

Decontamination Plan, V-Tanks, Waste Area Group 1, Operable Unit 1-10 Remedial Action

1. INTRODUCTION

This decontamination plan has been prepared for the V-Tank remediation project at Waste Area Group 1, Operable Unit 1-10, Test Area North, at the Idaho National Engineering and Environmental Laboratory (INEEL), as documented in the *Group 2 Remedial Design/Remedial Action Work Plan* (RD/RA WP) (Department of Energy Idaho Operations Office [DOE-ID] 2001a).

This plan is organized into three sections. Section 1 provides an overview of the decontamination plan. Section 2 provides a general overview of the decontamination process and lists the equipment anticipated to require decontamination. Subsequent sections provide more detail with regard to requirements and methods for decontaminating radiological, hazardous, and polychlorinated biphenyl (PCB) contamination from equipment; sampling and control of decontamination waste; and decontamination of the V-Tank exteriors. It concludes with a discussion of sampling and waste handling requirements and methods, as well as a general discussion of controls. Section 3 addresses the regulatory, INEEL, and designated Treatment, Storage, and Disposal Facility (TSDF) (i.e., Envirocare of Utah, Inc.) requirements that apply to the decontamination activities, specifically in the areas of radiological control and waste management.

The execution of the V-Tank project will consist of a number of field activities. The majority of the field activities involve the use of various types of equipment to handle radioactive-, hazardous-, and PCB-contaminated soil or waste materials. In the course of handling these materials, this equipment may become contaminated and may require decontamination to allow either unconditional release or release that would allow reuse at the INEEL. For the purpose of this remedial action, conditional release requires removal of PCB and hazardous constituents and removal of radionuclide contamination in accordance with INEEL Management Control Procedure (MCP)-425, "Radiological Release Surveys and the Disposition of Contaminated Materials."

When the scope of the different design documents was being defined, it was decided that the Decontamination Plan should focus on the requirements and methods to release contaminated items used in the remediation effort, and that other "decontamination" activities would be more appropriately covered in other documents. As a result, this plan covers only the decontamination of equipment—machinery, tools, and apparatuses used to support the tank-contents removal process, the tank excavation and removal, and soil remediation. Equipment released from a contaminated area (CA) will be decontaminated, as necessary, to meet either conditional or unconditional release criteria.

Because of this focus, the following activities are **not** addressed in this plan:

- Removal of the sludge from the tanks, either as part of the initial pumping process or any subsequent rinsing to remove residual interior materials, or any in-tank contamination fixation, or grouting. The current design does not anticipate any such activities, which would be described in the RD/RA WP (DOE-ID 2001a) scope (i.e., operational) with no regulatory release criteria.
- Removal of contamination on surfaces or in soil in a CA for the purpose of reducing personnel exposure or housekeeping. This is also an operational activity and is within the scope of the RD/RA WP (DOE-ID 2001a) or execution-level documents such as radiological work permits (RWPs).

- Soil remediation steps, where bulk contaminated soil or other environmental media are removed or treated to achieve the final site conditions described in the Record of Decision (DOE-ID 1999a). This is addressed in the relevant regulatory documentation (DOE-ID 1999a, DOE-ID 1999b, DOE-ID 2001a, and DOE-ID 2001b).
- Decontamination of personal protective equipment (PPE) when employees exit a contamination area to the Radiological Buffer Area (RBA) or personnel decontamination. These will be addressed as safety issues in the project-specific Health and Safety Plans (HASPs) (WESTON 2001a and INEEL 2001a).

Items that have come in direct contact with the V-Tank sludge or water will typically be dispositioned as mixed radiological-hazardous remediation waste, some of which would also be PCB-contaminated waste. These items would include hoses, valves, pumps, lances, supplemental high-integrity containers and tanks, sampling equipment, plastic containment, and filters. In the event that contaminated equipment would require decontamination to unconditional release, initial removal of contamination would be performed in the CA under field conditions with contamination control requirements determined on a job-specific basis, implementing the INEEL Integrated Safety Management System process. The INEEL will judge on an individual basis whether to decontaminate an item, taking into account as low as reasonably achievable (ALARA) considerations, the cost to decontaminate, and the secondary waste generated versus the cost of the item and disposal costs avoided.

The project will implement an operational approach that minimizes equipment decontamination as much as practical by preventing the equipment from initially becoming contaminated. The following operational approaches may be used to reduce equipment contamination:

- When equipment is used in a contaminated area, areas of higher contamination will be covered with plastic or other clean media to minimize the direct contact between the equipment and the contamination.
- Equipment may be covered or protected, when possible, with plastic or other barriers when the potential exists for contact with concentrated, contaminated media. This will include coverings to mitigate spillage of process liquids or use of “stripcoat” types of paint on equipment surfaces.
- Dust suppression methods may be used during excavation of contaminated soil.
- If equipment becomes contaminated, it may be wrapped and controlled in a contaminated lay-down area until needed. Such equipment will be stored in compliance with appropriate PCB storage requirements (as necessary).
- Waste containers and equipment may be draped with plastic to mitigate spills.

These types of preventative measures will be identified and implemented using the Integrated Safety Management System approach.

At the end of normal working periods (e.g., end of shift for single-shift operations) and during temporary shutdowns, additional contamination control activities may occur. Contaminated equipment may be wrapped, contaminated soils covered, high-contamination areas closed (doors closed or locked, tent openings taped), and the areas placed in an acceptable, unattended shutdown condition.

Routine radiological surveys of work areas, including the Access Control Building, will be conducted as described in the project HASPs (WESTON 2001a and INEEL 2001a) and INEEL

procedures. Localized contamination discovered during these surveys will be decontaminated (as necessary). Swipes will be counted at a location in the Access Control Building. Other, less precise, measures of removable surface contamination (e.g., large area wipes) will be counted in the vicinity of the step-off pad with standard or shielded frisker probes if the background radiation permits. If not, they may also be counted in the Access Control Building with appropriate provisions for contamination control. The Access Control Building counting area is not intended for counting high-level smears associated with content removal operations. The type and quantity of counting equipment will depend on the workload.

2. PROCESSING SUPPORT, TANK REMOVAL, AND REMEDIATION EQUIPMENT DECONTAMINATION

The overall control of contamination during the remediation project will be based on designated and posted CAs surrounded by RBAs. When a piece of equipment (or other material) needs to be removed from the CA where it has been used in tank or soil remediation or sludge processing, a determination will be made if it will be reused, decontaminated, or disposed of as waste. If the intention is to reuse or decontaminate the equipment, it will be surveyed as it leaves a CA to document its radiological status. At the same time, its hazardous and PCB-contamination status will be documented both by visual inspection and by documentation of its potential for having had direct contact with V-Tank sludge (both PCB and hazardous waste contamination), or V-Tank liquid or contaminated soil (hazardous waste contamination only). Prior to leaving a CA, any equipment that is not ultimately disposed of as waste will be released radiologically and determined not to be contaminated with hazardous constituents or PCBs either based on it not having contacted such waste or its documented decontamination.

Surveying will occur at or adjacent to the CA entry/exit point. Plastic sheeting may be used to temporarily extend the controlled area. The equipment moved onto it will be surveyed and radiologically released. The controlled area extensions will be positioned so that equipment being surveyed or awaiting the counting of smears will not impede equipment entering the controlled area. Equipment may be completely decontaminated and released at this location, if practical.

There may be times when the radiological status of equipment may not be adequately characterized due to the high background radiation present at the CA entry point. In this case, initial surveys of removable radiological contamination will be used to allow the equipment to exit the CA, with the smears or large-area wipes counted in the Access Control Building or another area of lower background. A more detailed survey would be performed on the equipment in an area of lower background.

If the radiological, hazardous or PCB status of the equipment indicates that it is contaminated, and the background radiation levels or other reasons make it impractical to completely decontaminate it at the initial CA, then some preliminary decontamination might still be performed (e.g., removing clods of soil). Appropriate contamination barriers will be applied (e.g., small equipment would be bagged; larger equipment would have the affected area covered with plastic), and the properly labeled and/or posted equipment would be removed from the CA entry point.

Contaminated equipment will either be staged in a controlled area within an RBA or go directly to an appropriate area for radiological, hazardous constituent, or PCB decontamination. Storage requirements would be commensurate with the level and type of contamination and would range from proper labeling for fixed radiological, nonhazardous, non-PCB to various types of primary and secondary containment and posted storage for PCB-contaminated materials.

The details of the decontamination methods are given in subsequent sections based on the contaminant to be removed. For small equipment or localized areas on larger equipment, "spot" decontamination techniques will be used, with steadily more aggressive decontamination methods applied, as necessary, to achieve the release criteria. For larger equipment or larger areas requiring radiological, hazardous, or both types of decontamination, a powerwash-type sprayer may be more practical, despite the considerably greater controls for water collection and handling.

Equipment will be decontaminated within a controlled area appropriate to the work to be performed. Unless the equipment has been surveyed for radiological contamination ("predecontamination survey") and released, the area in which the decontamination occurs will be a CA with appropriate postings and surveys. (Otherwise, the decontamination area will be a contamination reduction zone.) The

decontamination area will be controlled to preclude cross-contamination or release of contamination to the environment.

The decontamination pad used to wash-down equipment will be plastic lined, with berms and a sump; it is currently expected that it will be a set-aside portion of the bermed area identified in the design as the Drum Storage, Water Storage, and Decontamination Area. The washing equipment will be arranged to ensure that back-splash from the decontamination does not cross the controlled area boundary, with portable curtains or partitions used only if necessary. Appropriate PPE, as described in the project HASPs (WESTON 2001a and INEEL 2001a) or RWP, will be required when the powerwash is used for decontamination of larger equipment. All decontamination residues and liquids will be collected and packaged as secondary waste.

Decontamination areas may also be created, as necessary, for spot decontamination (i.e., dry brushing or wet scrubbing with small volumes of a detergent or an approved PCB solvent) that will have containment commensurate with the activity performed. Decontamination areas will be surveyed and released when the activity is complete and they are no longer needed. The tools and containment will be dispositioned as waste.

Decontamination tools, equipment, and consumables that will be used for the removal of the different contaminants are as follows: plastic sheeting, long and short-handled stiff bristle brushes, wire brushes, brooms, putty knives, tack cloth, wash and rinse buckets, tubs, spray bottles, hand garden sprayers, containers of clean water, approved PPE, rags and paper towels, approved nonphosphate detergent, and plastic bags for trash. Unique materials required for specific contaminants are discussed in the appropriate sections.

2.1 Items Requiring Decontamination

The following items will require decontamination for conditional or unconditional release after the completion of the remediation tasks. The items marked with an asterisk (*) are INEEL-provided, government-furnished equipment. Conditional release is adequate (i.e., for Site use only):

- Crane
- Trucks
- Fork-truck
- Front-end loader*
- Track-hoe*
- Bulldozer*
- Soil compactor
- Soil bag lifting ring
- Soil bag lifting frame
- Soil bags (on leaving site)
- Trailer(s) and cargo containers
- Casks (may be contaminated on receipt and conditionally released for return to Durateck, Inc.)
- Trench shields

- Auger
- Trench box
- Plating or decking for stabilizing soil under excavation equipment
- Small tools not in direct contact with the sludge
- Sampling equipment (tank contents and soils).

2.2 Removal from Tank Remediation and Sludge Processing CAs

2.2.1 Requirements for Removal from Tank Remediation and Sludge Processing CAs

If it is not convenient to completely decontaminate the equipment at its initial location, the equipment will be removed from the Tank Remediation or Sludge Processing CA (otherwise identified in the design as the “Area of Contamination” and “HIC Storage/Drum Filling and Staging Area”). Prior to removal from the original CA, contaminated equipment must be covered, bagged, or packaged to meet the necessary storage or transportation requirements. Proper documentation of the radiological, hazardous, and PCB contamination status of the equipment will be completed. The equipment will be labeled appropriately.

If the equipment cannot be radiologically released, all contaminated areas will be covered or controlled to preclude the release of contamination within the RBA.

2.2.2 Methods for Removal from CAs

The following decontamination approaches will be used or available at the entry/exit points of the original CA.

- Cover contaminated locations with plastic sheeting
- Bag small items
- Extend plastic “step-off pad” for equipment surveying or decontamination
- Use dry decontamination techniques to remove observable contamination and/or soil
- Spot decontaminate with water or detergent on rags (over plastic sheeting), when practical
- Use large area wipes, smears, direct frisks, or a combination of equipment that was not in direct contact with hazardous or PCB remediation waste to conditionally release equipment for subsequent final release, particularly areas such as wheels.

2.3 Radiological Decontamination

2.3.1 Radiological Decontamination Requirements

The criteria for radiological release of items are contained in the INEEL *Radiological Control Manual* (PRD-183), Table 2-2.

Surveys (direct, smear, and large-area wipes) to quantify radiological surface contamination level will be performed and documented according to procedures based on release requirements. Copies of

equipment radiological surveys will be retained at the job site as part of the project record. Originals will be maintained at the facility's radiological control office in accordance with approved procedures.

Radiologically contaminated equipment may be stored within a posted CA or within the RBA with appropriate covering and taking into account weather conditions.

2.3.2 Radiological Decontamination Methods

Decontamination will include dry methods (manually wiping and brushing using rags, hand brushes, putty knives, etc.) and wet methods (increasingly aggressive manual scrubbing with detergents and brushes). Wet methods for spot decontamination may use either wet rags or a manual spray ("garden sprayer") to apply solution over small areas of the equipment, followed by scrubbing with brushes or rags, and typically using dry rags to manually remove excess liquids. Spot decontamination should not generate bulk liquid waste. Spot decontamination is used to remove radiological hot spots even if the equipment will be subsequently decontaminated for PCBs or hazardous constituents, or washed on the decontamination pad for removal of low levels of radiological or hazardous constituents over larger equipment areas. It is not anticipated that abrasive methods (e.g., sandblasting) will be required. Decontamination residues and consumables will be collected and disposed of as waste.

The contaminated areas on the equipment will be surveyed periodically for fixed and removable contamination as decontamination proceeds, and the equipment will be released either conditionally or unconditionally when the release requirement is achieved. The decontamination CAs will be located so that background radiation will not interfere with determination of fixed contamination levels.

After radiological decontamination and prior to decontamination for hazardous or PCB contamination, a "predecontamination survey" will be conducted using smears or direct frisking to verify the radiological condition of the affected area of the equipment. This survey will indicate whether the waste from the subsequent decontamination will be handled as hazardous, PCB, a mixed radiological/hazardous, or a mixed radiological/hazardous/PCB. In this case any residual radiological contamination will be noted, and the equipment will be resurveyed after the PCB/hazardous constituent decontamination for final radiological release. Decontamination of the tank used for stormwater runoff storage is covered under Section 2.5.

2.4 PCB Decontamination

2.4.1 PCB Decontamination Requirements

Any required PCB decontamination will be performed prior to hazardous decontamination. In order for equipment to require decontamination for PCB contamination, there must have been direct contact with PCB waste. This is interpreted to mean that the equipment must have had direct contact with V-Tank sludge. It has been determined that the soil, liquid, and other environmental media are not considered PCB waste (i.e., >50 parts per million PCBs). Project logs will specifically document events of direct contact between PCB waste and any equipment expected to be released.

Equipment that has had direct contact with PCB waste may be sampled for PCB contamination using the "PCB Spill Cleanup Policy" (Title 40 Code of Federal Regulations [CFR] Section 761.123). If the results of that analysis indicate that the surface is less than 10 $\mu\text{g}/100\text{ cm}^2$, then the equipment will be determined to meet the release standard.

Equipment locations that have had direct contact with PCB waste will be spot decontaminated by swabbing surfaces that have contacted PCBs with an approved solvent identified in 40 CFR 761.79(c).

The solvent would likely be either kerosene or diesel fuel. This decontamination should be performed prior to the decontamination for hazardous constituents (40 CFR 761.79, "Decontamination Standards and Procedures").

The method and result of the decontamination method used will be documented and maintained as part of the project record.

Prior to decontamination, equipment determined to be contaminated with PCBs must be properly wrapped and stored in a controlled, bermed area.

2.4.2 PCB Decontamination Methods

For situations where equipment has become contaminated in localized areas that are amenable to spot decontamination, the dry techniques will initially be used to remove soil or other surface deposits. The area will then be swabbed with a rag containing either kerosene or diesel fuel in a way that contacts the area with a sufficient volume of solvent to wet the entire contaminated surface. The contaminated solvent is removed with rags, the area re-swabbed, and dried again. The rag containing PCB-contaminated solvent must be disposed of as PCB waste. Additional absorbent will be added, if necessary, to prevent free liquids in the waste container. Extensive PCB decontamination is not expected.

Spot PCB decontamination may be performed in a radiological CA or, if the equipment has been radiologically released, may be performed at another location within the RBA. In either case, decontamination should be done over a plastic-covered area to avoid releases of PCB-contaminated solvents or cross-contamination.

Prior to decontamination for hazardous or PCB contamination, a "predecontamination survey" will be conducted. This survey will indicate whether the waste from the subsequent decontamination will be handled as hazardous, PCB, a mixed radiological/hazardous, or a mixed radiological/hazardous/PCB.

2.5 Hazardous Constituent Decontamination

2.5.1 Hazardous Constituent Decontamination Requirements

In order for equipment to require decontamination for hazardous contamination, there must have been direct contact with hazardous waste. This is interpreted to mean that the equipment must have directly touched either soil or other environmental media that characterization or historical process data have determined to be contaminated, that the equipment had direct contact with V-Tank sludge or water through use or spill, or that the equipment came into direct contact with the interior of the V-Tanks or associated piping. Project logs will specifically document events of direct contact between hazardous waste and equipment expected to be released.

Equipment that had direct contact with hazardous waste will be examined after decontamination has been completed. Criteria to determine whether hazardous waste has been removed will be by one of two methods. Equipment will be decontaminated and the rinsate will be sampled for hazardous constituents. The concentration of hazardous constituents in the rinsate must be less than drinking water maximum contaminant levels (MCLs). Alternatively, surfaces must meet the standard of a "Clean Debris Surface" (40 CFR 268.45, "Treatment Standards for Hazardous Debris").

In the event that there is evidence of direct contact between equipment and hazardous waste associated with the TAN-1704 valve pit, managed under Resource Conservation and Recovery Act

(RCRA) requirements per the Voluntary Consent Order (VCO), this equipment will be decontaminated separately, and the resulting decontamination waste will be managed with the other VCO waste.

The method and result of the decontamination method used will be documented and maintained as part of the project record.

Equipment determined to be contaminated with hazardous waste prior to decontamination must be properly wrapped and stored in a controlled, bermed area.

2.5.2 Hazardous Constituent Decontamination Methods

Prior to decontamination for hazardous or PCB contamination, a “predecontamination survey” will be conducted. This survey will indicate whether the waste from the subsequent decontamination will be handled as hazardous, PCB, a mixed radiological/hazardous, or a mixed radiological/hazardous/PCB. It will also determine the decontamination area postings and the waste status of decontamination residues and barriers.

For situations where equipment has become contaminated in localized areas that are amenable to spot decontamination, the dry techniques will initially be used to remove soil or other surface deposits. The area will then be scrubbed with approved detergent, wiped dry, and rinsed with clean water. Small tools, sampling equipment, and other items may be decontaminated by scrubbing in tubs or similar vessels. If the rinsate or the surface meets the criteria in Section 2.5.1, then the equipment will be determined to be decontaminated for hazardous constituents.

Spot hazardous constituent decontamination may be performed in a radiological CA or, if the equipment has been radiologically released, may be performed at another location within the RBA. In either case, decontamination should be done over a plastic-covered area to avoid releases of hazardous constituents or cross-contamination.

Residues or decontamination media (e.g., rags) will be disposed of as hazardous or mixed remediation waste, with or without PCB contamination. Spot decontamination will be used whenever possible to avoid the unnecessary generation of wastewater.

At this point, any stormwater runoff is expected to be stored in a 10,000-gal tank. At the end of the project, this tank will need to be dispositioned after the water has been removed. It is anticipated that the tank will not be contaminated with radioactive or hazardous constituents or PCBs unless there has been a spill on the pad. The tank contents will be sampled and dispositioned, as appropriate. At the completion of the project, if the tank has been determined not to contain hazardous waste, the tank will be surveyed for radiological contamination and decontaminated, as necessary, for release or size-reduced for disposal as non-mixed low-level waste.

If the tank is determined to have contained hazardous waste but the decision is made to decontaminate the tank for hazardous constituents, the tank will be rinsed once to remove residual hazardous constituents and then rinsed with clean water that will be analyzed for the appropriate hazardous constituents. If the clean-water rinse analysis results are below drinking water MCLs, the tanks will be considered nonhazardous. The tanks will then be surveyed for radiological contamination and decontaminated, as necessary, for release or size-reduced for disposal as non-mixed low-level waste.

In the event that the tanks become PCB contaminated or contaminated with hazardous constituents such that rinsing would be an impractical decontamination method, the tanks will be size-reduced and dispositioned as mixed and/or PCB waste for shipment to the appropriate TSDF.

2.6 V-Tank Exterior Decontamination

2.6.1 V-Tank Exterior Decontamination Requirements

The external surfaces of the V-Tanks will be decontaminated, as necessary, to remove clumps of soil. The tanks will be packaged. The exterior of the package will need to meet surface contamination requirements, and the surfaces will be decontaminated only as necessary to minimize cross-contamination. The ALARA considerations argue against substantial decontamination.

2.6.2 V-Tank Exterior Decontamination Methods

While the tanks are being removed or transported to their staging area, large area wipes will be used to survey the exterior surfaces of the tanks for radiological contamination. Exterior contamination greater than 10,000 dpm removable will be decontaminated using dry methods such as brooms or long-handled brushes. Tanks will be placed in approved Department of Transportation containers for shipment to the TSDF. Piping will be packaged for shipment to the TSDF with no decontamination.

2.7 Decontamination Sampling and Characterization

Decontamination waste will be sampled and characterized using process knowledge if sufficient information is available or by sampling in accordance with SW-846 methods (EPA 1996). The waste will be sampled to meet the Waste Acceptance Criteria (WAC) of the appropriate TSDF. The *Waste Management Plan (WMP) for the V-Tanks, TSF-09/18, at Waste Area Group 1, Operable Unit 1-10, Remedial Action* (INEEL 2001c) provides the project guidance on waste characterization; the following is provided for information only.

- **Organic solvent-contaminated debris generated from decontamination of PCB wastes (rags only, no free liquids).** No sampling of individual rag containers is expected to be required if the waste is disposed of as PCB remediation waste or hazardous debris, although some sampling of the original waste contaminating the equipment being decontaminated may be required for the hazardous waste determination or development of the waste profile. The debris must meet the TSDF's WAC. The characterization of this debris will be based upon V-Tank sludge.
- **Aqueous wastes generated as a result of decontamination pad activities.** Aqueous wastes will be sampled and analyzed for the appropriate suite of organic constituents (constituents present in V-Tank sludge), toxicity characteristic leaching procedure (TCLP) organics, TCLP metals, total radionuclides, and isotopic. Aqueous wastes will be characterized to ensure compliance with the TSDF's WAC.
- **Sludges generated as a result of decontamination pad activities.** Sludges (i.e., sump clean-out, mostly soil from equipment) will be sampled and analyzed for the appropriate suite of organic constituents (constituents present in V-Tank sludge), TCLP organics, TCLP metals, total radionuclides, and isotopic.
- **Soil generated as a result of general decontamination activities.** Decontamination soil sampling requirements will be consistent with remediation soil characterization requirements.
- **Miscellaneous consumable and debris wastes generated as a result of general decontamination activities.** Decontamination miscellaneous materials sampling requirements will be consistent with remediation debris characterization requirements. No sampling of these

materials (e.g., plastic sheeting, wet and dry rags, brushes, or buckets) is expected to be required if the waste is disposed of as debris, although some sampling may be required for the hazardous waste determination or development of the waste profile.

2.8 Decontamination Waste Handling

Waste generated from decontamination activities will be managed in accordance with the WMP (INEEL 2001c). The waste will be managed in accordance with the applicable procedures; the INEEL reusable property, recyclable materials, and waste acceptance criteria (RRWAC); and the WAC for any offsite TSDFs used for treatment, storage, or disposal of the decontamination wastes. The following is provided for information only.

- **Organic solvent-contaminated debris generated from decontamination of PCB wastes (rags only, no free liquids).** Rags used in PCB decontamination must be managed to ensure that, when bagged, there is no free solvent. Bagged rags will be drummed and stored as required under 40 CFR 761.65 and disposed of as debris.
- **Aqueous wastes generated as a result of decontamination pad activities.** Aqueous liquids generated as a result of decontamination on the decon pad will be managed as hazardous or mixed remediation waste with appropriate secondary containment. The liquids will be pumped from the decon pad sump into the appropriate storage tank at the end of daily operation. It is anticipated that these liquids will be solidified and disposed of as low-level mixed waste.
- **Sludges generated as a result of decontamination pad activities.** Solidified sludges (i.e., sump clean-out, mostly soil from equipment) generated as a result of decontamination on the decon pad will be managed as hazardous or mixed remediation waste with appropriate secondary containment. Sludges will be removed from the decon pad sump area on a daily basis.
- **Soil generated as a result of general decontamination activities.** Decontamination soil waste handling requirements will be consistent with remediation soil waste handling requirements. Waste will be managed according to the INEEL MCPs.
- **Miscellaneous consumable and debris wastes generated as a result of general decontamination activities.** Decontamination miscellaneous materials waste handling requirements will be consistent with remediation debris waste handling requirements. Waste will be managed according to the INEEL MCPs.

2.9 Decontamination Controls

Decontamination controls will be implemented during remediation activities to provide the following items:

- Specific survey requirements will be as identified in the project-specific procedures and/or RWPs. This will include specifically those surveys that will be applicable to equipment decontamination and to maintain and release CAs specific to decontamination activities. Additional surveys may be required for personnel protection.
- A Control Point will be located in Access Control Building to control worker access, allow for RWP development for specific work, and provide radiological control technician coverage and work oversight (see the project HASPs [WESTON 2001a and INEEL 2001a]).

- **Routine area surveys will be conducted for the CAs and RBAs, as provided for in the HASPs.**
- **Records of equipment surveys that document the status and release of specific pieces of equipment will remain part of the project record. When requested, copies of equipment surveys will be retained at the job site as part of the project record. Originals will be maintained at the facility's radiological control office per approved procedures.**

3. COMPLIANCE WITH RADIOLOGICAL CONTROL AND WASTE MANAGEMENT REQUIREMENTS

Numerous requirements, most notably those established by the federal government, the states of Idaho and Utah, and the INEEL and Envirocare Sites, will impact and control the execution of the V-Tank remedial activities. Those that most specifically apply to the decontamination of equipment are in two areas: radiological control and waste management. The principal INEEL documents that control those activities are the *INEEL Radiological Control Manual (PRD-183)* and the *Idaho National Engineering Laboratory Reusable Property, Recyclable Materials, and Waste Acceptance Criteria (RRWAC)*, (DOE-ID 1999b).

3.1 Compliance with Radiological Control Requirements

The *INEEL Radiological Control Manual (RCM)* dictates numerous specific requirements that apply to the broad range of planning, controlling, and executing work with radioactive materials. The RCM implements the requirements of the federal regulations and U.S. Department of Energy orders applicable to radiation protection for the INEEL. The V-Tanks project will comply with all provisions of the RCM relating to the specific work to be performed. The project HASPs cover a number of elements relating to project responsibilities, work control, hazards assessment, personnel protection, and emergency preparedness. Four topics that are particularly applicable to equipment decontamination are highlighted below:

- **Contamination Control and Control Levels.** Contamination will be monitored and equipment evaluated for conditional and unconditional release based on the provisions of Part 2 of the RCM, specifically Section 222 and Table 2-2. The provisions of all of Part 2 will be complied with regarding identification and posting of controlled areas.
- **Controlling the Spread of Contamination.** The project will use appropriate postings and barriers to establish contamination area boundaries to minimize the spread of contamination consistent with the demands of the specific remediation activity. Contamination area boundaries will be changed as activities change (Section 337).
- **Release to Controlled and Uncontrolled Areas.** The provisions of Sections 421 and 422 will be applied regarding release of materials between the CAs and the RBAs and between the RBAs and uncontrolled areas.
- **Decontamination.** The provisions of Section 463 will be applied during project decontamination activities. The project will use dry decontamination techniques when possible in preference to water or steam (the cited preference in the RCM).

3.2 Compliance with Waste Management Requirements

The project will generate a number of wastes as a result of decontamination activities. Most, if not all, of the radioactive wastes will be low-level mixed or low-level mixed/PCB due to the presence of RCRA-listed wastes and PCBs. The project expects the debris wastes (i.e., not sludge, water, or soil) to be shipped to the Envirocare TSDF in Utah or an alternate location. While the INEEL RRWAC implements the majority of the applicable requirements for the INEEL Site, there are a number of additional implementing documents, and there are additional requirements based on the use of Envirocare as the TSDF. Waste generated from decontamination activities will be managed in accordance with the WMP (INEEL 2001c). The waste will be managed in accordance with the applicable procedures, the INEEL

RRWAC, and the WAC for any offsite TSDFs used for treatment, storage, or disposal of the decontamination wastes.

3.2.1 Documentation and Control

The RRWAC describes the overall process for waste planning, generation, onsite management, tracking, and disposition, including organizational responsibilities, documentation requirements, and disposition pathway criteria. The RRWAC specifically defines the process that the project will use to develop the necessary waste treatment plan and Integrated Waste Tracking System Material and Waste Characterization Profiles. Additional waste management provisions are provided by the Waste Certification Plan for the Environmental Restoration Program and "Identification and Characterization of Environmentally Regulated Waste," MCP-3472. "Mixed Low Level Waste Management," MCP-70, will be the principle implementing procedure for the handling of waste once it has been generated. The Envirocare of Utah, Inc., document, "Waste Acceptance Guidelines," provides the necessary information regarding planning and contractual requirements to dispose of waste at that site.

3.2.2 Waste Characterization

The RRWAC, Section 3.2, describes the waste characterization requirements and implements the requirements from 40 CFR 262.11, 40 CFR 268.7, 40 CFR 761, and appropriate State of Idaho regulations (Idaho Administrative Procedures Act [IDAPA] 58.01.05.06–58.01.05.11) on the characterization of hazardous and PCB waste. Sampling is required to be processed through the INEEL Sample Management Office. It is anticipated that the majority of the waste characterization will be based on the tank sampling to date, although it may be advantageous to characterize the decontamination waste, residue, and environmental media as the project progresses. "Sample Management," MCP-2864, will be implemented (as required).

The Envirocare "Waste Acceptance Guidelines" provide the necessary information regarding waste characterization requirements to dispose of waste at that site and implementing their license and permit requirements.

3.2.3 Management and Treatment

The RRWAC, Section 4.6, describes the waste management and treatment requirements and implements the relevant requirements from 40 CFR 261, 40 CFR 262, 40 CFR 268, 40 CFR 761, and appropriate State of Idaho regulations (IDAPA 58.01.05.06–58.01.05.11) on the treatment of hazardous materials. Interim staging at various site locations will be based on the RRWAC, Sections 4.6.5–4.6.10. It is anticipated that the majority of treatment will be associated with proposed macroencapsulation activities at Envirocare, although there may be some need to grout specific items at the remediation site. Site provisions for controlling waste in containers (i.e., bagging and marking waste, logging and tracking box materials, and labeling and tracking waste boxes) will be applied. "Temporary Storage of CERCLA-Generated Waste at the INEEL," MCP-3475, will be implemented (as required). The Envirocare "Waste Acceptance Guidelines" provide the necessary information regarding treatment performed at that site.

3.2.4 Packaging and Transportation

The RRWAC, Section 4.6, describes the packaging and transportation requirements for the site and implements the requirements from 40 CFR 262, 40 CFR 761, 49 CFR 172, 49 CFR 173, 49 CFR 178, and appropriate State of Idaho Regulations (IDAPA 58.01.05.06–58.01.05.11) on the packaging and transportation of hazardous and PCB-containing materials. The Envirocare "Waste Acceptance Guidelines" provide the necessary information regarding their requirements to accept waste at that site and implementing their license and permit requirements.

4. REFERENCES

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- MCP-2864, September 1999, "Sample Management," Rev. 3, Environmental Restoration.
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