
Scanner			X
Fax machine			X

Table A-1. (continued).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Copy machine			X
Telephones	X		
Radio base unit	X		
Radios (mobiles and handhelds)	X		
Hand-operated compactor			X
Ecological monitoring traps			X
Miscellaneous ecological equipment			X
Networking equipment	X		
High-volume landfill leachate pump	X		
Pump pressure transducer unit	X		
MOYNO 2-TL8 Progressive Cavity Pump	X		
Portable dose rate instrument	X		
Portable scaler for RadCon swipe counting	X		
Hand-held friskers - alpha and beta	X		
Alpha probe for friskers	X		
Beta probe for friskers	X		
Bench-top scaler	X		
Digital dosimeters	X		
47-mm cassettes	X		
Tygon hoses	X		
Portable air sampler - high volume	X		
Portable air sampler - low volume	X		
12-V battery recharger	X		
Telescoping dose rate meter	X		
PCM-2		X	
Spill kits	X		
Depth markers	X		
Wall-mounted winch	X		
Terri-cloth wipes	X		
Miscellaneous hand tools	X		
HEPA-filtered vacuum			X
Calibrated flow instrument			X
Coffer-dam material			X
Portable generator	X		
Emergency rescue equipment	X		
Fire extinguishers	X		
Hoses	X		

Table A-1. (continued).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Staging, Storage, Sizing, and Treatment Facility Equipment			
Alpha CAMs		X	
Cables for alpha CAMs		X	
Alpha-7 radial head		X	
Alpha-7 in-line head		X	
Alpha-7 sources Pu-239		X	
Alpha-7 sources Am-241		X	
Alpha CAM filter tray assembly for in-line head		X	
Alpha CAM source holder assembly for in-line head		X	
Alpha CAM 1-1/4-in. fitting for in-line head		X	
Alpha CAM client software		X	
Alpha CAM calibration software		X	
Millipore 5-micron filters		X	
Beta air monitors		X	
Beta air monitors detector head		X	
Beta CAM Sr-90/Y-90 sources		X	
Beta CAM Cs-137 sources		X	
Air pumps		X	
Radiation area monitor control unit		X	
Radiation area monitor detector		X	
CAM carts		X	
Air sample lines		X	
Air sample lines connectors		X	
Detector for portable scaler		X	
Counting tables		X	
CAM/RAM table		X	
Temporary Equipment			
Flatbed truck			X
Crane			X
Dump truck			X
Drum roller			X

CAM continuous air monitor
HEPA high-efficiency particulate air
PCM personnel contamination monitor
RAM radiation area monitor

A2. ICDF CRITICAL SPARE PARTS AND EQUIPMENT

Table A-2 lists the critical spare parts and equipment items that will be maintained at the facility to ensure the protectiveness of the proposed remedy. The ability to measure and remove leachate from the LCRS is the most significant function.

Table A-2. Idaho CERCLA Disposal Facility critical spare parts and equipment.

Item	Number Needed	Description
High-volume landfill leachate pump	1	EPG Companies, Inc., model WSDPT 17-2 SurePump™ with 2-hp 460 Vac 3-phase motor. Includes 200-ft jacketed motor lead, submersible level sensor with 200-ft lead.
Pump pressure transducer unit	2	EPG Companies, Inc., Model PT05X LevelMaster™ submersible level sensor (this sensor fits all EPG pumps).
TARBY 2-TL8 progressive cavity pump	1	Replacement high-pressure pump for the CAPS unit for application of daily and long-term cover materials.

CAPS concover all-purpose sprayer