Kaiser-Hill

PROJECT MANAGEMENT PLAN

371 Closure Project

Rocky Flats Environmental Technology Site
Closure Project

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1. MANAGEMENT APPROACH

The new contract between the Department of Energy (DOE) and Kaiser-Hill (K-H) provides incentives to K-H to complete the Rocky Flats Closure Project (RFCP) in the most cost-effective manner possible with ***significant*** penalties for unsatisfactory safety, environmental, safeguards and security, and cost variance (CV)/schedule variance (SV) performance. While SV is evaluated, the contract places a greater value in delivering the project for lower cost than for completing the project earlier. Under the new contract, the transaction level with DOE is greatly reduced because K-H is responsible for virtually all differing site conditions. DOE is only responsible for government-furnished items and services as specified in Section C, Statement of Work (SOW), Technical Exhibit A. All references in this plan to the SOW refer to the K-H SOW for RFCP. To successfully complete the scope of work, K-H must conduct all work safely and cost-effectively through the Integrated Safety Management (ISM) process.

The ISM process is used by Kaiser-Hill as the framework for the planning and execution of the RFCP. At a macroscopic level, the five principle elements of ISM have been applied to develop the overall closure strategy and the 2006 Closure Project Baseline (CPB). For example, instead of considering hazards and controls for protection of workers in the traditional sense, hazards are also the risks and uncertainties in the baseline, and the controls are project management systems designed to mitigate those risks.

In addition to using ISM as an overall planning and managing strategy, ISM is used as the primary tool for assuring safe accomplishment of work at the floor-level. All work conducted at the Site is performed in accordance with the Integrated Work Control Program (IWCP) or an approved substitute. It is the floor level planning and execution tool used at Rocky Flats. The ISM process has been fully integrated into the IWCP process. The IWCP has been tailored over the past two years to incorporate planning for environmental stewardship, safeguards and security, and quality assurance.

By broadening these principles to cover work planning at the Site level, safety and stewardship issues become the central linkage for execution of the entire project, and are embodied in all work activities. This Project Management Plan (PMP) continues this philosophy and is organized around each of the following five ISM elements:

- Section 2—Project Scope
- Section 3—Work Activities
- Section 4—Identification of Project Risks
- Section 5—Controls
- Section 6—Feedback

Section 7 includes a list of references and appendices, which are included to provide detailed information about the project.

2. PROJECT SCOPE

In accordance with ISM, this section will define the scope of work for the 371 Closure Project. The scope information will provide input for detailed planning. The scope of the 371 Closure Project includes the following:

- Operation and shutdown of the Plutonium Stabilization and Packaging System (PuSPS) and Residues Programs.
- Special nuclear material (SNM) removal, liquids removal, and building stabilization/deactivation of the Building 371 and other associated structures.
- Decommissioning of Building 371 and other associated structures, which includes the following key work activities:
  - Establish and maintain a safe and compliant work environment;
  - Perform liquid system decommissioning;
  - Perform glovebox decommissioning;
  - Package resultant waste;
  - Decontaminate structures; and
  - Demolish structures.

The Rocky Flats Environmental Technology Site (RFETS or Site) projects supporting closure by 2006 is depicted in Figure 1: 2006 Closure Projects. The SOW tables from the contract are included as Appendix A. The tables have been modified to also identify the lead and supporting projects for each scope item.

2.1 Scope

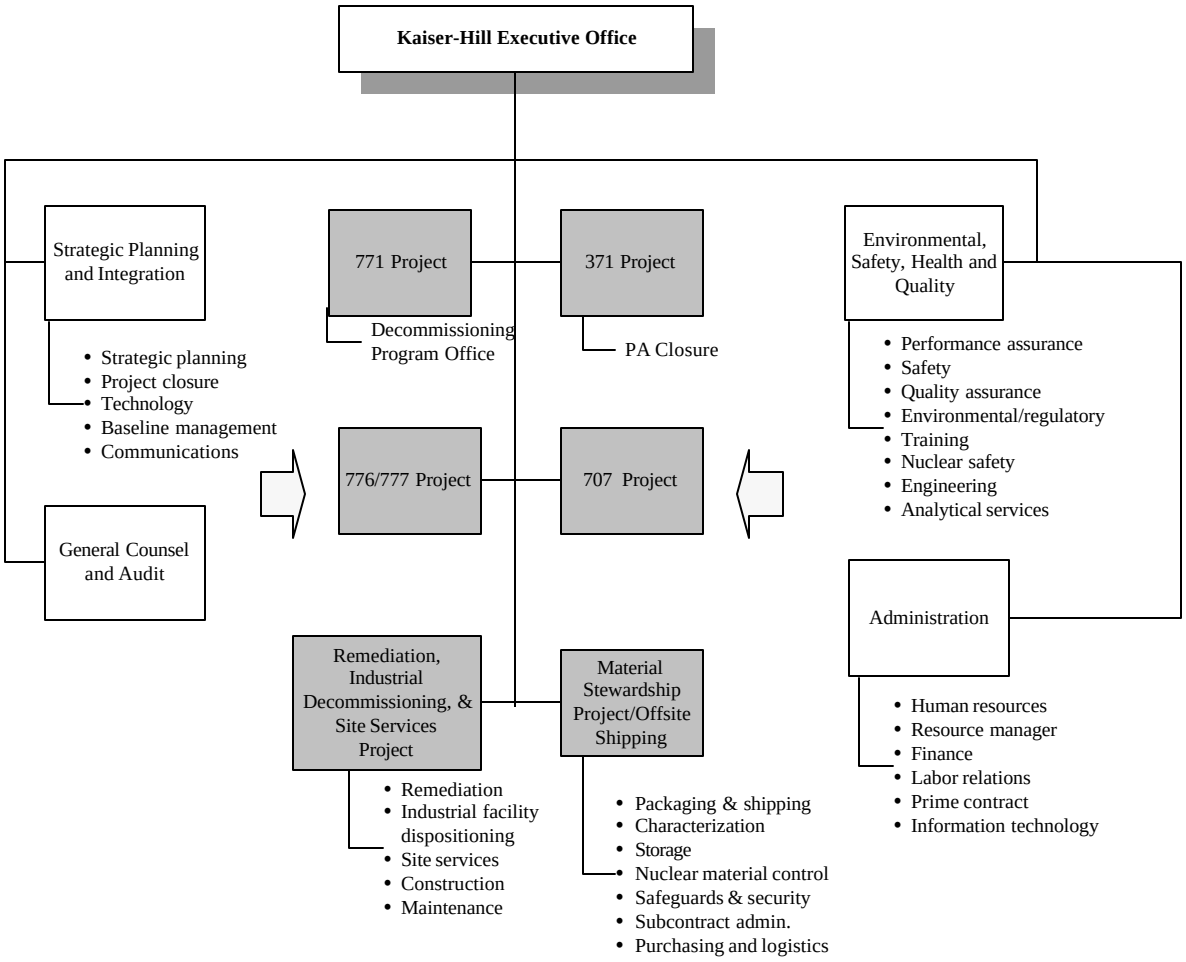
The work breakdown structure (WBS) structure that supports the above stated scope of work for the Building 371 Closure Project is as follows:

A 371 Project
AA 371 Closure
AAA Project Management
AAB Facility Management
AAC Deactivation
AAD Decommissioning
AAE Building 374 Waste Operations
AAF PuSPS
AAG Wet Residues
AAH Salt Residues
AAJ SS&C Residues
AAK Dry Residues

2.1.1 AAA, Project Management

This element includes project management, quality and compliance oversight, project engineering management, project administration, project controls and reporting, project finance and accounting, project document control, and human resource support.

Figure 1. 2006 Closure Project



2.1.2 AAB, Facility Maintenance

This element is the 371 Closure Project facility management functions. The major sub-activities include compliance surveillance, maintenance, operations technical support, operations management, facility authorization basis development and maintenance, and cooling tower replacement. The facility management activities consist of the ongoing effort necessary to maintain a safe, compliant, and operable building in support of Defense Nuclear Facilities Safety Board (DNFSB) and RFCA milestones, performance measures, and other risk reduction efforts. Facility management activities assure facilities are maintained in a safe state and operable condition until such time as the facilities are deactivated. The scope includes services necessary to maintain the facilities for projects operating in Building 371. Such services include environmental, safety, health, quality, analytical laboratory support, utilities, and laundry. The scope does not include any Mission work.

Some level of facility management activities will be necessary throughout each of the major WBS elements. Through FY01, as project levels increase in Building 371, such as Building 707 salts and dry residues moving into Building 371, PuSPS operations, and deactivation/SNM removal, an increase of facility management support is necessary to adequately support this and other programs. As the Project transitions through the mission activities, the funding level for this element will ramp-down commensurate with the reduction in requirements. The end-state of this element will be achieved when each of the major WBS elements have been completed and Closure is finalized. Section 3.1.9 provides a strategy for facility management activities.

2.1.3 AAC, Building Stabilization/Deactivation

This element is the 371 Closure Project deactivation and SNM removal. The major sub-activities include deactivation; SNM removal; caustic waste treatment; calcining sludge; and post-PuSPS SNM holdup stabilization and packaging. SNM removal activities involve the removal of SNM holdup in numerous forms to support MAA and PA closure. Deactivation activities involve the removal of rooms from operation, and preparation for turnover to decommissioning.

The scope of this WBS element does not include development of or installation of new processing/stabilization units other than Post-PuSPS SNM holdup stabilization and packaging. Additionally, the scope does not include disposition of sealed radioactive sources. As defined below, deactivation activities only occur in Type 3 facilities as defined in the Rocky Flats Cleanup Agreement (RFCA). Building stabilization are similar activities that occur on Type 1 or 2 facilities.

Deactivation/stabilization are the activities necessary to remove a building from operation and place the building in a safe and stable condition that eliminates or mitigates hazards and ensures adequate protection to workers, the public, and the environment. Deactivation potentially results in additional baseline cost reductions by eliminating or reducing the need for surveillance and maintenance activities.

Deactivation/stabilization includes characterization; planning and project management; administrative and physical deactivation; and AB modifications. Deactivation/stabilization activities involve the removal of the buildings from operation, and preparation for decommissioning.

Specific deactivation/stabilization activities may include preparing IWCP packages, performing removal of hazardous and nonhazardous material, holdup removal, and reduction of building fire loading. Activities may include inventory and removal of unattached hazardous materials from the building and project areas, such as regulated hazardous chemicals, beryllium, gas cylinders; draining fluids from equipment; asbestos abatement and/or encapsulation; and repack of existing waste packages. Resource Conservation and Recovery Act (RCRA) units may be placed into RCRA stable condition or RCRA unit closure may occur. Disposition of excess property, in accordance with government property disposition requirements may be performed.

2.1.4 AAD, Decommissioning

Decommissioning is the activity necessary to remove a building from the Site, in a safe manner that minimizes hazards and ensures adequate protection to workers, the public and the environment. Decommissioning includes the tasks of: characterization; site preparation; decontamination; dismantlement; demolition; and project management and support services. Regulatory approval for decommissioning precedes the physical execution of decommissioning tasks. The decommissioning process, as implemented

at RFETS, results in each building and contents being dispositioned properly in accordance with the applicable regulations and requirements, whether as waste, as recycle, or as reuse.

Specific physical decommissioning activities include: the characterization; stripout, removal and size reduction of process equipment (gloveboxes, tanks, process piping, ducting, etc.) and distribution systems (building lighting/power, heating, water, sewer, etc.); and isolation of the building from the rest of the Site infrastructure; packaging of contaminated wastes generated during the overall decommissioning effort; holdup removal; property and waste disposition; decontamination; building disassembly and dismantlement; and demolition. Activities such as waste chemical removal, disposition of excess property, chemical hazard reduction and placement of RCRA units into RCRA stable condition, or their closure, may occur either during deactivation or decommissioning.

Demolition of the walls, roof, non-structural and structural components, foundations and connecting structures (tunnels, breezeways, overhead walkways) of the building is performed to a depth of three feet below the final proposed grade. Demolition rubble will be dispositioned in accordance with the RSOP for Recycling Concrete.

2.1.5 AAE Building 374 Waste Operations

Building 374 Operations provide the primary processing for Site process wastewater. Precipitation, sludge treatment/packaging, spray dryer, and evaporator operations will be shut down as soon as possible, and transferred to other facilities at RFETS to enable early decommissioning of Building 374. Building 374 operations include the following scope:

- The evaporator process which is expected to process approximately 4 million gallons of Site chemically and/or radioactively contaminated wastewater. Two outputs result from this process, product water which is recycled, for use as make-up water for the boiler plant and the 371/374 cooling tower, and brine which goes to the spray dryer process.
- The spray dryer operation dries the concentrated brine from the evaporator to a salt. Approximately 650,000 gallons of brine will be dried to salt in FY01 resulting in about 2,000,000 ft^3 of salt, which will require shipment for offsite treatment and disposal (shipment and disposal are addressed by Material Stewardship Project). The proposed disposal site for the salt is the Envirocare facility in Utah. Approximately 100 pounds of salt will be sent to Envirocare for acceptance testing early in FY01. If it is compliant with the waste acceptance criteria, a contract will be awarded to Envirocare for disposal of salts. Salt/brine preparation and packaging for offsite treatment and disposal will be performed by Building 374 and shipment will be coordinated by the Material Stewardship Project (MSP).
- The precipitation process decontaminates wastewater to a level that the resulting effluent can be processed through the evaporator; approximately 200,000 gallons of feed are expected per year. The resulting sludge will be stored in tanks until final treatment can be performed and a disposal site is identified. Sufficient storage capacity exists to continue storage of the precipitation sludge generated until final treatment is available in FY02. Efforts are underway to identify off site contractors to take, process, and store the sludge and identify a final repository for the sludge. Due to acceleration of decommissioning in Building 374, offsite sludge disposal could begin as early as the end of FY01
- Waste collection and transfer (including process waste transfer system operation and maintenance) includes operation and maintenance of 20 valve vaults located throughout the site. Building 374 is responsible for operating and maintaining everything from the valve vaults into the Building 374 tanks. Upon completion of the final transfer and rinse, which will place the units in a RCRA stable

configuration; the valve vaults and associated piping and tanks will be turned over to the Remediation, Industrial Decommissioning and Site Services Project (RISS) for decommissioning.

- Process maintenance (corrective and preventive) and required support such as work planning, administration of IWCPs, engineering and craft support, and procurement of maintenance parts. Estimates for Building 374 maintenance do not identify any major maintenance activities for Building 374 treatment systems.
- Compliance with all applicable regulations and DOE Orders (including surveillance, tank scans, and other activities to ensure compliance).
- Support to Conduct of Operations which includes general housekeeping, training and qualifications, procedure generation and maintenance, administration of Shift Orders, plan-of-the-day (PODs), Plant Action Tracking System (PATS), Environmental Corrective Action Tracking System (ECATS), and budgets. Integrity testing for the 231 and Building 374 tanks as required by the Tank Management Plan Consent Order.
- Building 910 landlord responsibility until Protected Area (PA) reconfiguration is complete, when responsibility transfers to RISS for decommissioning.
- Since Building 374 is scheduled for decommissioning in FY03 and other production buildings will not be demolished by then, the Building 374 operations group will identify and fund replacement treatment system(s). Once the system is operable, it will be turned over to RISS to operate.

2.1.6 AAF, PuSPS

PuSPS includes the following elements of work:

- Acceptance activities pertaining to the PuSPS, which includes reviews of British Nuclear Fuel Limited (BNFL) documentation, witnessing BNFL performance demonstrations, performing K-H post-acceptance testing, contracting with BNFL for technical support, preparation and maintenance of the Broomfield warehouse until completion of disassembly, and dispositioning of the stabilization system equipment.
- Procurement and installation of a radiographic machine in Building 371 for the inspection of the containers produced by the PuSPS, consistent with the baseline inspection and periodic surveillance required by DOE-STD-3013. The lid of the inner can is designed to deflect at internal pressures of ~100 psi, and this radiographic equipment is required to detect the deflection.
- Design and construction to install the BNFL Packaging System and K-H Stabilization System in Building 371. Activities include design, room modifications, spare parts/consumables, packaging system modifications, contamination modifications, functionality modifications, qualification of the outer can welding process, equipment procurement, construction, testing, National Environmental Protection Act (NEPA) determination, authorization basis, criticality safety limits, procedures development, training, and readiness assessment. At the completion of this element, the system will be capable of producing containers consistent with the requirements of DOE-STD-3013, and the start of operations will be approved. The scope of this element will also include the implementation of the Supercritical Fluid Extraction (SFE) system.
- Operations of the PuSPS including the procurement of the DOE-STD-3013 containers. All plutonium metal and oxide subject to DOE-STD-3013, plus specific additional items will be processed. This element will be completed when the packaging of plutonium metal and oxide identified in the Material Campaign Plan has been completed. Approximately 1,900 DOE-STD-3013 containers will be produced from 1,200 oxide and 700 metal containers. No classified shapes will be packaged in DOE-STD-3013 containers. The processing of SNM holdup is planned to occur in this element unless an

alternative method of packaging has been determined. The scope of this element will also include the operation of the SFE system.

- The material currently subject to International Atomic Energy Act (IAEA) safeguards will continue to be managed in accordance with IAEA as long as it is on the Site. This activity includes supporting the needs of the IAEA, including seal verification, inventory records review, assay of selected materials, the taking of samples for destructive assay, and other activities. It is assumed that the processing of the IAEA material will not interfere with the productivity and performance of the PuSPS System. IAEA oxides can be processed concurrently with non-IAEA metals. Once IAEA material is shipped offsite, RFETS will no longer be responsible for supporting the IAEA safeguards requirements.

2.1.7 AAG, Wet Residues

This element includes operations and support staff, materials and supplies, maintenance of the process, staging of the material, storage of the materials and certification of materials intended for shipment to Waste Isolation Pilot Plant (WIPP). Transportation and disposal scope is included for plutonium fluorides only. The following item description codes (IDCs) are covered by this project:

H61	Duct Holdup	490	HEPA filters-not acid contaminated
089	Grease oxide	342	Absolute drybox filters-acid contaminated
090	Plutonium Fluoride	335	Absolute drybox filters-not acid contaminated
091	Non-spec fluoride	335G	Absolute drybox filters-organic contaminated
092	Impure fluoride heel	376	Processed filter media
093	Sodium fluoride pellets	330	Dry combustibles
097	Impure fluoride (in small cans)	330G	Dry combustibles-organic contaminated
099	Grease fluoride	337	Plastic
290	Filter sludge	337G	Plastic-organic contaminated
291	Dried lab waste fluoride sludge	441	Unleached raschig rings
292	Incinerator sludge	331	Ful-flo filters
299	Miscellaneous sludge from repack	331G	Ful-flo filters-organic contaminated
340	Sludge from size reduction area	336	Wet combustibles
338	Filter media	336G	Wet combustibles-organic contaminated
338G	Filter media-organic contaminated	336	Oily Sludge

The processing will be repackaging and/or gas generation testing of the wet combustible drums. The repackaging will take place in Building 371, Rooms 3206 and 3701. Gas generation testing is now performed in Building 371, Room 2202. Plutonium fluorides will be repackaged in Building 371, Room 3515. Room 3515 may also be utilized for some repackaging of non-fluoride wet combustible residues.

The total inventory is approximately 23,417 kgs of material. There are 300 kgs of resins, which were disposed of by the liquids project, which completed in February of FY99. There are approximately 317 kgs of plutonium fluorides, targeted to start processing in FY00. There are approximately 660 kgs of leaded gloves, which have already been dispositioned. The inventory is stored on Site with the majority of the items stored in Building 371 and Building 776.

Plutonium fluorides and wet combustibles may be processed on two shifts per day. Non-destructive assay (NDA) will be accomplished by cal/gamma for the fluorides and either SSGS can counter, SGS drum counter or TGS for the combustibles. Costs for the fluorides include repackaging, NDA, and costs for the combustibles, which includes NDA, gas generation testing, real-time-radiography (RTR) (if required) and shipment to a storage facility.

Combustible residues are comprised of several residue types known or suspected to contain free liquids. Processing operations will take place in Building 371, which has the capability to treat, store, and dispose of liquid wastes. The residues that are currently considered to be in this category are detailed in the following paragraphs. As a result of a previous revision to the baseline, dry combustibles will be processed with the wet combustibles.

The nitric-contaminated and organic-contaminated residues will be repackaged and/or gas generation tested for disposal at WIPP. The remainder, primarily dry combustibles, will also be repackaged and/or gas generation tested for disposal at WIPP. Fluorides will be blended to meet STL as necessary and repackaged for shipment to WIPP.

The on-going residue characterization program has completed sampling and analyzing the wet combustible residues. The characterization has provided a 95% confidence level that the combustible inventory is all "low risk" and may simply be repackaged and/or gas generation tested for disposal at WIPP.

Greases and oily sludges represent a very small portion of the wet/combustible residue backlog, and they are very poorly characterized materials. Oily sludge were evaluated for stabilization through microwave-heating, but contained too many volatile constituents for successful thermal treatment. Stabilization operations will consist of either cementation or mixing the material with a suitable absorbent and then repackaging it for interim storage (if necessary) and ultimate shipment to WIPP.

In summary, nitric and organic contaminated wet combustibles will be repacked and/or gas generation tested for disposal at WIPP. Raschig rings will be drained, air-dried, and packaged. Fluorides will be blended as necessary and repackaged for shipment to WIPP. High-efficiency particulate air (HEPA) filter media will, if necessary, be separated from the frame and packaged. Sludges will be packaged with absorbent. Absorbent may be added in any of the packaging steps.

2.1.8 AAH, Salt Residues

This includes operations and support staff, materials and supplies, maintenance of the process, storage of the stabilized materials, certification of materials intended for shipment to the WIPP. The Salt Stabilization Project mission is to stabilize approximately 16,000 kgs of potentially unstable plutonium contaminated salt residues. The objective of the project is to blend the salt to meet the safeguards termination limits and Waste Analysis Plan criteria. The material will be introduced into the gloveboxes in Room 3602 where it will be repackaged into WIPP compliant containers. Once repackaged, the containers are assayed and placed into Pipe Overpack Components (POCs) for shipment to WIPP.

2.1.9 AAJ, Sand, Slag and Crucible (SS&C) Residues

This includes operations and support staff, materials and supplies, maintenance of the process, storage of the stabilized materials, certification of materials intended for shipment to the WIPP. SS&C Repack Operations will take place in Building 371. The ITCs that are included in SS&C Scope include:

387 Reburned SS&C Sweepings,
390 Unpulverized Slag,
391 Unpulverized Sand and Crucible,
392 Unpulverized SS&C,
393 SS&C Heel,
94 Sand from BBO,
395 Unpulverized Sand and Crucible,

396 Pulverized Slag and
398 Pulverized SS&C.

Approximately 2800 kgs of these IDCs have been repackaged for Savannah River Site (SRS). The proposed plans for disposition of these IDCs will be to assay the containers in their current configuration and place in POCs for shipment to WIPP. IDC 393 will be repackaged and assayed for shipment to the WIPP. As a result of the EIS/ROD issued 11/25/98 and DOE Technical Directive Letter MSD: CRS:01996, dated 12/2/98, Kaiser-Hill was directed to repackage IDC 393 for disposal to WIPP. The material will be introduced into the gloveboxes in Room 3602 where it will be repackaged into WIPP compliant containers.

2.1.10 AAK, Dry Residues

The Dry Repack Project mission is to repackage approximately 8,400 kgs of dry inorganic residues in Building 371, Room 3602 for shipment to WIPP. The objective of the project is to size reduce residues (as necessary) for packaging, blend the residues (as necessary) to meet the safeguards termination limits, and perform visual examinations, packaging, NDA, and drum/POC packaging to meet WIPP/Waste Analysis Plan criteria.

2.2 Boundaries

The 371 Closure Project includes the following buildings as listed in the following Table 1.

Table 1. 371 Closure Project Facilities

Bldg/ID	Description
371	Process Building
374	Waste Treatment
373	Cooling Tower
374A	Fire Risers
377	Dry Chemical Silo
378	Dry Chemical Silo
381	Fluorine Building
T371H	Office Building
T371J	Office Building
T371K	Office Building
376	Office Building
T376A	Office Building

Other Buildings

Buildings 376, T371H, T371J, T371K, and T376A, are office buildings, which house personnel in support of the 371 Closure Project. Other buildings associated with the Project are the fire risers (374A), dry chemical silos (377, and 378), fluorine building (381), cooling tower (373) and KOH storage tank (225).

Building 374 waste operations has control over the valve vaults, Building 231, Tanks 231A and 231B, Building 910, holding ponds 228A and 228B, Building 226, Building 227, and Tanks 308B-A, 308B-B and 308B-C. These vaults, tanks, and buildings represent the control points from which Building 374 accepts

various waste streams. Building 374 will maintain control until the supply of waste for the specific lines has ended. Upon termination of use of the lines and associated tanks and valves, they will be turned over to RISS.

2.3 Budget

The baseline budget is presented in Appendix B. The working budget is presented in Appendix C. The following table was developed to quantify the most significant risks associated with the 371 Closure Project baseline budget and schedule. Two dollar figures have been developed for each planning basis. The total cost represents the cost of not realizing any of the planning basis. The most probable added cost represents the cost of not realizing a portion of the planning basis. The planning basis column represents the most significant risks or assumptions associated with the 371 Closure Project. These risk and assumptions are documented in the individual strategies in Section 3.0. Based on this table, approximately 64 million dollars could be added to the current 371 Closure Project Budget if the assumption and risks currently built into the baseline are inaccurate.

Table 2. Planning Risk Analysis

Re-Baseline Planning Basis	Risk of Failure	Total Cost	Most Probable Added Cost	Notes
Crew mix for Building Trade work will be similar to the decommissioning Worker concept (i.e. laborers will do most of the work)	70%	$11,066,066	$7,746,247	Change is required for the current labor work rules.
AB changes through USQD Process	60%	$17,688,000	$10,612,800	Numerous changes will be required to complete decommissioning
Steelworker resources will be available in FY03 to increase the number of crews	50%	$22,250,000	$11,125,000	Change based on 771 Closure Project or residues completing late.
The contamination levels found will allow the planned methodologies, to be proven correct	20%	$1,200,000	$240,000	Without detailed characterization, it is hard to determine exact amounts.
Landlord cost ramp down will occur as predicted	70%	$8,125,000	$5,687,500	History has shown that it is difficult to reduce landlord costs
16% of the TRU gloveboxes and tanks can be decontaminated to low level and SCO	20%	$6,400,000	$1,280,000	D&D Summit Assumption has not been tested in this building.
Cerium decontamination will be effective in decontaminating large tanks	40%	$22,350,000	$8,940,000	Cerium has not been tested at this date. This will cause a significant amount of in situ size reduction.
Building Trades labor will be available	45%	$19,800,000	$8,910,000	Numerous facilities on site will require building trades during this period (over 600). Because of the tight Denver labor market, they may not be available locally.
Sludges can be easily removed and treated from Building 374	45%	$3,250,000	$1,462,500	Sludges are notoriously difficult to handle and treat
Residues will complete on schedule	50%	$16,500,000	$8,250,000	Processing, storage and NDA areas would not be available for decommissioning.

2.4 Schedule

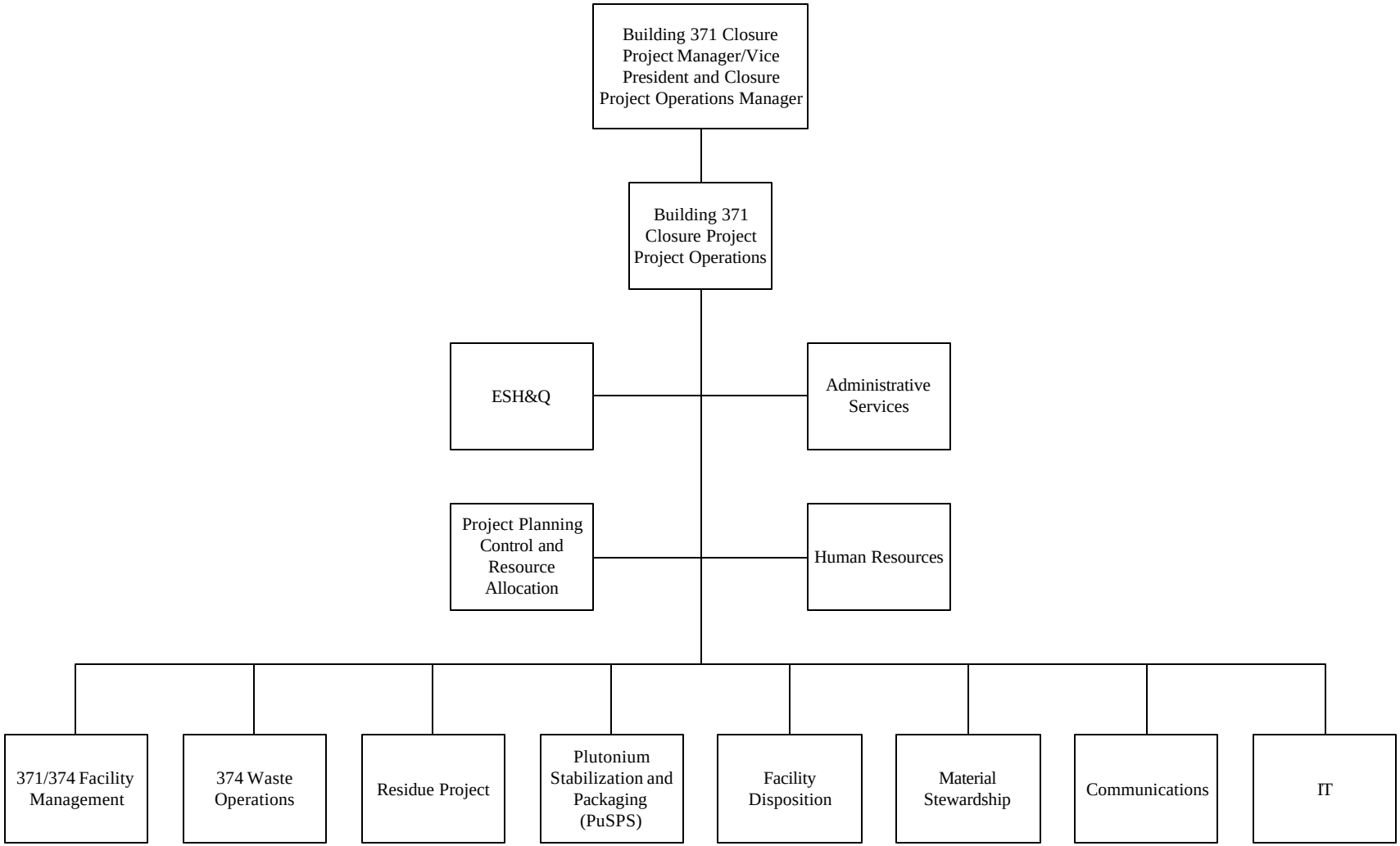
The baseline schedule is presented in Appendix D. The working schedule is presented in Appendix E.

2.5 Organization And Responsibilities

This section describes the project organization structure, functions, and interfaces. Figure 2 presents the organization chart for the 371 Closure Project. The roles and responsibilities of this project along with its interfaces with other projects and within this project are presented below.

Building 371 Project Manager	
Roles and Responsibilities	**External Interfaces**
• Maintain and operate Building 371/374 within the approved Authorization Basis • Operate the PuSPS to stabilize and package metals and oxide; transfer packages to the Material Stewardship Project (MSP) • Store SNM until transferred to the MSP • Stabilize, and package residue wastes in compliance with receiver site waste acceptance criteria • Store residue material that is awaiting processing • Transfer packaged residue waste to the MSP in accordance with MSPs requirements • Operate Building 374 Waste Treatment Systems • Deactivate 371 Closure Project • Decommission 371 Closure Project	• DOE (RFFO and HQ) • DNFSB • Stakeholders • EPA • ESH&Q • MSP • 707 Project • CDPHE • 776 Project • 771 Project

Figure 2. 371 Closure Project



ESH&Q (Staff Function)	
Roles and Responsibilities	**External Interfaces**
• Maintain facility Authorization Basis • Report to Project Manager on implementation and effectiveness of the Management Assessment Program (MAP); provide guidance • Report to Project Manager on implementation and effectiveness of project Environmental Stewardship; provide guidance • Report to Project Manager on implementation and effectiveness of project Quality programs; provide guidance • Report to Project Manager on implementation and effectiveness of project Health and Safety programs; manage project Health & Safety Professional(s) • Provide project liaison to ESH&Q • Monitor Project performance with infrastructure requirements • Coordinate all formal assessments of the Project • Collect, track, trend and report on Project safety metrics. • Chair facility/project Plant Review Committee (PRC) and represent facility at site PRC • Coordinate all project AB issues • Project Price-Anderson point-of-contact • Manage external interfaces with State, EPA, DNFSB and other agencies as required • Provide day-to-day project-specific (i.e., building inspections, DNFSB building-specific milestones, etc.) information to CDPHE, EPA and DNFSB • The site licensing focal point • Provides program, policy and regulatory guidance and will perform independent performance assessments of the project's programs • Integrates site wide trending and reporting • Chairs the site PRC	• CDPHE • EPA • DNFSB • DOE

Project Planning & Controls (Staff Function)	
Roles and Responsibilities	**External Interfaces**

• Maintain the PMP
• Manage Project change control process; assist projects in development of Change Proposals
• Monitor and report project performance against PMP
• Manage project production controls to include Plan-of-the-Day and Plan-of-the-Week
• Develop and maintain a project resource plan. Provide project manager resource prioritization/allocation recommendations
• Contracting
• Award and administer project specific support Subcontracts
• Award and administer Task Orders against Master Task Agreements
• Purchase commodities required to support project efforts
• Purchase major engineered equipment
• Maintain status of project external commitments
• Contract personnel are matrixed to the project from MSP Contracting. Contracting in the new organization is entirely accountable to the Building 371 Project Manager for Project contract activities. The "central" K-H contracting organization in MSP provides:
  • Management of Site Wide Procurement Operations and Procedures and Policy
  • Award and Administration of Master Task Agreements for use by the Projects Teams
  • Purchase of standard warehouse stock items, items used by all projects, and shipping containers
  • Award and Administration of Construction Subcontracts
  • Small Business Program
  • People Soft Administration
  • FOCI Coordination
  • Cost Price Analysis
  • Credit Card Program Administration
  • Audits of the Procurement System
  • Balanced Score Card Administration
  • Training
  • Hiring of Personnel
	• SP&I
	• Administration
	• MSP
	• ESH&Q

Administration (Staff Function)	
Roles and Responsibilities	**External Interfaces**

• Manage project communication activities
• Provide miscellaneous project administrative support
• Manage Project training program (this function provides project training infrastructure, project managers are responsible for ensuring their people are trained)
• Manage project document control
• Provide project Human Relations (HR)/Labor Relations competence:
  • Provide guidance and counseling to project management in employee relations issues
  • Administer and provide guidance to project employees with regard to HR policies
  • Provide general HR expertise to the project in such areas as performance appraisal training, assistance with position descriptions, counseling employees, etc.
  • Administer the Compensation Program within the project (i.e. merit planning, promotion planning, and ensuring compliance with Company policies and guidelines)
  • In concert with the Resource Allocation Program, assist the project in resource allocation planning, both hourly and salaried, and coordinate surpluses and shortages with other projects and with the HR functional center
  • Supported by the Central Employment function, provide project management with qualified salaried candidates for openings within the project and assist management in the selection process
  • Assist and act as a resource in the discipline process for both salaried and hourly employees
  • Provide guidance in issues with hourly employees
  • Represent Labor Relations and assist the first-line supervisor in step 1 of the grievance procedure
  • Assist management in interpreting the labor agreements, with appropriate guidance from Labor Relations
	• SP&I
	• Admin.
	• ESH&Q
	• MSP

Facility Management	
Role and Responsibilities	**External Interfaces**
• Accountable to the Building 371 Project Manager for the safe operation of the Building 371 Cluster Buildings in accordance with applicable standards and requirements • Provide sufficient resources and authority to enable safe and successful work scope completion – dependence on other organizations within this project or Kaiser-Hill is minimized • Release/authorize daily work in accordance with the Plan-of-the-Day • Provide Shift Management • Estimate, monitor and control project cost; prepare change proposals • Prepare, monitor and control project schedules; prepare change proposals • Provide 1st line supervision • Manage hourly workforce • Provide an operable facility • Operate and maintain facility utilities • Conduct facility surveillance's • Provide project Occurrence Reporting • Maintain facility security • Manage facility emergency preparedness • Maintain safety systems • Maintain and operate vaults, including the Central Storage Vault • Conduct RCRA inspections; maintain RCRA compliance • Maintain compliance with Air quality requirements • Provide Radiological Operations Management • Ensure alarm systems are maintained • Ensure facility instruments remain calibrated • Provide Criticality Safety Officer function • Provide utility need projections to RISS • Manage preparation of facility IWCPs • Oversee execution of facility IWCPs • Support facility closeout • Maintain facility-specific equipment • Provide facility discipline engineering, radiological controls, criticality safety engineering, radiation safety engineering, nuclear safety engineering, and industrial safety engineering • Ensure compliance with quality requirements • Maintain facility environmental compliance	• RISS • ESH&Q • MSP • DOE • DNFSB

Residues	
Roles and Responsibilities	**External Interfaces**
• Accountable to the Building 371 Project Manager for the safe planning, execution, and closure of this project in accordance with applicable standards and requirements • Designed to provide this project sufficient resources and authority to enable safe and successful work scope completion – dependence on other organizations within this project or Kaiser-Hill is minimized • Provide 1st line supervision • Manage hourly workforce • Material movement • Sampling • Assay • Estimate, monitor and control project cost; prepare change proposals • Prepare, monitor and control projects schedule; prepare change proposals • Provide project requirements to project planning and controls • Manage preparation of project IWCPs • Oversee project execution of IWCPs • Support project IWCP closeout • Maintain project-specific equipment • Provide project discipline engineering, radiological controls, criticality safety engineering, radiation safety engineering, nuclear safety engineering, and industrial safety engineering • Provide guidance to projects for WIPP requirements • Ensure compliance with quality requirements • WIPP documentation and records management • Maintain project environmental compliance	• DOE • DNFSB • MSP • ESH&Q

PuSPS	
Roles and Responsibilities	**External Interfaces**
• Accountable to the Building 371 Project Manager for the safe planning, execution, and closure of this project in accordance with applicable standards and requirements • Designed to provide this project sufficient resources and authority to enable safe and successful work scope completion – dependence on other organizations within this project or Kaiser-Hill is minimized • Provide 1st line supervision • Manage hourly workforce • Estimate, monitor and control project cost; prepare change proposals • Prepare, monitor and control projects schedule; prepare change proposals • Provide project requirements to project planning and controls • Manage preparation of project IWCPs • Oversee project execution of IWCPs • Support project IWCP closeout • Maintain project-specific equipment • Provide project discipline engineering, radiological controls, criticality safety engineering, radiation safety engineering, nuclear safety engineering, and industrial safety engineering • Ensure compliance with quality requirements • Maintain project environmental compliance	• DOE • DNFSB • Savannah River Site • SP&I • MSP • Administrative • ESH&Q

Building 374 Waste Operations	
Roles and Responsibilities	**External Interfaces**
• Prepare Building 374 and external ancillary structures and equipment for deactivation and decommissioning by leaving this equipment in a RCRA stable configuration • Accountable to the Building 371 Project Manager for the safe planning, execution, and closure of this project in accordance with applicable standards and requirements • Designed to provide this project sufficient resources and authority to enable safe and successful work scope completion – dependence on other organizations within this project or Kaiser-Hill is minimized • Provide 1st line supervision • Manage hourly workforce • Estimate, monitor and control project cost; prepare change proposals • Prepare, monitor and control projects schedule; prepare change proposals • Provide project requirements to project planning and controls • Manage preparation of project IWCPs • Oversee project execution of IWCPs • Support project IWCP closeout • Maintain project-specific equipment • Provide project discipline engineering, radiological controls, criticality safety engineering, radiation safety engineering, nuclear safety engineering, and industrial safety engineering • Ensure compliance with quality requirements • Maintain project environmental compliance	• Sludge disposition planning will require significant interactions with MSP, ESH&Q, and SP&I • Alternate water treatment system planning and development will require significant interaction with MSP, ESH&Q, and SP&I • Site Aqueous Waste Generators & JCUSC • RISS • SP&I • ESH&Q • MSP • CDPHE • EPA • DOE

Facility Disposition	
Roles and Responsibilities	**External Interfaces**
• Accountable to the Building 371 Project Manager for the safe planning, execution, and closure of this project in accordance with applicable standards and requirements • Designed to provide this project sufficient resources and authority to enable safe and successful work scope completion – dependence on other organizations within this project or Kaiser-Hill is minimized • Deactivation • Provide 1st line supervision • Manage hourly workforce • Estimate, monitor and control project cost; prepare change proposals • Prepare, monitor and control projects schedule; prepare change proposals • Provide project requirements to project planning and controls • Manage preparation of project IWCPs • Oversee project execution of IWCPs • Support project IWCP closeout. • Maintain project-specific equipment • Provide project discipline engineering, radiological controls, criticality safety engineering, radiation safety engineering, nuclear safety engineering, and industrial safety engineering • Ensure compliance with quality requirements • Maintain project environmental compliance • Prepare RFCA Decision Documents • Conduct RLC and reporting • Prepare decommissioning cost estimates and schedules • Manage development of IWCP work packages • Prepare SOW for RFP(s) • Provide available information to RISS for under building contamination characterization planning and remediation sequencing. Make facility available for characterization	• MSP (Safeguards & Security) • ESH&Q • 771 Project (Decommissioning Program) • RISS • SP&I • CDPHE • EPA • Stakeholders

Material Stewardship	
Roles and Responsibilities	**External Interfaces**
• Matrixed to the Building 371 project from the K-H Material Stewardship Project organization • Accountable to the Building 371 Project Manager for the safe planning, execution, and closure of Building 371 Material Stewardship activities in accordance with applicable standards and requirements • Provide this project sufficient capable and qualified resources to enable safe and successful work scope completion • Manage storage of facility materials • Conduct facility material movement with authorization of CCA • Enter data in WEMS • Coordinate inter-building material movements • Provide projections of waste volumes and types to the Material Stewardship Program • Coordinate the immediate pick up and storage of compliant waste packages by MSP • Properly monitor waste and hazardous material that the building owns or has agreed to store for MSP • Disposition of empty drums and containers generated by the projects • Develop, update and maintain building specific MC&A plans • Develop and implement project specific MAA/PA closure plans • Conduct project specific safeguards functions including: SNM inventory, intra-building moves, control MAR, MBA custodian, and assay and accounting (ROCKMAS)within MC&A project plans • Project and communicate security force requirements to MSP to support building operations • Fund security force overtime that supports building operations • Project and communicate inter-building shipment needs to MSP • Manage and dispose of facility property • Establish MOU with MSP on the operation of specific NDA equipment dependant on process needs and equipment location • Fund specific NDA and other characterization operations that support the project	• DOE • DNFSB • RISS Project • 707 Project • 771 Project • 776 Project • ESH&Q

2.6 Subcontracting Strategy

Following the reorganization of the RFCP around six main projects, the Subcontract Management and Administration functions were also reorganized. The formerly centralized procurement organization has been decentralized to give each of the Projects control of their subcontracting functions, with the Administration organization serving in a support function to the Projects.

Specifically, each of the Projects has a Subcontract Administrator Lead and necessary professional and support staff, working directly for the Manager of Project Planning in managing and administering all subcontract work for the Project. The Administration organization supports the projects by administering the Master Task Agreements (MTAs) that all of the Projects utilize. The administration organization also manages subcontract close out and provides the small business liaison.

The Procurement Systems organization within the MSP provides matrixed Procurement Leads to each of the Projects for the procurement of commodities. This organization also provides procurement engineering, quality assurance, and material logistics management to the Projects.

Management of subcontracts, including subcontractor invoicing and claims management, will continue to follow the guidance as described in the Acquisition Procedure For Requisitioning Commodities And Services.

2.6.1 Future Subcontracting Strategy

K-H has assumed the responsibility of directly performing the project management of the Building 371 Closure Project. This includes, in general, the activities listed below. These responsibilities began being executed by K-H employees, augmented as necessary by subcontractor personnel on March 20, 2000:

- Building 371 Closure Project Program Management
- ESH&Q
- Project Planning, Controls, Contracting, and Resource Allocation
- Administrative Services
- Configuration Control Authority, Criticality Safety, and AB functions of Facility Management
- Project management of the scope of work in the following cost accounts:
  - Facility Management
  - Salt Residue Processing and Packaging
  - SS&C Residue Processing and Packaging
  - Dry Residue Processing and Packaging
  - Wet Combustible Residue Processing and Packaging
  - PuSPS Operations and Disposition of the Equipment
  - Facility Material Stewardship
  - Building 374 Waste Operations
  - SNM Removal and Deactivation
  - Hot Decommissioning
  - Cold Decommissioning
  - Demolition
- New MTAs have been negotiated with Safe Site of Colorado (SSOC), Rocky Mountain Remediation Services (RMRS), and other contractors to provide those types of services required to process residues, package residues, process SNM metals and oxides, size reduce SNM, package SNM metals and oxides, maintain nuclear material controls over assigned SNM, remove SNM items and holdup, deactivate Type 3 facilities, perform risk reduction and stabilization of Type 1 and 2 facilities, decommission facilities, and provide staff augmentation in support of such activities. K-H will then use task orders under these MTAs to task SSOC, RMRS, and/or other contractors with specific activities or sub-projects.

- Personnel will also be obtained using various Technical Support MTA to supplement the K-H project management team. Some support may be obtained from separate procurements.

AAA Project Management
K-H will retain all subcontracts for this work scope. Professional service subcontractors will provide staff augmentation personnel to provide support for ongoing efforts while subcontracts will be awarded for task specific work scope.

AAB Facility Management
K-H leased labor will be supervised by SSOC supervisors who will be tasked to K-H as staff augmentation. K-H will retain control of the professional services contracts support for facility operations and that provide staff augmentation to the K-H Cost Account Manager. These service contracts include, but are not limited to, Analytical Laboratory Support, Project Controls, Calibration of Health Physics Instrumentation, Laundry, Procedure Writers, Engineering, Nuclear Safety, Criticality Safety, Fire Protection Engineering, Fire Inspection and Testing, Chemical Control Officer, Quality Assurance, Maintenance Planners, and Document Control. In addition, K-H will retain the service contract necessary for building systems such as the elevators, chillers, and uninterruptible power supply.

AAC Deactivation/AAD Decommissioning
The Planning and Integration, Operations, and Technology Transfer and Development Groups leads will be K-H employees who will supervise K-H personnel and staff augmentation subcontracts for SSOC, LATA, Capstone, and Applied Engineering Services to perform the specific scope associated with each group. Additionally, the Operations Group will develop discrete subcontract packages that will be performed by the incumbents, SSOC/RMRS.

During the first quarter of FY02, a small contract will be initiated to commence miscellaneous building trade activities. During the third quarter of FY02, an open procurement will be initiated for remaining scope of decommissioning activities (deconstruction) to include dismantlement, decontamination, and demolition.

AAE Building 374 Waste Operations
The project will be managed by the K-H Cost Account Manager utilizing professional services subcontractors, contracted directly to K-H to support the project. SSOC technical support contractors will supervise K-H leased labor to perform the waste operations.

It is anticipated that two subcontracts will be awarded. One contract will be design/build/license/operate contract for the alternate water treatment system to replace Building 374 in FY02. The second contract will be a design/build/license/operate contract for transportation, treatment, packaging, and disposal of the current inventor of LL and LLM sludges in Buildings 374 and Building 774.

AAF PuSPS
All work scope associated with the construction, startup, and operations of the PuSPS equipment will be staff augmentation subcontracts assigned directly to K-H with the Cost Account Manager being the only K-H employee.

Construction management lead will be subcontracted to Tenera with support contracts issued to SSOC and LATA. LATA will be the lead subcontractor for the management of the Material Campaign with planning

assistance provided by PCS. SSOC will be subcontracted to operate the PuSPS utilizing leased labor from K-H. Planning and Integration work scope will be subcontracted to Omega while PCS will be the lead subcontractor for Technical Support utilizing personnel from various specialty subcontractors.

AAG Wet Combustible Residues

The total work scope of the project will be performed by staff augmentation subcontractors contracted directly to K-H with the exception of support contracts for the Box-N-Go work scope. LATA will be contracted to perform all work required to plan and execute the Box-n-Go strategy. Production and processing work scope will be lead by SSOC with support from LATA. Tenera will be the lead subcontractor for the administrative and technical support work while PCA will lead the planning, schedule, and budget effort with support from LATA.

AAH Salt/AAJ SS&C/AAK Dry Residues

The project work scope will be performed by staff augmentation subcontractors assigned directly to the K-H Cost Account Manager with K-H leased labor being supervised by SSOC and LATA personnel for the processing operations in Buildings 371 and 707. Numerous professional services subcontractors will provide the personnel for the staff augmentation positions.

2.7 Building History

The original mission of Building 371 was to replace plutonium recovery operations housed in Buildings 771 and 776. The recovery operations were threefold: 1) to recover plutonium from spent field weapons and from all residues generated by plutonium-related fabrication, assembly, and research activities, 2) to convert the recovered plutonium into high purity metal; and 3) to recover associated americium and convert it to americium dioxide. Plutonium recovery was to be accomplished by 25 essentially separate and independent process operations.

Building 371 is a non-reactor plutonium handling facility designed to comply with many of the requirements of DOE Order 6430.1, "General Design Criteria." It is a four level, partially buried reinforced concrete structure containing about 334,700 square feet of floor space. The Building was designed and constructed to store SNM, to support process operations and to withstand design basis accidents (earthquakes, tornado, wind, and fire) while protecting the worker, the public and the environment.

All process units were available for "cold" system operation testing in September 1980. Authorization for "hot" testing was given by DOE in 1981. While some processes did function, others were declared to be inoperable. The site mission changed to Closure with the cancellation of the weapons production mission in 1992. Plutonium recovery processes were shutdown when plutonium operations were curtailed in 1989.

In support of the Closure mission in Building 371, the following operations include, but are not limited to:

Nuclear operations and storage (residue processing, PuSPS, Shipping, IAEA), chemical removal, equipment removal, removal of non-essential personnel and radioactive sources, process equipment deactivation, disposition of classified material, disposition of excess equipment, SNM holdup removal, legacy waste removal, proper waste packaging and removal, and contaminated area reduction.

The evaporator in 374 started up in April 1980 and the other processes, such as waste treatment, followed soon after. Building 374 was designed to meet stringent standards for the removal of radioactive and chemical contaminants from aqueous process effluents. Building 374 processes convert these effluents into reusable distilled water, disposable solid residues and exhaust gases. The distilled water is used as boiler feed water or cooling tower makeup water. The solid residue is packaged for off-site disposal. The exhaust gases are filtered then vented to atmosphere. This continues to be the mission of Building 374.

2.8 Work Breakdown

Project Management, AAA, is the level-of-effort work of the project manager, administrative, and project control support functions. Facility Management, AAB, is primarily the level-of-effort work required to maintain a safe and operational nuclear facility. The majority of this effort is consumed in managing the facility (shift management, configuration controls, stationary operating engineers), facility maintenance and facility surveillances. Facility Management is also responsible for the facility authorization basis.

Building 374 Waste Operations, AAE, is primarily the level-of-effort work needed to process site wastewater and maintain a safe and operational facility. PuSPS, AAF, work is primarily operational activity, which is planned and measured by the numbers of containers produced. There is nominal level-of-effort management work. Residues, AAG, AAH, AAJ and AAK, work is primarily operational activity, which is planned and measured by the number of kilograms of plutonium dispositioned and packaged. There is nominal level-of-effort management work.

The decommissioning work is broken down into Dismantlement Sets and Decommissioning Areas. In general, Dismantlement Sets are completed by Steelworkers, and Decommissioning Areas are completed by Building Trades. Steelworkers conduct work on highly contaminated systems with removal contamination greater than 2,000 dpm. Building Trades generally work in areas with removable contamination less than 2,000 dpm, unless some ventilation is left in place by the Steelworkers to maintain differential pressure. The following sections detail how the work has been broken down and the proposed strategy for IWCP packages.

Preparation of the IWCP packages necessary to define this work, or acquisition of complete characterization data for the building systems and/or structure have not been completed. As such, it is anticipated that steelworker dismantlement activities could occur in any room of the building due to the proximity of process piping or ventilation systems. Consequently, dismantlement sets have been assigned for all internal areas of the buildings.

2.8.1 Dismantlement Work Set Descriptions

Table 3 indicates the Set number and a brief description of those Sets. The Sets were established for dismantlement activities. Dismantlement sets include scope to remove process equipment and associated items, but leave in place elements needed for safety and convenience of the workers performing activities in the Areas. For example, fire suppression and alarm systems, ambient lighting, domestic water, sanitary drains, and various tools are among the items that may be left in place after dismantlement. Dismantlement consists of planning, disassembly and removal of equipment components and satisfactory packaging for disposal of the resulting waste. Although the Set descriptions indicate piping, conduit, and ventilation will be removed, there may be some instances where miscellaneous equipment and/or piping, conduit, and ventilation remains for the following reasons:

- It meets the unrestricted release criteria,
- There are no advantages to removing the equipment,

- Due to logistics in the Set, the equipment can be more readily removed during the Area decommissioning, and/or
- The equipment is necessary for safety or coordination reasons.

If equipment is not removed for any of the four reasons stated above, the Set will still be considered complete for dismantlement purposes.

Table 3. Set Descriptions

Set	Description
1	This Set includes Room 4301 and involves the removal and packaging of piping, conduit, and ventilation, as necessary.
2	This Set includes Rooms 4202 and 4303 and involves the removal and packaging of piping, conduit, and ventilation, as necessary.
3	This Set involves Room 3517 and involves the removal and packaging of gloveboxes 61, 63, and 65; tanks D-64, D-65, D-132A, D-132B, and D-132C; and the trolley hoist, CV-26. Items internal to these gloveboxes, tanks, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
4	This Set includes Room 3571 and involves the removal and packaging of glovebox 66; tanks D-133, D-150, D-151, D-152A, D-152B; E-55, evaporator-reboiler; E-56, evaporator bottoms cooler; E057, condenser; and E-62, nitric acid feed heat exchanger. Items internal to these gloveboxes, tanks, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
5	This Set includes Room 3573 and involves the removal and packaging of gloveboxes 64 and 67 and tanks D-134A, D-134B, D-134C, D-135A, D-135B, D-289A, D-289B, and D-289C. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
6	This Set includes the Oxide and Residue Tank Vaults (Rooms 3563 and 3559), the Ion Exchange Canyons (Rooms 3553, 3549 and Airlock 3551), the Ion Exchange Valve Maintenance Corridor (Rooms 3543, 3545, 3547, 3555, and 3557), and the access corridor 3567. This set involves the removal and packaging of gloveboxes 58 and 59 and tanks D-49 A/B, D-50 A/B, D-51 A/B, D-52 A/B, D-55 A/B, D-56, D-57 A/B/C/D, D-61, D-63 A/B, D-63 A/B, D-66 A/B, D-68 A/B, D-69 A/B/C, D-72, D-173 A/B, D-191, D-192, and D-305E. This set will remove oxide and residue ion exchange columns T-4 A/B/C, T-5 A/B/C, T-6 A/B/C/D, T-7 A/B/C/D, T-9 A/B, and T-28 A/B/C. This set will remove downdraft tables DDT-6 and DDT-9. Items internal to the contaminated downdraft tables, gloveboxes, and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
7	This Set includes Rooms 3301, 3303, 3305, and 3315 and involves the removal and packaging of gloveboxes 36, 37, 38 and 75, pumps P-22, P-35, and P-99, 34 pencil tanks and 4 raschig ring tanks. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
8	This Set includes Rooms 3202, 3204, 3206, and 3208 and involves the removal and packaging of gloveboxes 39, 40, 41, 42, 43, 44, and 45, 31 pencil tanks, 5 raschig ring tanks, and 1 annular tank. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
9	This Set consists of the Central Storage Vault and associated rooms and includes Rooms 1204, 1206, 1218, 1216, 1220, 1224, and I/O Stations 1, 2, 3, 4, 5, 6, and 7. This set will remove and package the Plutonium storage racks and the spare and primary Stacker/Retriever. This set will remove and package the stacker transfer vehicle and the repair lift. Items internal to the contaminated I/O stations will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the I/O stations.

Table 3. Set Descriptions

Set	Description
10	This Set includes Rooms 1208, 1210, and 2217 and involves the removal and packaging of the storage vault racks (room 1208) and the removal of Scrubbers D230 A/B, and tank D-715.
11	This Set includes Room 1101 and involves the removal and packaging of the storage vault racks.
12	This Set includes Rooms 1103,1105, 1107, 1109, 1111, 1113, 1115, 1117, 1125, 1127, 2319, and 2327, and involves the removal and packaging of gloveboxes 17, 18, 19, 20, 21, 22, 26, 27, 62, 68, 69, 70, 74, 2410, 2402, 2403, 2404, and I/O Station 8. This set will remove tanks D-160 A/B/C, D-166, D-229 A/B, D-233 A/B, D-293 A/B, D-312, D-400 A/B/C, D-713, D-2410 A/B/C/D, D-2402 A/B, D-2403, the pencil tanks D-43 A/B, and D-44 A/B, and pumps P-1 A/B, P-2 A/B, P-3 A/B, P-4 A/B, P-7 A/B, P-15A/B, P-27 A/B, P-70 A/B, P-76 A/B, P-82 A/B, P-83 A/B, P-108 A/B, and P-928 A/B... This set will remove Scrubbers D131 A/B, T-1, T-10, T-30, and T-31, and evaporators E-63 A/B, A1 to A-5 and E-70. This set will remove control room equipment, conduit, and instrument systems. Items internal to the contaminated glovebox and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the equipment.
13	This Set includes Rooms 2307, and 2317 and involves the removal and packaging of gloveboxes 76, 77, tanks D-67, D-277 A/B, D-292A/B, D-912, D-914, D-916, D-922 A/B, D-933, and pump P-85A. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
14	This Set includes Rooms 2323, 2325, and 2341 and involves the removal and packaging of gloveboxes 8, 9, 10, 12, 13, 1526, and tank D-1575. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
15	This Set includes Room 2223 and involves the removal and packaging of tanks D-934 A/B. Items internal to the contaminated tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the tanks.
16	This Set includes Rooms 3511, 3521, 3523, and 3525 and involves the removal and packaging of glovebox 33, precipitation tanks T-11 A/B/C/D, T-12 A/B/C/D, T-13 A/B/C/D, furnaces F-4 A/B/C/D, F-5 A/B/C/D, F-6 A/B/C/D, and pneumatic lifts ME-94 A/B/C/D, ME-94 A/B/C/D, ME-95 A/B/C/D, ME-96 A/B/C/D, ME-97 A/B/C/D, ME-98 A/B/C/D, and ME-99 A/B/C/D. This set includes the fluorination tanks T-23 A/B/C/D, fluorination pumps C-1A/B and associated equipment. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
17	This Set includes Rooms 3515, and 3531 and involves the removal and packaging of glovebox 32, furnaces F-10 A/B/C, F-16 A/B/C, pneumatic lifts ME-23 A/B, and ME-39 A/B/C, and master/slave manipulators ME-100 A/B, and ME-169 A/B. This set includes the fluorination pumps C-1A/B and associated equipment. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
18	This Set includes Room 3801, and involves the removal and packaging of gloveboxes 111, 112, 106, 108, and tanks , D-808, D-812, D-813, D-814, D-815, D-816, D-817, D-818, D-819, D-820, D-821, D-822, D-823, D-826 A/B, D-827, D-878, D-883 A/B, D-884,D-845, and T-807,. This set includes removal of pumps P-810, P-811, P-812, P-817 A/B/C, P-828, P-837, P-838, P-843, P-845, P-846, P-852, P-857, and P-861. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
19	This Set includes Room 2804 and involves the removal and packaging of gloveboxes 101 A/B, 102 A/B, 105 A/B, 155 A/B, 119; and tanks D-801 A/B/C, D-802 A/B/C, D-804 A/B/C/D, D-811 A/B, D-824 A/B, D-843, D-852, D-155 A/B. This set includes removal of pumps 855 A/B/C. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.

Table 3. Set Descriptions

Set	Description
21	This Set includes Rooms 4802, 4812, the North portion of Room 3809, one tank in Room 3801, and involves the removal and packaging of tanks D-826 C, D-883 A/B, D-884, and D-885. This set includes the removal of Spray Dryer W-803. This set will remove Spray Dryer Blowers B-805 A/B, Storage Hoppers H-804 and 805, and the Spray Dryer Bag Filter FL-803. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the equipment and tanks.
22	This Set includes Room 2801, 2802, 2805, and 2808 and involves the removal and packaging of filter plenums FP-321, FP-322, supply air units SAU-301, SAU-302, SAU-303, chiller units 701 A/B, and pumps 703 A/B/C. Items internal to the filter plenums, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenums and equipment will be removed, as necessary, to facilitate access to the filter plenums and equipment.
23	This Set includes the Americium Processing Tank Vault (Room 3337), Americium Processing Ion Exchange Canyons (Rooms 3327, 3331 and Airlock 3329), the Americium Processing Valve Maintenance Corridor (Rooms 3325, 3333, 3323, 3321, and 3335), and the access corridor 3341. This set involves the removal and packaging of gloveboxes 52 and 54 and tanks D-82 A/B, D-84 A/B, D-86 A/B, D-87, D-88, D-89 A/B, D-90, D-95, and evaporators E-39 A/B, E-40 A/B, E-41 A/B, and E-45 A/B. This set will remove downdraft tables DDT-11 and DDT-12. Items internal to the contaminated downdraft tables, gloveboxes, and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
24	This Set includes Room 3408 and involves the removal and packaging of gloveboxes, 71, 72, 73,. Items internal to these gloveboxes, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
25	This set includes Room 3412 and involves the removal and packaging of gloveboxes 48 A/B/C/D/E/F, 49 A/B/C/D/E/F/G/H, 50 A/B/C/D/E/F/G/H, 51 A/B/C/D/E and the trolley hoist, CV-9. Items internal to these gloveboxes, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
26	This Set includes Room 3602 and involves the removal and packaging of gloveboxes 1, 2, 3, and the chainveyors, CV-27 and CV-62. Items internal to these gloveboxes, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, and equipment.
29	This Set includes Rooms 3713, 3715, and 3717 and involves the removal and packaging of gloveboxes 1509, 1510. 1514, 1521 A/B/C, and 1524. Items internal to these gloveboxes, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
30	This Set includes Room 3701 and involves the removal and packaging of gloveboxes 1500 A/B, 1502, 1503, 1504, 1506, 1512, 1513, 1516, and 1518. Items internal to these gloveboxes, and external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes, tanks, and equipment.
31	This Set includes Room 3541, and involves the removal and packaging of drum storage operations.
32	This Set includes Rooms 3501, and involves the removal and packaging of drum storage operations.
33	This Set includes Room 3513 and involves the removal and packaging of drum storage operations.
34	This Set includes Room 3420 and involves the removal and packaging of drum storage operations.
35	This Set includes Rooms 3606, and 3189, and involves the removal and packaging of drum storage operations.
36	This set includes Rooms 3709 and 3719 and involves the removal of control room equipment.
38	This Set includes Rooms 2201, 2202, 2202 A/B/C, 2221, 2301, 2304, 2306, and 2316. Piping, conduit, and ventilation duct will be removed, as necessary, to provide support for adjacent dismantlement sets.

Table 3. Set Descriptions

Set	Description
39	This Set includes the corridors on the sub-basement level. Items located in the corridor (external equipment) will also be removed. Piping, conduit, and ventilation duct (remaining) will be removed, as necessary, to provide support for adjacent dismantlement sets.
40	This Set includes Room 2203 and involves the removal and packaging of Filter Plenums FP-125 A/B. Items internal to these filter plenums, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenums will be removed, as necessary, to facilitate access to the filter plenums and equipment.
41	This Set includes Room 2213 and involves the removal and packaging of Filter Plenums FP-241, and FP-242. Items internal to these filter plenums, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenums will be removed, as necessary, to facilitate access to the filter plenums and equipment.
46	This Set includes Room 2207, and involves the removal of control equipment for ventilation, and HP vacuum equipment.
50	This Set includes a portion of Room 2310 and involves the removal and packaging of Filter Plenum FP-141. Items internal to the filter plenum, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenum will be removed, as necessary, to facilitate access to the filter plenums and equipment.
51	This Set includes a portion of Room 2310 and involves the removal and packaging of Filter Plenum FP-142. Items internal to the filter plenum, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenum will be removed, as necessary, to facilitate access to the filter plenums and equipment.
52	This Set includes a portion of Room 2310 and involves the removal and packaging of Filter Plenum FP-243. Items internal to the filter plenum, and external equipment will also be removed. Piping, conduit, and ventilation duct to the plenum will be removed, as necessary, to facilitate access to the filter plenums and equipment.
56	This set includes a portion of Room 3801 and involves the removal and packaging of gloveboxes 107 and 113, and tanks D-806, and D-807 A/B. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
57	This set includes Rooms 3810, a portion of Room 3809, and Room 4814, and involves the removal and packaging of pumps P-819, P-820, P-821, P-822 A/B, P-823, P-824, P-825, P-840, and P-861. This set will remove heat exchangers E-804 A/B/C, E-806 A/B, E-807, E-808, E-809, E-810, E-812 A/B, E-817 A/B, and Vapor Body Tanks T-802, T-803, T-804, and T-805. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
58	This set includes Rooms 3803 and 4805, and involves the removal and packaging of gloveboxes 115 A/B and 116 A/B, drum handling equipment and conveyors CV-808, CV-812, and CV-816. This set will remove Sludge Dryer W-801, Rotary Drum Filters FL-802 A/B, Vent Gas Scrubber T-807, heat exchangers E-804 A/B, E-817 A/B, and pumps P-806 A/B, P-815 A/B, P-816 A/B, and P-862A/B. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the equipment, gloveboxes, and tanks.
59	This set includes the removal of the RDC.

2.8.2 Decommissioning Areas

Table 4 indicates the Area designation and a brief description of those Areas. The Areas involve dismantlement, decontamination, size reduction, pre-demolition survey (PDS), and demolition activities. Some miscellaneous equipment may remain in areas after decontamination, component removal

(dismantlement), and size reduction because it meets the unrestricted release criteria, and there is no justification to remove it. Decommissioning Areas are conducted by Building Trades.

Table 4. Area Descriptions

Area	Description
AA	This Area consists of portions of the CWTS systems and includes removal of any remaining piping, electrical, and ventilation systems in sub-basement rooms 1208 (storage vault), 1210, 1214, 1216, 1218, 1222, 1109, 1111, 1113, 1115, 1117, and basement incinerator vent scrubber canyon, room 2327. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination. Room 1127 area contains surface areas associated with the criticality tank pit. Included are sub-basement corridor rooms 1001 through 1005, 1121, 1121A, 1123, 1124, and surface areas of the decontamination storage tank pit.
AB	This Area consists of portions of the CWTS system and includes removal of remaining piping, electrical, and ventilation systems in sub-basement rooms 1101(storage vault), 1103, and 1105, and basement room 2319. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination
AC	This Area consists of the Central Storage Vault (CSV), repair bay and maintenance area, and I/O stations number 1 through 8 and includes removal of remaining piping, electrical, and ventilation systems in sub-basement vault rooms 1206 (central storage vault), 1220 (stacker/retriever transfer bay), 1218 (repair bay), and 1224 (maintenance bay). Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination
AD	This Area includes removal of remaining piping, electrical systems, and system #2 ventilation systems in basement rooms 2201, 2203 2205, 2207, 2213, 2221, 2011, and 2325. Temporary ventilation systems will be installed to facilitate decontamination activities after filter plenum removal has been completed under the dismantlement sets.
AE	This Area includes removal of remaining piping, electrical systems, and system #1 ventilation systems in basement rooms 2306, 2310, 2301, 2307, 2317, 2316, 2015, and 2016. Temporary ventilation systems will be installed to facilitate decontamination activities after filter plenum removal has been completed under the dismantlement sets.
AF	This Area includes removal of remaining piping, electrical systems, and system #4 ventilation systems in basement office areas including rooms 2101, 2103, 2102, 2107, and remaining administrative areas. In-process characterization will confirm radiological status and decontamination activities are not expected to be required.
AG	This Area includes removal of remaining piping, electrical, and system #1 ventilation systems in ground floor rooms 3701, 3713 and 3717 (removed incinerators and afterburners for high and low specific activity wastes, now PuSPS), 3189, 3606, 3602, and corridor room 3031B. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination.
AH	This Area consists of the main aqueous processing area and includes the ion exchange, fluorination, and precipitator canyons, and includes removal of remaining piping, electrical, and ventilation systems in ground floor rooms 3559, 3563 (ion exchange tank vault), 3553 (ion exchange canyon), 3549, and support rooms 3545, 3543, 3557, 3521, 3531 (canyons), and support rooms 3529, 3511, 3515, and 3523. Also included in this Area are rooms 3517 and 3571 (nitric acid recovery), and 3573 (secondary nitric acid recovery). Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination.

Table 4. Area Descriptions

Area	Description
AJ	This Area includes the americium canyons, and anion exchange canyon. Remaining piping, electrical, and system 1 ventilation systems in ground floor rooms 3337, 3331, 3327 (canyons), and support rooms 3321, 3325, 3333, 3335, 3513, 3501, 3301, 3303, 3305, 3315, and corridor rooms 3035 and 3031A will be removed. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (e.g., scabbling) will remove contamination.
AK	This Area consists of the residue sampling and wet repack area, and includes the removal of remaining piping, electrical, and ventilation systems in ground floor rooms 3202, 3204, 3206, 3208, 3408, 3412, and 3420. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surfaces will be decontaminated (e.g., scabbling).
AL	This Area includes removal of remaining piping, electrical, and system #1 ventilation systems in attic rooms 4001, 4301, 4305, 4303, and 4307. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surfaces will be decontaminated (e.g., scabbling).
AM	This Area consists of the chemical make up area and includes the removal of remaining piping, electrical, and system 2 ventilation systems in attic rooms 4202, 3189, 4101, 4102, 4103, 4104, 4105, and 4106. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surfaces will be decontaminated (e.g., scabbling).
AN	This area consists of Building 374, the Liquid Waste Process Treatment Building. Piping, electrical, and ventilation systems remaining after dismantlement will be removed. Interior surfaces will have all paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surfaces will be decontaminated (e.g., scabbling).
AP	This Area consists of remaining office and support areas, maintenance, and cold laboratories in Building 371, and includes the removal of remaining piping, electrical, and ventilation systems in all office areas. In-process characterization will confirm radiological status and decontamination activities are not expected to be required.
AQ	This Area consists of remaining exterior surfaces (walls and roofs) of Buildings 371 and 374 and 12 structures/trailers (identified as 371A-K, 376A, 377, 378, 381, 373 and the carpenters shop), and includes the removal of remaining exterior surface-mounted electrical and clean piping systems to facilitate PDS. In-process characterization will confirm radiological status and decontamination activities are not expected to be required. Demolition of Building 371/374 will occur at the close of structural decontamination activities, and the completion of PDS, and included within this Area.

2.8.3 IWCP Strategy

All work is accomplished in accordance with the RFETS Integrated Work Control Program (IWCP) to ensure compliance with Integrated Safety Management System (ISMS) standards. Various documents are used, such as procedures, standard work packages and individual work packages as part of the program. Work planning and control for the entire Project includes mission work, preventive and corrective maintenance, deactivation, decommissioning and demolition. In general, mission work uses Site Document Requirements Manual (SDRM) procedures to accomplish their goals and the maintenance group mainly uses IWCP packages to accomplish their work. Deactivation uses the SDRM process for repetitive tasks such as tank fogging, ring removal, cerium nitrate, glovebox return to service and SCO surveys. Standard Work Packages are also used by deactivation for most everything else including line draining, SNM removal, service termination, trash removals, etc. The following assumptions apply to the IWCP strategy:

- All work control will be performed in accordance with the latest version of the RFETS IWCP Program Manual.
- The specific division of scope into packages is influenced by many factors from building conditions to personnel availability.
- The work crew, in accordance with the ISMS will determine the final number and content of IWCP packages.

IWCP packages provide a means for implementing ISMS principals and standards, each package is developed based on a specific work scope and hazards. To provide a meaningful and manageable package each IWCP typically contains scope that presents similar hazards. Since each package is the tool of the crew performing the work, the number and scope of work packages cannot be specified in advance of the ISMS implementation. However, a baseline plan can be established. Dismantlement and decommissioning operations are underway at various locations of the Site and certain standard IWCP work packages have been successfully used on other facilities and that knowledge will be utilized on this Project. The final decision on the number and scope of packages will be made by the work team that plans and develops the scope of work activity.

The following tables document the IWCP packages anticipated for the Dismantlement Sets and the Decommissioning Areas. The details on the exact content of each set and area are more fully described in Sections 2.8.1 and 2.8.2. The use of standard work packages is generally limited to such activities as clean up and removal of loose materials and other such house keeping activities and are not expected to be a major item of work. The Set packages have been segregated into hot, cold and balance packages. A Set hot package is for work that involves process lines and associated equipment that are contaminated. A Set cold package is for work that involves process lines and associated equipment that are believed to be uncontaminated. Balance packages are for the remaining activities within the set.

Building 371 Set IWCP Breakdown

Set	Room	IWCP Packages		
		Cold	Hot	Balance
1	4301	1	1	0
2	4202, 4303	1	1	0
3	3517	0	1	1
4	3571	0	1	1
5	3573	0	1	1
6	3567	1	2	1
7	3305	1	1	1
8	3206	1	1	1
9	1220	0	3	1
10	1210	0	1	1
11	1101	0	1	1
12	1115	1	3	1
13	2307	1	1	1
14	2325	1	1	1
15	2223	0	1	0
16	3511	1	1	1
16	3511-1			
17	3515	0	1	1

Building 371 Set IWCP Breakdown				
Set	Room	IWCP Packages		
		Cold	Hot	Balance
18	3801	1	2	1
19	2804	1	1	1
20	4106	1	2	1
21	4805	1	1	1
22	2801	1	2	1
23	3337	1	1	1
24	3408	1	1	1
25	3412	1	1	1
26	3602	1	1	1
27	2107	1	1	0
28	3141	1	1	0
29	3713	1	1	1
30	3701	1	1	1
31	3541	1	1	1
32	3501	1	1	1
33	3513	1	1	1
34	3420	1	1	1
35	3606	1	1	1
36	3709	1	1	0
37	3581	1	1	1
38	2009	1	1	1
39	1003	1	1	1
40	2203	0	1	1
41	2213	0	1	1
42	2202p1	0	0	0
43	2202p2	0	0	0
44	2202p3	0	0	0
45	2202p4	1	0	1
46	2207	0	0	0
47	2201	1	0	0
48	2306p1	0	0	0
49	2306p2	0	0	0
50	2310p1	1	1	0
51	2310p2	1	1	0
52	2310p3	1	1	0
53	2301	0	0	0
54	2304	1	0	0
55	2316	1	0	0
56	outside	0	0	0
Total		38	52	36

Standard work packages document removal and decontamination activities which are recurrent and may be utilized in conjunction with prepared Dismantlement Set IWCP work packages, as appropriate. The following outline the standard work packages for Steelworker work:

- Installation of Hydrogen Purge Assembly (annular)

- Modification of Glovebox Windows
- Installation of Hydrogen Purge Assembly (Rashig ring)
- Glovebox Window Replacement
- Installation of Hydrogen Purge Assembly (pencil)
- Dioctylphthalate Test on New Downdraft and Air movers
- Deactivate Glovebox Overheat Detectors
- Replace Analog Controller and Transmitter With Digital Version
- Replace Glovebox Intake and Exhaust Filters
- Asbestos Abatement/Removal
- Dioctylphthalate Test HEPA Filters on Air Movers/Downdrafts
- Tap and Drain Systems
- Process Piping Removal
- Replace Room Exhaust Filters
- Load testing of Hoists, Cranes and Rigging Equipment
- Configuration Determination of Energized Electrical Circuits
- Encapsulation of Gloveboxes, B-Boxes and hoods
- Cleanup rooms scheduled for Decommissioning
- Remove SNM in Preparation for Decommissioning
- Liquid/Solid Sampling
- Remove SNM from gloveboxes (amounts exceed 200g)
- Remove Holdup B-Boxes
- Performance Test Breathing Air Drops
- Construct Soft Sided containment
- Install Breathing Air Drops
- Modify Breathing Air Drops
- Assemble/Test Breathing Air Hoses
- Aerosol Testing of HEPA filters
- Encapsulation of Gloveboxes, B-Boxes and Hoods
- Dioctylphthalate Test Filter Plenum
- Decommissioning Equipment Containing Liquids
- Size Reduce Piping in Portable Glovebox
- Core/Coupon Sampling
- Reconnaissance Level Characterization
- Sample Liquids and Sludges in Tanks
- Identify and Remove Non-Essential Electrical Wiring and Components
- Identify and Remove Tanks
- Deactivation of Glovebox Overheat Detectors, Heat Trays and Flower Pots
- Room Encapsulation for Contamination Control
- Dioctylphthalate Test HEPA Filters on Air Movers/Downdrafts

The following table documents the packages currently planned for the Decommissioning Areas. The packages are segregated into hot, cold and balance types of work. An Area hot package is for decontamination work that involves contaminated areas: e.g. the hydrolasing of surfaces or the scarification (scabbling) of surfaces. An Area cold package includes removal of materials within the free released sections of the structure along with the structural demolition. Balance packages for Areas include the removal of special systems associated with decommissioning areas: e.g. ventilation systems.

Building 371 Area IWCP Breakdown				
Area	Description	IWCP Packages		
		Cold	Hot	Balance
AA	East Side--CWTS	1	1	1
AB	West Side CWTS	1	1	1
AC	Central Storage Vault	1	1	1
AD	South Side-Basement	1	1	1
AE	North Side-Basement	1	1	1
AF	Basement-Offices/Admin	1	1	1
AG	Wet Combustibles/PuSPS	1	1	0
AH	Main Aqueous Processing	1	1	0
AJ	Americium Processing/SGS	1	1	0
AK	Wet Residue/SS&C	1	1	0
AL	Attic North	1	0	1
AM	Attic South/Chem Make-Up	1	0	1
AN	Waste Processing-B 374	1	1	1
AP	Ground Floor Offices/Admin	2	0	1
AQ	Outbuildings/Trailers	2	0	1
	Total	17	11	11

Standard work packages document removal and decontamination activities which are recurrent and may be utilized in conjunction with prepared Decommissioning Area IWCP work packages, as appropriate. The following outline the standard work packages for Building Trades work:

- Interior wall Removal
- Hydrolasing
- Scabbling
- Final survey
- Loose Material removals

The following table details the uncertainty, impact and mitigation measures associated with the IWCP strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Scope and number of work control packages will change as planning proceeds.	Minimal: work to date does not impact project.	High	None Needed
Changes to requirements and forms in the IWCP will be made without considering input from the project.	Medium: reduces efficiency and creates re-work which can impact schedule and cost factors.	Low	Staff performing IWCP program changes should solicit project comments to revisions.

3. WORK ACTIVITIES

After the scope has been defined, hazards identified and analyzed, and controls established, the work may commence. In addition to the documentation and controls documented in following sections, there are additional procedures in place to control work activities once work commences. These procedures include the plan-of-the-day, pre-evolution requirements, and training requirements.

3.1 Administrative Strategy

There are several administrative activities that have to be conducted before and during decommissioning in order to facilitate the deactivation and decommissioning schedule and regulatory requirements. These activities include PA closure, authorization basis modification and maintenance, regulatory strategy, relocation of personnel, and resource and shift management.

3.1.1 Protected Area (PA) Closure Strategy

The PA strategy for 371 Closure Project is based on the activities required to close the Material Access Area (MAA), eliminate the remaining PA, and ultimately terminate site safeguards and security. As of February 2001, the PA will have been reduced to surround only Building 371/374. That reduction of the PA will facilitate work activities for other Projects. Likewise, and in order to meet an aggressive schedule for Building 371 closure, remaining security areas in and around Building 371 must be reduced as early as compliance with requirements can be demonstrated. The PA closure strategy is based on the assumption that the following activities must be completed in order to closure the MAA:

- PuSPS operates, shipping capacity and certified containers are available as planned, receiver sites take packages, and the system is deactivated to inventory clean levels of SNM.
- Processing of drummed residues is complete and systems are deactivated to inventory clean levels of SNM.
- Gloveboxes, systems and tanks with accountable quantities of SNM are deactivated. Section 3.1.3 and 3.2.3.2 contain additional information on the deactivation endpoints and the glovebox strategy.
- A wall-to-wall scan is conducted along with a vulnerability assessment, which indicates no credible roll-up capability of Category 1 material.

The following table documents, by Material Control and Accountability assigned (MC&A) category, the security areas and storage requirements for SNM from DOE Physical Protection Program Manual:

MC&A Category	Storage, Security Area
I	Vault, MAA, PA
II	LAA, PA
III	LAA
IV	PPA

In order to close the MAA, deactivation must proceed to a point where there is no credible roll-up to SNM Category I quantities. The successful operation of the PuSPS will enable the shipment of these materials to receiver sites' and provide a significant/critical step toward MAA closure.

Processing/re-packaging of drummed residues will also need to be completed in order to conduct SNM hold-up remediation from the lines involved. Upon completion of residue processing and Pu metal and oxide stabilization and packaging, all locations, which could contain In Process Material (IPM), will be scanned. Scan data will be used to determine the extent of remediation of process lines and systems that will require elimination of potential a Category II roll-up. Processing of remediated IPM through PuSPS or the appropriate residue packaging line will be necessary prior to deactivation of the lines.

When SNM shipment of Category I and II discrete items is complete, a detailed process of verifying the removal of Category I and II quantities/roll-ups of SNM will begin. Wall-to-wall scans to include all rooms, vaults, process lines and other equipment, verification walk-downs, and vulnerability assessment(s) will ensure that all SNM that could credibly contribute to a Category II quantity have been removed. Vault and other alarms will be deactivated to the extent that DOE orders allow for limited access areas (LAAs). Fence-to-fence scans will be needed to validate PA closure. A thorough verification and validation will be conducted and reviewed by several parties before DOE approval to close the MAA and PA is required.

3.1.1.1 Security Isolation Zones

A MAA requires a Q clearance for un-escorted access. Up to three (3) L-cleared and un-cleared employees can be escorted by a Q-cleared employee, but only after completing a justification for MAA visit. As constraints on the availability of Q-cleared workers dictate, small Security Isolation Zones (SIZs) inside of the Building 371 MAA could be established to accomplish decommissioning activities with some un-cleared and L-cleared workers. Under a special security plan, a Security Police Officer (SPO) could be empowered with surveillance of more workers in a given space than could a Q-cleared worker. The SIZ would be temporary and only in effect during scheduled work periods. The SIZ security plan would evaluate the need for temporary intrusion/exit alarms to be used when the SIZ is operated.

No SIZ will be necessary after September 2002 when the MAA is scheduled to be closed. Early decommissioning activities conducted in rooms that would be SIZ candidates include:

- Installation of size reduction components in Room 3501
- Decommissioning of Set 16, Room 3511
- Decommissioning of cold equipment in Set 30, Room 3701
- Decommissioning of Set 15, Room 2223 in the basement
- Decommissioning of Set 16, Rooms 2325, 2323, and 2341 in the basement

The need for SIZs will be dependent on available resources. Section 3.1.6 addresses the resources available and required for deactivation and decommissioning.

3.1.1.2 Classified Matter Disposition

Building 371 currently stores classified matter in approved repositories and under waiver in the MAA. All classified matter must be stored in the minimum of an LAA and in approved repositories. The disposition of classified matter from Building 371 is integral to the reduction of its security areas because open storage of classified matter under waiver will not be possible without an MAA and would preclude its closure. In order to facilitate MAA closure, classified matter could be stored in the vaults as soon as SNM shipping achieves Category II status as described previously.

Although not critical to MAA or PA closure, classified documents and information systems will either be retained by DOE in a LAA, or will be destroyed. Classified tools and parts acquired from other buildings will be shipped to another site.

The following table documents the uncertainty and risks associated with the PA closure strategy.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
PuSPS, shipping, or receiver delays	Delay decommissioning and impact Site closure.	Medium-High	Alternative storage methods, see Section 3.2.1.3
Other Pu facility encounters a Cat II quantity of SNM	After PuSPS deactivation, impact could be severe	Low	High quality characterization and scans during other facilities' downgrades, or reduce its attractiveness.
DOE makes more stringent the requirements to reduce security areas	Schedule delays and cost increases.	Medium	Thorough scans to validate SNM removal and aggressive approach to removing all quantities of SNM.

*High, Medium, or Low

3.1.2 Authorization Basis (AB) Strategy

Buildings 371 and 374 are Hazard Category 2 nonreactor nuclear facilities and are currently operated under Revision 4 of the Building 371/374 Complex Basis for Interim Operation (BIO). The BIO authorizes the performance of both facility activities (including nuclear material storage and assaying, residue processing, wastewater treatment, and most deactivation activities) and routine activities that are required to maintain the facility in a safe, habitable, and compliant condition and/or are mandated by law or regulation. PuSPS and most decommissioning activities are not currently authorized.

An annual update to the Building 371/374 Complex BIO is being prepared for submittal to RFFO in early 2001. This update will incorporate the PuSPS activities and accident scenarios, and will address aspects of closure work. While the analysis and control set will remain primarily focused on the remaining nuclear processing and packaging mission, deactivation and decommissioning activities will be incorporated to the extent possible. The deactivation and decommissioning activities in the BIO annual update will include (but are not limited to) the following:

- Plasma arc cutting for dismantling and segmenting both *in situ* or in a central size reduction chamber.
- Segmentation and fire barriers defined by Fire Protection Engineering to prevent the initiation of an accident (primarily fire) in an area where there is a significant amount of nuclear material.
- Activities identified in the decommissioning BIOs written for Buildings 707, 771, and 776/777.

As identified, deactivation and decommissioning activities that are not included in the BIO annual update will be evaluated through the unreviewed safety question determination (USQD) process for inclusion in the BIO. Additional updates to the BIO will be performed as needed to fully authorize any remaining deactivation and decommissioning activities.

The following risks and uncertainties have been identified for the AB strategy:

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
RFFO does not approve the annual update.	Delayed decommissioning activities.	Medium	None

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Activities not identified in the BIO result in a positive USQ.	Schedule depends on RFFO approval of activity.	High	Plan far enough in advance to allow time for approvals.
RFFO does not accept the reduction of controls in decommissioning areas.	Schedule and cost increase	Medium	None
Decommissioning of other buildings may find material Building 371 is not authorized to accept.	Schedule and cost of decommissioning in other facilities and in Building 371.	Low	Identify potential to RFFO before it happens. Develop an emergency justification for continued operation if needed to accommodate the Site.

* High, Medium, or Low

3.1.3 Deactivation Endpoints

Endpoints encompass the endstate for a certain scope of work and the connection between different scopes of work. For building tenants, it defines when facility management activities stops and deactivation starts. For deactivation, endpoints define the start of decommissioning. The endpoints will allow the proper planning and estimating to ensure scope between each phase of work is not missed or duplicated. These endpoints can also define the change in regulatory structure. For example, when decommissioning starts, the work falls under RFCA. Deactivation activities are not governed by RFCA, but are regulated by DNFSB.

Facility management activities in Building 371 include nuclear mission activities such as; residues processing and repackaging, plutonium oxide and metal stabilization, non-destructive assay, and liquid waste treatment. The endpoints for the tenant activities will be the following:

- Relocation of personnel, as needed;
- Removal of mission-specific excess chemicals;
- Mission-specific classified property/material disposition;
- Disposition of tenant records;
- SNM removal to inventory clean levels and confirmatory scans; and
- All waste generated by the mission activity has been properly packaged and transferred to material stewardship.

Completed facility management endpoints will be documented in a memo. In addition, the memo will contain information on remaining hazards, which can be used during deactivation or decommissioning in preparing safety analysis of the area.

The endpoints for deactivation will be the following:

- Tanks: TRU/TRUM sludges removed from tanks (tanks will be inventory clean) – completion will be documented using scans and visual checks and removal of all other sludges that will not be disposed in the tank;
- Gloveboxes: loose material removed; oils and liquids removed; and SNM removed as necessary for MAA closure;
- Personnel relocation, as needed;
- Removal of excess chemicals from non-tenant areas;
- Removal of hazardous and non-hazardous materials, does not include equipment;

- Draining of liquids from piping – actinide and non-actinide (piping will not necessarily be removed) except for fire suppression, deluge, potable water, process waste, and steam and condensate systems;
- Removal of liquids and oils from equipment that will become waste;
- Removal of SNM required to close the MAA; and
- All waste generated by deactivation activities has been properly packaged and transferred to material stewardship.

There are no assumptions associated with the endpoint strategy. The following table details the uncertainty, impact and mitigation measures associated with the endpoints strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Scope is missing between cost accounts	Negative cost variance for work not budgeted	Low	Detailed review of PMP to ensure scope is not missed

*High, Medium, or Low

3.1.4 Regulatory/RCRA Strategy

The 371/374 DOP is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory decision document under which decommissioning will be completed. Building 371 and the associated Type 2 facilities will be closed in accordance with the DOP, and it is assumed that the Type I structures relevant to this project will be closed using the DPP. The DOP will address all environmental requirements through applicable or relevant and appropriate requirements (ARARs). Management of waste is described in the DOP in detail. The PDS will be conducted using the Site-wide Pre-Demolition Survey Plan (PDSP). Following are the assumptions associated with the regulatory strategy:

- The RSOPs will be available when needed for the other Project facilities.
- All but a few RCRA units will be closed in accordance with the DOP.
- The PDSP will be approved and available.
- The release criteria for the 371/374 Closure Project will be similar to the 779 and 771 Projects.
- Soil characterization and release criteria will not delay closure.

Appendices F and G contain tables on the tanks and gloveboxes within the 371 Closure Project. The tables indicate, which items are RCRA units.

3.1.4.1 Building 371 RCRA Closure Strategy

There are 141 regulated tanks in Building 371. Tanks will be closed by draining remaining liquid from the tank systems, removing Raschig rings, and removing mobile or removable sludge, as necessary. Tanks and their ancillary equipment will be characterized, removed from existing locations and size reduced as needed, and packaged for off-site disposal. Tank systems will be closed consistent with the RCRA permit using unit removal, clean closure, or the Debris Rule. Tank systems may undergo a cerium nitrate rinse to lower radiological contamination, which will facilitate disposal as low level rather than TRU waste. Hazardous tank system components will be managed under CERCLA as remediation waste. The aqueous waste currently in the tanks will be treated either in the Building 371 Caustic Waste Treatment System, Building 374 liquid waste system, or other appropriate disposal system. Hazardous liquids will be managed under CERCLA or RCRA as appropriate. Very little sludge, if any is expected in Building 371 tanks. Sludge will be removed, treated on- or offsite and disposed of offsite as TRU, TRU-mixed, low level, or low level mixed waste as analytical data dictates. If the waste is low level mixed $\geq$ 10 nCi/g then there is

no current disposal facility and therefore will be stored as hazardous waste. The Site Treatment Plan identifies the issue of the disposal of low level mixed waste $\geq$ 10 nCi/g.

Permitted storage units in Building 371 include gloveboxes, rooms, and vaults. Waste will be removed from these units as the first closure step. Permitted storage units may become RCRA stable after removing the waste and cleaning/wiping down surfaces as required. Rooms or vaults may be used after RCRA stable is achieved to store CERCLA remediation waste, house size reduction tents, or facilitate other decommissioning activities. Rooms or vaults may be scabbled to remove greater degrees of radioactive contamination. Gloveboxes may be fogged with a fixative to control contamination, size reduced, as needed, and packaged for off-site disposal. If there is lead shielding in/on permitted units, it may be removed and handled separately as hazardous waste or sent off-site for recycle; otherwise, leaded gloveboxes will be managed and disposed of as mixed hazardous waste. Gloveboxes will be closed in accordance with the Site Permit closure requirements.

Permitted treatment units in Building 371 include the Caustic Waste Treatment System and Fluoride Residue Treatment Process. These units consist of gloveboxes, tank systems, and waste staging areas. Treatment units will be closed similarly to the above discussions for each type of unit.

Characterization of waste associated with unit closure will be conducted at the time the waste is generated. For example, as liquids are drained, samples will be taken and data will dictate resulting characterization; when sludge is encountered, it will be sampled and characterized. Tank system components and gloveboxes that hold only characteristic waste are not hazardous, but could be rendered hazardous if a substantial volume of hazardous waste remained inside (i.e., cemented sludge in tank bottoms). Any sludge remaining will be analyzed to characterize the components. Tank system components and gloveboxes that held listed waste may remain hazardous for the same listed codes. Clean debris standards may be applied and confirmed by visual inspection. Clean closure may be achieved by triple rinsing and ensuring listed constituents are below threshold standards.

The following table outlines the risks and uncertainties associated with the Building 371 RCRA Closure Strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Not all liquid thought to have been removed was drained.	Potential spill and/or personnel contamination.	Medium	Ensure the potential is discussed at the pre-evolution briefing prior to tank system dismantlement. And, ensure spill cleanup materials are readily available.
Waste is improperly RCRA characterized.	Waste will not meet WAC for off-site receiving facility.	Low	Sample, analyze, and document waste characterization carefully.
Low-level mixed waste has no off-site disposal location.	Waste will continue to be stored at the Site at a significant cost.	High	STP personnel aggressively pursue an off-site disposal path.

*High, Medium, or Low

3.1.4.2 Building 374 RCRA Closure Strategy

There are 56 permitted tanks and 10 other permitted equipment located in Building 374. The aqueous waste currently in the tanks will be treated either in the Building 374 permitted treatment system or another treatment system. The other treatment system would treat existing aqueous waste or newly

generated waste after the current treatment system is no longer operational. Sludge volumes for the tanks have been estimated and contaminates are based on process knowledge. Additional testing and visual inspections will be conducted before final disposing is decided.

Closure for units in Building 374 will be performed consistently to those in Building 371 in Section 3.1.4.1. However, there is a significant volume of sludge contained in tank systems in Building 374. Sludge exists in tanks in rooms 3801 and 2804. The current plan is to transfer and consolidate sludge from tanks in room 3801 to compatible tanks in Room 2804 to accommodate an accelerated Building 374 decommissioning schedule. Tank bottom material that is solidified or cemented to the tank may be left in place. In that case, a sample of the solidified material will be taken for analyses. The volume of the sludge will be conservatively estimated by weight. The characterization of the tank (with the tank bottom material in place) will be calculated based on analytical data and weight volume of the tank and solidified material to determine the tank's hazardous nature. Plans for removal, characterization, and disposal of sludge retained in the tanks in Room 2804 are being developed at this time.

The following table outlines the risks and uncertainties associated with the Building 374 RCRA Closure Strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Not all liquid thought to have been removed was drained.	Potential spill and/or personnel contamination.	Medium	Ensure the potential is discussed at the pre-evolution briefing prior to tank system dismantlement. And, ensure spill cleanup materials are readily available.
Waste is improperly RCRA characterized.	Waste will not meet WAC for off-site receiving facility.	Low	Sample, analyze, and document waste characterization carefully.
Low-level mixed waste has no off-site disposal location.	Waste will continue to be stored at the Site at a significant cost.	High	STP personnel aggressively pursue an off-site disposal path.

*High, Medium, or Low

3.1.5 Relocation of Personnel Strategy

The relocation of personnel will be conducted in phases. Phase I will involve setting up temporary offices, bathrooms, shower facilities, and storage areas. The trailer area at the top of the hill on the west side of the building, outside the PA, will be expanded to include additional temporary office space or the existing 130 trailer complex will be utilized. It is envisioned that the existing trailers behind Building 371, and the temporary office facilities will house the 371 Closure Project staff throughout the decommissioning process.

Once this area has been established, personnel will be relocated from the building into the temporary office trailers. It is estimated that space for 250-270 personnel (approximately 10-12 trailers with office and conference space) will be required to be established. A decision will be made prior to relocating personnel on the essential project staff. Essential project staff will be relocated to the trailers behind the 371 complex (inside of the PA), and non-essential project staff will be relocated to the temporary office trailers outside the PA. The distinction between essential and non-essential project staff is that the essential project staff needs to have constant and immediate access to the project. Non-essential project staff can still conduct their job assignments without immediate access to the project. The following are the assumptions associated with the relocation of personnel strategy:

- Adequate temporary office space (trailers) will be available when needed;
- One person can be relocated in one day;
- 80-100 people can be relocated in one week; and
- The temporary office trailers can be delivered and installed prior to the close of FY01.

No risks or uncertainties have been identified for the relocation of personnel strategy. A timeframe for the relocation of personnel and layout of the trailer areas will be added to subsequent revision of the PMP.

3.1.6 Staffing/Resource Strategy

This section provides details on the strategy for providing resources for decommissioning of the 371 Closure Project. The resources are allocated as salaried, steelworkers, or building trades. The number of K-H salaried positions will not change drastically from the current level. The remaining salaried positions will be filled by subcontractors on an as needed basis.

Building 371 currently does not have steelworkers dedicated to decommissioning due to the ongoing residue elimination and deactivation operations. It is anticipated that by the end of the second quarter of FY01 four decommissioning crews will be staffed. This will be accomplished using a combination of resources external to the Building 371 Project such as on Site job posting and off site hires and resources internal to the project transitioning from completed work. For the steelworkers, a decommissioning crew will typically consist of 10-12 decommissioning workers (skilled trades and hazard reduction technicians) and 2-3 Radiation Control Technicians. The Radiation Control Technician (RCT) will be filled using on site resources or through subcontracting mechanisms (such as the current Bartlett contract). If the RCTs are obtained through subcontracting, they will be obtained 2 months in advance of starting work for training and certification. Four decommissioning crews, supported by the existing waste handling crew, will be run in single shift operations through FY02. Decommissioning operations will be performed on dayshift unless those operations conflict with other facility operations and it is determined that alternate work shifts would be more productive.

In early FY03, an additional 10 decommissioning crews and one waste handling crew will be formed from a combination of steelworker resources coming from Building 771 and from completed projects internal to Building 371. Resources from the completion of residue processing operations and the beginning of the ramp down of Building 771 steelworkers decommissioning are expected in the time periods listed below:

- 2nd Qtr FY02 – PuSPS – 30 to 35 Steelworkers
- 2nd Qtr FY02 – Wet Residues – 30 to 35 Steelworkers
- 3rd Qtr FY02 – Dry Residues – 20 to 25 Steelworkers
- 1st Qtr FY03 – Building 771 decommissioning – 20 to 30 Steelworkers

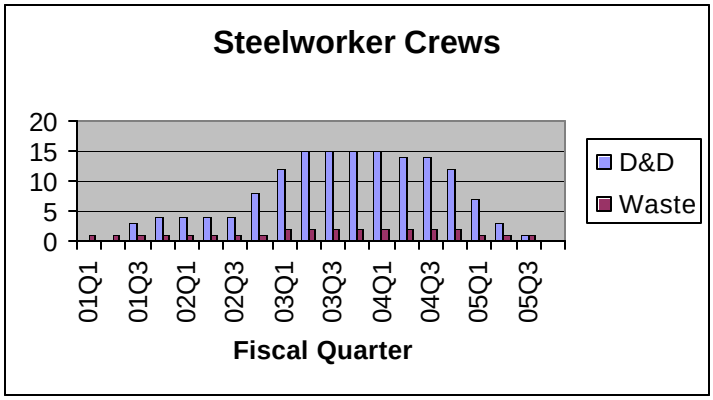
Based on this information, sufficient on Site steelworker resources should exist to staff the 10 decommissioning crews required to start full scale decommissioning operations. An additional crew may be necessary in FY03 to complete the dismantlement and decontamination of the CSV depending on the methodology chosen to perform this task.

Decommissioning operations will be performed utilizing a total of 14-15 decommissioning crews until the beginning of FY05 (see Figure 3). In FY05, the decommissioning steelworker staffing is expected to ramp

down throughout the first half of the year as the steelworker work is completed. Decommissioning operations are expected to be conducted primarily on dayshift.

It is anticipated that by the beginning of FY03 sufficient progress will be made in the dismantlement of contaminated systems to allow the start of a significant amount of Building Trades work. Forty to 60 trades are anticipated to be required throughout FY03. As the dismantlement of contaminated systems progresses, the number of trades is expected to double in FY04. In FY05, nearly all of the remaining work will be allocated to construction trades and a peak work force of approximately 150 Building Trades is expected. Some Building Trades work may be performed prior to FY03, but the majority is expected to be performed as described previously.

Figure 3. Steelworker Crew



The following assumptions are associated with the Shift/Resources Strategy:

- There will be no significant changes in the steelworker contract.
- Sufficient progress will be made on residue processing and Building 771 decommissioning to allow steelworker resources to transfer to Building 371 decommissioning.
- The local trades labor market can support staffing for demolition.
- Primary decommissioning activities will be accomplished by laborers

The following table documents the uncertainty and risk associated with the staffing and resource strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Building 771 resources not available to support Building 371 decommissioning as planned.	Lack of man power to conduct steelworker decommissioning activities	Medium	Staff decommissioning from existing Building 371 resources, hire off site
Building 371 resources not available to convert to decommissioning as planned.	Lack of man power to conduct steelworker decommissioning activities	Medium	Staff decommissioning from Building 771 resources, hire off site.
Steelworker contract changes significantly.	Possible loss of resource flexibility	Low	None.
Insufficient number of local trades to support construction contractor.	Lack of man power to conduct trades decommissioning activities	Low	Staff from national labor pools, convert steelworkers to trades at end of their mission

3.1.7 Training Strategy

This section provides details on the strategy for providing training to Steelworkers and their supervision assigned to decommissioning. Prior to the performance of Steelworker decommissioning tasks, individuals who are not currently qualified to perform decommissioning will be required to complete decommissioning qualifications. Since a number of Steelworkers and supervisors new to decommissioning are expected to be used on the Project (see Section 3.1.6, Staffing), a strategy for training the work force is necessary.

Training for decommissioning can be divided into two distinct parts: prerequisite items and the performance of the individual task qualifications. Prerequisite items consist of Site-specific training courses such as Computer Based Training courses and classroom courses that are developed for presentation to all worker classifications (not specific to the performance of decommissioning). The individual task qualifications are decommissioning specific job task skills that were developed from the Job Task Analysis performed specifically for decommissioning. The decommissioning individual task qualifications are collectively referred to as the Qualification for Decommissioning. In order for an individual worker or supervisor to be considered "qualified" to perform decommissioning, they must have successfully completed all of the prerequisite training items and the portions of the Qualification for Decommissioning considered to be applicable to the task they are assigned. The Qualification for Decommissioning is maintained by the Site Decommissioning Training Program and currently contains approximately 30 individual qualification tasks. The qualification is flexible because it is task specific. Additional task qualifications can be added when necessary and not all of the task qualifications need to be completed for a worker or supervisor to be considered qualified, only the task qualifications needed to perform a specific assignment.

In addition to training for decommissioning, there are training requirements that need to be met to work in a specific building at RFETS. These training requirements, referred to collectively as Building-Specific Training, consist of items unique to a facility. Building-Specific Training requirements are identified by the project's training department. The 371 Building Indoctrination and training to the facilities Authorization Basis are typical Building-Specific Training requirements. All personnel new to the facility will be required to have been trained to the 371 Closure Project Building-Specific Training requirements in order to work in the facility without training restrictions (escorts).

Building trades that conduct decommissioning activities are trained by the company they work for or by the appropriate union hall. Only Site-specific training will be provided for Building Trades.

3.1.7.1 New Hires

Personnel from off site will need to receive all of the decommissioning training. New hires will be turned over the Site Decommissioning Training Program where they will be scheduled to receive their prerequisite training (lasting approx. 2 weeks). The Site Decommissioning Training Organization will also qualify these individuals to several of the basic decommissioning individual qualification tasks such as power tool operation, lift table operation, decontamination, glovebox operations, and supplied breathing air. The decommissioning training period is expected to take approximately 6 to 8 weeks overall. After completion of the Site Decommissioning Training Program, workers will report to the facility and receive their Building-Specific Training. Training on additional individual qualification tasks will be performed by facility personnel on an as needed basis.

3.1.7.2 Unqualified Decommissioning Worker Transfers to Decommissioning

Workers from non-decommissioning job classifications or unqualified decommissioning workers transferred to perform decommissioning will need to be qualified. Unqualified individuals will be turned over to the Site Decommissioning Training Program where they will be scheduled to obtain any prerequisite training they lack. The Site Decommissioning Training Organization will also qualify these individuals to several of the basic decommissioning individual qualification tasks. This training period is expected to take 4 to 6 weeks after which workers will report to the facility and receive their Building-Specific Training. Training on additional individual qualification tasks not covered by the Site Decommissioning Training Program will be performed by facility personnel on an as needed basis.

3.1.7.3 Qualified Decommissioning Worker Transfers

Qualified decommissioning workers transferring to 371 Closure Project from other RFETS projects will only need the Building-Specific training for the facility to begin work. If a transferred worker lacks training on additional individual qualification tasks that will be needed, then facility personnel can qualify the individual on the specific task.

The following table provides the uncertainties and/or risks associated with the training strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Site Decommissioning Training Program is discontinued	Training functions would be staffed and managed by Project Personnel.	Low	Identify additional resources
New hires and/or transferred workers are unable to qualify	Additional off-site staff would be required.	Low	Ensure that the necessity of the Program is understood and funded

*High, Medium, or Low

3.1.8 Management Review Strategy

The initiation of decommissioning in Building 371 will result in the conduct of new activities in the facility. In accordance with site procedure MAN-040-RDM, "Readiness Determination Manual", it is the responsibility of facility management to evaluate start up actions within their facility to identify those that potentially require a readiness determination. Criteria to establish the appropriate level of readiness determination are outlined in MAN-040-RDM, which is based on the requirements of the DOE Orders and Standards governing start up actions.

Initiation of decommissioning operations does not meet the criteria an Operational Readiness Review. However, initiation of certain decommissioning operation are likely to require a Readiness Assessment. A Readiness Assessment is planned to confirm readiness prior to the start of the following activities:

- The first highly contaminated glovebox/tank Decommissioning Set
- Operation of the first size reduction facility
- Performance of the first highly contaminated in-situ size reduction

Prior to the start of other activities not listed above, facility management may direct an internal assessment to confirm readiness internal to the project before commencing startup.

3.1.9 Facility Management Strategy

The facility management (landlord/tenant) portion of the 371/374 Closure Project Baseline will contain the activities necessary to maintain a safe, compliant, and available facility. Facility management activities are required to maintain the facility in a ready state until decommissioning occurs. The five facility management activities are compliance surveillance, maintenance, operations technical support, operations management and AB.

The commencement of decommissioning activities in Building 371, the last plutonium facility to be decommissioned at RFETS, will signify the building's transition from that of a support role to other closure projects to a closure project. Accordingly, costs for some tasks previously considered to be facility management will be allocated to closure project activities. Most tasks under the operations technical support activity and some under the operations management activity will be considered newly scoped closure project management activities.

As glovebox lines and other process equipment are removed, certain surveillances and the extent of maintenance activities required will decrease in a linear fashion. When a criticality event is no longer credible, many facility management activities will cease. After removal of all components to the ventilation system, which cannot occur until all process equipment has been removed, the need for an authorization basis is assumed to terminate and remaining facility management activities will be terminated.

The cost of performing many facility management tasks is not incremental to the amount of process equipment that has been removed. For example, the Shift Management task, which scopes the Configuration Control Authority (CCA) office, will be required as long as an AB is required for the facility. The following are the assumptions that were used for the development of the facility management strategy and estimate reduction factors:

- Historical costs are an accurate predictor of future cost. If there is a significant change in operations requirements, then historical costs are not valid.
- Some reduction in facility management costs is due to Building 371 becoming a decommissioning project
- FY01 is the base year for estimating. No material reduction in facility management costs will be achieved in FY01.
- At the start of FY02, 86% of the gloveboxes and tanks are assumed to remain, at the start of FY03 69% remain, and at the start of FY04 33% will remain. These percentages will be applied as factors to facility management activities whose costs are incremental to the amount of process equipment removed.
- At the start of FY05, facility management functions for the 371/374 Closure Project will cease because only the facility structure will be left.

The following table addresses the uncertainties and risks associated with the facility management strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Glovebox and tank removal proceeds at a slower pace than assumed.	Insufficient budget to perform required surveillances on tanks and gloveboxes.	Medium	Focus decommissioning efforts on removal of gloveboxes and tanks to reduce facility management expense.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Decommissioning of Buildings 371 and 374 proceeds at a slower pace than assumed.	At the start of FY04, facility safety systems are still required to be operational and monitored.	Medium	To maximum extent possible work safety system removal activities and other project activities, in parallel.
Changes in operational requirements cause an increase in surveillance, maintenance, or operational activities.	Historical costs would not be an accurate predictor of future landlord costs.	Low	Screen operational requirement changes to quantify potential cost impacts. Inform customer of cost impacts.

*High, Medium, or Low

3.2 Technical Strategies

The technical strategies are focused on three areas: operations, deactivation and decommissioning. Due to the nature of deactivation and decommissioning activities, many of the strategies overlap.

3.2.1 Building 371 Operational Strategies

In order to initiate deactivation and decommissioning, the operational missions within Building 371 and 374 must be completed. There are numerous operational activities currently being conducted in Building 371. These activities are PuSPS, wet residue, salt residue, SS&C residue, dry residue, ash residue and SNM shipping and storage. The completion of these activities are crucial to the decommissioning schedule and many of the assumptions in the deactivation and decommissioning strategies are predicated on the successful and timely completion of the operational activities.

3.2.1.1 PuSPS Operations Strategy

The PuSPS prepares weapons grade plutonium for long term safe storage. DOE STD 3013-2000, "Stabilization, Packaging and storage of Plutonium Bearing Materials," is the basis for the design of the package. Both metal and oxide will be processed and prepared for 50 year storage. The oxide must be in a stabilized form and both metal and oxide must be free of any combustible or organic material and stored in sealed, corrosion-resistant containers in an inert atmosphere. Additionally, two individually sealed nested containers are required to isolate the stored material from the environment.

PuSPS consists of a stabilization system and packaging system. The stabilization system is a manual process used to prepare Pu metal and oxide for packaging. Pu oxide is stabilized in trays by heating in a dry air furnace to 950 degrees centigrade for a minimum of two hours. The packaging system is a semi-automated process that fills oxide convience cans with oxide and places an oxide can or ingot (metal) into the two nested welded containers.

PuSPS is currently in the final stages of construction in Room 3701 in Building 371. Following final testing and operator readiness, the PuSPS is expected to begin producing packaged 3013 containers in early spring 2001. The material identified to be processed will represent approximately 2,000 3013 containers. (Note the actual amount of material is classified.) Normal packaging operations will be performed on both day shift and p.m. shift, with the midnight shift being utilized to stage material and prepare equipment for the upcoming production day. Approximately eight 3013 cans are expected to be produced each production day. The entire campaign is expected to last approximately 15 months.

A potential contingency to allow PuSPS and residues a longer operational period involves isolating Set 10 from the rest of the building. Some utilities would need to be installed to isolate this area from Building 371 utilities, which would allow decommissioning activities to continue around Set 10. The utility installation could include HVAC, fire suppression, electrical, plant air, and service water. This contingency could add 2 years of operations without significant impact to the decommissioning schedule. An evaluation will be conducted at the beginning of FY02 to determine if this contingency is necessary and/or cost effective.

The following are the assumption associated with the PuSPS strategy:

- The packaging system will be capable of continuous operations, without excessive maintenance, such that its availability will be not less than 72%.
- The packaging system will be capable of functioning at a minimum rate of not less than 1 container every 2 hours, either metal or oxide
- A DOE approved deviation path will be available for packaging and shipping materials in 3013s that cannot meet the 3013 standard (low Pu content, moisture cannot be measured accurately, etc.). Any alternate approved path will not impact the material campaign or require additional equipment for processing.
- Repackaging of materials that cannot meet the 3013 standard will be minimal (0% for metals, less than 5% for oxides)
- Data obtained from the HSP 31.11 surveillance program will not result in a change to the surveillance requirements for plutonium metal.
- Data and a technical basis will support the elimination of surveillance requirements per HSP 31.11 for material that is packaged in DOE-STD-3013 containers.
- On-site surveillance of DOE-STD-3013 will be limited to the initial weighing and radiography of the 3013 container. Radiography is limited to the top of the 3013 container by equipment currently on-site. No oral or visual document/history is required for materials to be packaged in 3013 containers.
- No additional requirements for DOE-STD-3013s will be mandated above and beyond what is required to meet the Standard itself, including receiver site requirements and material disposition requirements.
- The stabilization and packaging system will stabilize the holdup identified and recovered by January 2002, as necessary. Holdup recovered after that date must be stabilized elsewhere, or dispositioned as is.

Alternatives will be identified and evaluated to either reduce scope and/or replace PuSPS. The analysis will take into account that different strategies may be required for plutonium metal versus plutonium oxide. For example, the primary risk mitigation strategy for plutonium metal may be to employ an alternate packaging method, such as produce cans or the Savannah River bagless transfer system. Final packaging at other DOE Sites to meet DOE Standard 3013 will be included as appropriate in the analysis.

For the plutonium oxides, the packaging alternatives described above for plutonium metal will be analyzed, as well as partial or complete disposal of the plutonium oxide inventory to WIPP. The WIPP disposal will consider both the standard repackaging into POCs used successfully for plutonium residues as well as the efficacy of using an immobilization technique (i.e., cold ceramification).

Constraints and requirements from the Energy and Water Appropriations, safeguards termination, WIPP and other regulatory considerations will be factored into the analysis, and areas that require action or relief identified.

The following table documents the uncertainty and/or risk associated with the PuSPS strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
The failure of the equipment to meet production rates will extend the operation of the PuSPS and cause the completion of the Cost Account to be extended.	Extended schedule duration (with the indirect costs) resulting from the inability to shut down the MAA and PA and the inability to achieve the associated subsequent increase in work efficiency.	medium	Prepare Pu metals and oxides alternatives study that identifies key alternatives/options; key decision points; 371 project-specific, as well as other Site impacts; estimated costs of alternatives; and action plans for further alternative development and selection.
The delay in the operations schedule causes a serial delay in the deactivation of Set 10 where the PuSPS process is located which ties into Set 13 which is the ventilation set which is the last set to be decommissioning.	This delay could potentially place Set 10 on the critical path. The current critical path for Building 371 is accelerated through a corrective action plan to mitigate the delay in non-actinide liquids draining.	medium	
The shipment of SNM out of the Building 371 vaults and off site will be delayed due to the SNM not being available due to production delays.	The impact of the delay includes: compressing the shipping schedule which may not be able to be supported by the DOE transportation group and the ability of receiver sites to receive the material at the rates required to meet the compressed schedule along with container requirements.	medium	
The delay in the removal and shipment of SNM from the Building 371 vaults will delay the series of tasks required to ensure the SNM has been removed from Building 371 which leads to approval to Close the Building 371 MAA and the site PA.	Increase the duration of deactivation and decommissioning work scope which results in increased costs.	medium	

*High, Medium, or Low

3.2.1.2 Residue Operations Strategy

Residue project operations (cost accounts AAG/AAH/AAJ/AAK) is responsible for the repackaging of residue wastes into WIPP compliant packages. The repackaging operations will be performed in Rooms 3602 (Set 26), 3412 (Set 25), 3206 (Set 8), 3515 (Set 17) and 3701 (Set 30). The residues materials to be processed include salt, sand, slag and crucible, dry and wet combustibles, ash, fluorides, and plutonium oxides. These materials will be repackaged to less than 10% and less than 200 grams verified through NDA and placed into either POC or bulk packaged 55 gallon drums. It is anticipated that the processing of

the residue waste will be completed by the end of the second quarter of 2002. The following are the assumptions associated with the Residue project strategy:

- WIPP will accept shipments of repackaged residue waste.
- MSP will have adequate NDA capacity.
- DOE will approve processing of greater than 10% PuF4.
- No additional material is identified on plant site for processing.
- Adequate capacity for sampling in Building 559.
- No changes to processing/packaging for Waste Analysis Plan (WAP) compliance.

Residue processing and repackaging will continue in several glovebox lines in Rooms 3206, 3412, 3515, 3602, and 3701 into CY02. Several other areas house NDA equipment for performance of final safeguards measurements and WIPP certifications. Although these spaces and equipment will not be available for closure for another year, their availability does not affect the Project critical path for the following reasons:

- These rooms occupy a small percentage of the total floor space of the facility.
- There are no remaining residue processing technical uncertainties.
- WIPP requirements are known, however, shipments must increase substantially.
- Acceleration is possible through use of more efficient processing techniques and packaging configurations.

The following table details the risks and uncertainties associated with the residue strategy.

Uncertainty/Risk	Impact	Probability of Occurrence	Mitigation Measures
PRE WAP repackaged items to be reworked	Delay decommissioning activities of Building 371 resulting in continued mortgage cost	Medium	None
Limited NDA and storage of repackaged residue in building	Delay of decommissioning activities due to additional storage resulting in continued mortgage cost	High	Remove glovebox from 3701 for additional POC packing. Make room 3408 available in January for decommissioning then use as Cal Laboratory. Complete evaluation of material flow by 12/30/00 and determine rack space requirements.
WIPP certification for shipments	Delay of decommissioning activities due to additional storage resulting in continued mortgage cost	Medium	None
DOE approval to process and ship greater than 10% Fluorides to WIPP	Delay to decommissioning activities	Medium	None
Additional TRU waste that does not meet WIPP criteria identified for processing	Delay to decommissioning activities	High	None

*High, Medium, or Low

3.2.1.3 SNM Storage, Shipping, and Removal Strategy

The SNM Shipping Project supports the DOE Strategic Plan by providing the processes to reduce the risks associated with SNM Storage at Rocky Flats. It also supports the requirements of the direction

provided by the DNFSB and prepares the material for offsite shipment to different receiver sites within the DOE that have the capability to store or process this material. Since 1994, many different shipping contingencies have been analyzed. One major influencing factor is the U. S. Government policy to pursue a greater emphasis on the reduction of the nation's stockpile of fissile metals that could be available and used for nuclear weapons production. Critical success factors for the SNM shipping project are:

- Successful negotiations with Offsite receivers to receive RFETS material per the agreed upon schedules
- The timely supply of offsite shipping containers
- The availability of Safe Secure Transport vehicles (SST's)
- Ensuring that SNM Shipping Operations perform work in compliance with site safety standards, on schedule and within approved budget
- Ability for Building Operations to provide sufficient resources and operational availability (over 85%) to maintain the required throughput of the system.

The SNM currently at RFETS is the plutonium and enriched uranium that is the by-product material from the processing and manufacture of nuclear weapons. These materials during production were constantly produced and staged in various containers and locations throughout RFETS until additional processing of the material was conducted. In 1989, all operations for processing plutonium and fabricating plutonium components for weapons at the RFETS were shut down for various reasons. At this time, it was intended to restart operations within a few months and materials containing plutonium were left in place for short-term storage until processing operations could be restarted. SNM removal has three major functions associated with the successful completion of this task:

1) SNM will be removed and consolidated into Building 371 to support deactivation of the other plutonium facilities at Rocky Flats. To consolidate the SNM, material moves will be properly planned to allow for efficient relocation and/or combination of this material into the limited storage locations of Building 371.
2) SNM movements within the 371 Closure Project to support deactivation are the second function. This will include the movement and transfer of residue processing materials and Category I and II quantities of SNM. Other activities will include inventory support, residue/waste packaging, vault support and shipment preparations.
3) Repackaging and shipment of metal, oxide, and composites made of Pu or enriched uranium is the third function. This effort requires the planning, design support, and establishment of requirements that are needed to coordinate the offsite shipments necessary to remove all Category I and II quantities of SNM from RFETS. This effort will include removing the material from their primary storage vaults (Rooms 3606, 3327, 3331, 1101, 1208, and 3337) repackaging into Type B shipping containers primarily in Rooms 3341 and 3321. The material will be staged into Room 3606, and Docks 21T and 18T will be used to load the DOE Transportation Safeguards Division vehicles (SST/SGT).

A more significant impact to the residues mission results from the amount of floor space that is currently dedicated to storing residue feed stock and repacked drums awaiting final assay or shipment to onsite or offsite storage facilities. Currently, much of the facility is not available for deactivation and decommissioning. Starting in the second quarter of FY01, drum storage must be consistently and aggressively eliminated to support Facility Disposition schedules. In order to reduce drum storage, the following must be achieved:

- Residue lines meet or exceed planned production rates.
- The facility is available at 90% or better.
- Containers ready for shipment have minimal residence time in the facility.

- Drum storage areas are continually consolidated.
- Areas most critical to deactivation and decommissioning are made available first.
- Waste facilities are able to receive drums as generated and stored until shipped to WIPP.

The stabilization and packaging of the Pu oxide and metal inventory will be performed in the PuSPS line in Room 3701. The line is expected to become fully operational early in CY01 and run through most of CY02. Maintaining current working schedules eliminates PuSPS operation from the Project's critical path, however, significant uncertainty remains including:

- Completion of final testing, the Operational Readiness Review, and hot startup.
- Ability of the equipment to meet and maintain planned production rates.
- Shipping capacity to, and availability of the Savannah River storage site.

Should additional time be required for completion of the Pu oxide and metal mission, negative impacts could result from:

- Delayed closure of the MAA/PA
- Fulfillment of a DNFSB Recommendation 94-3 commitment in response to seismically upgrade subbasement vaults 1101and 1208 for storage of remaining Pu metal and oxide
- Delayed decommissioning of the ventilation system servicing the PuSPS line.

Possible contingencies for each are as follows:

- Collapse the MAA, and if feasible, the PA to the area immediately surrounding the vaults required for storage of the remaining inventory
- The Site must inform the DNFSB by the end of March 2001 of its intention not to upgrade the subbasement vaults. Since PuSPS is expected to be fully operational before that date, a decision not to begin construction can be defended if the line is performing as planned. Should it become apparent at any time over the operational lifecycle of PuSPS that metal or oxide will be stored in Building 371 after December 2002, DOE and the DNFSB would be petitioned to consider an alternate strategy requiring short term acceptance of higher risk from seismic events.
- Remove PuSPS from the existing ventilation system and provide a temporary, HEPA filtered exhaust system capable of meeting all operating specifications and safety requirements.

The three areas listed previously will be required for SNM removal activities until the offsite shipments of Category I and II quantities of SNM are complete (currently scheduled for September 2002). SNM material will be shipped to the DOE-site with the most appropriate mission to store, process or place the material back into the strategic reserve. Currently, the items to be shipped as a part of this Project are shown on Table 5.

Table 5. SNM Shipment

Item Description	Shipping Destination	Shipping End Date
Pits	Pantex	complete
Non – WR Pits	LANL, LLNL, Pantex	complete
Aries Pits	LANL, LLNL	complete
Enriched Uranium	Oak Ridge Y-12	complete
Scrub Alloy Buttons	SRS	complete
Classified Plutonium Metal	SRS	Dec. 2000
Plutonium Metal	SRS	July 2002
Plutonium Oxide	SRS	Sept. 2002

Table 5. SNM Shipment

Item Description	Shipping Destination	Shipping End Date
IAEA Oxides	SRS	May 2002
Contaminated HeU shells	SRS	Sept. 2002
4.5% Enriched Uranium	TVA/NTS	Sept. 2001
Composite Items	SRS, LANL	Sept. 2002
Misc. Metal and Oxides	LANL	Dec. 2000

Funding for the SNM Shipping program is supplied entirely by DOE EM-50 funding in the following allocations:

- FY00 - $29 M (annualized)
- FY01 - $25.6 M
- FY02 - $13.4 M
- FY03 - $1.9M

The following are the assumptions associated with the SNM storage, shipment, and removal strategy:

- DOE will supply certified DT-22 shipping containers to support shipping schedules.
- DOE Transportation Safeguards Division will fund and support shipments based on the June 2000 RFETS Plutonium Shipment schedule.
- 9975 shipping containers will be available to support January 2001 metal shipments.
- 9975 container will be approved for Pu Oxide greater than 30% by January 2000.
- PuSPS hot start up will begin January 2001.
- Three hundred contaminated enriched uranium items will be shipped to SRS in reusable DT-22s supplied, certified and funded by DOE.
- DOT 6Ms with acceptable 2R pipes will be available.
- DOE will approve and fund the DT-22 for Composite use by March 2001.
- SRS will accept shipments based on the June 2000 RFETS Plutonium Shipment schedule.
- SRS will accept the balance of the classified metal based on the June 2000 RFETS Plutonium Shipment schedule.
- LANL will accept the balance of the metal shipments based on the June 2000 RFETS Plutonium Shipment schedule.
- Total remaining POCs to be packed will be 9,678 items.
- POC packing will be complete May 2002.
- No additional processing costs for composite Items.
- Composite Targets will be shipped to Lawrence Livermore National Laboratory (LLNL) in a DT-22, and DOE will provide funding for any LLNL processing costs.
- Composite enriched uranium shells greater than 1000 A2 will be shipped to SRS in a DT-22.
- Composite Special Assembly Components will be shipped to Nevada Test Site (NTS) in a 9975 shipping container.
- No additional costs for shipments or containers associated with IAEA oxide shipments above current budgeted shipping costs.

In addition to removing the stored nuclear inventory from the facility, SNM holdup must be remediated to support MAA/PA closure. There is no holdup in Building 374, and because of its short operating history, holdup in Building 371 is not as extensive as holdup contained in other Pu facilities at the Site. The most

significant holdup in the facility has been removed from tilt pour furnaces in Room 3305. Remaining holdup is expected to be limited to Raschig ring tank sludge, the fluorination canyons, and the CSV. Based on historical scan data, eight of 75 Raschig ring tanks may contain kilogram quantities of SNM. The deactivation of these tanks is sequenced early and is expected to be complete in the first quarter of CY01. The fluorination canyons and the CSV are highly suspect areas based on the operational history, however, exact amounts and locations of foldup are not known. Entries into the canyons are planned in CY00 for the purpose of performing scans. Identified areas of holdup will be remediated as it is discovered. The CSV will be scanned once the remaining nuclear inventory and the storage pallets have been removed in the first quarter CY02 . Scanning will be performed manually or remotely using the stacker/retriever vehicle. Any suspect holdup areas will be visually inspected and remediated after the CSV has been deinerted. All holdup removed will be processed either through the appropriate residue line, disposed as waste, or processed through PuSPS.

No significant holdup is expected in out-of-service gloveboxes or ventilation ducts. Confirmatory scans will be performed on each glovebox as part of deactivation, and gloveboxes with the highest potential for holdup will be sequenced first. Any holdup discovered will be removed to inventory clean levels. Holdup in residue and PuSPS lines, will be the last SNM holdup removed prior to MAA/PA closure. Following the completion of nuclear processing in the lines, the equipment and gloveboxes will be taken to inventory clean levels by operating personnel. Holdup will be processed through the line from which it was removed prior to its deactivation. After completion of the nuclear mission, only gram quantities of SNM may be encountered during decommissioning. Any such discovered material will be processed and packaged in the CWTS calcining glovebox in Room 1111 that is scheduled to remain operational throughout CY03.

The following table outlines the identified risks and uncertainties associated with the SNM storage, shipment, and removal strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Receiver site delays shipments	Delays shipping and initiation of decommissioning	High	Contingency plan for temporary storage of processed materials.
Shipping containers not available for shipping to the approved schedules	Delays shipping and initiation of decommissioning	High	Identifying alternative processing methods to utilize other containers, Identifying alternative storage methods to minimize impact on Building 371 closure
SSTs not available for shipping to the approved schedules	Delays shipping and initiation of decommissioning	High	Identifying alternative storage methods to minimize impact on Building 371 closure
System failure in Building 371 preventing nuclear operations (e.g. Safety System failure, Safety violation)	Delays shipping and initiation of decommissioning	Medium	Training on response to upset conditions, and providing building with sufficient resources to respond and repair systems when required
High consequence natural event (e.g. earthquake)	Delays shipping and initiation of decommissioning	Low	Use emergency plan

*High, Medium, or Low

3.2.2 374 Operations Strategy

All equipment within the physical boundary of Building 374 will be deactivated by the 371/374 Closure Project. Liquid Waste Operations (cost account AAE) will be responsible for deactivation of all RCRA regulated equipment, tanks, and lines within the confines of the building. Deactivation will be achieved when the RCRA regulated equipment is isolated and placed in a RCRA stable configuration. Deactivation of the non-RCRA regulated equipment, final closure of RCRA units, and decommissioning of all the equipment within the physical boundary of Building 374 will be the responsibility of Facility Deactivation and Decommissioning (cost accounts AAC and AAD). It is anticipated that the deactivation of the equipment within Building 374 will commence in the first quarter of FY01 and decommissioning will start during third quarter FY01.

Building 374 Liquid Waste Operations is responsible for operating several tanks and the liquid transfer system (including 20 valve vaults) located throughout the Site. Planning is underway to terminate operations within Building 374 by 9/30/01. In order to achieve this goal, an alternate water treatment system must be located and put into service treating the water that normally goes to Building 374 for processing. The new system will utilize the exterior holding tanks, transfer lines and valve vaults currently operated by Building 374. Once Building 374 stops using this exterior equipment, it will be transferred to the RISS organization, which will require a RCRA permit modification. Any equipment that is not immediately transferred to RISS will be put into a RCRA Stable condition by Building 374 Liquid Waste Operations and responsibility will be transferred to RISS. It is anticipated that equipment turn over will commence during the second and third quarter of FY01.

The following are the assumptions associated with the 374 operations strategy:

- RISS will operate the alternate treatment facility to replace Building 374.
- Budget for finding, procuring, and initial startup of the alternate water treatment system will be transferred to RISS.
- Water treatment volumes continue to decrease to less than 1 million gallons per year.
- The liquid waste equipment will be placed in a RCRA stable configuration as its mission is completed unless the equipment is transferred to another group before the mission ends (i.e., valve vaults and tanks needed by RISS for water treatment after 374 closes).
- Building 371 Facility Deactivation and Decommissioning will close the RCRA units for all equipment decommissioned within the Building 374 footprint.
- RISS will close the RCRA units for all equipment outside of Building 374 footprint.

The following table details the uncertainties and risks associated with the 374 operations strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Failure to provide an alternate to Building 374 for water treatment after FY01	Delay closure of Building 374 resulting in continued mortgage cost ($5M/yr) and equipment overhaul	Medium	Work with RISS to identify on site capabilities. If that fails, contracts will be award as necessary to procure a system.
Sludge disposal site is not identified	Delay closure of Building 374 resulting in continued mortgage cost ($5M/yr) and equipment overhaul	High	Building 374 will consolidate sludge inventory into one room and close the remainder of the building. Sludge issue is being coordinated site wide by the MSP.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
750 Pad brine is not ready to ship to 374 for spray dryer feed by 8/01	Delay closure of spray dryer rooms in Building 374.	Medium	Brine may be used to resuspend sludges in 750 Pad storage and will be disposed of elsewhere.
RCRA Permit modification is delayed	Delays decommissioning of Building 374 equipment	Low	Building 374 is submitting paperwork to DOE and CDPHE as soon as possible

*High, Medium, or Low

3.2.3 Deactivation Strategies

The technical approach for the 371 Closure Project is based on meeting the following goals: early risk reduction, early PA closure, and closure of the Site by the end of FY06. The approach for the 371 Closure Project is to conduct deactivation and decommissioning in parallel. This approach is more cost-effective as it allows more work to be accomplished with fewer resources. It also significantly reduces exposure of the workers to hazards. This approach also enables the project team to better utilize the resources and reduces the overall schedule for the Project.

3.2.3.1 Non-actinide Liquid Draining Strategy

Non-actinide draining is a deactivation priority because it eliminates the potential for leaks and spills from process piping, reduces surveillances and baseline costs associated with pipes and tanks, and is a precursor activity to Raschig ring and SNM removal from actinide processing tanks in support of MAA/PA closure.

The 371 Closure Project is currently in the process of draining the non-actinide solutions within Building 371. There are a total of eight sets that contain non-actinide solutions. Sets 1 and 2a have been completed, and Set 5a is in progress. Completion and closure of IWCP packages will provide closure documentation. The schedule is to complete all the non-actinide draining by April 2001. The non-actinide liquid draining strategy is based on the following assumptions:

- Hourly resources will be provided when existing PuSPS personnel are no longer available.
- CWTS will remain operational.
- Building availability will remain consistent.

There are several prerequisite steps involved before the actual draining. These steps involve engineering walkdowns to identify drain and vent points, development of engineering design packages to accompany a standard work package, and installation of saddles and taps.

The non-actinide solutions consist of reagents, primarily acids and caustic solutions, and various waters (e.g., cooling water, process water, condensate return etc.). There are two treatment and disposal paths for non-actinide solutions depending on the radioactive material content of the drained solution: 1) through the CWTS for pre-treatment and ultimately to Building 374 for final treatment, and 2) directly to Building 374 via the D717 or 718 tanks for final treatment. Treatment in Building 374 consists of precipitation, and evaporation resulting in a final waste form of product water and concentrate.

When non-actinide liquid draining is complete, only the following liquids will remain in piping systems in Buildings 371 and 374:

- Fire water will remain in wet sprinkler piping systems throughout the facility for most of its remaining lifecycle to provide life safety and property protection.
- Potable water servicing bathrooms, showers, emergency showers and decontamination facilities will remain throughout the facility for most of its remaining lifecycle

These piping systems will be drained either when the provided function is no longer required, or as part of the area stripped out. Fire and potable water are expected to be disposed of through the sanitary liquid system, remaining process liquids will be treated in Building 374 or the portable low level liquid waste processing system that will replace it.

There are no significant uncertainties or risk associated with this strategy.

3.2.3.2 Glovebox Strategy

In Buildings 371 and 374, there are approximately 111 gloveboxes. The equipment is installed on three of the four floors of the facility, and vary widely in size. Gloveboxes and other ventilation enclosures were used for both aqueous and nonaqueous processes. Several glovebox lines in Rooms 3206, 3412, 3515, 3602, and 3701 will remain operational for residues repackaging and PuSPS into CY02. I/O stations 1, 3, 5, 6, and 8 will remain operational until the CSV inventory is removed and the 1,200 maintenance and storage pallets are decommissioned. Gloveboxes that enclose the CWTS and calcining operation in Room 1111 will remain operational into CY03 to support cerium nitrate decontamination. All other gloveboxes and ventilation enclosures are available for deactivation and decommissioning.

The following are the objectives for the glovebox deactivation process. Achieving these objectives will provide the safest, shortest, and most cost effective lifecycle closure of the Project's ventilation enclosures:

- Removal of SNM to support earliest possible MAA/PA closure
- Minimize work in breathing air
- Minimize in situ size reduction
- Minimize the volume of generated TRU waste.

The key to achieving these objectives is decontamination of internal glovebox surfaces to LLW surface contaminated object (SCO) levels, particularly since many of the Project's ventilation enclosures are large and will require in situ size reduction. Additionally, deactivation and dismantlement work will be performed seamlessly on a glovebox to prepare the enclosure for stripout and disposal by building trades. In general, this endstate will leave gloveboxes empty of all equipment, disconnected from all alarms, services, and utilities with the exception of ventilation, and the enclosure will be internally decontaminated and/or encapsulated to achieve LLW-SCO contamination levels. Work will be conducted using standard IWCP work packages and existing operating procedures as much as possible, and the work packages will be based on those currently in use in other Closure Projects. The historic use of the glovebox will determine which of the following activities must be performed to achieve the desired endstate:

- Walkdown the facilities glovebox and characterize. Characterization criteria could include; SCO vs. TRU, waste stream identification, hazards, personnel accessibility and relative difficulty of equipment/SNM removal, etc.
- Returning gloveboxes to service will be a necessary prerequisite for most of the Project's enclosure. Typically, this will include glove changeouts and differential pressure gauge calibration at a minimum.

- All loose equipment, tools, and waste will be bagged out of the glovebox for disposal. Most of this material is expected to be TRU waste.
- SNM holdup scans will be conducted. If accountable levels of material are found, holdup removal will be done to inventory clean levels to support MAA/PA closure.
- Fixed equipment will be dismantled and removed from the glovebox, unless determined to meet SCO criteria.
- SCO surveys will be conducted. If decontamination is warranted, a number of techniques could be used to decontaminate the box to SCO levels. If it is determined that it will not be economically feasible to decontaminate the box, the box will be dismantled for size reduction. Wipedowns and encapsulants are expected to be sufficient for loose surface contamination.
- All alarms, services, and utilities will be terminated except ventilation.

Because of the relatively short operational history of Building 371, the quantity of SNM holdup encountered is not expected to be significant. The only significant known glovebox holdup was contained in 10 tilt pour furnaces housed in Room 3305, glovebox 36. The holdup was removed in FY00. Glovebox 36 is the likely first candidate to be fully deactivated; however, the sequencing of glovebox deactivation will be driven primarily by the need to create decommissioning areas for earliest possible start of building trade work.

The typical order of the subsequent glovebox removal steps will be determined by field conditions; however, the following outlines the general process:

- Building utilities, except ventilation, will be isolated and disconnected from the glovebox (e.g., instrument air, gas, water, and electricity).
- Internal plumbing will be disconnected, drained and removed. Any liquid generated will be collected in 4-liter bottles, sampled, removed and stored until characterization is completed.
- Criticality drain liquid will be removed.
- Fixed hazardous materials such as lead shielding will be removed as required.
- If “debris rule” treatment is feasible, internal surfaces will be wiped down and decontaminated. This may require extensive cleaning using approved methods. Gloveboxes meeting the “clean debris surface” standard will be disposed of as non-hazardous debris. Gloveboxes not meeting the “clean debris surface” standard will either be disposed of as hazardous debris or will be disposed of as LDR compliant hazardous debris following encapsulation in accordance with Section 268 of the Colorado Hazardous Waste Regulations (CHWR).
- The interior of the glovebox will be visually inspected for detection of any remaining visible hazardous waste or constituents.
- A final radiological survey/assay will be conducted.
- A spray fixative will be applied to contaminated surfaces and allowed to harden, thereby encapsulating the loose particulate matter and preventing it from becoming airborne contamination. Some spray equipment used during application may be left in the glovebox. After encapsulation, the glovebox will be removed.
- The glovebox exhaust will be disconnected from the building ventilation system.
- The glovebox shell will be separated from its legs and either packaged as an SCO or transferred to a size reduction facility.
- Once inside the size reduction facility, remaining hazardous waste, including leaded glass, lead-lined glovebox gloves, etc., will be removed from the glovebox using approved techniques.

- The glovebox will be size reduced, as necessary, and segregated into appropriate waste streams for packaging. These streams include, but are not necessarily limited to, light metal, composite glovebox materials, combustibles, plastic, glass, leaded glass, leaded gloves, solid lead, instruments, tools and HEPA filters.
- Waste will be characterized in accordance with the applicable waste generator instruction, by IDC and in accordance with applicable regulations and WAC. Absorbent may be added to the packages to absorb any residual dampness.

Appendix G contains a table on the gloveboxes within the 371 Closure Project. The table provides a physical information on each glovebox and the potential disposition pathway. The following table addresses the uncertainties and risks associated with the glovebox strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Operational use of gloveboxes extends past the schedule	Delay decommissioning activities and MAA closure	high	None
Cerium (IV) nitric acid decontamination does not work	Glovebox has to be shipped as TRU; more size reduction is required; greater worker risk	low	Investigate other decontamination options
Pallet removal does not proceed on schedule	Delay decommissioning and MAA closure	high	None
Gloveboxes contain more hold-up than anticipated	Delay closure of the MAA; increase decontamination activities	low	Early characterization to mitigate schedule impact

*High, Medium, or Low

3.2.3.3 Tank System Characterization Strategy

This strategy details the waste streams and handling of those waste streams associated with the removal of tank systems relevant to the 371 Closure Project during dismantlement. The tank system waste stream consists of tanks, pumps, piping, valves, flanges, and other fixed, metal components. The waste description is IDC 480, Light Metal. Also included are ful-flo filters, IDC 331; lead IDC, 321; Raschig Rings, IDC 441; and other minor components that could carry other IDCs. There are pencil, Raschig ring, and annular tanks. Tanks range in size from 5 gallons to 5,000 gallons. Pipe ranges in nominal diameter from ½" to 3" with an inside diameter of ½" to 2¾". Valves consist of manual, air actuated, electronic, and directional flow (backflow preventer) varieties. Flanges, including their gaskets and shrink-wrap, can be disposed of along with the pipe and valves as long as a different IDC is not added. Most of the tanks, piping and valves are made of stainless steel. Exceptions to stainless steel include a monel alloy, fiberglass, minor amounts of mild steel pipe, and Kynar®-lined pipe used for chloride processes. Incidental metals include nuts, bolts, tank and pipe supports and associated threaded rod/hardware.

Free liquids of any volume are not permitted in final waste packages. Free liquids will be removed and collected from the tank system waste prior to packaging. Collected liquids will be sampled, characterized, and treated. Incidental liquid can be wiped up with chemical wipes, and the wipes disposed of as combustible waste. Tank sections may be racked (or stood in an upright position) to drip dry if deemed appropriate or necessary. Additionally, Abzorbit®, or other solidifying/drying material, may be added to the waste package to protect against liquid pooling that could occur subsequent to packaging.

Sludge is an inexact term used to describe any material that is not liquid or solid, but is some combination of both. Like liquid, sludge of any volume is not allowed in final waste packages. Sludge may be readily

removed from the waste by standing the waste on end, or it may be solid enough to require mechanical removal techniques. Mechanical methods could include reaming out the waste using a tool like a wire brush or rod. Sludge will consist of the chemical's concentrated salts (corresponding to the solution held in the system) and corrosion products from the stainless steel piping. Impurities that have been observed in the liquid may also be present in the sludge; these have included cadmium, selenium, silver, barium, and lead and nonhazardous chromium and iron.

Sludge must be treated prior to meeting final packaging criteria. There are six potential sludge waste streams, IDC 299, for the 371 Closure Project as follows:

Waste Stream #	RCRA	RCRA Codes	Waste Type	Underlying Constituents	LDR Regulated	Analyses Required
371-15-144	Non-Hazardous	None	Low Level	None	no	Yes
371-15-145	Non-Hazardous	None	Low Level	cadmium, chromium, lead	yes	Yes
371-15-146	Hazardous	D006, D007, D008	Low Level-Mixed	Unknown	yes	Yes
371-15-147	Non-Hazardous	None	TRU	None	no	Yes
371-15/148	Non-Hazardous	None	TRU	cadmium, chromium, lead	yes	Yes
371-15-149	Hazardous	D006, D007, D008	TRM	Unknown	yes	Yes

While the waste streams above actually characterize the waste sludge, analyses are needed to determine the actual sludge waste stream. The treated sludge will be solidified creating a new waste stream that is based on the solidification technique. Sampling and final waste stream determination (characterization) will be performed at the time the sludge is accessed and/or generated.

Solid material is material that has adhered to the inside of the tank system. It may be a coating that may or may not be readily visible if the tank system components were sliced open for inspection – it is a solid remnant. Solid material is made up of the same chemicals, salts, and impurities as sludge, but can only be removed using mechanical methods.

Tank system components are nonhazardous but can be rendered hazardous when combined with sufficient quantities of remaining residue. While liquid and mobile sludge will be removed from components, non-mobile sludge and/or residue may remain. In this case, the sludge must be sampled for actinide content, chemical species, and RCRA metals. The number of samples will be determined based on the volume of residue found. The quantity of the residue will be determined by visual observation. Where the volume of residue is diminimus, residue sampling may not be performed. Where the volume of residue could impact the characterization, sampling and Toxicity Characteristic Leaching Procedure (TCLP) analyses will be performed to determine the levels of characteristic toxic metals. The waste is characterized, and no further sampling will be performed for the waste itself.

Actinide levels are measured using drum or crate counters located in Buildings 371 and 569. During packaging in Building 371, a gram estimator or Site NDA techniques may be used to help preclude packaging material above waste acceptance criteria for actinides.

Size-reduced tank system components will be visually inspected. Liquids and sludge will be removed by pouring and/or draining by standing the pipe upright over a period of time (i.e., during one shift). The liquid or sludge will be managed as a new waste stream. The material removed will be sampled, characterized and treated based on its characteristics. Liquid and sludge from acid and caustic systems will likely be hazardous under RCRA based on corrosivity, D002; each may also be characteristic for toxic metals that are commonly found in Building 371 process liquid wastes.

Tank system components that are visibly clear of solid residue waste will be characterized as nonhazardous. Components containing visible solid residue waste will be evaluated based on quantity and quality of residue material to determine whether or not the waste stream is hazardous. The quantity of waste plus the quantity of residue, and the concentration of toxic metals in the residue will be evaluated to determine the waste characterization under RCRA.

The following table details the expected waste quantities from pipe waste characterization.

Waste Type*	Quantity	Waste Stream	Waste Stream #
Tanks	≈650 each	480 – Light Metal	371-15-33
Stainless Steel Pipe	≈1,000,000 feet	480 – Light Metal	371-15-33
Kynar Lined Pipe	1,000 feet	480 – Light metal	New Waste Stream
Sludge	60 liters	299 – Misc. Inorganic Sludge	371-15-14X
Residual Liquid	100 liters	400 – Misc. Residue Solution	371-15-503

*Other insignificant volumes of waste types will be generated.

The following bullets are the assumptions for the tank system component waste characterization strategy:

- Process steam/condensate and process waters are included.
- Tank system components are relatively free of sludge; components are all non-hazardous.
- Tank system components are visually inspected as prescribed to ensure remaining sludge, if any, is quantified.
- Gram estimator is accurate pursuant to its design and settings.
- No liquids are left in drained components.

The volume of waste generated, with respect to the number of waste packages, will vary. Waste may be packaged in 55-gallon drums, standard waste boxes, or IP-2 metal crates. Waste may need to be size reduced to fit into whichever package is selected. Further, waste may be packaged with other IDC 480, Light Metal waste. Packaging is determined at the time of generation considering the actinide levels and other waste with which the components may be packaged.

Appendix F contains a table on the tanks within the 371 Closure Project. The table indicates the physical characteristics of the tanks and provides a potential disposition pathway. The following table outlines the potential risks and uncertainties associated with tank system component characterization and summarizes the level of risk associated with the activity.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Tank system components are characterized as hazardous.	Packaging and storage would have to be changed as appropriate.	Medium	Adequately inspect and remove sludge, if any, to maintain non-hazardous characterization.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Tank system components are not adequately visually inspected.	Pipe is characterized incorrectly.	Low	Component inspection is required in the IWCP; a log indicating adequate inspection is included in the IWCP and is signed by supervision.
Gram estimator is inaccurate.	Pipe would have to be repackaged if grams exceed the allowable threshold for package.	Low	Calibrate gram estimator. Operate instrument pursuant to instructions.
Liquids are left in drained piping.	Pipe would fail RTR and would have to be repackaged.	Low	Components are drained during size reduction. Components are visually inspected.
Tanks with listed waste codes could be demonstrated to contain none of the listed constituents	Reduced requirement for decontamination, saving time and cost.	Medium	This is a potential improvement. Discuss the approach with the State to confirm feasibility.

*High, Medium, or Low

3.2.3.4 Raschig Ring Tank Removal Strategy

Building 371 contains seventy-five Raschig-ring filled tanks of various sizes, which are housed in multiple concrete rooms. These tanks may contain SNM and high levels of contamination. Based on historical tank scans taken prior to the completion of actinide liquid draining, less than 8 of the tanks are expected to contain accountable quantities of SNM. Most, however, are expected to have appreciable levels of radioactive contamination residing on the inner wall of the tanks, on the Raschig rings, and in the sludge layer at the bottom of the tank bottom. Depending on the prior use of the tank, the sludge may also contain RCRA regulated materials.

Raschig rings are boron impregnated glass rings that have a high cross-section for absorption of thermal neutrons. Raschig rings provided criticality safety because the cylindrical tank design is not critically safe. These tanks were integral parts of the plutonium recovery operations that were conducted throughout the early 1980s to recover impure plutonium metal, oxide, and other plutonium bearing compounds.

The tanks are cylindrical containers in a range of sizes up to 3 feet in diameter and 5 feet to 12 feet in length, containing a ring volume ranging from 200 gallons to 4,000 gallons. The bulk of the tanks are stainless steel (SS304). There are several carbon steel tanks and fiber reinforced plastic (FRP) tanks.

Plutonium recovery operations resulted in performing a series of wet and dry chemical processing steps directed at producing high purity plutonium. The tanks served as batching and staging points in the wet chemical process. In the first step, the materials were dissolved in nitric acid and kept in critically safe pencil tanks. These solutions were then pumped into or out of Raschig ring filled tanks where the chemistry was adjusted. The Raschig ring tanks contained feed, effluent or eluate (purified plutonium stripped from the anion exchange columns with dilute nitric acid). Liquids were then sent to anion exchange columns.

The tank closure activity has the following objectives: removal of SNM holdup and Raschig rings to support MAA/PA closure; decontamination of the internal tank walls to allow for disposal of the tank as

LLW; and termination and capping of all piping and sealing of all ports, leaving the tanks in a RCRA stable condition and ready for transport. During tank dispositioning, the IWCP process will be used to perform the following activities:

- Residual liquid removal and hydrogen purging will be performed in accordance with the tap and drain activity that was developed during the actinide draining process from actinide bearing lines and tanks
- Some combination of the following two engineered safety features will be employed when a tank port is open to the room environment in order to control the spread of airborne contamination to the worker and into the room. An encapsualting fog will be introduced into tanks through an engineered port. The fog will fix contamination on the ring and tank surfaces to reduce the worker personal protective equipment (PPE) requirements during Raschig ring removal. Using negative differential pressure, a soft sided containment pen and an air mover will be erected at the tank port to contain airborne contamination.
- SNM removal will be performed by removing of Raschig rings and sludge from the tank. Material removed during this activity will be contained in waste compliant containers for final disposition as TRU or LLW. Material control and accountability measures will be followed. Accountable quantities of SNM will be processed and packaged as appropriate through either the wet combustible residue or PuSPS lines.
- After raschig ring and potential sludge removal, cerium (IV) nitric acid solution will be injected into a ½ inch steam line at a flow rate of 3-4 gallons per minute; using a pump or mixing cross. Dilution of the cerium/nitric solution from steam condensate is expected. The rate of decontamination from the chemical reaction is heat dependent, and the optimum temperature of the steam/cerium nitric solution is 100 degrees centigrade. However, the actual temperature after mixing steam with cerium nitric solution is expected to be less than 100 degrees centigrade. The steam/cerium nitric solution is then introduced into the tank through an acceptable nozzle that results in full coverage of the inside surface. Once all the cerium/nitric solution is introduced, ferrous sulfate will be pumped into the tank resulting in the reduction of cerium (IV) and chromium (VI). The purpose of adding the ferrous sulfate is to cease the reaction occurring between cerium (IV) and stainless steel resulting in chromium (III) and cerium (III). The tank will be drained to the CWTS and the drain valve left open. The tank will be steam cleaned through the nozzle to remove residual contamination.
- Tanks will be surveyed to verify remaining contamination levels are sufficiently low to allow shipment using DOT LLW-SCO criteria. All piping connections will be terminated and capped, and tanks ports will be sealed.

Tanks are currently proposed for disposition as LLW. The bulk of the tanks will be removed in one piece without prior size reduction. Tanks will be removed through existing doorways and elevators unless the tank is too large. In that case, the tank will be left in place until the building walls are breached. At that time, the tank will be removed whole through a wall or hoisted through the ceiling or size reduced. IP1 or IP2 containers will be used for tank packaging and transport without size reduction, as necessary. Size reduction of tanks will be the alternate strategy with packaging and shipping in accordance with specified receiver sites.

The following list describes the assumptions that were used in the tank deactivation and decommissioning strategy:

- The tanks will be free of actinide and non-actinide bearing liquids.

- Tanks associated with this activity are assumed to be free of explosive concentrations of hydrogen as the result of the actinide liquid draining process, which removed liquids and entrained hydrogen.
- The derived air concentrations in rooms where Raschig ring removal will be performed will be maintained below 800 DAC.
- The drum staging room will be made available by MSP to store Raschig ring filled drums until they can be removed from the Building for final disposition.
- Material/waste generated in excess of WIPP shipping capacity will be managed on an interim basis in either new on site facilities or retrofitted existing facilities.
- Measurement systems will be available and operate to take full advantage of SCO and SCO-2 levels.
- The tanks will be internally decontaminated to contamination levels that permit disposition as LLW.
- The bulk of the tanks will be removed in one piece without prior size reduction.
- SNM holdup removed from tanks is less than Attractiveness level D.
- IP1 or IP2 containers will be made available for packaging and transport of tanks, as necessary.
- The Authorization Basis will be revised to accommodate breaching of walls and cutting on hot tanks.
- CWTS will be available to process residual liquids from the cerium decontamination process.
- There are sufficient trained and qualified operators and floor supervisors to support the schedule.
- Worker exposure will maintained below the Building administrative limit.

Appendix F contains a table on the tanks within the 371 Closure Project. The table indicates the physical characteristics of the tanks and provides a potential disposition pathway. The following table provides a listing of uncertainties and risk associated with the Raschig ring tank removal strategy.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
The tanks are not free of liquids when Raschig ring removal operations begin.	Delay in schedule	Low	Re-drain the tank and associated piping.
Tanks associated with this activity are not free of explosive concentrations of hydrogen	Delay in schedule	Low	Re-purge the tanks
The derived air concentrations in some rooms where Raschig ring removal cannot be maintained below 800 DAC.	Cost and schedule increase	Medium	PPE's will increase to breathing air
There is insufficient space for staging Raschig ring filled drums	Cost and schedule impact	Medium	Strip out additional storage space
Material/ waste generation is excess of WIPP Shipping capacity	Cost and schedule impact	Medium	Material will be managed on an interim basis in either new on site facilities or retrofitted existing facilities

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Tank disposition waste is classified as transuranic waste above low level waste classification	Major cost and schedule impact	Medium	Tanks will be size reduced and dispositioned at WIPP in accordance with WIPP WAC.
Measurement systems are not available to take full advantage of SCO and SCO-2 levels	Cost and schedule impact	Medium	Size reduction of tanks and an increase in shipments of tank disposition waste
Size reduction is not available and the route for removal of large tanks without size reduction has not been established.	Cost overrun and schedule delay if demolition must be modified to accommodate removal of the tanks.	High	Begin engineering study in view of the sequence of set decommissioning early in project.
SNM Holdup Removal exceeds Attractiveness level D	Cost and schedule impact	Low	Repackage and program for PuSPS processing
Not enough IP1 or IP2 containers are available	Cost and schedule impact	Low	Size reduction of tanks and an increase in shipments of tank disposition waste
The Authorization Basis will not be revised to accommodate breaching of walls and cutting on hot tanks	Cost and schedule impact	Medium	The USQD/JCO process will have to be used to authorize work
CWTS Will not be available to process residual liquids from the cerium decontamination process	Major cost and schedule impact	Medium	Install excess tanking capacity. Purchase redundant spare parts
There are in-sufficient trained and qualified operators and floor supervisors to support the schedule	Cost and schedule impact	Medium short term	Hire more operators now
Worker exposure cannot maintained below the Building administrative limit without severely limiting residence time in HCAs	Cost and schedule impact	Medium	Redesign the job Hire more operators

3.2.3.5 Non-raschig Ring Tank Removal Strategy

Buildings 371 and 374 were constructed to replace Building 771/774 as the main plutonium recovery facilities at RFETS. After a brief period of startup operation (about 2 years), most of the recovery operations in Building 371 were terminated. The operations that continued included pyrochemical, packaging, utility, and ventilation operations, which do not generate significant amounts of liquids.

Due to the truncated start up of Building 371, not all piping systems completed start-up testing. As a result, there may be unexpected cross-ties between systems. The welded construction of lines makes

isolation more difficult and the likelihood of leaks through in-line valves is high. Liquids may, therefore, be found in unexpected places, unexpected quantities, and/or unexpected composition.

Despite the substantial curtailment of activity in Building 371, Building 374 has operated and continues to operate as a waste treatment facility accepting waste from Building 774, the Solar Ponds area, and other facilities on-Site. The liquids are restricted in actinide levels.

Building 371 is continuing a mission to repackage SNM and residues and must maintain building services until the operations are complete. Several processes also operate in Building 374 including acid neutralization, radioactive decontamination, sludge solidification, evaporation, and spray drying/saltcrete.

Tanks from operations not in use are available for deactivation and stripout. Other tanks will become available for deactivation and stripout as operations in the facilities complete their missions and are terminated. The set definitions in Section 2.8.1 provide additional information. Some of these tanks are expected to contain sludges, which are addressed in Sections 3.2.3.3 and 3.2.3.6. Tanks will be closed through unit removal and will be characterized based on any existing sludge. The only sludge remaining in the tanks at the time of disposal will be adhered to the inside of the tank.

The tank closure and removal strategy is based on the following assumptions;

- A tank closure plan, equivalent to *Closure Description Documents for Tanks and Ancillary Equipment*, will be incorporated and approved in the Project DOP.
- Tanks small enough to be packaged whole or with minimal size reduction will be packed in standard waste boxes (if TRU) or crates (if LLW) without decontamination to change the waste form. This group includes pencil tanks.
- Larger tanks will be decontaminated to LLW-SCO, non-hazardous. Where the tank cannot be removed through existing doorways and elevators, the tank will be left in place until the building walls can be breached. At that time, the tank will be removed whole through a wall or hoisted through the ceiling. For example, most interior walls of Building 374 can be demolished. The stacker retriever maintenance bay, in the vicinity of Set 4A or the freight elevator shaft may provide vertical access through the building. The tanks will be shipped whole for disposal.
- Annular tanks and shielded annular tanks are not contaminated. Where the tank cannot be removed through existing doorways and elevators, the tank will be left in place until the building walls can be breached. At that time, the tank will be removed without size reduction through a wall.
- The AB will be revised to allow for breaching of walls and removal of tanks without size reduction.
- An alternative to decontaminating the tank, if a disposal site WAC allows it, is to render the sludge dry inside the tank by adding absorbents and ship the tank with the sludge inside for treatment or disposal.
- Reagent and diesel fuel tanks will contain no unexpected chemicals.

Appendix F contains a table on the tanks within the 371 Closure Project. The table indicates the physical characteristics of the tanks and provides a potential disposition pathway. The following table provides a listing of uncertainties and risk associated with the non-raschig ring tank removal strategy.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Leaving large tanks in place till the end of decommissioning deprives the facility of open floor space for staging and storage of other decommissioning materials especially packaged waste.	Delay and associated cost increases if decommissioning is curtailed or suspended	Medium	MSP to remove waste from the building promptly.
The route for removal of large tanks without size reduction has not been established.	Cost overrun and schedule delay if demolition must be modified to accommodate removal of the tanks.	High	Begin engineering study in view of the sequence of set decommissioning early in project.
Pencil tanks may contain unexpected amounts of hold up or unexpected chemicals	A larger number of waste containers would be generated	Medium	Obtain scans as possible. This would await removal of drums and decontamination of corridors, rooms, and canyons.
Presence of drums defers tank removal until building can be breached will limit workspace.	Delay and associated cost increases if decommissioning is the number of workers is limited or productivity decreased.	High	Develop more detailed schedules and waste projections, and update as actual experience is gained. This could allow revised approaches to be developed.
Some very large tanks in Building 374 may not be acceptable for intact transport	Delay and increased cost to size reduce tanks	Medium if rail transport is an option.	Include and early transportation study
Criticality drain tanks below the subbasement floor have unknown contents, and the mix of solutions accumulated in them could create precipitate and sludge	Delay and increased cost to safely empty and size reduce tanks	High	Collect all available information on construction and use of the tanks; early characterization of contents.
Cannot decontaminate the tanks to LLW	Delay schedule; additional cost for size reduction	Medium	Suck it up
Tanks frequently located in spaces with difficult access. Planning based on a standard or typical tank may understate the engineering and preparatory activities	Under-estimate planning and preparation costs	Medium	Allow for tailoring of each planning package.

*High, Medium, or Low

3.2.3.6 Sludge Removal Strategy

In 1982 and 1983, plutonium recovery operations were initiated in Building 371. The building was not able to meet accountability requirements that were established in the years between the initial design and startup; therefore, the processes for recovery of oxides and other residues requiring dissolution were not

continued. However, other operations were performed including pyrochemical recovery and repackaging in Building 371 and waste treatment in Building 374. Tanks in the facility are frequently larger than those found in other plutonium processing buildings at Rocky Flats and some are located behind massive concrete walls or inside contaminated rooms.

Tanks that were intended for liquids with higher levels of radioactivity range in size and contain Raschig rings. Only minimal amounts of sludges are expected in these tanks due to the limited operations. Sludge encountered will be removed and packaged with the Raschig rings (see Section 3.2.3.4). The resulting waste is expected to be TRUM.

Small tanks, especially those installed inside gloveboxes, will not be extensively decontaminated and will be disposed along with other glovebox internals and piping. Any sludge in these tanks will be packaged with the tank, with the addition of an absorbent where moisture may be present. Sludge characterization for worker safety will be based primarily on process knowledge. Chemical and radiological characterization will be completed at the time of sludge removal. This will allow personnel to determine if any visible layers are present that might require composite sampling and can reflect the latest guidance from Material Stewardship so all disposal requirements are met.

The tanks in Building 374 do not contain Raschig rings. During normal operations, which continued despite the shutdown of Building 371 processing, significant amounts of sludge accumulated in many of the tanks. Due to limitations on the waste accepted into the facility, the sludges will have less radioactive contamination than found in similar tanks in Building 774. Non-raschig ring tank removal is addressed in Section 3.2.3.5.

Building 374 waste treatments include acid neutralization, sludge solidification, evaporation, spray dryer, and cementing of the resulting waste salt. The existing sludge solidification process is not in use. Based on studies still underway, the process may be replaced by another process that is not yet known. If a new process is added, the decommissioning of that process will be added to this baseline plan.

Until Building 374 operations are terminated, the tank contents can be characterized by the on-going operations. Both radiological and chemical data are needed to determine the waste disposal path for the sludges and the tanks. Tank contents may be TRU or LLW, and include F-listed EPA waste codes, based on process knowledge. The effluent will be sampled at the final operational status. If F-listed waste codes are not present, the 371 Closure Project will negotiate with the regulatory authority on removal the F-listing status from the sludge and tanks. Since F-listed waste has been minimally processed in the recent history of Building 374 operations and organics are quick to volatilize, it is probable that F-listed material is no longer present in the systems.

Building 374 assumes the sludges are LLW. Sludges that are hazardous waste due to the presence of F-codes are currently orphan wastes. MSP has not yet determined what treatment or disposal will be used for the sludge. This uncertainty need not impact the closure schedule for the 371 Closure Project if storage space is provided, but could impact the overall Site closure.

The Building 371/374 sludge removal strategy is based on the following assumptions:

- Sludges are wet and can be mobilized through existing process operations.
- The sludges are LLMW.

- Sludge will be rendered dry, via paint filter test, in a manner convenient for decommissioning and packaged in low-level crates.
- MSP has the mission to specify the disposal site and treatment requirements that follow the Building 371 project's packing of the dry sludge in crates.
- An alternative approach for low level sludge is to render the sludge dry with absorbents inside the tank, seal the tank, and ship it whole for disposal.
- Liquid contents: LLMW (F001, F002, F005, F006, F007, F009) will be processed through the Building 374 waste treatment system to the extent possible, then through a final treatment system yet to be defined.
- Solid/sludge contents: LLMW (F001, F002, F005, F006, F007, F009) will be treated based on the studies currently underway.
- Rings and associated sludge: see Section 3.2.3.4.

Appendix F contains a table on the tanks within the 371 Closure Project. The table indicates the physical characteristics of the tanks and provides information on the anticipated sludge associated with each tank. The following table addresses the uncertainties, impacts, and potential mitigation measures associated with the Building 371/374 sludge removal strategy.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Pre-treatment/drying of sludges is not yet defined	Delay and cost overrun equipment must be procured and installed to accomplish the drying.	Medium	Project staff will select and price a drying approach and conduct early charcterization
Storage for the pre-treated sludges is not defined.	If the packaged sludge is not removed promptly from the facility, the stored containers will complicate AB compliance and decommissioning flexibility. If storage space is exhausted, deactivation may be halted and decommissioning delayed.	Medium	MSP has created a team to address the sludge issue Site-wide.
Amounts and types of sludge are not detailed. Due to potential for unexpected cross-ties in the piping systems, sludges could exist in unexpected locations.	Delay and cost overrun if the sludge removal takes longer than planned.	High (but not frequent)	As drums and known hold-up are removed, tanks can be scanned to obtain more accurate data on radioactive hold up.

*High, Medium, or Low

3.2.4 Environmental Restoration (ER) Characterization Strategy

Decommissioning will interface with ER to achieve an integrated process to minimize risk to workers and the environment, minimize generation of remediation wastes, streamline the technical process, and reduce project costs.

Soil beneath the Buildings 371 and 374 will be characterized to determine if potential contamination is present and identify any health and safety concerns associated with any potential contamination. This characterization, in accordance with the Industrial Area Sampling and Analysis Plan, will take place during decommissioning when building safety and security allows. Soil sampling will take place in areas of known or suspected contaminant releases and will consist of drilling through the building slabs/structural floors to access the soil. Soil samples will be analyzed using field instruments and the results will be compared to RFCA soil action levels to determine if soil removal is warranted. This characterization will be completed before the end of FY03 to support remediation planning.

If soil contamination exceeding RFCA Tier I soil action levels is found beneath the buildings, remediation will take place prior to demolition of the building shell. It is anticipated that if contamination is present it will be in isolated areas in the sub-basement. Remediation will be guided by in-process characterization that will provide real-time sampling data. Soil removal activities will be conducted in accordance with an ER decision document. The following bullets outline the interface points between the 371 Closure Project and ER:

- Demolition of the building will include removal of the basement concrete slab in areas identified to have soil contamination and where it is less than 3 feet below final proposed grade. Decommissioning will remove the slab and ER will excavate and remove any under building contamination before the demolition of the building shell is initiated. Decommissioning will remove the lower structural floor of Building 371
- The 371 Closure Project will disposition all process and utility lines associated with the buildings to the outermost building foundation. The lines will be capped and tagged.
- The 371 Closure Project will remove all structures, foundations, etc., down to three feet below final proposed grade and any structures below three of grade that do not meet the unrestricted release criteria.

The following are the assumption associated with the ER strategy:

- Building structure and contents will be removed to three feet below final grade. All remaining building structures, regardless of elevation, will meet unrestricted release criteria following decommissioning activities.
- The Industrial Area Sampling and Analysis Plan will be approved.
- The RSOP for Environmental Restoration will be approved.

The following table documents the uncertainties and risks associated with the ER strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
UBC exceeds RFCA Tier I soil action levels	Remedial action requires slab/structural floor removal and soil excavation	Medium	ER will perform preliminary characterization of soils in areas most likely to be contaminated
Extent of UBC/Volume of waste	Additional costs and schedule duration	Medium	ER will utilize in-process characterization techniques during the remedial effort to maximize cost and schedule efficiencies by eliminating off Site laboratory costs and reducing sample result turnaround times

3.2.5 Reconnaissance Level Characterization

Reconnaissance Level Characterization (RLC) for the 371 Closure Project has been completed. The RLC included all of the Project facilities (i.e., Building 371, Building 374, Building 373, Building 374A, Building 377, Building 378, Building 381, and the Project tanks), except for the office building (Building 376) and the office trailers to the north of Building 371/374. Results are presented in the Reconnaissance Level Characterization Report (RLCR) for the Building 371 Cluster, Revision 0, August 28, 2000. The office building and trailers will be characterized in the same manner at a later time. Based on historical knowledge, they present no radiological, chemical or unique physical hazards.

The objective of RLC was to assess current radiological, chemical or unique physical hazards in order to Type/Classify the facilities and prepare a RLCR, which has been issued to the lead regulatory agency (LRA) for concurrence. The data generated from this phase also will support planning for decommissioning, subsequent characterization, and the PDS. The specific goal of RLC was to answer the following questions:

1. What surfaces are suitable for free-release?
2. What surfaces will require further decontamination?
3. What surfaces will be classified as radiological, hazardous, toxic or asbestos waste?
4. What type of decontamination will be required on specific surfaces? How will it be completed? What technology will be used or implemented?
5. How will the surfaces be classified for Pre-Demolition Survey?
6. How will the volumes of waste be classified?
7. How will the volumes of waste be disposed of?
8. What equipment presents a decommissioning hazard?

Hazards were assessed based on a review of historical and process knowledge, historical radiological and chemical data, and newly acquired RLC data. RLC results indicate the presence of radioactive contamination within Buildings 371 and 374, and possibly within the vapor effect tanks and the spray dryer. Radioactive contamination is present on surfaces (e.g., floors, walls and equipment) and in equipment and building systems (e.g., gloveboxes, process tanks and lines, and ventilation ducts). Some areas and equipment/systems have high levels of radioactive contamination. Also, radiological hazards are associated with the presence of in-process nuclear material, nuclear material holdup, other radioactive materials (e.g., containerized special nuclear material and calibration sources), and radioactive and mixed waste. In addition, some elevated radioactivity was detected on metal roofing, which may be due to naturally occurring radioactive material (i.e., radon decay products). This elevated activity will be further investigated through additional surveys and the collection of physical samples (if deemed necessary).

Residual amounts of toxic metals, organic solvents, and beryllium are present inside gloveboxes, process equipment and tanks, related piping, and plenums. Some equipment may contain PCB-contaminated oils. Building 371 also contains considerable amounts of lead shielding, and numerous gloveboxes, equipment and containers are lead lined. Asbestos-containing material is present in most of the Project buildings in several forms (e.g., floor and ceiling tile, mastic, and insulation). Some buildings have fluorescent light ballasts containing PCBs. In addition, chemical hazards are associated with in-process nuclear material and hazardous and mixed waste.

Based upon this RLC, and subject to concurrence by the Colorado Department of Public Health and the Environment, Buildings 371 and 374 are considered Type 3 Facilities, and the cluster tanks are considered Type 2 Facilities, and Buildings 373, 374A, 377, 378 and 381 are considered Type 1 Facilities.

The Type 1 facilities were characterized in accordance with the requirements for PDSs, pursuant to the D&D Characterization Protocol (MAN-077-DDCP). To ensure that these facilities remain free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities posted accordingly. Isolation controls restrict the transfer, storage and use of radioactive materials. Verification surveys will be performed prior to the release of these structures to confirm that radioactive material was not introduced into these areas.

3.2.6 Size Reduction Strategy

Size reduction is the process of reducing equipment to a size compatible with the intended waste container. There are two types of size reduction: in situ size reduction (ISSR) and central size reduction. The major benefits of using central size reduction facilities (CSRF) over in situ operations include a higher level of worker safety through the use of automated tools to reduce manual handling of components; a reduced PPE requirement; and enhanced ventilation and packaging controls, which again promote worker safety. An additional benefit is the increased productivity that these facilities have demonstrated in other onsite applications. The term glovebox is used generically throughout the strategy for gloveboxes, B-boxes, tanks, large ducting, and all other equipment that will be size reduced.

The following are the decision criteria for how a glovebox, tank, section of duct, or piece of equipment should be size reduced in the order in which the decisions will be made:

1. An SCO option will be evaluated and is always preferable for glovebox removal and disposal because it reduces or eliminates the need to size reduce equipment.
2. If the glovebox cannot fit through any door of the room, even with the transom removed, the glovebox (or tank) will be size-reduced in-situ by mechanical means.
3. If the glovebox is too big to fit in the elevator and cannot be readily moved to the ITC, then the glovebox will be size reduced in situ by mechanical means.
4. If the inner tent chamber (ITC) is at capacity, any additional glovebox overflow may be sent to another Closure Project's size reduction facility as their schedule allows.

3.2.6.1 Central Size Reduction

This strategy applies to a CSRF for gloveboxes, ventilation duct, tanks, and other process equipment that cannot economically decontaminate to SCO and are small enough to be readily disconnected and moved to the size reduction facility. There are two potential CSRF proposed for the 371 Closure Project. The first form is the use of size reduction capabilities in other Closure Projects. It is anticipated that there will be size reduction capabilities in Building 771, Building 776, and Building 707. Building 371 will have the capability to ship components requiring size reduction in a DOT certified Type A container to the other Projects.

The second form is an Inner Tent Chamber, Phase 2-1, which is planned to be installed in Room 3501 in Building 371. The ITC facility consists of an engineered enclosure approximately 25 feet long by 6.5 feet wide and 13 feet high. This enclosure will be connected to the building ventilation and utilities systems and operate throughout the decommissioning phase of the Project. The ITC will accept equipment with maximum dimensions of 14 feet long by 5.5 feet wide and 8 feet high for size reduction. The unit has an air lock on the feed side and a TRUPACT bagout ring on the discharge end of the unit. Soft side containments will support maintenance and operations tasks on both sides of the ITC. The ITC utilizes both automated and manual means to size reduce equipment, and the ITC is equipped with automated arms with tool handling capabilities and a hoist for material handling and transfer. Manual operations can

also be conducted through a series of glove ports and hand held tools, but this handwork and maintenance operations will be minimized to reduce work risks. Generally, the ITC will package waste in a TRUPACT container through a bag out port. The TRUPACT will then be taken out of the room and moved to the loading dock for transportation.

The 371 Closure Project central size reduction strategy is based on the following building-specific drivers and assumptions:

- The building has a number of Non-SCO gloveboxes, duct sections, equipment and tanks that can be readily separated and moved to a CSRF.
- Cerium (IV) nitric acid decontamination will be effective in reducing most tank and some gloveboxes to LLW SCO status; thereby eliminating the need for size reduction.
- Any gloveboxes/equipment that has to be moved to the other Closure Projects would have to be transported by road.
- Other on-going operations (residue processing and PuSPS) will impose security, AB, ventilation, and utility constraints; compete for storage and staging areas; and compete for funding, resource, and management attention within the building for the next 2 to 3 years.
- Projects will take items for size reduction from other Closure Projects.
- All ABs will be modified to allow for the on-site transportation of equipment to other Closure Projects.

The overall process to prepare candidate equipment for centralized size reduction involves the following steps.

- The equipment is characterized and decision is made on SCO, in-situ, or centralized size reduction for disposition.
- Equipment contamination is fixed.
- The equipment will be isolated from Zone 1 ventilation, disconnected from the equipment line and utility connections removed. The equipment will be partially dismantled, if necessary, and the legs and other ancillary appurtenances removed. The equipment will be sleeved, wrapped and moved to either the ITC staging area or a preparation area for transportation to other Closure Projects.
- Equipment that are directed for size reduction at the other Closure Projects will be additionally shrink-wrapped in the preparation area, smeared to confirm the absence of external contamination, loaded in an Type 1 DOT container, properly tied down, and transported to the 707 Project. At the receiving facility, the equipment will be removed from the container, staged adjacent to the size reduction unit, and size-reduced robotically.

The following details the anticipated equipment that will size reduced through CSSF:

- Gloveboxes – 62
- Tanks - 123
- Equipment - 198

Appendices F and G contains tables on the tanks and gloveboxes within the 371 Closure Project. The tables indicates the physical characteristics of the tanks and gloveboxes and provides a potential size reduction pathway. The following table documents the uncertainties and risks associated with the CSRF strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Closure Projects will only size reduced their own equipment	No overflow options	High	Utilize ITC on multiple shifts.
ITC over scheduled	2nd Shift/ extended hours	Medium	design additional staging areas

*High, Medium, or Low

3.2.6.2 In-Situ Size Reduction

This strategy applies to ISSR operations for gloveboxes, ventilation duct, tanks, and other process equipment that cannot be economically decontaminate to LLW-SCO and disconnected or moved or will not fit into CSRF. The strategy to be used for the 371 Closure Project ISSR is based on several building-specific drivers and assumptions:

- The building has a number of Non-SCO gloveboxes, duct sections, equipment and tanks that can not be readily separated or moved to a CSRF.
- Cerium (IV) nitric acid decontamination will reduce the number of items that must be size reduced in place.
- Gloveboxes and tanks in Building 371 are located on three different floors, connected by a freight elevator outside the current MAA boundary. The logistics of waste movement to the shipping dock is complex and efforts to streamline this movement are required.
- Other on-going operations (residue processing and PuSPS) will impose security, AB, ventilation, and utility constraints; compete for storage and staging areas; and compete for funding, resource, and management attention within the building for the next 2 to 3 years.

The overall process to prepare candidate equipment for ISSR involves the following general steps:

- The equipment, piping, and tanks are removed from the equipment and the equipment is decontaminated.
- The equipment is characterized and decision is made on SCO, in-situ, or centralized size reduction for disposition.
- The equipment contaminated surfaces are fixed.
- A soft sided containment is designed and erected around the equipment, the necessary tools, equipment, materials and supplies are mobilized along with support services.
- The equipment will be isolated from Zone 1 ventilation, disconnected from the equipment line and utility connections removed. The equipment will be dismantled and other ancillary appurtenances removed and packaged for disposal. The dismantlement operation will include removals, cutting, and other size reduction operations that are necessary to fit the equipment into appropriate containers.
- Once the equipment is removed the interior of the soft side containment along with all tools, equipment and materials is decontaminated or packaged for disposal, and the unit is removed and packaged for disposal.

The following details the anticipated equipment that will size reduced through ISSR:

- Gloveboxes – 54
- Tanks - 85
- Equipment - 125

Appendices F and G contains tables on the tanks and gloveboxes within the 371 Closure Project. The tables indicates the physical characteristics of the tanks and gloveboxes and provides a potential size reduction pathway. The following table document the risks and uncertainties associated with the ISSR strategy.

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Safety Issues	Operation shutdowns	High	Increased training and oversight
Productivity	Repetitive operations causing slowdowns	High	Limit manhours, monitor burnout
Contamination	Occurs through load in and load out operations	High	Increased training and monitoring

*High, Medium, or Low

3.2.7 Surface Contaminated Object (SCO) Strategy

LLW can be packaged in several containers. While LLW follow the same management and disposal process regardless of the U.S. Department of Transportation (DOT) container, when the wastes meet DOT LLW-SCO regulations, there are more packaging options.

DOT regulations recognize two categories of LLW-SCO waste. SCO I has plutonium limits of 2,400 dpm/100 cm^2 for removable contamination on accessible surfaces and 24,000,000 dpm/100 cm^2 for total plutonium contamination on accessible and inaccessible surfaces. SCO II has corresponding limits that of 240,000 dpm/100 cm^2 and 480,000,000 dpm/100 cm^2. SCO I waste must be packaged in a minimum DOT Strong Tight or IP-1 package. SCO II waste must be packaged in a minimum IP-2 package. A combination of decontamination techniques, application of fixatives and engineered features to render contaminated surfaces inaccessible will be used to assure compliance with DOT limits. The RFETS program for compliance with SCO requirements was developed during the 779 Closure Project and has been in use for approximately two years.

LLW-SCO is currently packaged in IP-2 metal waste boxes and 8 feet by 8 feet by 20 feet Strong Tight, IP-1 or IP-2 cargo containers. All closure project assumptions include an adequate supply of these containers as needed. Items that are too large for IP-1 or 2 containers may be shipped without an exterior package if all contaminated surfaces are inaccessible, and the object is transported using a dedicated carrier.

The primary benefit of the use of large LLW-SCO containers (such as cargo containers) is that less labor is needed since only minimal size-reduction is needed for large items. The density of waste in cargo containers has been about 15% less than waste packaged in crates, primarily because items that are not size-reduced have more void space than items that have been size-reduced. Secondarily, the end-loading cargo containers are difficult to pack. Procurement of top loading cargo containers has begun, which should allow some increase in the density of SCO packaging and will also increase safety for large items handling. Cargo containers are too large to bring into Building 371; therefore, the waste must be transported to the container. Metal crates can be moved to the work site in the building and loaded there.

Dispositioning waste as SCO is a key Project strategy. Significant 371 Closure Project and Site cost and schedule efficiencies are expected based upon the following:

- LL and LLM waste packaging and shipping requirements are less stringent than those for TRU and TRUM waste.

- SCO waste does not have to pass through the crate or drum counter prior to offsite shipment.
- Fewer offsite waste shipments are required.
- Size reduction can be substantially reduced or eliminated. This is particularly important in Buildings 371 and 374 where an estimated 70% of all tanks and gloveboxes would require ISSR.
- Efficient, cost effective decontamination techniques are available.

Tanks and gloveboxes constitute a large percentage of the Project's decommissioning work and will generate the majority of the anticipated waste volume. Based on process knowledge and initial walkdowns, it is believed a high percentage can be removed as LLW-SCO. Stainless steel tanks and gloveboxes are particularly suited to decontamination using previously proven techniques. With few exceptions, the project will remove all stainless steel tanks and gloveboxes as LLW-SCO. Aqueous processing system components are known to have higher levels of fixed contamination. If initial surveys fall within allowable levels, encapsulants (typically Fire Dam) can be applied to assure the contamination remains inaccessible. If surveyed levels exceed allowable limits, cerium (IV) nitric acid decontamination is expected to provide a fast, effective method to reduce fixed contamination. Non-aqueous process system components typically have higher levels of loose surface contamination, suited to decontamination by wet wiping and use of strippable coatings. As with aqueous system components, if initial surveys are within allowable levels, application of Fire Dam may be the most cost-effective alternative.

Carbon steel and fiberglass tanks are expected to be more difficult to release as LLW-SCO. Cerium (IV) nitric acid decontamination is not usable with these materials; therefore, encapsulation is the only option. For these types of components, SCO-II limit criteria will be utilized. At the present time, direct reading instrumentation is not available to measure fixed contamination at the higher levels. The project is working in conjunction with the Technology Development office to procure, calibrate, and certify SCO-II instrumentation. Should the effort be unsuccessful, items that can not be decontaminated to SCO-I release criteria will be size reduced and shipped to WIPP as LLW or LLMW.

The piping and pumps that connect the facility's tank farms contribute significantly to the Project's decommissioning waste volumes. Those piping systems that carried actinide liquids cannot be easily surveyed or decontaminated and will be size reduced and disposed of as TRU or TRUM waste. Much of the remaining piping is not expected to be highly contaminated, and will be disposed of either as LLW or LLW-SCO waste.

In addition to tanks and gloveboxes, the material storage pallets in the CSV represent a large enough waste stream to make decontamination the preferred strategy. The aluminum base plates and stainless steel storage containers are easily decontaminated using wet wiping. All of the pallets and containers will be disposed of as LLW or LLMW waste. Abandoned tools, equipment, and Volrath cans presently stored in the CSV on maintenance pallets will not be decontaminated. If not highly contaminated, these materials may still be able to be shipped as LLW using gram/package weight criteria. Compaction will be utilized on Volrath cans to increase the density of the waste stream.

The final waste stream of significant volume is comprised of miscellaneous and office equipment. Much of that not housed in the MAA is expected to be unrestricted released. The materials in the MAA and will be disposed of either as LLW or LLW-SCO because the cost of disposing of the material is less than the cost of the surveys required to free release the material.

The waste estimate provided in BEST for the Building 371 decommissioning assumed that 84% of the gloveboxes and 100% of the tanks (raschig ring, pencil, and annular) in the Building 371 MAA would be dispositioned as TRU waste. The following table shows the approximate impact on the TRU and LLW estimates of the project increasing its SCO disposition for gloveboxes from 16% to 80% and 90%, and increasing its SCO disposition for tanks from 0% to 80% and 90%.

	Current BEST		80% SCO		90% SCO	
	TRU*	LLW*	TRU*	LLW*	TRU*	LLW*
Glovebox Waste	569	189	135	947	68	1,065
Glovebox Sec Waste	201	1,521	253	1,521	261	1,521
Tank Waste	254	1,745	51	1,955	25	1,955
Tank Sec Waste	165	48	185	48	188	48
Other Waste	1,338	27,026	1,338	27,026	1,338	27,026
Total	2,526	30,529	1,962	31,496	1,880	31,614

* All values cubic meters

Appendices F and G indicate what tanks and gloveboxes are projected to be dispositioned as SCO. The following table documents the uncertainties and risks associated with SCO strategy.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Waste projections may be inaccurate	Resources could be improperly assigned, reducing Site ability to pursue opportunities or respond to problems.	High for Areas and Medium for Sets	Continue to collect actual waste data and adjust projections as appropriate.
Existing external contamination fixatives on tanks may interfere with SCO determination	Schedule and increase in TRU waste volumes	Medium	Early characterization and planning on those high risk tanks
Poor forecasts of container needs could create delays or overstocking.	Added expense would be incurred to expedite purchase orders	Medium	Continue to collect actual waste data and adjust projections as appropriate.

*High, Medium, or Low

3.2.8 Ventilation Strategy

The primary ventilation systems for the processing areas of Building 371 consist of six supply-air handling units and sixteen exhaust filter plenums. Two filter plenums (FP-125A and FP-125B) are dedicated to re-circulation and filtration of the inert atmosphere used in the CSV and in/out (I/O) stations. Five four-stage filter plenums (FP-141, FP-142, FP-241, FP-242, and FP-243) are dedicated to Zones I and IA ventilation. Six two-stage filter plenums (FP-121A, FP-121B, FP-221A, FP-221B, FP-222A, and FP-222B) are dedicated to Zone II ventilation, and three two-stage filter plenums (FP-122, FP-223A, and FP-223B) are dedicated to Zone III ventilation. Two-stage filtration of building ventilation is normally conducted in a re-circulation configuration. The building ventilation zones are defined as follows:

- Zone I provides ventilation for primary confinement where highly radioactive material is handled. Zone I (and Zone IA) is maintained at the lowest pressure for gloveboxes, canyons, and conveyor enclosures
- Zone IA provides the ventilation for primary confinement in vaults and open enclosures (hoods and downdraft tables).

- Zone II provides ventilation supply and exhaust for the secondary confinement. Zone II includes any areas containing Zone I and Zone IA equipment, or otherwise communicating with these areas.
- Zone III provides ventilation for tertiary confinement in the building. Zone III areas are generally not contaminated.
- Zone IV provides ventilation for administrative areas and other uncontaminated areas.

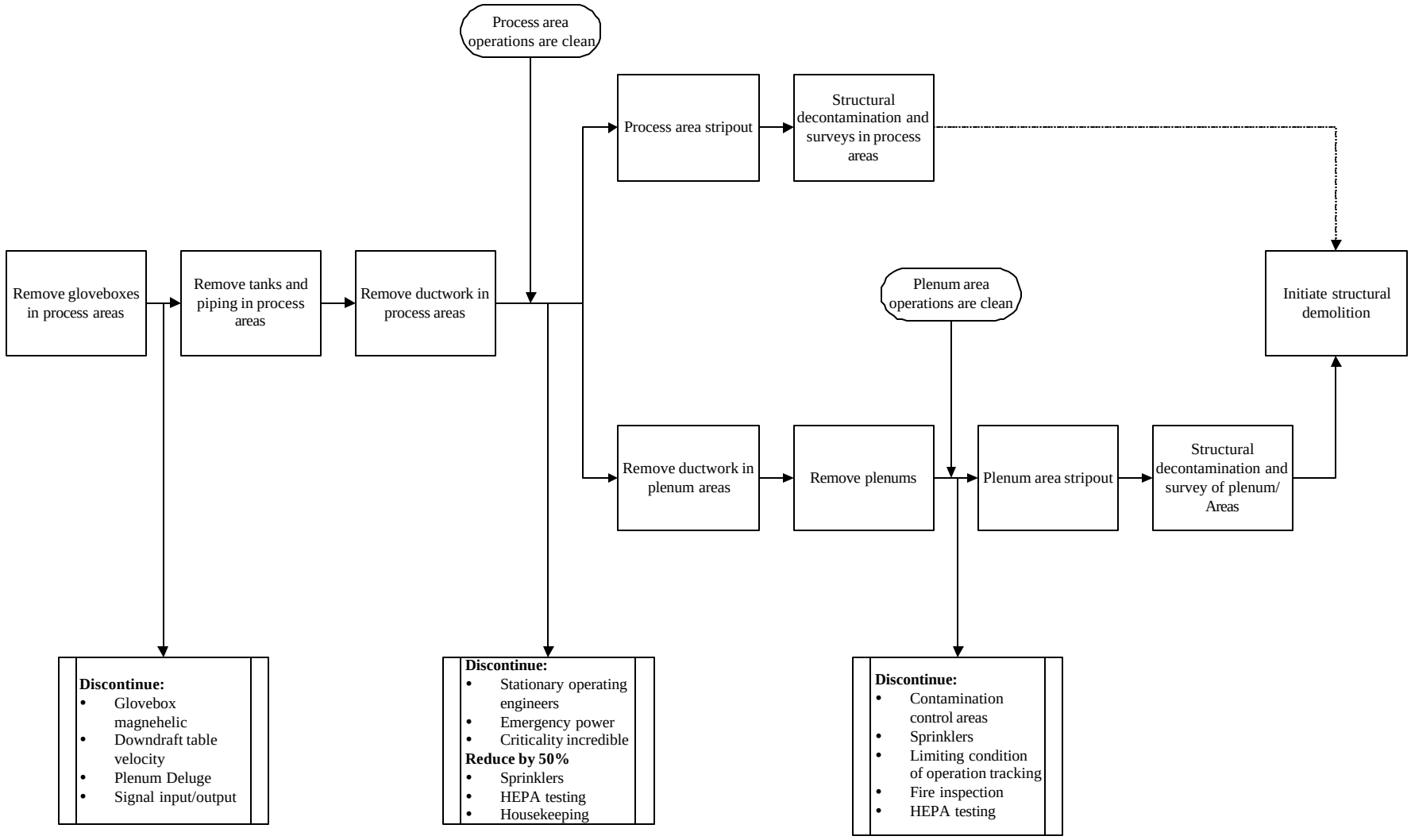
The ventilation system consist of six systems. System 1, a primary system, ventilates the north sections of the building. System 2, a primary system, ventilates the south sections of the building, and the inert system, which ventilates the CSV and the I/O stations. Systems 1 and 2 each contain four ventilation zones.

System 3 ventilates portions of the east office areas of the ground floor, the stairwell, and elevator areas. System 4 ventilates the east office areas in the basement level. System 5 ventilates the north and east ground floor office areas. System 6 ventilates the south section of ground floor area outside the MAA containing the emergency generator (TGEN) and building electrical switchgear. The miscellaneous support system ventilates portions of the east office areas (room 3185) on the ground floor, and portions of the Chemical Make Up Area at the attic level.

As facility components are removed and/or decontaminated, workers will complete the removal of remaining utilities, including building ventilation and exhaust filtration systems. Due to the potential for radiological and/or chemical contamination within the ventilation systems ductwork, there is the possibility for releases of hazardous and/or radioactive materials to the environment. As a result, the removal sequence is extremely important and will be planned carefully for each area. Although the approach may differ on an area-by-area basis, the removal sequence described below, and depicted in Figure 4, will be followed:

- Airflow studies will be performed in accordance with Radiological Safety Practices Manual to determine feasibility of dismantlement and decontamination activities and identify potential problems and options.
- Zone I and IA plenums will be maintained until tanks, gloveboxes, downdraft tables, canyons, and ductwork have been stripped out.
- Glovebox removal will be initiated at the glovebox furthest away from the plenum and work will continue toward the plenum to ensure that adequate air continues to flow from areas of least contamination to areas of higher contamination. There may be exceptions to this rule depending on access restrictions.
- Air studies will continue throughout glovebox, tank, and downdraft table removal to ensure zones are balanced and negative pressure is maintained in accordance with the AB. Airflow will be balanced using Zones II and III systems and/or temporary ventilation and filtration systems.
- Once Zones I and IA tanks, gloveboxes, downdraft tables, and ductwork have been removed, the building areas serviced by that ventilation could be decontaminated to the unrestricted release criteria.
- Plenums and associated ductwork will be removed.
- Airflow will be balanced, if necessary, using temporary ventilation and filtration systems.
- Surface contamination will be measured for Zones II and III systems to determine feasibility of unrestricted release.

Figure 4. Ventilation Removal Sequence



A fixative coating will be applied to selected ductwork surfaces to reduce the spread of contamination during ductwork disassembly and movement. The application of fixative coating will require that ventilation be reduced or terminated in the selected ductwork. Reduction or termination of ventilation may negatively affect or eliminate room and building work activities. Building differential pressures will be monitored to assure building balance and negative pressures are maintained following any reduction or termination of ventilation. Depending on levels of contamination, containments may need to be constructed for dismantlement activities. It is assumed that the use of containments will be minimal for Zones I and IA, and will not be required for Zones II and III. This assumption is based on the use of fixatives and assumes that the fixatives will be effective.

Since there are two separate ventilation systems in the processing areas of Building 371, an engineering study of the ventilation systems will be conducted to determine the most effective sequencing for de-energizing and dismantling the ventilation systems. This will provide information for maintenance of adequate building differential pressures and airflow throughout dismantlement and decontamination activities. The study will detail methods, procedures, and incorporate the decommissioning schedule in airflow calculations.

Following application of the fixative and re-initiation of complete or reduced system flow, rigging will be installed to hold and lower the disassembled ductwork. A containment tent or sleeve will be placed, as necessary, around the areas where ductwork will be separated to reduce the spread of contamination. Complete or reduced ventilation system flow will be used to reduce contamination spread during ductwork separation. Mechanical cutting techniques and standard disassembly techniques (unbolting of ductwork connections) will be used to disassemble ductwork sections. Open sections of removed ductwork will be sealed with plastic wrap and tape in preparation for transport to size reduction areas. Open ductwork remaining connected to the ventilation system will be configured (e.g., blanked, capped, valved, or left open) to support maintenance of negative pressure in the room/area and the building. Ductwork sections will be hand carried or transported on carts to appropriate size reduction containments.

Penetrations (primarily located in the ground floor level) through the floors for Zones I and IA ventilation systems will require removal using concrete removal technologies (breaking, cutting, or coring methods). Removal of the penetrations will be accomplished before structural decontamination activities. Scrubber removal will require flushing and isolation prior to dismantlement of ventilation systems.

Disassembly of ventilation system plenums may be performed just before building demolition activities. Plenums supporting a specific room/area of the building will not be removed until radioactive material holdup or contamination levels of gloveboxes, contaminated equipment or structure, and corresponding ductwork in the applicable area are below safety analysis and/or radiation protection defined thresholds.

Plenum disassembly will not be initiated until all connecting ductwork has been removed to the filter plenum intake. Plenum disassembly is initiated by removing the primary stages of HEPA filtration (most contaminated stage(s); first stage of a two-stage system, or first three stages of a four-stage system). Filters will be packaged in appropriate waste containers. Following primary filter removal, any ductwork openings will be sealed, unnecessary plenum interfaces (i.e., electrical, instrumentation) will be removed and sealed, and exhaust fans will be shutdown. Temporary HEPA filtered ventilation will be initiated downstream, and the final stage of HEPAs removed and packaged for disposal. Where appropriate, non-contaminated stages of the plenums will be separated from the contaminated sections.

Loose contamination in the plenums will be removed using wet wiping techniques. Depending on the situation, strippable coatings may be used to reduce contamination levels of the plenum surfaces. Fixative or strippable coating application to plenum surfaces is intended to reduce the spread of contamination during plenum disassembly.

Following the application of the coatings, radiological surveys will be performed and all remaining plenum interfaces will be removed. Mechanical cutting techniques and/or plasma cutting techniques may be used to disassemble and size reduce the plenum into pieces of correct weight and contamination level to place in appropriate waste containers. The Building 371 ventilation strategy is based on the following assumptions:

- Zones I and IA ventilation are TRU.
- Inert ventilation system is TRU.
- Zone II and III ventilation is LLW.
- Ventilation systems 3, 4, 5, and 6 will meet unrestricted release criteria.

Building 374 contains a dedicated ventilation system. Removal of the ventilation systems in the building will be accomplished in the same manner as the systems servicing Building 371. The primary ventilation systems for the waste processing area of Building 374 consist of three supply-air handling units, and three filter plenums. Two filter plenums (FP-322A and FP-322B) are dedicated to Zone I, two-stage HEPA filtration of tanks, equipment and areas of building 374. One two-stage filter plenum, FP-321, is dedicated to Zone II exhaust ventilation.

The following table provides an estimate of the waste streams and volumes of waste resulting from ventilation dismantlement:

Building 371	**TRU** (m^3)	**LLW** (m^3)	**Building 374**	**TRU** (m^3)	**LLW** (m^3)
Zone I/IA Ducts	321	0	Zone I Ducts	12	0
Zone II/III Ducts	0	190	Zone II Ducts	0	184
Systems 3,4,5, and 6	0	0	Plenums	0	78
Plenums	0	584			

3.2.9 Piping and Utility Strategy

The general approach to piping and conduit removal will be consistent with the overall approach to decommissioning. The Steelworkers will accomplish the contaminated process piping and initial conduit removals from equipment as parts of Dismantlement Sets. The removal of the non-contaminated or utility piping and the balance of the electrical conduit will be part of the Decommissioning Areas or Building Trades scope of work. Initial piping and conduit removals will be accomplished to gain access to a glovebox, tank or piece of contaminated equipment, and to isolate it from the building systems. Generally, piping and conduit will be removed only from the immediate working area to facilitate equipment removal. As the equipment is removed at the floor level, the piping and conduit will typically remain in the overhead areas, particularly since much of the piping and conduit runs throughout the building across Set and Area boundaries. When equipment removal is complete, decommissioning workers on man-lifts will remove the remaining process piping from overhead. Non-process piping and conduit will generally remain until the beginning of the decontamination activities, unless it is necessary to remove these non-process systems to gain access to Zone 1 ventilation. The quantity of conduit, cable tray and buss bar to be removed from the building exceeds 763,000 linear feet or 144 miles of material. The quantity of process piping associated with the building is over 144,000 linear feet and the utility piping totals over 344,000 linear feet of materials. The two piping systems combined exceed 488,000 linear feet or 92 miles of piping systems.

Piping and conduit will not be removed by system. For contaminated piping that goes through walls, the piping will be removed to the wall or floor that it penetrates, and be capped and/or foamed. The piping on the other side of the wall (or corridor) will be removed during the work activities associated with the room. The hole between that rooms will be foamed to maintain ventilation balance, as necessary.

The following table gives a description of the systems of piping and conduit systems present in Building 371/374.

Systems	Description	Issues	Removal Org./ Sequence
Piping Systems			
Process Piping in Canyons	Typically direct runs of piping connecting raschig ring and pencil tanks, and columns	Avoid recontamination of tanks after cerium nitrate treatment. Piping externally contaminated.	Steelworkers/ early
Process Piping in VMCs	Multiple levels of process piping and solenoid valves	Must coordinate with pump glovebox removal.	Steelworkers/ early
Process liquids/piping – Zone 2	Piping between tanks and gloveboxes.	Additional care required for removal; sometimes glovebags	Steelworkers/ medium
Oxide conveyor	Bulk pneumatic conveyor 4" pipe) from 3601 to dissolution.	Line has been scanned for oxide accumulation	Steelworkers/ early
Sample conveyor	Rabbit conveyor between process gloveboxes and the labs	No issues expected	Steelworkers/ early
Process vent	System providing negative DP to the tank headspace	Avoid recontamination during tank removals	Steelworkers/ medium
Criticality drains	Piping from process area gloveboxes to basement and sub-basement tanks	Removal of liquids from p-traps	Steelworkers/ early
HP Vacuum	Vacuum to support air samplers and stack samplers	No issues	Steelworkers/ late
Process Waste	Piping to or within 374	May contain sludge, RCRA closure issues	Steelworkers/ late
Reagent Chemicals	Required for process waste and CWTS	Potentially non-contaminated, but may contain acids and bases.	Trades/ medium
Water Systems	Process and potable water	No issues	Trades/ medium
Compressed Gas Systems	Instrument air, breathing air, nitrogen, etc.	Instrument air is required as long as ventilation	Trades/ medium
Sanitary Drains	Waste lines	None	Trades/ late
Steam/ Condensate	LP Steam and condensate	Condensate from process areas is suspect	Trades/ late
Fire suppression	Sprinkler systems	None	Trades/ Near last
Atmospheric Reference	Required for ventilation balancing	Potentially non-contaminated	Trades/ Near last

Systems	Description	Issues	Removal Org./ Sequence
Electrical/Instrumentation			
Process system power/ instrumentation	Power/instrumentation to in-glovebox and canyon equipment	Determinate, cut, and mark	Initial disconnect – Steel; Principal removals – Trades/ early
Security	Door alarms, motion detectors, safeguards/ classified computer	Required through at least MAA closure	Trades/ early-medium
Criticality Alarm	Panels & detectors	Required while operating	Trades/ early
Fire detection	Panels & sensors	Fire watch requirements	Trades/ late
Emergency Power	Includes emergency generator	None	Trades/ medium
Emergency Lighting	Panels & Units	None	Trades/ medium
Air Monitoring	Panels & detectors	Limited requirements after equip. has been removed.	Trades/ late
Uninterruptible Power	Panels & system	No requirements after sensitive equip. has been removed	Trades/ late
Utility Power	Exterior	Substation removals	Trades/ late
Lighting Power	Exterior and interior	Temp. electric systems	Trades/ late
Power Distribution	Exterior and Interior	Temp. electric systems	Trades/ late
Lightning Protection	Exterior	None	Building demolition

The piping and conduit removal in canyons and valve maintenance corridors (VMCs) will be conducted early in the decommissioning process. The work will be done in respirators or supplied air; the canyons will be fogged, and elevated work will be kept to a minimum. All piping and conduit will be stripped out to facilitate surface decontamination. Pencil tanks in the canyons will be treated as piping, and placed in standard waste boxes with no decontamination and minimal size reduction. VMC piping and valves must be removed (and the VMCs stabilized or decontaminated) before the pump gloveboxes can be removed and size reduced.

For piping and conduit removal in Zone 2 areas, only the contaminated piping will be removed. Criticality drains will be cut at both the bottom of the glovebox and at the floor, and capped at the floor. Floor penetrations will be removed before surface decontamination begins. Contaminated piping with the potential for liquids holdup will be packaged such that there are bags on the ends of piping with suitable absorbent material to contain any residual liquids; piping waste generated from size reduction will not require absorbent. Techniques/equipment such as mechanical disassembly, crimpers, and glovebags. will be used to dismantle contaminated equipment. Cutting of contaminated equipment will be mechanical, with contamination control techniques used as appropriate. Building trades will use thermal cutting on relatively non-contaminated items (e.g. hangers).

The piping associated with active systems, particularly associated with residues, PuSPS, CWTS, and 374 waste processing will be isolated from piping being removed based on engineering analysis, identifying isolation points, sequences, and system constraints. Deactivation will drain all liquid piping, including placing new drain taps at low points. The condition of the lines will be confirmed as dry before removing the piping run. All residual materials (liquids, sludges) will be removed during deactivation. Sequencing of

stripout will be predicated on the completion of liquids draining in a given area/room. Section 3.2.3.3 provides additional information with respect to draining piping associated with tanks. Removal of piping that is part of a RCRA treatment unit will be reported as part of the closure process.

When sufficient stripout has occurred to allow the initiation of lighting conduit and systems removal, a temporary power and lighting system will be installed. Until the power is removed from the building, specific procedures will be followed, including lock-out/tag-out; marking of live conduits and pipe; and minimum maintenance of as-builts to preclude accidents and accidental compromising of the safety systems.

The following are the assumptions associated with the piping and utility strategy:

- The majority of the liquids in the system have been removed by deactivation operations and that there are no orphan chemicals or materials encountered.
- The necessary piping, electrical and instrumentation systems can be reasonable terminated or modified in accordance with the schedule without creating significant AB issues.
- Thermal cutting of non-process/non-contaminated systems will be allowed with appropriate fire and safety controls.
- System isolations to allow scheduled removals can be scheduled within mission constraints.

The following table documents the uncertainties and risks associated with the piping and utility strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
There are trapped liquids in piping	Spills Disposal issues Safety issues	Medium	IWCP Process Glovebag with absorbents Treat each line as if it contains hazardous liquids/materials
Live circuits	Safety issues	Medium	IWCP Process Lock Out/ Tag Out Procedures Field Tests/Verification Skilled/Trained Personnel

*High, Medium, or Low

3.2.10 Decontamination Strategy

Structural decontamination will involve the removal of residual contamination from the structure; removal of contaminated structural components (e.g., block walls, partitions, etc.); removal of remaining utility systems; decontamination of the remaining structure, and the initial confirmatory survey of release status. This will occur in the following Decommissioning Areas:

AA CWTS-Subbasement and Basement
AB CWTS-Subbasement
AC Central Storage Vault, Repair and Maintenance Bay
AD Ventilation System 2-South Side of Basement Level
AE Ventilation System 1-North Side of Basement Level
AF East Office Area-Basement Level
AG PuSPS and Wet Combustibles-Ground Floor
AH Ion Exchange and Fluorination Canyons
AJ Americium Vault, SS&C and Wet Sample Repack
AK Residue Sampling and Wet Repack
AL North Side of Attic Level

AM South Side of Attic Level-Chemical Make Up Area
AN Building 374 Waste Processing Facility
AP Main Office Areas-North, South and East
AQ Exterior Structural Surfaces, Trailers, and Outbuildings

The following assumptions form the basis for the decontamination strategy developed herein for Decommissioning Areas associated with Building 371/374, the exterior of the structures, and the outbuildings:

- Decontamination activities are planned to provide a building that meets the unrestricted release criteria for release of structure prior to demolition activities.
- PDS for contaminated areas will require the removal of paint from all exposed surfaces to facilitate survey measurements.
- Decommissioning Areas AE (Office area-East Basement), AP (Office Areas-Ground Floor-North South, and East), and AQ (Exterior surfaces and out-structures), exhibit none or very low contamination levels; will require 0-10% decontamination efforts; and surface preparation for PDS (paint removal) will be not be required.
- Asbestos characterization and removal will be accomplished by an outside contractor.

General Approach to Structural Decontamination

The internal areas of the structure will be dismantled according to Set. At the close of the dismantlement activities, the areas will be empty of all gloveboxes, tanks, and systems providing services to gloveboxes and tanks. The electrical systems supplying lighting and distribution will remain in place, and the Zones I, IA, and II ventilation systems will have been removed, complete to the nearest isolation to a decommissioning area boundary. Asbestos removal internal to the structure will be completed, and the areas will be isolated from the balance of the structure to allow decontamination activities.

Room or area walls will be used as containment barriers, or temporary containment barriers will be installed to ensure that decontamination activities will be isolated from the balance of the structure. This will ensure that migration of contamination cannot occur to the balance of the structure. Mobile HEPA ventilation will be installed for ventilation of areas being decontaminated, if necessary. HEPA ventilation exhausted to the environment will be monitored, or exhausted to the building ventilation systems. Dismantlement activities associated with identified Sets will be accomplished prior to commencement of dismantlement and decontamination activities associated with the Decommissioning Areas. The decontamination of Building 371/374 structures will be performed in the following general sequence.

- Remaining electrical systems (conduit, switches, and distribution of electricity) will be removed. Temporary electrical services will be installed as necessary.
- Remaining safety systems will be removed back to the Area boundary, and any necessary modifications performed to replace required safety items.
- Remaining utility supply systems (water, air, etc.) will be removed to the Area boundary; and temporary services (for support of the decontamination activities) installed for supply to the Area.
- Prior to the characterization of the interior concrete surface areas, and physical decontamination activities, all painted concrete surfaces in contaminated areas will be abrasively cleaned of paint unless subsurface paint sampling has demonstrated radiological characterization meeting unrestricted release criteria. Removed paint material will be packaged for disposal as TRU.
- Scaffolding will be installed (or personnel man-lifts used) in the area, and upper walls and ceiling areas will be decontaminated first. Concrete ceilings will be decontaminated as necessary, initial surveys completed, and the decontaminated surfaces covered to protect against re-contamination

- Upper and lower walls will be decontaminated, as necessary, and preliminary surveys completed. Scaffolding will be removed to allow decontamination of the floor surfaces.
- Floor areas requiring removal of contaminants exhibiting penetration of less than one inch will be mechanically scabbled to remove contamination. Surface cracks in the floor slabs will be decontaminated with "crack chaser" scabbling equipment or removed.
- Floor drains and "below-slab" services will be isolated or removed.
- Areas exhibiting residual contamination following the initial PDSs will be physically isolated, decontaminated, and re-surveyed.
- All waste will be removed from the Area, pre-certified, and staged outside the Area boundary.
- PDSs of interior surface areas will be performed.
- Systems and equipment attached to the exterior surfaces of the structure will be removed, and initial PDS surveys completed.
- Following decontamination of the exterior structure and removal of remaining asbestos roofing materials, final surveys of the building structure will be completed.
- Prior to demolition activities, ACM in the roofs will be removed.

Table 6 provides a preliminary estimate of the scope of the tasks:

Table 6. Decontamination Quantities by Area

AREA	FLOORS ft^2	WALLS ft^2	CEILINGS ft^2	WALL REMOVED ft^3	FLOOR REMOVED ft^2	SURFACE DECON FLOORS ft^2	SURFACE DECON WALLS ft^2
AA	18,026	62,183	18,026	1,054	7,176	18,026	57,123
AB	5,507	8,236	5,507	0	0	5,507	8,236
AC	7,537	48,516	7,537	0	754	7,537	48,516
AD	35,264	63,170	35,264	3,511	0	26,448	30,524
AE	34,189	69,123	34,189	3,472	0	25,642	35,179
AF	20,133	77,994	20,133	470	0	1,007	1,644
AG	14,113	27,793	14,113	469	1,411	14,113	25,543
AH	12,800	48,051	12,800	781	1,280	12,800	44,301
AJ	19,159	53,367	19,159	1,068	958	19,159	48,241
AK	13,877	27,293	13,877	1,493	694	12,489	17,398
AL	15,409	14,820	15,409	431	0	9,245	6,821
AM	30,778	14,532	30,778	484	0	18,467	6,397
AN	35,353	62,216	35,353	4,298	3,535	31,818	33,919
AP	51,353	142,725	51,353	699	0	2,568	3,781
AQ	7,310	5,124	3,416	184	0	366	427
TOTALS	320,807	725,143	316,913	18,414	15,808	205,190	368,050

Area AA

The east side of the CWTS area (subbasement), basement level of Room 2327, corridors, storage vault, and decontamination storage tank pit will have remaining electrical and heating, ventilation and air conditioning (HVAC) systems removed to the Area boundary. Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 7,176 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface

areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AB

The west side of the CWTS area (subbasement level), basement level of Room 2217, storage vault, and criticality tank pit will have remaining electrical and HVAC systems removed to the Area boundary. Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AC

In the CSV and the I/O stations, all upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 754 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AD

The north sections of the basement level will have remaining systems removed to the Area boundary, and as building ventilation systems are removed, temporary HEPA ventilation will be installed. Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AE

The south sections of the basement level will have remaining systems removed to the area boundary, and as building ventilation systems are removed, temporary HEPA ventilation will be installed. Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AF

The office and support areas will have all equipment/fixtures removed, and the structures surveyed to document the PDS. Decontamination efforts are not expected to be required for this Area.

Area AG

The PuSPS, Salts and SS&C areas, and Rooms 3606 and 3189 of the ground floor level will have remaining systems removed to the Area boundary, and as building ventilation systems are removed,

temporary HEPA ventilation will be installed. Removal of Zone I and IA ventilation systems will include isolation of the system immediately below ground floor level, blanking or capping of the duct, removal of the duct/concrete penetration, and closure of the penetration prior to decontamination efforts in the Area.

Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 1,411 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AH

The main aqueous processing area, including the ion exchange, fluorination, and precipitation canyons of the ground floor level, will have remaining systems removed to the Area boundary, and as building ventilation systems are removed, temporary HEPA ventilation will be installed. Removal of Zone I and IA ventilation systems will include isolation of the system immediately below ground floor level, blanking or capping of the duct, removal of the duct/concrete penetration, and closure of the penetration prior to decontamination efforts in the Area.

As liquid contamination events have been limited to minor leaks, concrete removal is not expected to be required in this area.

Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 1,280 square feet of floor is expected to require complete removal. The floor removal is anticipated to be conducted in Room 3521. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AJ

The americium and anion exchange canyons, pit leak testing (Room 3541), and SGS counting (Rooms 3301, 3303, and 3305) areas of the ground floor level will have remaining systems removed to the area boundary, and as building ventilation systems are removed, temporary HEPA ventilation will be installed. Removal of Zone I and IA ventilation systems will include isolation of the system immediately below ground floor level, blanking or capping of the duct, removal of the duct/concrete penetration, and closure of the penetration prior to decontamination efforts in the Area.

Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 958 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AK

The residue sampling and wet repack areas of the ground floor level will have remaining systems removed to the Area boundary, and as building ventilation systems are removed, temporary HEPA ventilation will be installed. Removal of Zone I and IA ventilation systems will include isolation of the system immediately below ground floor level, blanking or capping of the duct, removal of the duct/concrete penetration, and closure of the penetration prior to decontamination efforts in the Area.

Upper structural surfaces (walls and ceilings) will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 694 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AL

The north section of the attic level will have remaining systems removed to the Area boundary, and initial PDS surveys will identify surface areas (walls, floors, or ceilings) requiring decontamination efforts. Decontamination efforts necessary to meet unrestricted release criteria will be accomplished using mechanical scarifying equipment, as necessary.

Area AM

The south section of the attic level and the chemical makeup area (Rooms 4101 through 4106) will have remaining systems removed to the Area boundary, and initial PDS surveys will identify surface areas (walls, floors, or ceilings) requiring decontamination efforts. Decontamination efforts necessary to meet unrestricted release criteria will be accomplished using mechanical scarifying equipment, as necessary.

Area AN

Building 374 will have remaining electrical and HVAC systems removed. Structural surfaces of Building 374 will have all paint removed using abrasive shot/grit blasting or high-pressure water hydrolasing. Floor areas will be scabbled in two passes to remove ½ inch of concrete material, and approximately 3,535 square feet of floor is expected to require complete removal. Initial PDS surveys will identify surface areas (walls or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination will occur, as necessary. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Area AP

The office and administrative support areas will have all equipment/fixtures, suspended ceiling systems removed, and the structure surveyed to document the PDS. Decontamination efforts are not expected to be required for this Area.

Area AQ

ACM roofing will be removed. Initial PDS surveys will identify surface areas of exterior wall and roof areas requiring decontamination efforts. Decontamination efforts are not expected to be extensive for the exterior of the structure. The Building 371 outbuildings and structures will be handled in the following manner:

- The diesel fuel tanks will be drained, surveyed and dispositioned.
- Turbine (emergency) generator will be removed from the structure, surveyed and dispositioned.

- Building 373/374 pumphouse will have all equipment removed. Cooling tower will have ACM removed and will be demolished
- Trailers will have the skirting and stabilizing blocks removed. Trailers and removed materials will be surveyed for unrestricted release, and removed from the area.
- Exterior steel tanks will be evacuated, surveyed for unrestricted release, and segmented in place.
- Exterior acid and caustic tanks will be verified as empty, surveyed and dispositioned.
- Remaining outbuilding structures will be surveyed and removed or demolished.

The following table summarizes the proposed disposition of the Building 371 outbuildings and structures:

Building/Structure	**Disposition**
Building 373-Cooling tower	Demolished
Building 374A-Carpenter's Shed	Demolished
Building 377-Air Compressor Building	Demolished
Building 378-Waste Collection Pump House	Demolished
Building 381-Fluorine Building	Demolished
Tanks 163, 164, and in-ground concrete berms.	Removed
Tank 165-Cement Silo	Removed
Tank 167-Nitric Acid Storage Tank and asphalt lined earthen berm.	Removed
Tanks 168 and 169-Potassium Hydroxide Storage Tanks, and asphalt lined earthen berm.	Removed
Tank 170-Liquid Nitrogen Storage Tank	Removed
Tanks 224, 225, 226, and 227-Effect Vapor Body Tanks.	Removed
Tank 228-Spray Dryer Tank	Removed
Tank 262-Diesel Fuel Storage	Abandoned
Tank 262A-Diesel Fuel Storage	Removed
Trailers	Removed

Available Decontamination Technologies

Scabbler - Abrasion (scabbling) of concrete surfaces is also referred to as "scarifying" (scabbling is a trade name). The scarifying technique is best suited for the removal of thin layers of contaminated concrete. The tool consists of pneumatically operated piston heads that strike the surface and chip off the concrete. The piston heads have points (normally five or nine) and are made of tungsten carbide. The units are available in floor, wall, and hand-held models, depending on the application. The scabbler, while effective at removing surface contamination up to one inch deep, does require containment controls during operation, due to a high generation of dust. All debris generated, even from unaffected areas, will be managed as LLW.

Hydrolasing - Hydrolasing is accomplished by propelling water at very high pressure against the contaminated surface. The abrasive action of the high-pressure water removes the layers of paint and the immediate layer of concrete matrix. Containment of the water is necessary to protect adjacent areas. Water is contained at floor level by temporary berms installed and sealed on the floor surface. Secondary hydrolasing water is collected from bermed areas and is processed through filtration and ion media to meet release criteria.

Grit blasting - Abrasive grit decontamination is accomplished by propelling a grit media against a contaminated surface. The abrasive action of the grit strips the contaminant from the surface. Water and air are the two most widely used grit propellants. Water is preferred because it reduces the amount of airborne contamination. However, water systems produce more secondary waste than air systems, unless the system is equipped to recycle the secondary liquid waste generated.

Most modern grit blasting systems are equipped to not only recycle the propellant used, but also the grit itself. The most common grit media in use are glass beads, plastic beads, and alumina, all of which may be recycled several times before their effectiveness is diminished.

"Shot"- blasting - Vacu-blasting operates on the same principal as grit blasting, i.e., an abrasive grit media is propelled at high force onto a contaminated surface to remove the contaminants. The vacu-blasting system is equipped with a vacuum fitting which evacuates the abrasive media, dislodges debris, and collects it in a reclaimer. The abrasive media is then separated from the contaminated debris for reuse.

Systems currently in use in the nuclear industry effectively remove layers of paint and underlying contaminants while generating a minimum of airborne contamination and secondary waste. However, large compressor units are required to provide the air supply. Larger systems are equipped with several blast heads of various sizes. The number and sizes of the blast heads are dependent upon the dimensions and physical arrangement of the area(s) to be decontaminated. Flexible hosing is used to connect the blast heads to the main unit. This improves the system's versatility and mobility.

Pneumatic Hammers - Chipping hammers are similar in concept but are lighter (14-35 pounds), which allows them to be hand-held for use on walls and ceilings. Their rate of delivery is normally about 2,000 blows per minute but the nail size is about half that of a paving breaker. Chipping hammers are used to scarify small areas of walls where contamination may have penetrated several inches. Hand held and reasonably priced, they are effective for removing surfaces in a partially contaminated structure.

Concrete floor and wall saws - A motor-driven diamond or carbide saw blade may be used to cut a kerf through concrete floors or walls. Most concrete wall saws are track-mounted and operated manually. Most concrete floor saws are wheeled units and are also manually operated. A normal thickness of cut is about 1/3 the diameter of the blade, and saw cut speed can reach 150 square inches per minute, depending on the concrete composition. Since most concrete saw blades are water-cooled to prevent warping, the water is a secondary waste concern. The process of concrete cutting is dependent on the material being cut, but it is a useful dismantling technique. Concrete sawing is cost-effective, but is limited to concrete removal applications.

The following tables summarizes the uncertainties and potential risks associated with the 371 Closure Project decontamination strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Depth of contamination, Areas	Increased schedule and cost	Medium	Increased RLC and in-process characterization
Surface area of contamination, Areas AF, AP, and AQ	Increased scope, schedule, and cost	Low	Early characterization process

*High, Medium, or Low

3.2.11 Central Storage Vault Strategy

The CSV is a room measuring 300 feet by 15 feet by 40 feet, with one-foot thick reinforced concrete walls. The CSV contains storage racks constructed of 4 inch by 4 inch steel channel frame designed to hold the 4 foot by 4 foot aluminum and stainless steel pallets, which are used to store and transport SNM between gloveboxes within Building 371. The stacker retriever (S/R) is a computer-controlled remote mobile lifting mechanism, which moves the pallets between storage locations and I/O stations. The I/O stations are gloveboxes extending through the vault walls, up through the first floor of Building 371, providing direct access to process gloveboxes, without bag-in or bag-out. The I/O stations contain hydraulic lifters. Additional rooms within the CSV are used as a repair bay, as an open area to allow for movement of the stacker retriever between rooms, and as a storage area for a spare stacker retriever. The CSV and I/O stations are serviced by a recycled, inert, Zone 1 atmosphere. The following outlines the general approach to dismantlement and decontamination of the CSV:

- Removal and dismantlement of the Pu storage pallets,
- Removal and dismantlement of the maintenance pallets stored in the CSV,
- Preparation of the CSV (and adjacent areas) and equipment to support dismantlement and decontamination,
- Dismantlement of the spare and primary stacker/retrievers,
- Re-configuring of CSV ventilation and de-inerting of N_2 atmosphere,
- Fogging of CSV to fix loose contaminants,
- Surveys and scans of CSV and storage systems,
- Vacuuming of pockets of contaminants to alleviate airborne incidents,
- Storage rack removal and I/O station dismantlement,
- Dismantlement of transfer vehicle and repair lifts,
- Structural decontamination, and
- PDS.

SNM remaining in the CSV are residues that are currently being removed and processed or repackaged for offsite shipment. Empty storage pallets (approximately 1,200), and maintenance pallets, will be deactivated in I/O 8 and its associated glovebox line in sub-basement Room 1111. I/O 8 will be modified to add a bag-out port for removal of waste materials to a rolling table. A single storage pallet will be moved into I/O 8 using the existing S/R. Water will be removed from each of four double walled stainless steel storage cans riveted to the aluminum base plate using vacuum. The water, which served as radiation shielding, will be piped directly to the CWTS for processing. The SNM storage containers will be removed from the aluminum base plate using an air-operated chisel. The SNM storage containers and the aluminum pallet will be decontaminated using either wet wiping or strippable coating. The SNM storage containers will be moved into the glovebox line and packaged as LLMW due to the presence of lead shielding inside of the double walled containers that will not be removed. The aluminum pallet will be removed through the bag-out port and packaged as LLW.

When the inventory of storage pallets has been deactivated, deactivation of the approximately 200 maintenance pallets presently in the CSV will be accomplished. Maintenance pallets are aluminum base plates fitted with a stainless steel dish that holds contaminated tools, process system parts, and excess SNM storage cans. The material stored in each maintenance pallet will be moved into the glovebox line for packaging as TRU waste. Excess SNM storage cans will be crushed prior to packaging. The maintenance pallets will be decontaminated, removed through the bag-out port and packaged as LLW.

Concurrent with activities for removal of the storage pallets, Room 1214, located at the sub-basement level will be configured as a containment access for the repair bay. Appropriate containment for moving materials through the floor hatch (upper level Room 1218) will be constructed. This room will provide a packaging area for materials coming from the repair bay.

In order to accomplish storage rack survey and removal, manned access to all areas and elevations of the storage racks will be necessary. This will require that some type of man-lift capability, adequate to ensure personnel and removal equipment access, be inserted into the Pu storage area of the CSV. Three alternates have been identified for preparation of man-lift capabilities for rack survey and removal. The engineering design and cost economy will be assessed for each alternate prior to the execution of storage rack removal.

- Alternative one would consist of selecting, procuring, and inserting into the CSV, a commercially available man-lift with the capabilities determined during initial engineering design for CSV decommissioning. A specially engineered battery-operated man-lift (or scissors type lift) will be procured for the survey operations and storage rack removal. The man-lift will be moved to the sub-basement with the elevator, and inserted into the repair bay through the floor hatch of room 1218. This alternative will require removal of the rail system for the S/R, or procurement of a man-lift able to maneuver in the Pu storage area without S/R rail removal.
- Alternative two would consist of engineering design and construction of a new carriage capable of using the floor mounted rail system, installing lifting capability (possibly with a commercial man-lift) with the capability of supporting storage rack survey and removal. The carriage will be designed to accept a battery operated man-lift or scissors lift capable of conducting survey operations and storage rack removal.
- Alternative three would consist of modifying pieces of the spare S/R to accomplish survey and rack removal in the CSV. The spare S/R will be moved from the maintenance bay to the repair bay using the stacker transfer vehicle. The repair bay door will be closed to isolate the repair bay from the CSV and the ventilation for the bay de-inerted and re-configured to support decontamination activities. The spare S/R will be surveyed to determine waste classification. Based on contamination surveys results, some or all of the S/R may be decontaminated to allow disposal as LLW or LLW-SCO. Major components of the S/R (motors, gears, transfer cart, electrical controls, cameras, etc.) will be removed from the assembly and packaged for disposal. The mast, and lift platform assembly, will be segmented using plasma cutting technology, supported by the overhead bridge crane in the repair area. The carriage frame assembly of the spare S/R will be recovered and will be used as the platform for construction of a special use man-lift to facilitate removing the CSV storage racks. Using the overhead bridge crane, the removed materials will be transported through the floor access hatchway of Room 1218, and packaged as LLW-SCO material in Room 1214.

  Using the recovered carriage frame assembly from the spare S/R as a stable and moveable rail-mounted platform, a specially engineered battery-operated man-lift (or scissors type lift) will be assembled in the repair bay. A specially engineered and converted (no wheels, attachment points modified, etc.) commercial man-lift will be introduced into the repair bay through the floor hatch above Room 1214 and attached to the recovered carriage assembly. The man-lift/platform will be used for the storage rack removal and initial decontamination (vacu-blasting or hydrolasing) of the CSV.

Following assembly, the rail-mounted man-lift will be covered and moved with the stacker transfer vehicle to the maintenance bay for storage until manned entry can be accomplished.

The primary S/R will be moved from the CSV to the repair bay using the stacker transfer vehicle. The repair bay door will be closed to isolate the repair bay from the CSV, and the ventilation for the bay re-configured to support decontamination activities. The primary S/R will be surveyed to determine waste classification. Based on contamination surveys results, some or all of the S/R may be decontaminated to allow disposal as LLW or LLW-SCO. Major components of the S/R (motors, gears, transfer cart, electrical controls, cameras, etc.) will be removed from the assembly and packaged for disposal. The mast, lift platform assembly, and carriage frame assembly will be segmented using plasma arc or other cutting technology, supported by the overhead bridge crane in the maintenance area. Using the overhead bridge crane, the removed materials will be transported through the floor access hatchway of Room 1218, and packaged as LLW-SCO material in Room 1214.

The CSV will be de-inerted and adapters to insert a passive aerosol fog will be installed in the East and West sections of the CSV. Ventilation (re-circulation) of the CSV will be reduced, and the interior of the Pu storage vault, stacker/retriever transfer bay, and the maintenance bay will be fogged to encapsulate the contaminants on the interior surfaces of the vault, and reduce the possibility for airborne contamination. The repair bay is isolated from the primary vault and spare S/R dismantlement can be accomplished concurrent with fogging and initial operations in the CSV. Manned entry to the CSV will be accomplished in powered air purifying respirator (PAPR), and any loose items will be removed and packaged for disposal as TRU material. A durable fixative or Insta-Cote coating will be applied to the floor area to encapsulate remaining contaminants. The storage racks and structural surfaces will be surveyed to assure that all accountable SNM has been removed, and scans will be conducted to characterize any remaining areas of contamination. The ability to “re-fog” the room will be maintained during the rack removal and initial decontamination operations.

In an effort to reduce the possibility of re-suspending contamination, the man-lift/platform will be moved from the maintenance bay to the Pu storage vault, and the rack assemblies will be vacuumed in PAPR using criticality safe vacuum systems to remove any remaining loose materials. This vacuuming operation should remove the identified areas (“pockets” or bulk material-containing areas) of contamination from the storage rack assemblies prior to rack removal. This is accomplished to preclude the possibility of creating airborne problems during the storage rack removal and segmentation. Following this evolution, the man-lift will be returned to the maintenance bay, or the repair bay, the repair bay door closed and sealed, and the CSV will be re-fogged.

A specially engineered winch system will be installed to facilitate the segmenting and lowering of removed rack assemblies. The winch system will be designed to allow for slowly lowering the vertical sections of rack assemblies to the floor in a controlled manner. The racks will be removed as one “ladder section” at a time. The vertical rack assemblies (ladder sections) will be supported at the top with the winch system. The wall brackets will be cut free using plasma arc or mechanical cutting, the 4 inch by 4 inch vertical masts will be severed six inches below the ceiling, and the masts will be notched within working distance of the floor. The severed section of vertical rack system will then be lowered to the floor from the top, segmentation of the 4 inch by 4 inch masts at the floor level will be completed, and the sections will be laid flat on the floor. Segmentation of the “ladder” sections will then be accomplished at floor level using plasma arc or mechanical type cutting methods, and the pieces packaged for an assumed TRU disposal. Should in-process characterization indicate that removed rack pieces can be decontaminated to LLW-

SCO, decontamination will be accomplished at floor level prior to waste packaging. Upper and lower pieces of the vertical mast assembly will be removed prior to proceeding with the next vertical mast assembly. This operation will be completed for each vertical mast section until all storage racks have been removed.

Upon completion of rack size reduction, I/O stations will be deactivated and decommissioned in a manner similar to all other contaminated gloveboxes. Hydraulic lift stations and transfer vehicles will be decontaminated, or loose contamination will be "fixed", dismantled, segmented and packaged for disposal as TRU. I/O stations will be isolated with steel plates mounted at the floor line, and surface decontamination of the I/O stations will be accomplished during CSV decontamination activities.

The stacker transfer vehicle, and maintenance repair lift will be removed, segmented, and packaged for LLW-SCO disposal. The CSV, maintenance bay, and repair bay will be prepared for hydrolasing or vacu-blasting operations. If hydrolasing is the method selected, collection areas at elevations 60 feet 2 inch, 58 feet 10½ inch, 57 feet 2 inch, and 53 feet 2 inch for hydrolasing effluents will be installed. Criticality safe pumps and collection containers will be installed to collect and process hydrolasing water.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method or by high-pressure water hydrolasing methods. Floor areas will be decontaminated using mechanical scarifying equipment. Concrete embedments (plates, anchors, rails, penetrations, etc.) will be removed. Leaded glass windows and maintenance bay glove ports will be removed and the openings covered. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts and an iterative process to complete decontamination will occur. Additional decontamination efforts will be accomplished using mechanical scarifying equipment until surfaces meet applicable unrestricted release criteria.

The following table provides an estimate of the waste streams and volumes of waste resulting from CSV dismantlement and decontamination:

Building 371	**TRU** (m^3)	**LLW** (m^3)
Stacker/Retriever	0	200
Storage Rack Removal	28	82
I/O Station Removal	159	0
Miscellaneous Material	20	200

The following are the assumptions associated with the CSV strategy:

- S/R will remain operative until storage and maintenance pallets have been removed,
- Ventilation systems can be re-configured to facilitate "fogging" operations,
- To allow use of PAPR, "fogging" operations and/or installation of "fixative" coatings will contain loose contamination and prevent airborne contamination,
- Man-lift capability can be designed and constructed to facilitate Pu storage rack removal and decontamination activities,
- Plasma arc cutting is authorized, and
- Concrete removal will not be required to meet unrestricted release criteria,

The following table addresses the uncertainties associated with the CSV strategy:

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
S/R becomes inoperative	Cost and schedule impact	Medium	None
Supplied breathing air required for dismantlement	Cost and schedule impact	Low	None
Plasma arc cutting methods not authorized	Cost and schedule impact	Low	None
Concrete removal will be required	Cost and schedule impact	Low	None

*High, Medium, or Low

3.2.12 Canyon and Carousel Strategy

The term "canyon" refers to the rooms in Building 371 that were designed to contain process equipment too large to be placed in gloveboxes. These rooms are serviced by Zone I and IA ventilation that were designed to collect and contain plutonium solutions and/or materials that could escape from process equipment. The canyons include the incinerator scrubber canyon (Rooms 2327, 1117, and 1125), precipitator canyon (Room 3521), fluorination canyon (Room 3523), reduction canyon (Room 3531), ion exchange canyons (Rooms 3549 and 3553), ion exchange valve maintenance corridors (Rooms 3547 and 3555), and ion exchange tank vaults (Rooms 3559 and 3563). There are equivalent canyons in the Americium area (Rooms 3325, 3333, 3327, 3331, and 3337).

The canyon deactivation scope includes SNM removal, non-actinide liquid draining, and removal and packaging of loose material and equipment. During Set activities, the mechanical and process equipment will be manually size reduced and packaged as TRU waste. Dismantlement work in the canyons will require the use of supplied breathing air.

For deactivation and dismantlement activities, all canyons will be “fogged” to alleviate airborne contamination problems. Adapters to insert a passive aerosol fog will be installed through appropriate penetrations for each canyon. Ventilation will be reduced, and the interior of the canyon will be “fogged” to encapsulate the contaminants on interior surfaces. A durable fixative coating (Insta-Cote) will be applied to floor areas. The ability to “re-fog” the canyon will be maintained for deactivation, dismantlement, and initial structural decontamination operations.

Decontamination of the canyons will be conducted to render walls, ceilings and floors that will meet unrestricted release criteria. Liquid contamination events have been generally limited to small leaks, and overflows. directly beneath the valves, tanks, and cups. As these areas have not been generally exposed to excess liquids, it is likely that concrete interfaces (construction joints, floor to wall, wall to ceiling) will not be contaminated beneath the painted surface layer. To eliminate this migration pathway, all decontamination methods will be accomplished with dry methods. As such, the structural surfaces will be vacu-blasted using abrasive grit to remove all paint from the surfaces above the floor level. Floors will be scarified with mechanical equipment to an initial depth of ½ inch. Floors or walls with deep contamination will be identified (as to depth of contaminants), and concrete will be removed either during the decontamination process, or the areas will be sealed and removed just prior to demolition of the structure.

Incinerator Scrubber Canyon (Rooms 2327, 1117, and 1125)

The incinerator scrubber canyons are the lower half of the original canyon that stretched the complete height of the building. The canyon originally housed the scrubbers for the incinerator off-gas from the HSA and LSA incinerators, piping, caustic tanks, and pumps necessary to run the systems. The sub-basement level also contained the acid backwash for the CWTS, used to make the CWTS oxide precipitate acceptable as feed to the ion exchange system on the ground floor. The LSA never went hot, and that scrubber system is contaminated to the extent it became cross-contaminated within the canyon environment. The HSA was contaminated and some of that contamination migrated through its scrubber system.

During the PROVE upgrades (1987), the incinerators and the top portion of both system's scrubbers were removed to below the ground level, the areas decontaminated, and a new ground floor poured. The added concrete floor must be removed just prior to the demolition of the structure. Room 2327 was moderately contaminated before fogging, and will be stripped out manually as LLW. The sub-basement, separated from the basement by a grating, is more highly contaminated as a result of liquids leaking on the floor without immediate cleanup and the backwash system leaks. The residual liquids and caustic crystals were cleaned up in the early 1990s, and a painted coating was applied to seal the floor from future leaks. Most of this waste will be LLW, although the contamination levels under any fogging will be much higher than in the basement level. The ventilation system (Plenum 243) that draws air from this canyon is the same system that supports the PuSPS system, making coordination between decommissioning and PuSPS during ongoing operations necessary.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced, and packaged as TRU and LLW.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Floor areas will be decontaminated using mechanical scarifying equipment to remove ½ inch of initial concrete materials; contamination in cracks will be chased and removed with portable scabblers or needle guns. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Precipitation and Calcination Canyon (Room 3521)

The precipitator canyon housed the process system that converted the plutonium nitrated solutions (previously purified in ion exchange) into the plutonium oxide as feed for the fluorinators. The equipment consists principally of two "carousels," each containing stations, an automatic transportation system for moving the filter boats to Glovebox 33. The stations are on a seismically qualified structure attached to the floor. Each station consists of a 6 feet by 4 inch diameter stainless-steel pencil tank and a circular, refractory-containing calciner 2½ feet in diameter and 1½ feet high. There are numerous additional liquid and solenoid valves and instrumentation located on racks in the rooms. The precipitator process proceeded through hot start-up, during which numerous batches of nominal 100 gram per liter plutonium nitrate per 1 molar nitric acid slurries were dumped to the canyon floor. After testing was discontinued, the plutonium oxide was cleaned up as much as possible, leaving the floor pitted and paint peeled in places. In some localized areas gram-levels of contamination may exist; however, the limited period of use would seem to indicate that excessive, widespread penetration of contamination into the concrete is unlikely.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced and packaged as TRU and LL waste. Glovebox 33 will be modified to allow the sorting and final sizing of waste going into SWBs or crates.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Floor areas will be decontaminated using mechanical scarifying equipment, initially using smaller tools to remove local hot-spots, followed by larger equipment to remove an additional ½ inch of concrete materials. The floor in this canyon area is expected to exhibit the deepest contamination pattern for the building. Some floor may need to be removed in lieu of decontamination. These will be identified, and removal will be accomplished just prior to PDS and building demolition. Water filled windows will be drained, leaded glass removed, window opening decontaminated, and the opening will be closed with steel plate. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Fluorination Canyon (Room 3523)

The fluorination process was used for a limited start-up period with plutonium oxide produced in Building 771. Oxide was pneumatically introduced from Glovebox 33 into the four fluidized-bed columns in Rooms 3523. The room also contains the off-gas dust separators, pneumatic piping to the reduction canyon, and various instrumentation. Because of the limited start-up period and the dry nature of the process, the contamination introduced during start-up should not have penetrated the surface paint. Additional contamination due to cross contamination from airflow or tracking of contamination from the more-contaminated precipitator canyon should be readily removable.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced and packaged as TRU and LLW.

Upper structural surfaces (walls and ceilings) will be initially decontaminated with strippable coatings, and subsequently will have paint removed as necessary using an abrasive shot/grit blasting method. Floor areas will be initially decontaminated with strippable coatings, and subsequently decontaminated using mechanical scarifying equipment to remove an initial ½ inch of concrete materials. Water filled windows will be drained, leaded glass removed, window opening decontaminated, and the opening will be closed with steel plate. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Reduction Canyon (Room 3531)

The reduction process in Room 3531 was also used only during start-up. Plutonium fluoride was transferred from the fluorinators to the reduction "carousel," magnesium metal added, the reaction ignited, metal and slag phases allowed to separate and cool, and the coalesced plutonium metal "button" removed using manipulators. Final processing and packaging occurred in Glovebox 32. The levels of contamination on structural surfaces should be similar to that of the fluorinator canyon, powdery in nature and with little

penetration into the paint, with areas are higher contamination from leaking pneumatic (dry) piping and spills of metal or slag. Cross contamination from airflow or tracking of contamination from the more-contaminated precipitator canyon also may have occurred. Glovebox 32 is currently being used to process residues, which may contribute an additional source of contamination to this canyon.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced and packaged as TRU and LLW. The carousel is a fairly massive piece of metal, but will be size reduced using plasma arc or other thermal cutting. The manipulator arms could possibly be used to hold the plasma arc torch. Glovebox 32 may be modified to handle waste packaging.

Upper structural surfaces (walls and ceilings) will be initially decontaminated with strippable coatings, and subsequently will have paint removed as necessary using an abrasive shot/grit blasting method. Floor areas will be initially decontaminated with strippable coatings, and subsequently decontaminated using mechanical scarifying equipment to remove an initial ½ inch of concrete materials. Water filled windows will be drained, leaded glass removed, the window opening will be decontaminated, and the opening will be closed with steel plate. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Oxide and Residue Processing Canyons

Ion Exchange Canyons (Rooms 3553, 3549 and Airlock 3551)

The ion exchange (IX) canyons contained the processes, which received liquids from the oxide and residue dissolution lines in Room 2325 (via the tanks in Rooms 3563 and 355), purified and concentrated the plutonium nitrate, and prepared the solutions for precipitation in the precipitator canyon. The system was integrated with tanks in the tank vaults, controlled by the valves in the VMCs, fed by the pumps and filters in the pump gloveboxes, and supported by the nitric acid recovery in Rooms 3571 and 3573. The canyons extend into the attic space. The equipment consists of numerous columns, pencil tanks, and evaporators hung vertically along the sides of the canyons. During start-up testing, significant liquids were run through the ion exchange columns and evaporators. Historically, there was localized dripping of plutonium nitrate. All liquids have since been drained and all resin in the columns has been removed. Contamination should consist of localized acid-etched areas on the floor, and some splash areas on the walls.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced and packaged as TRU and LLW.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Floor areas will be decontaminated using mechanical scarifying equipment to remove an initial ½ inch of concrete materials. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Ion Exchange Valve Maintenance Corridors (VMCs) (Rooms 3543, 3545, 3547, 3555, and 3557)
The VMCs are long, narrow rooms that wrap around the perimeter of the IX canyons, and contain the solenoid valves and other equipment in an environment that was intended to be more benign than that of the IX canyons. It contains two levels – an upper level, extending into the attic that contains reagent valves, and a lower level that contains valves for plutonium nitrate solutions. The outer wall of the VMCs (i.e. the wall opposite the IX canyons) is made up of the back side of the pump gloveboxes (including piping) on the bottom and drywall construction above. The removal of the VMCs must be coordinated with the pump glovebox removal. There was leaking of valves during start-up testing, and areas of localized acid etching exists on the floors and walls.

Pump gloveboxes and downdraft tables will be removed first to provide access to the VMC. VMC equipment (piping and valves) will be removed and packaged as TRU waste. Structural steel and grating materials will be removed and packaged as SCO-LLW.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Floor areas will be decontaminated using mechanical scarifying equipment to remove an initial ½ inch of concrete materials. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Oxide and Residue Tank Vaults (Rooms 3563 and 3559)
The tank vaults were feed storage for the IX process, and include a total of seventeen raschig-ring tanks. The solutions originally stored were the liquids from dissolution; however, over the years various solutions of lower plutonium concentrations (e.g. tank calibration) were added. The tanks contained contaminated acids for over ten years. Although there were no massive spills, leaks from valves and sight glasses contributed to localized, acid-etched contaminated areas. The tanks were drained during the actinide draining program, completed in FY98, and will have the raschig rings removed, and be decontaminated to SCO levels during building deactivation.

Prior to decontamination, mechanical and process equipment will be removed, manually size reduced and packaged as TRU and LLW.

Upper structural surfaces (walls and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Floor areas will be decontaminated using mechanical scarifying equipment to remove an initial ½ inch of concrete materials. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Americium Processing Canyons
The americium area (tank vault, IX canyons, and VMCs (Rooms 3337, 3327, 3331, 3325, 3333, 3323, 3321, 3335, and Airlock 3329)) were never placed in service. The intended purpose of this process was to purify the americium resulting from the molten salt extraction in Room 3305. The configuration of the canyons is analogous to the oxide and residue IX canyon areas, with tank vaults and VMCs surrounding

an americium IX canyon. In the early 1990s, the equipment in the tank vault and IX canyons was stripped out and the rooms made into secured storage vaults to support residue and IAEA-monitored material storage. The valve maintenance areas and pump gloveboxes remain as installed, and are reported to have become contaminated during ventilation reversals.

Americium Processing Tank Vaults (Room 3337)
Structural surfaces (floors, walls, and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Americium Processing Ion Exchange Canyons (Rooms 3327, 3331 and Airlock 3329)
Structural surfaces (floors, walls, and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

Americium Processing Valve Maintenance Corridor (Rooms 3325, 3333, 3323, 3321, and 3335)
Pump gloveboxes and downdraft tables will be removed first to provide access to the VMC. VMC equipment (piping and valves) will be removed and packaged as TRU waste. Structural steel and grating materials will be removed and packaged as SCO-LLW.

Structural surfaces (floors, walls, and ceilings) will have all paint removed using an abrasive shot/grit blasting method. Piping, mechanical, and electrical penetrations will be abrasively cleaned and the penetration sealed to prevent re-contamination. Initial PDS surveys will identify surface areas (floors, walls, or ceilings) requiring additional decontamination efforts, and an iterative process to complete decontamination to unrestricted release criteria. Additional decontamination efforts will be accomplished using mechanical scarifying equipment.

The following table provides an estimate of the waste streams and volumes of waste resulting from canyon dismantlement and decontamination:

Building 371 Canyons	**TRU** (m^3)	**LLW** (m^3)
Incinerator Scrubber Canyon	50	30
Precipitation and Calcination Canyon	11	32
Fluorination Canyon	11	21
Reduction Canyon	12	26
Oxide and Residue Processing Canyons	133	266
Americium Processing Canyons	59	57

The following are the assumptions associated with the canyon strategy:

- Equipment removal and initial structural decontamination will require supplied breathing air, with subsequent decontamination efforts in PAPR or air purifying respirator (APR).

- Raschig ring removal and cerium (IV) nitric acid decontamination of tanks will allow disposal as LLW-SCO
- Mechanical penetrations (piping, electrical, HVAC, etc.) will not require removal,
- Plasma arc cutting is authorized, and
- Concrete removal will not be required to meet unrestricted release criteria.

The following table addresses the uncertainties associated with the CSV strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Plasma arc cutting will not be authorized	Cost and Schedule Impact	Low	None
Concrete removal will be required	Cost and Schedule Impact	Low	None

*High, Medium, or Low

3.2.13 Pre-Demolition Survey Strategy

The objective of the PDS is to assess the final radiological (and non-radiological, if applicable) conditions within the Project in order to free-release the facilities and prepare a Pre-Demolition Survey Report (PDSR), which is issued to the LRA for approval. The following question will be answered based on PDS results: Is the survey unit suitable for unrestricted release?

The strategy for PDS is to verify that the radiological condition of the survey unit meets the requirements outlined in the PDSP. The type of data necessary to satisfy the objectives of PDS include total surface contamination measurements, removable surface contamination measurements, and scan data.

The RLCR provides much of the information required to design the PDS. Additional information required to design the PDS include in-process survey data (radiological) and updated maps to reflect structural alterations. In-process surveys are performed to assess the changing radiological conditions during the course of decommissioning and to confirm that an area is free of gross contamination. In-process survey data will be considered in the PDS design.

The RLC data for Type 1 (Class 3) survey units satisfies the PDS requirements. PDS will not be repeated for these structures, provided that isolation controls were maintained throughout the duration of the project. Verification surveys will be performed prior to the release of these structures to confirm that radioactive material was not introduced into these areas. Structures such as the office building (Building 376) and trailers (T376A, T371K, and T371H/J), and support outbuildings (Buildings 373, 374A, 377, 378 and 381) are included in this category.

Chemical contaminants will be addressed during the in-process phase of decommissioning. All equipment chemically contaminated (e.g., with concentrations of beryllium, other toxic metals, PCBs, and other organic compounds above levels allowed for unrestricted release) and all ACM shall be removed prior to the commencement of PDS. Areas with any beryllium or other chemical contamination will be decontaminated prior to PDS. In limited cases (e.g., Building 371/Building 374 roof), non-radiological characterization may be required during the PDS phase.

Based upon available data/information, the following sampling plan is recommended in order to support the PDS effort for both radiological and chemical constituents. The building surfaces have been divided into survey areas based on the requirements outlined in the PDSP. Further breakdown of the survey areas into survey units will be completed once the characteristics of individual areas and the potential for contamination are assessed. The types of measurements that will be performed during PDS include total surface contamination, removable surface contamination, and surface scans. For this estimate, the 371 Closure Project will be delineated into 37 survey units as shown in Table 7.

Table 7. 371 Closure Project Survey Areas

BLDG	Survey Area	Description
371	A	Rooms 1115 & 1113, and CAs within Rooms 1103 and 1210 in sub-basement
371	B	Rooms/corridors, including 1103, 1101, 1111, 1006, 1005, 1004, 1003, Stairwell #5, 1216, 1210, 1208, 1121, 1121A, 1124, 1123, 1204, 1202, 1214, and Stairwell #1
371	C	Rooms/corridors at south end of basement, including 2202, 2011, 2202A, 2202B, 2202C, 2205, and Stairwell #3
371	D	Rooms/corridors, including 2012, 2203, 2201, 2207, 2223, 2213, 2217, 2010 (corridor), 1216, Stairwell #5, 2221, 2225, and 2009 (corridor)
371	E	Rooms, including 2307 & 2325, and Stairwell #4
371	F	Rooms/corridors at northwest end of basement, including Rooms 2305, 2301, 2309, 2303, 2304, 2306, & 2018; Stairwells #1 & #2; and Corridor 2014
371	G	Rooms/corridors in basement, including Rooms 2310, 2316, 2321 & 2016; Corridor 2015; and a portion of Corridor 2009
371	H	Non-radiological Rooms/offices at east end of basement, and Rooms 1001 & 1002, Elevator #1, and Stairwell #6 in the sub-basement
371	I	Process areas/Rooms on main floor, including 3305, 3323, 3321, 3335, 3327, 3329, 3331, 3206 & 3204
371	J	Process areas/Rooms on main floor, including 3412, 3602, 3511, 3515, 3567A, 3545, 3543, 3557 & 3567B
371	K	Rooms/corridors on main floor, including Corridors 3341, 3035, 3031A, 3034/3404A & 3033; Rooms 3337, 3037, 3537A, 3541, 3036, 3501, 3315, 3301, 3030, 3208, 3406, 3404, 3404B, 3402, 3408, 3436, 3412, 3513 & 3420; and Stairwells # 1, 2 & 3
371	L	Rooms/corridors on the main floor, including Corridors 3031B, 3032, 3042, 3040, 304; and Rooms 3434, 3432, 3432A, 3432B, 3430A, 3430, 3721, 3717, 3709, 3719, 3606, 3189, 3713, 3715 & 3701
371	M	Non-radiological Rooms/administrative offices in the southwest corner of main floor level, including those west of Corridor 3017A, including Corridor 3017a.
371	N	Non-radiological Rooms/administrative offices in the southeast corner of main floor level, including those east of Corridor 3017A, excluding Corridor 3017A.
371	O	Non-radiological Rooms/administrative offices/docks in the Northeast corner of main floor level, including those north of Corridor 3023 (Rooms 3038, 3583, 3581, 3044, 3587, 3043 & 3585)
371	P	North end of Room 4301 and Stairway #2
371	Q	Rooms 4303, 4305, 4307, & south end of 4301, and Stairway #1
371	R	Rooms 4202, 4204, 4003 & 4004, and Stairway #3
374	S	Rooms 4101, 4102, 4103, 4104, 4105 & 4106, and Stairways #6 and #7
374	T	Room 2804 including stairwell
374	U	Rooms 2801, 2805, 2807, 2808, 2811 & 2812, and Stairwell #8
374	V	Rooms 3801 and 3803

Table 7. 371 Closure Project Survey Areas

BLDG	Survey Area	Description
374	W	Rooms 3802, 3804, 3805, 3806, 3807, 3808, 3809, 3810, 3811, 3812, 3813 (including downward Stairwell #8), 3168 & 3168A
374	X	Rooms 4803, 4804, 4805, 4806, 4807 & 4815 (including Stairwell #9)
374	Y	Rooms 4801, 4802, 4810, 4812 & 4814 (including stairway)
371/374	Z	External surfaces/roofs
371/374	AA	Diesel fuel/storage tanks 262A, and liquid nitrogen storage tank 170 exterior to 371/374
371/374	BB	1st , 2nd, 3rd & 4th effect vapor body tanks (H20 + NAOH) 224 - 227 exterior to 371/374
371/374	CC	Product water tanks 163 & 164; cement silo 165; nitric acid tank 167 (aka D-222), KOH storage tanks 168 (aka D-225) and 169 (aka d-842); and spray dryer tank 228 exterior to 371/374
373	DD	Interior of cooling tower and pump house
377/381/ 374A	EE	Interiors of Building 377 (air compressor bldg.), Building 381 (fluorine storage/paint shop), & 374A carpenter shop
378	FF	Interior of Building 378 (waste collection pump house)
377/378/ 381/374A/373	GG	Roof and exterior of Building 377, Building 378, Building 381, Building 374A & Building 373
376/376A	HH	Interior of Building 376 and T376A (offices)
376/376A	II	Roof and exterior of Building 376 and T376A
371K & 371H/J	JJ	Interior of T371K and T371H/J (offices)
371K & 371H/J	KK	Roof and exterior of T371K and T371H/J

The initial survey area classifications (per the PDSP), surface area estimates, and minimum required scan frequencies are presented in Table 8.

Table 8. 371/374 RLC Survey Areas

Survey Unit	Initial Survey Area Classification	Estimated Surface area (m^2)	Minimum Required Scan Frequency (%)
A	1	497	100
B	1	775	100
C	2	1857	50
D	1	1607	100
E	1	674	100
F	2	1413	50
G	2	962	50
H	2	1861	50
I	1	869	100
J	1	603	100
K	1	1790	100
L	1	1334	100
M	2	1638	50
N	2	1380	50
O	2	1712	50

Table 8. 371/374 RLC Survey Areas

Survey Unit	Initial Survey Area Classification	Estimated Surface area (m^2)	Minimum Required Scan Frequency (%)
P	1	1217	100
Q	1	1116	100
R	1	1773	100
S	1	1032	100
T	1	625	100
U	1	1340	100
V	1	610	100
W	1	1199	100
X	1	287	100
Y	1	395	100
Z	2	Exterior	50
AA	3	Tanks	10
BB	2	Tanks	50
CC	2	Tanks	50
DD	3	341	10
EE	3	208	10
FF	3	12	10
GG	3	Exterior	10
HH	3	461	10
II	3	Exterior	10
JJ	3	268	10
KK	3	Exterior	10

Per the PDSP:
Class 3: areas that are not expected to contain any residual radioactivity, or are expected to contain levels of residual radioactivity at a small fraction of the $DCGL_W$;
Class 2: areas with a potential for radioactive contamination, or known contamination, but are not expected to exceed the $DCGL_W$. These areas should provide a high degree of confidence that no individual measurement would exceed the $DCGL_W$;
Class 1: areas that have, or had prior to remediation, a potential for radioactive contamination, or known contamination. Note that areas containing contamination in excess of the $DCGL_W$ prior to remediation should be classified as Class 1 areas.

An independent verification (IV) survey may be performed on an established percentage of survey units (typically five-percent) following the completion of the PDS. The independent verification contractor (IVC) will be selected and funded by the DOE such that independence is maintained from the 371 Closure Project personnel.

PDS will be performed with a combination of contracted vendors and site qualified RCTs. The primary responsibility of the vendor(s) will be to perform scan surveys. Site RCTs will typically collect total and removable surface contamination measurements. Outstanding samples (for radiological and/or chemical contaminants) will be collected by the Site sample team or other sampling personnel. The total number of crews to be utilized will depend on schedule constraints. The following are the assumptions associated with the PDS activities:

- The required number of survey crews and instruments will be available.

- Independent verification surveys will not affect the schedule, and any support required from the 371 Closure Project team would be minimal.
- Independent verification surveys will be budgeted by DOE.
- The regulators will approve the PDSP.

The following table documents the potential risks and uncertainties associated with PDS activities.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Required number of survey crews are unavailable.	Cost and schedule impact.	High	Hire outside contractor to support/perform PDS.
Required number of instruments is not available.	Cost and schedule impact.	Medium	Purchase additional instruments. Hire outside contractor to support/perform PDS.
Survey productivity is less than 100 square meters per crew shift.	Cost and schedule impact.	High	Hire outside contractor to support/perform PDS. Develop/streamline contractor survey protocols/data-processing methods prior to commencement of PDS.
Map development not maintained as parallel path to surveys.	Cost and schedule impact.	Medium	Early start on map development. Early start on survey package development. Hire additional AutoCAD engineers.
Technical support not maintained as parallel path to surveys.	Cost and schedule impact.	Low	Early start on survey package design, etc. and report development.
Additional areas/conditions identified to expand original scope.	Cost and schedule impact.	High	Minimize spread of contamination during decommissioning, especially for uncontaminated or low contamination areas. Minimize storage and transport of waste crates in previously uncontaminated or low contamination areas. Perform thorough in-process surveys prior to turnover for PDS. Add "buffer" time into schedule to perform decontamination in areas contaminated during decommissioning. Maintain stringent isolation controls in surveyed areas.
The CDPHE and EPA do not approve existing Site PDSP.	Survey design approach changes, potential cost and schedule impact.	Low	Develop a project-specific plan.
The CDPHE and/or other oversight groups do not accept PDSR.	Schedule and cost impact.	Medium	Maintain consultative process throughout the duration of the survey process.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Areas are inaccessible for PDS due to decommissioning and waste storage	Cost and schedule impact.	High	Determine "critical path" activity to minimize cost and schedule impact.

*High, Medium, or Low

3.2.14 Demolition Strategy

This strategy encompasses the physical demolition of 371 Closure Project structures after decontamination and component removal activities are complete. The demolition scope will focus on all remaining structures, facilities, and appurtenances associated with the 371 Closure Project, as globally defined by Dismantlement Sets and Decommissioning Areas. The scope includes such associated appurtenances as retaining walls, loading docks, pads, tank containments, temporary structures, trailers/storage boxes, and underground utilities or structural features from within the building to a point five feet out from the edge of a given building foundation. Sidewalks, fences, and aboveground exterior utilities will be removed on a case-by-base basis and coordinated with the RISS. ER will remove asphalt roadways and the remaining underground utilities. The 371 Closure Project baseline assumes that all demolition activities will be conducted in accordance with the RSOP for Facility Disposition, as referenced in the 371 DOP. All concrete meeting the requirements of the RSOP for Concrete Recycling will be recycled.

3.2.14.1 Overview

In general, demolition activities will be split into two phases: outbuilding and Building 371 ancillary structure removal (Building 374 and Facility Support portion of Building 371), and demolition within the main Building 371 footprint. This is due to the massive nature of the main Building 371 structure, derived from it's seismic compliant design. Demolition techniques for the Building 371 structure will differ significantly from the mechanical techniques.

General demolition will be accomplished using a variety of mechanized equipment combined with the engineered and controlled use of explosives. Tracked excavators fitted with quick-change attachments are the preferred piece of equipment, using a variety of hydraulic shears, grapples, thumbs and vibratory demolition hammers to accomplish various demolition needs. A large tracked excavator properly outfitted can be used effectively on most two to three story tall demolition applications. Additionally, the detachable tools can be fitted with remote operated fogging water-spray nozzles for dust control purposes in order to prevent personnel with dust control spray hoses from getting into tight locations with limited escape routes. During demolition, airborne dust will be monitored on a visual presence or absence criterion, with dust control water spray being applied as required from a firehose equipped with a fog nozzle. The following bullets provide the general sequence of activities associated with the demolition of the 371 Closure Project:

- Mobilization,
- Site preparation,
- Removal of overhead obstructions,
- Removal of site features required to execute demolition (paved lots and streets for ease of access, retaining walls, inactive exterior fire system components),
- Demolition of outbuildings and site features (cooling towers, trailers, tanks, outbuildings, ASTs, etc.),
- Demolition of structures and appurtenances specific to Building 371/374 but independent of the main Building 371 structure. These areas will include the Building 374 structure as well as the

Support Facility located along the south side of Building 371 and connecting Building 371 to Building 374, and the Switch House and Switch Yard located along the north side of Building 371,

- Implosion of the main Building 371/374 structure after using the Building 371 as the containment for ER activities,
- Completion of the main Building 371/374 structure demolition using tracked equipment to remove remnant walls and foundation items to a depth at least 3 feet below adjacent grade,
- Placement of an engineered backfill of the Building 371 footprint,
- Site cleanup, and
- Demobilization.

The demolition sequence is based on technical requirements. However, starting the demolition process on the smaller outbuildings will ensure that the process is refined before the more complicated structures are initiated.

3.2.14.2 Mobilization

The demolition execution will begin with the mobilization of the demolition contractor followed by site preparation. A central contractor's area will be established in an existing improved area, such as the paved area off the northwest corner of Building 371. The decommissioning contractor may mobilize the following items: office trailers, shower/change facilities, lunchroom, portable toilets, hand wash units, and tool/equipment storage. The existing PA security fence will be incorporated into an overall access control boundary.

3.2.14.3 Site Preparation

As part of site preparation, all existing features associated with Site utility systems will be located, marked, and evaluated for isolation purposes. The sanitary sewer system will need to be isolated to prevent inflow of inappropriate wastewater generated by demolition dust control activities.

Electrical and communication needs within the 371 Closure Project area will be dynamic, but it is likely that all power fed from the main distribution substation located on the east side of Building 371 will eventually be terminated, and the Project will be supported by temporary power. All critical power requirements will be identified as a part of the design process. Maintaining sump and foundation pumps for control of groundwater, power to sanitary sewer lift stations, and some area lighting will be necessary.

Protective barriers or fences will be erected around permanent Site features designated to remain during demolition and site restoration. Electrical distribution switchgear, overhead electrical distribution lines, area lighting, and fire protection system hydrants and post indicator valves to remain operational during and/or after the demolition will be protected as required, and flagged for added operator awareness and overall visibility.

Run-on and run-off control features will be erected or implemented. Installation of temporary diversion berms, erosion control silt fencing, and interceptor ditches, as well as the clean out of existing drainage culverts and ditches will be accomplished as required to divert significant overland flow away from the demolition area. The installation of run-on/run-off control features will be coordinated with Environmental Systems and Stewardship personnel responsible for the surface water monitoring system surrounding the Project.

Traffic patterns and specific loading areas for waste management will be established, as will temporary stockpile areas for debris. For any backfill material that will be stockpiled for a long period of time, a more permanent area will be created that will encompass additional erosion or run-on/run-off controls as necessary. The location of any long-term backfill stockpile area will be coordinated with ER. Finally, any known contaminated surficial soils in the areas immediately adjacent to planned demolition activities will be delineated and controlled by ER.

3.2.14.4 Removal of Site Features

Initial demolition tasks will also involve stripping remnant equipment, roof top entry/landing deterrent systems, filter housings, and other miscellaneous materials from roof tops. The removal of overhead obstructions will reduce the possibility of equipment coming in contact with energized electrical lines, and will allow access for operating cranes and long reach tracked excavators. The removal of remnant equipment is required early in the process in order to free up the roof system for dismantling/removal of potential ACM in the membrane of structures with older, multiple fiber-ply, built-up roofing systems.

3.2.14.5 Demolition of Outbuildings

Demolition of outbuildings and structures associated with the 371 Closure Project will be executed as follows:

Building 373 - Old Cooling Towers. This demolition task will require more worker safety and potentially hazardous debris handling concerns than the other outbuildings. These three cooling towers are part of a three story structure constructed primarily of wooden framing members treated with pentachlorophenol and corrugated asbestos siding panels (transite panels) on top of a concrete foundation and sump system. The demolition of this structure will require careful planning and controls to avoid exposures and/or release of harmful compounds to the environment. The structure itself is unserviceable and is being replaced with a new stainless steel unit placed on concrete foundation piers just to the southeast of the original towers.

Demolition will require the controlled disassembly of the towers, beginning with a controlled removal of the transite panels by a certified asbestos workers. Polyethylene sheets will be laid out securely on the ground adjacent to the side of the tower being worked in order to prevent contamination of surrounding soils should pieces of damaged transite panels become loose during handling. The transite debris will be characterized based on representative chemical analytical data and disposed at an offsite facility in accordance with Site waste management programs.

With the transite removed, the wood frame can be removed/dismantled through the use of the hydraulic shear mounted to the tracked excavator. As the shear grabs framing and baffles from the building, the debris will be placed immediately into appropriate containers for disposal at an offsite facility based upon debris characterization chemical analytical data and in accordance with Site waste management programs. Process water piping, valves, pumps, electrical conduit and fixtures, and miscellaneous appurtenances will also be removed as it is encountered and disposed in accordance with all applicable regulatory requirements. With the structure removed, the raised concrete foundation and sump will be removed for on site use as recycled rubble for backfilling purposes. The concrete removal will be accomplished using a hydraulic demolition hammer, or breaker, mounted to the tracked excavator. All underground utilities in the area will be cut and capped within the foundation footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Building 373 - New Cooling Towers. This cooling tower structure is a replacement for the old wooden/transite towers described above. These units are new, being installed in August-October 2000, and should be in reasonably good condition at the time they can be taken out of service. This tower is a three-fan unit similar in capacity to the original towers, but is a one-story prefabricated unit, installed on a steel frame mounted to cast-in-place concrete piers. It is constructed of insulated steel panels, with all piping, equipment, instrumentation, and controls contained within the structure. Disposition of this unit should be based on an evaluation of it's performance and condition at the time of the demolition project. The first alternative for disposition should be for reuse on Site or resale.

If demolition of the cooling tower unit is deemed the appropriate choice, then the structure will be dismantled or cut apart and recycled. Pumps, motors, and electrical controls and switchgear will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill. The concrete piers will be removed for recycling purposes. All underground utilities in the area will be cut and capped within the foundation footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Building 381 – Fluorine Storage Building. As a step in the aqueous plutonium recovery process, dry plutonium oxide was converted to plutonium tetrafluoride prior to being subjected to the final plutonium metal purification. As such, the plutonium oxide was contacted with a fluorine-argon gas mixture in a fluidized-bed reactor located in the fluorination canyon, Room 3523 in Building 371. This mixture would keep the plutonium oxide fluidized while converting it to the desired plutonium tetrafluoride compound. The fluorine used in this process step was stored and dispensed from Building 381.

Building 381 is a single-story structure approximately 43 feet long by 30 feet wide. It is located approximately 75 feet due north of Building 371, and approximately 50 feet due east of the Building 371 high voltage switch yard. It is constructed of reinforced concrete block walls, with pre-cast concrete panels, and a multi-ply built up membrane for the roof structure. It rests on a cast-in-place concrete footing and concrete block stem wall, with a cast-in-place concrete slab for the main floor.

After verifying the absence of ACM, this building will be razed using the tracked excavator alternately fitted with a hydraulic grapple/thumb attachment or a hydraulic concrete breaker. All building materials will be removed during the demolition of this structure, with no concrete materials left to be abandoned-in-place. All concrete materials will be removed for recycling. Insulating and roofing membrane materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill. All underground utilities in the area will be cut and capped within the foundation footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Tanks 163 and 164 – Product Water Storage. These two tanks are large product water storage tanks located within a cast-in-place concrete secondary containment approximately 75 feet due north of Building 374. They are vertically-oriented cylindrical tanks constructed of carbon steel, painted white. The tanks are identical and are approximately 24 feet in diameter by 31 feet tall, with a nominal capacity of 100,000 gallons. They are mounted on cast-in-place concrete foundations, which are integral to a cast-in-place concrete secondary containment. The containment is approximately 50 feet wide by 100 feet long by 4 feet deep.

These tanks are not designed to have received any waste or process contaminated water, only condensate return from the evaporator process. The tank interiors will be evaluated for solids that may have resulted from the addition of polymer corrosion inhibitors to the steam plant boiler. Any solids present in the tank bases will be collected and analyzed as appropriate.

The paint coating of the tanks will be evaluated for notification purposes to off site recycling agents for the presence of lead-based paint. With the tank empty and lead-based paint issues addressed, the tank will size reduced in place, with metal pieces transferred off site for recycling purposes. This size reduction can be accomplished using an excavator mounted shear attachment, or by cutting the tanks apart using track guided acetylene torches with tank sections supported by on a crane lift line during the segmenting process. Any overhead pipe rack and supporting structures, and associated transfer piping will also be transferred off site for recycling. All electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill.

With the tanks removed, the concrete secondary containment will be removed for recycling purposes. The removal will be accomplished using a hydraulic demolition hammer, or breaker, mounted to the tracked excavator. All underground utilities in the area will be cut and capped within the containment footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Building 377 – Air Compressor Building. This small structure is located immediately west of Building 378, in the vicinity of the two process water storage, Tanks 163 and 164, approximately 75 feet north of the northeast corner of Building 374. It is a single-story, light-steel framed structure with a light gauge metal siding and roof. It is constructed on a cast-in-place concrete slab. It occupies a footprint of approximately 15 feet by 10 feet.

Actions for this building will include removal of the interior equipment for disposition as salvaged equipment suitable for reuse as originally intended, or for scrap. When the building is empty, the steel framing and siding will be removed for disposition as metal suitable for recycling. The concrete slab/foundation materials will be removed for recycling purposes.

Building 378 – Pump House. This small structure is located immediately west of the two process water storage tanks, Tanks 163 and 164, approximately 75 feet north of the northeast corner of Building 374. It is a single-story, light-steel framed structure with a light gauge metal siding and roof. It is constructed on a cast-in-place concrete slab. It occupies a footprint of approximately 10 feet by 10 feet.

Actions for this building will include removal of the interior equipment for disposition as salvaged equipment suitable for reuse as originally intended, or for scrap. When the building is empty, the steel framing and siding will be removed for disposition as metal suitable for recycling. The concrete slab/foundation materials will be removed for recycling purposes.

Tank 165 - Cement Silo. This is a Portland cement storage silo located immediately west of the Building 377, approximately 75 feet north of the northeast corner of Building 374. It is a vertically-oriented cylindrical tank constructed of A36 carbon steel, painted white, approximately 6 feet in diameter by 20 feet tall. It is mounted on a cast-in-place concrete slab, along with miscellaneous electrical controls and vacuum equipment. There is also a steel-framed overhead material transfer pipe rack that connects the

tank to the north wall of Building 374. This rack includes two light-steel support towers and cast-in-place concrete bases.

The tank will be evacuated for residual material. With the tank empty, the tank will be detached from the overhead rack and the concrete base, lifted intact onto a suitable flatbed or low-boy trailer, and then transferred off site for recycling purposes. The overhead pipe rack and supporting structure, as well as any material transfer piping, will also be transferred off site for recycling. All electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill. The concrete pad will be removed for recycling. All underground utilities in the area will be cut and capped within the concrete pad footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Tank 167 - Nitric Acid Storage (a.k.a. Tank D-222). This tank is one of three additive storage tanks located within a concrete-lined secondary containment approximately 100 feet north of Building 371 and 40 feet due west of the secondary containment tank pool. It is a vertically-oriented cylindrical tank constructed of stainless steel, approximately 10 feet in diameter by 16 feet tall. It is mounted on a carbon steel platform, and includes associated miscellaneous electrical controls, pump equipment, and transfer lines. There is also a steel-framed overhead material transfer pipe rack that connects the tank to the north wall of Building 374. This rack supports transfer of nitric acid from this tank, as well as caustic reagent from two adjacent storage tanks, and includes light-steel support towers with cast-in-place concrete bases.

The tank will be evacuated of residual acid. The tank will be declared operationally empty and an interior inspection will be performed. It is expected that no residues or solids will be found within the tank. The tanks will be steam cleaned to address any RCRA waste code issues. This steam cleaning will also be accomplished for the transfer lines associated with this tank's operational history. Additional information on the RCRA closure strategy is contained in Section 3.1.4.

With the tank empty, the tank will be detached from the overhead rack and lifted intact onto a suitable flatbed or low-boy trailer, and then transferred off site for recycling purposes. The carbon steel platform, overhead pipe rack and supporting structure, and associated acid transfer piping will also be transferred off site for recycling at this time. All electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill.

Once the additional two additive storage tanks have been removed, the concrete containment will be demolished. The resulting concrete rubble will be removed for recycling. All underground utilities in the area will be cut and capped within the remnant containment footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Tanks 168 and 169 - KOH Storage (a.k.a. Tanks D-225 and D-842). These two tanks are the remaining additive storage tanks located within the concrete-lined secondary containment described above for Tank 167. They are vertically-oriented cylindrical tanks constructed of stainless steel. Tank 168 is approximately 10 feet in diameter by 20 feet tall, and Tank 169 is approximately 10 feet in diameter by 16 feet tall. It is likely that the design for these tanks also included the use of an interior heating coil. They are mounted on painted carbon-steel platforms, and include associated miscellaneous electrical controls,

pump equipment, and transfer lines. These two tanks share the overhead transfer line rack described above for Tank 167.

The tanks will be declared operationally empty and an interior inspection will be performed. It is expected to find some water-soluble dry remnants in the bottoms of the tanks, and water-soluble dried film or residue on remaining interior surfaces. These residuals will be mobilized by the addition of hot water, containerized, and transferred for treatment, storage and disposal. The tanks will be steam cleaned to address any RCRA waste code issues. This steam cleaning will also be accomplished for the transfer lines associated with these tanks' operational histories. Additional information on the RCRA closure strategy is contained in Section 3.1.4.

With the tank empty, the tank will be detached from the overhead rack and lifted intact onto a suitable flatbed or low-boy trailer, and then transferred off site for recycling purposes. The carbon steel platform, overhead pipe rack and supporting structure, and associated acid transfer piping will also be transferred off site for recycling at this time. All electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill.

Tank 170 - Liquid Nitrogen Storage. This tank is located near the north wall loading dock of Building 371, immediately outside of the breathing air compressor station. It is a vertically-oriented cylindrical tank constructed of A36 carbon steel, painted white, approximately 4 feet in diameter by 8 feet tall. It is mounted on a cast-in-place concrete slab, along with miscellaneous electrical controls and piping.

The tank will be evacuated of remaining nitrogen gas. With the tank empty, the tank will be detached from the concrete base, lifted intact onto a suitable flatbed or low-boy trailer, and then transferred off site for recycling purposes. Gas transfer piping will also be transferred off site for recycling. All electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. The concrete pad will be removed for recycling. All underground utilities in the area will be cut and capped within the concrete pad footprint, and the depression will be backfilled and graded to match immediately adjacent elevations and conditions.

Tank 228 - Spray Dryer and Equipment (a.k.a. Tank W-803). This is a spray dryer used to dry the vapor stream issued from T-805, 4th Effect Vapor Body, through the D-878 Spray Dryer Feed Tank. It is located outside of Building 374, due north of Room 3809, mounted on a two-story steel frame structure. It is a carbon steel tank and hopper arrangement with the straight side upper portion being 16 feet in diameter by 6 feet tall, with an overall height of 26 feet. It is painted black. The straight side portion is housed in a penthouse on the second story of the steel framed support structure, sided and roofed with corrugated transite (ACM) panels, and resting on an elevated concrete platform. Also mounted on the platform is the F-801 Spray Dryer Furnace, D-807 Combustion Air Blower, electrical power and controls, and associated ducting and HVAC support features. The steel framing of the structure is anchored to cast-in-place concrete pads.

It is expected to find minimal dry remnants in the bottom hopper and on horizontal surfaces of the tank interior that will be manually removed, containerized, and transferred to the existing salt cementation process or to an off site vendor for disposal of residual sludges and solids. The tank will be steam cleaned to address any RCRA waste code issues. This steam cleaning will also be accomplished for the ducting

associated with this tank's operational history. Additional information on the RCRA closure strategy is contained in Section 3.1.4. It is expected that F-801 and D-807 will require no interior treatment.

The second-story penthouse will require careful removal of the transite panels under an asbestos abatement permit. Removed panels will be wrapped and placed into appropriate containers for off site disposal as non-friable ACM. Painted transite will require an evaluation for the presence of lead-based paint. If the lead-based painted transite matrix fails to the meet the LDRs as debris suitable for disposal as solid waste, the material will be treated as hazardous waste and will likely be transported to an off site Subtitle C Landfill for encapsulation and burial.

Once the transite paneling has been removed, F-801 and D-807, piping, electrical conduit, ducting, controls, and instrumentation will be removed for disposition as recyclable, or for scrap. The tank will be detached from the concrete slab and lifted intact onto a suitable flatbed or low-boy trailer, and then transferred as SCO to NTS for disposal. The steel framework and concrete slab will be demolished using a tracked excavator equipped with a hydraulic shear/grapple. All steel framing will be transferred off site for recycling. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill.

The concrete pads will be removed for recycling. All underground utilities in the area will be cut and capped within the concrete pad footprint, and the depressions will be backfilled and graded to match immediately adjacent elevations and conditions.

Tanks 224-227 - Water and NaOH Storage. This is a set of four non-process tanks located on the north wall of Building 371, due east of the breathing air compressor station. The tanks are mounted on the second floor of a two-story steel framework which is supported on cast-in-place concrete piers. Tank 224-226 are the most western of the four tanks, are carbon-steel tanks used to store process water, and are approximately 6 feet in diameter by 9 feet tall. Tank 227 is the most easterly of the four tanks, is a carbon-steel tank for storage of caustic reagent, and is approximately 8 feet in diameter by 20 feet tall. All of these tanks are insulated with fiberglass materials and covered with stainless steel jacketing.

The tanks will be declared operationally empty and an interior inspection will be performed. For Tanks 224-226, it is expected to find some water-soluble dry remnants in the bottoms of the tanks, and water-soluble dried film or residue on remaining interior surfaces. These residuals will be mobilized by the addition of hot water, containerized, and transferred for treatment, storage and disposal. The tanks will be steam cleaned to address any RCRA waste code issues. This steam cleaning will also be accomplished for the transfer lines associated with these tanks' operational histories. This rinseate will be containerized, and transferred for treatment, storage and disposal. It is expected that Tank 227 will require no interior treatment.

All piping, electrical conduit, controls and instrumentation will be removed for disposition as recyclable, or for scrap. Tanks will also be stripped of insulation systems. The tanks will be detached from the overhead rack and lifted intact onto a suitable flatbed or low-boy trailer, and then transferred off site for recycling purposes. The steel framework and any remaining transfer piping will also be transferred off site for recycling at this time. All remaining electrical and mechanical support equipment will be disposed as items suitable for salvage and reuse, or as scrap. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill.

The concrete pads will be removed for recycling. All underground utilities in the area will be cut and capped within the concrete pad footprint, and the depressions will be backfilled and graded to match immediately adjacent elevations and conditions.

Tank 4A - Aboveground Diesel Fuel Storage. This tank is a skid mounted unit, approximately 4,000 gallons in capacity, located behind ASSHTO MB5 barriers just at the northwest corner of Building 371. It is used to supply fuel to the emergency generator system of the building. It is planned that this tank will have value for reuse when the demolition of the building begins. It is intended to evacuate remaining fuel from the tank and transfer lines to the building, and demobilize the tank to another Site location. If another on Site location is not available, the tank can be sold for re-use. The transfer lines will be stripped of insulating materials and removed for recycle. Insulating materials, along with other incidental non-recyclable items, will be disposed as solid waste at a permitted off site Subtitle D landfill. To finish, the area will be graded to match immediately adjacent elevations and conditions.

Building 374A - 371/374 Carpenter Shop. The carpenter shop is a series of Sea/Land storage containers centered on either side of a small single-story office on the south side of the Building 374 loading dock area. The office is of insulated, wood-frame construction, covered with painted asbestos-containing transite siding and roofing panels. The storage containers will be emptied of their contents. The contents (tools and miscellaneous materials) will be segregated into materials suitable for reuse or re-sale, and waste materials and debris suitable for disposal as solid waste at an off site Subtitle D landfill. The containers will be reused on the RFETS for their original intended storage purpose, or transferred off Site for recycling. Painted containers will require evaluation of coatings for the presence of lead-based paint that will trigger notification to recycling agents.

The office structure itself will require careful removal of the transite panels under an asbestos abatement permit. Removed panels will be wrapped and placed into appropriate containers for off site disposal as non-friable ACM. Painted transite will require an evaluation for the presence of lead-based paint in concentrations that may fail limits set for the disposal of lead under the RCRA LDRs. If the lead-based painted transite matrix fails to the meet the LDRs as debris suitable for disposal as solid waste, the material will be treated as hazardous waste and will likely be transported to an off site Subtitle C TSD for encapsulation and burial.

With the transite panels successfully removed, the remaining structure will be demolished using the excavator equipped with a hydraulic thumb/grapple attachment, with the debris loaded directly into containers for disposal as solid waste at an off site Subtitle D landfill. The building appears to have been constructed directly onto the asphalt apron; therefore, no concrete foundation removal is necessary.

B262 – Underground Diesel Fuel Storage Tank. Little as-built information is available for this underground storage tank. It was originally installed to provide diesel fuel for the emergency generator system for Building 371, and associated surface appurtenances are still visible. It was placed approximately 125 feet north of Building 374, in the open area due south of T371K. Still visible are the pumps, controls, instrumentation, and surface piping associated with fuel transfer needs; as well as the protective concrete slab over the tank, and surface manway entrances. It is clear that the need for this tank was eliminated with the installation of new Tank 4A. Even though the tank is no longer in service, it is unclear as to whether this tank has been cleaned and abandoned-in-place, or whether the tank was left as is after Tank 4A was put into service.

The presence of the surface tank equipment is a clear indication that the tank is still present. Therefore, it is planned to remove all surface equipment for salvage or recycling purposes. With this equipment gone, the protective cast-in-place concrete equipment slab will be removed and added to the concrete debris recycling stream intended for use as clean backfill. The tank will be fill with urethane foam and abandoned in place. Once the foaming and demolition are complete, the area will be graded to match immediately adjacent elevations and conditions.

371A Cluster. This is a cluster of temporary buildings located due north of Building 374, and includes Building 376, T371H, T371J, T371K, and T376A, as well as a collection of approximately 12 Sea/Land storage boxes, some of which as been converted to temporary shop space for building trades activities.

T371H, T371J, T371K, and T376A – Trailers. This is a collection comprised of single-wide trailers converted into office space. Each single-wide unit is approximately ten feet wide by forty feet long, and is a standard trailer design using wooden framing and sheet metal siding and roofing systems. The trailers utilize various heating sources, with all having electric air conditioning units added at a later date. T371H-J are connected along their long sides into a triple wide unit. T371K is a standard double wide with wood siding, and T376A is a standalone single-wide unit placed north of the old cooling towers.

The only substantial building in the cluster is Building 376, a single-story light metal framed building with corrugated metal siding and roofing. It is located due west of the old cooling towers and is approximately 60 feet long by 50 feet wide, with an eave height of eight feet. The building is insulated with non-ACM materials and is comprised of one large open office area surrounded by four hard walled offices and a split bathroom facility. The building interior has standard drywall treatment for partitions, and has an acoustic dropped ceiling system. The building is constructed on a cast-in-place concrete spread footing and stemwall, and has a 4-inch cast-in-place concrete floor slab.

The final grouping of structures associated with the Building 371A Cluster is a series of steel Sea/Land temporary storage containers converted to temporary shop space for building trades activities. All have temporary electrical utilities installed to them, some have been converted to office space including heating systems and covered wall treatments.

All of the structures in this cluster can be demolished using a similar approach. All buildings and containers will be emptied of their contents. The contents (tools, furniture, and miscellaneous materials) will be segregated into materials suitable for reuse or re-sale, and waste materials and debris suitable for disposal as solid waste at an off site Subtitle D landfill. The containers will be reused at RFETS for their original intended storage purpose, or transferred off site for disposal through recycling. In addition, all temporary utilities will be disconnected, and material will be segregated based on salvage/recycle potential or as solid waste. All containers will be moved out by lifting onto flatbed trailers using a small capacity (40-ton) hydro-boom crane, and then transferred to new RFETS locations, or off site, as appropriate. The container area will then be graded to match existing adjacent elevations and conditions.

With these containers removed, a tracked excavator will be mobilized to completed demolition of the trailers and Building 376. Air conditioning units will be evaluated for the presence of Freon coolants, with the Freon disposed of accordingly. The corrugated siding and steel framing will be taken from Building 376, along with the subframes of the trailers, as suitable for recycling, with the remaining structural materials loaded as solid waste. Once the building structures have been removed, all remaining cast-in-place concrete items will be removed for recycling. All underground utilities in the area will be cut and

capped within the remnant building footprint, and the depressions will be backfilled and graded to match immediately adjacent elevations and conditions. A possible exception to the disposition of trailer structures as described above will be that some Government entity may be interested in acquiring the trailers intact as real property for reuse.

3.2.14.6 Demolition of structures and appurtenances specific to Building 371 and Building 374

Once the majority of the outbuildings have been addressed, the structures and appurtenances incorporated into Building 371 and Building 374, but independent of the main production floor space of Building 371 will be initiated. The objective is to remove structures that do not allow unrestricted access to the main building structure/production footprint. These structures include, but are not limited to: Building 374 Waste Treatment Operations, Building 371 Support Facility (offices, shops, and cafeteria that act as the transition between Building 371 and Building 374, and that occupy the south side of Building 371), and the Building 371 electrical switch house and yard located on the north side of Building 371. Removal of these features allows access to structural concrete partition walls separating the production area of Building 371 from Building 374 to the east, and from the support facility to the south. Structurally, this is represented by the area of Building 371 defined by the major cast-in-place concrete walls bounded by column lines 1 through 15 (north-south), and B through T (east-west).

After these structures have been removed, the remaining 371 Closure Project will look like concrete apron surrounding the south and east sides of the Building 371 main production superstructure.

Building 374 – Waste Treatment Operations Structure. This portion of the Building 371/374 structure was constructed along the east side of the Building 371 Support Facility. It is constructed of conventional structural steel framing (vertical columns and roof beams) with portions of the east, north, and south exterior walls faced with pre-cast concrete tilt-up panels. Remaining exterior wall treatment is primarily painted structural concrete block. The structural framing system attaches to the west side cast-in-place concrete wall of the Building 371 Support Facility at north-south column line 15. The roofing system is a cast-in-place concrete deck covered with 2-inch rigid insulation and a built-up membrane. The east side loading dock area is a light steel-frame design with an interior metal cladding, and built-up roofing structure supported by open-web steel bar joists.

Floor treatments range from exposed sealed concrete slab to vinyl composition tile to glued down carpet. Interior partition walls are a mix painted concrete block and standard metal-stud walls faced with gypsum board. There is also extensive use of suspended acoustic ceiling treatment through out the office portions of the building. There is also evidence of extensive use of transite paneling on interior walls of the active mechanical and equipment rooms in order to provide a high fire rated wall system. These walls will require a permitted abatement action prior to proceeding with the demolition phase.

Initial conditions for this portion of the Building 371/374 structure assume that there will be unrestricted released construction materials and equipment items left in place in Building 374 after the decontamination and strip out phase of the project has been completed, to include: interior partition walls, dropped ceiling systems, kitchen equipment, non-process and utility piping and materials, doors, and windows. It is planned that some of these remaining items will be suitable for reuse or for salvage, and as such will be selectively dismantled and removed. Additionally, it is also assumed that all large tanks from Building 374 will be classified as SCO for disposal purposes, and will be allowed to remain in place until they can be removed intact, to be shipped whole to the NTS. This list of tanks is assumed to include, but not be limited to: Room

2804: Tanks D-801 A-C, Tanks D-802 A-C, D-804 A-D, and D-811A and B; and Room 3805: Tanks D-826 A-C, Tanks D-823, and Tank D-819.

The general approach for the demolition of Building 374, will be to work to the west commencing at the east side loading dock area in the vicinity of Doors T9 and D12. The loading dock/ground floor slab will be used as the working surface for moving materials and as a stable surface for staging large demolition equipment. Initial tasks will be focussed on the removal of salvage items (HVAC equipment, electrical switchgear) and those construction materials and systems easily removed for recycling (e.g. stripping of large power conduits for copper cable). These materials will be moved to the east side loading dock area to be placed into staged debris containers, or to be trucked off site for salvage.

With the building stripped of salvage items, and all electrical systems isolated from areas still requiring power, engineered openings will be cut into the roof system of Building 374. The roof system is basically a heavy steel frame supporting a cast-in-place concrete roof deck covered with an HDPE membrane. The building framing is basically a nominal grid of 30-foot (east-west) by 22.5-foot (north-south) bays. With this in mind, appropriate sections of the roof decking and membrane system can be sawcut and lifted vertically leaving the structural steel framing intact beneath. With the decking removed, access to the tops of the tanks will be reasonably unrestricted, and the tanks can be lifted intact through the roof openings, laid out horizontally on the asphalt apron outside of the building, re-slung to be picked for loading, and then loaded onto flatbed or low-boy trailers appropriately configured for the size and weight of a given tank. These tanks will then be shipped intact to the NTS, or other appropriate ultimate disposal destination.

With all tanks removed from the building, tracked excavators equipped with hydraulic shear attachments will proceed west across the main (ground) floor slab removing and sizing all building components that remain. The excavators will also segregate the debris to the best extent possible as they turn and move it to awaiting debris or recycle material containers. Initially, these containers will be placed onto the asphalt apron to the east and south of the building. As demolition progresses and floor space on the main slab becomes free, a ramp will be built up to the main floor elevation, and waste containers will be placed directly onto the main concrete slab.

As materials are cut and plucked from the building structure, the materials will be swung behind the excavator for segregation into appropriate debris streams (e.g. concrete for on-site recycling, steel for off-site recycling, etc.), and further size reduction, as necessary. As additional floor space on the ground floor slab becomes available, additional material processing equipment can be placed on the slab to assist and facilitate the segregation and sizing operation.

This clean removal will progress across the Building 374 ground floor slab, until encountering the cast-in-place concrete wall found at north-south column line 15. At that point, the demolition will continue west toward the concrete wall line found at north-south column line 12, but only removing non-concrete debris and building components. Concrete walls found in this area will be left in place to be brought down into the basement and sub-basement as a result of using explosives to implode the main structure. Once reaching north-south column line 15, the demolition effort will cease.

This approach of working this portion of the project off of the ground floor slab requires that a structural evaluation be accomplished to guarantee full support of the weight of the excavator/shear attachment as well as other intended demolition support equipment. This evaluation can look only at the live/dead load conditions that would exist at the time of the demolition, versus the added consideration of seismic

concerns that went into the original operational design of the structure. If a conflict arises regarding floor loading, steel plates can be placed on the slab to better distribute the live load of the demolition equipment.

It is assumed that all materials remaining after completion of the decontamination phase will be suitable for unrestricted release and will require no additional screening prior to being loaded for disposition. Consequently, material will be loaded as soon as possible, with containers leaving the Site immediately upon being filled. It is anticipated that no debris materials will be staged on Site, with shipping containers and/or appropriate trucking available to match the production rate of debris.

A possible exception to this staging protocol could be the installation of a temporary concrete crusher at the demolition site. For the Building 374 structure alone, concrete materials suitable for processing into backfill material will come from the roof structure, all exterior pre-cast double-T walls, interior cast-in-place walls, and the floor slab. With this significant amount of concrete rubble suitable for backfill to be generated during this project, there would be a significant cost saving realized by not transporting the concrete to a centralized processing area, and then transporting it back for backfilling purposes.

Building 371 Support Facility. This portion of the Building 371/374 structure was constructed along the south side of Building 371 after completion of the main Building 371 production space. It is constructed of conventional structural steel framing (vertical columns and roof beams) with the east, west, and south exterior walls faced with pre-cast concrete tilt-up panels. The structural framing system attaches to the south side cast-in-place concrete wall of Building 371 at east-west column line T. The roofing system is a cast-in-place concrete deck covered with 2-inch rigid insulation and a built-up membrane. Interior partition walls are painted concrete block or standard metal-stud walls faced with gypsum board. Floor treatments range from exposed sealed concrete slab to vinyl composition tile to glued down carpet.

There is a decorative fascia applied to the exterior walls that utilized a cement asbestos facing product applied to ¾-inch exterior plywood. This fascia will require a permitted abatement action prior to proceeding with the demolition phase. This material will likely be considered a friable ACM product to be scraped off, thereby requiring a full containment to be implemented. It could be possible to remove the asbestos facing and plywood backer together, but that will require detailed evaluation.

The approach for the demolition of the support facility will mimic that of the Building 374 structure. Upon completion of the asbestos abatement and after isolating the area electrically, demolition will commence along the south wall of the facility. A strip out task similar to that described for Building 374 will be performed, removing such salvage items as lockers, cafeteria equipment, electrical switchgear, and HVAC equipment. Moving north across the ground floor slab, equipment will remove this single-story structure from east-west column line X to east-west column line T, a distance of approximately 70 feet. Again, debris will be direct loaded into staged disposal or transport containers.

Building 371 Electrical Switch House and Switch Yard. This portion of the Building 371/374 structure was constructed as a part of the original structure. It was built as the area where electric power entered the building and was subsequently converted to appropriate voltages and then routed into the building. The Switch House also houses the emergency generator and throw-over switchgear. There is also an exterior transformer yard housing four step-down transformers that receive electricity from the substation located due east of Building 374, through underground duct banks.

As stated above, the switch yard has four separate transformers mounted on cast-in-place concrete pads. There are also concrete walls placed to separate each of the four transformers, isolating them from possible damage caused by explosion of an adjacent unit. The transformers are all placarded as being PCB-free. Power leaves the transformers through an overhead bus duct and enters the north wall of the switch house.

The switch house consists of a single-story addition attached to the north side of the main Building 371 production floor, and was constructed of cast-in-place concrete walls, with a steel framed roof support structure covered by a cast-in-place concrete deck and built-up roof membrane. It is approximately 40 feet wide by 160 feet long.

The fence surrounding the switch yard currently displays notifications indicating the potential for environmental impacts in this area. The first step in the demolition of this area will be for ER to perform an investigation of the soils within the switch yard to identify all areas of soils potentially impacted by past practices. If possible, any impacted soil should be removed early in order minimize spread of environmental problems during all demolition tasks, and to allow for complete site closure once the main Building 371 structure has been razed. Once all impacted soils have been identified, isolated, and possibly removed, and all equipment isolated electrically, the switchgear will be lifted from within the switch yard and shipped off site for salvage. The security fence surrounding the area will also be removed to facilitate access to the equipment to be removed from the switch house. An underground duct bank system provides the conduit space for the high-voltage cables that feed Building 371. The cabling will be stripped from these duct banks for off site recycling, and the duct banks will be capped at either end and abandoned-in-place.

To the extent possible, all switch gear and breakers will be removed from the switch house with the structure remaining intact. Once all equipment that can be removed through existing doors is out, an opening will be created in the walls or roof in order to access the emergency generator. The generator will then be lifted out of the building, along with any remaining large switch gear and electrical equipment, and shipped off Site for salvage/reuse.

With all equipment removed, the structure will then be demolished. Prior to removal, the concrete slab and equipment mounting pedestals will be inspected for staining indicative of past oil spilling. If staining is evident, the concrete will require characterization prior to removal. As described for all other removals, concrete debris will be used as clean backfill material, metal will be sent off site for recycling purposes, and remaining construction materials will be direct loaded as solid waste suitable for off site disposal at a permitted Subtitle D landfill. The final step will be to grade the entire switch yard/switch house area to match adjacent elevations and conditions.

3.2.14.7 Under Building Contamination Remediation

The UBC removal will be performed once the slab has been removed, but before the building has been demolished. Once the slab has been removed from over these impacted soils, ER will be prepared to immediately follow the decommissioning workers and commence removal of these soils. This break in demolition is prudent as it takes advantage of the Building 371 structure for use as a containment to control the excavation activities. The removal of the UBC at this point is also mandatory to support the intention to collapse the structure into the sub-basement void and then backfill over the debris pile. Once under slab media has been removed and confirmed, the void created by the removal will be left unfilled. No backfill or protective plates are planned to be placed before, during, or after demolition.

Using the Building 371 structure provides control of the soil removal; promotes human health and environment protection during soil removal; provides a containment that will withstand the effects of extreme meteorological events (versus a temporary post-demolition enclosure); and reduces project cost. Project savings come from the following areas:

- Eliminating design, permitting, installation, monitoring, decontamination, and final survey of the containment system;
- Utilizing the existing containment system and waste handling pathway prepared for the slab removal;
- Eliminating the need to provide a protective surface on the floor slab (e.g. steel plating) to complete the Building 371 structure demolition;
- Completing the overall demolition with only one mobilization effort; and
- Reducing project administration and management costs by reducing the overall 371 Closure Project duration.

The least complex scenario for the extent of this anticipated contaminated media is that the impacted soil is limited to the backfill space between the bottom of the concrete sub-basement slab and the top of the under slab soil surface. Under this scenario, no structural foundation elements will be disturbed. It is anticipated that contaminants will not have migrated significantly in either a horizontal or vertical direction, because these compounds are insoluble in nature. In addition, there was an absence of hydraulic head, which would drive a spill condition through cracks in the floor and deep into the underlying backfill layer. Therefore, it is assumed that these contaminants will likely be limited to the layer of soil directly beneath the slab.

In addition, the configuration of the concrete caisson foundation is such that no areas of temporary shoring or underpinning should be required if contaminants have migrated under a building wall. No significant or extensive spread footings exist in this system. Spread footings are only present in the areas of the elevator and equipment pits. Significant vertical loading to be supported or shored during soil removal in these areas will not be required, with the use of simple adjustable post jacks on temporary pads. Therefore, if contamination has migrated beneath a concrete wall, under excavation of the wall is possible because the vertical loads (dead and live) imparted to the wall are transferred to the grade beam beneath the wall, and then to caissons/soil system.

Should the contamination have migrated horizontally beneath an exterior wall, some design consideration will need to be evaluated if the amount of slab required to be removed becomes extensive, say greater than one to two 20- to 30-foot bay widths. This is because the interior slab does assist in stiffening the resistance to horizontal loading imparted to the exterior walls through the passive forces of the soil retained behind the wall. However, temporary horizontal shoring can be employed if required, transferring some of the loading to the next row of columns in toward the center of the building.

3.2.14.8 Demolition of the Main Building 371 structure

Building 371 is a four-level partially buried structure constructed of reinforced concrete. Even with the partial removal of Building 374 and the Support Facility as described above, the building will still encompass approximately 150,000 square feet of floor space. The building construction was hardened to withstand the forces imposed by a design-basis earthquake or tornado. The hardened construction includes the exterior walls and roof, those parts of the building where plutonium recovery operations were conducted, and portions of the building that housed equipment or systems essential to the recovery

processes or were required to contain plutonium within the building. The following are the aspects of the hardened construction that affect demolition activities and approach:

- Increased quantities of reinforcing steel over standard American Concrete Institute (ACI) requirements,
- Construction of cast-in-place concrete interior partition walls instead of typical concrete block or metal-stud and drywall partition systems, construction of a complete cast-in-place concrete framing and floor slab system versus the use of steel framing components,
- Thickening of concrete walls and slabs beyond typical industrial use/code requirements,
- Construction of the building on an extensive foundation of concrete caissons up to 6 feet in diameter and drilled to bedrock.

The building was constructed with two full operational levels below, and one above, the ground floor slab. The basement level is approximately 20 feet below the ground floor slab, and the sub-basement level is an additional 20 feet below that. This configuration, coupled with the many plutonium storage vaults and canyons, contribute to a complex, extremely stiff, and incredibly strong structural system.

All of these factors contribute to a building that will be extremely resistant to the mechanical demolition methods and approach described above for the outbuildings and attached appurtenances. It also poses a configuration that would be unsafe if mechanical demolition techniques were to be used. Exposing personnel and equipment to unsupported walls and floor slabs, as well as height/shoring issues attendant with the building being constructed 40 feet within the ground, provide an unacceptable level of risk to the decommissioning worker.

Consequently, the demolition approach for the main Building 371 production floor space and structure is to employ the use of explosives. Placing explosives in an engineered and controlled fashion, while the structure is still sound, minimizes safety exposure issues to personnel and equipment. The use of explosives is enhanced by the beneficial effects of gravity, which eliminates the need to move large quantities of soil away from the building walls to relieve passive earth pressure. Not only does explosives provide a safer alternative, it also provides the lowest cost scenario available.

An overview of this demolition approach will be to complete the strip out of appropriate remaining utility systems and building components, and then initiate an explosion sequence beginning in the sub-basement structure that would be timed to move upward and outward through the basement, ground floor, and mezzanine structures. The roof structure and exterior walls will likely not require any explosive actions to initiate collapse, relying solely on gravity to bring them down into the sub-basement void. This will provide a protective shell that will contain any projectiles issued from the interior blasts. Once the collapse is complete, backfill operations would begin directly over the collapsed materials, without further debris sizing or segregation. Figure 5 provides an illustration of Building 371 and how demolition will proceed.

With these issues and constraints in mind, the planned Building 371 structure demolition would proceed as follows:

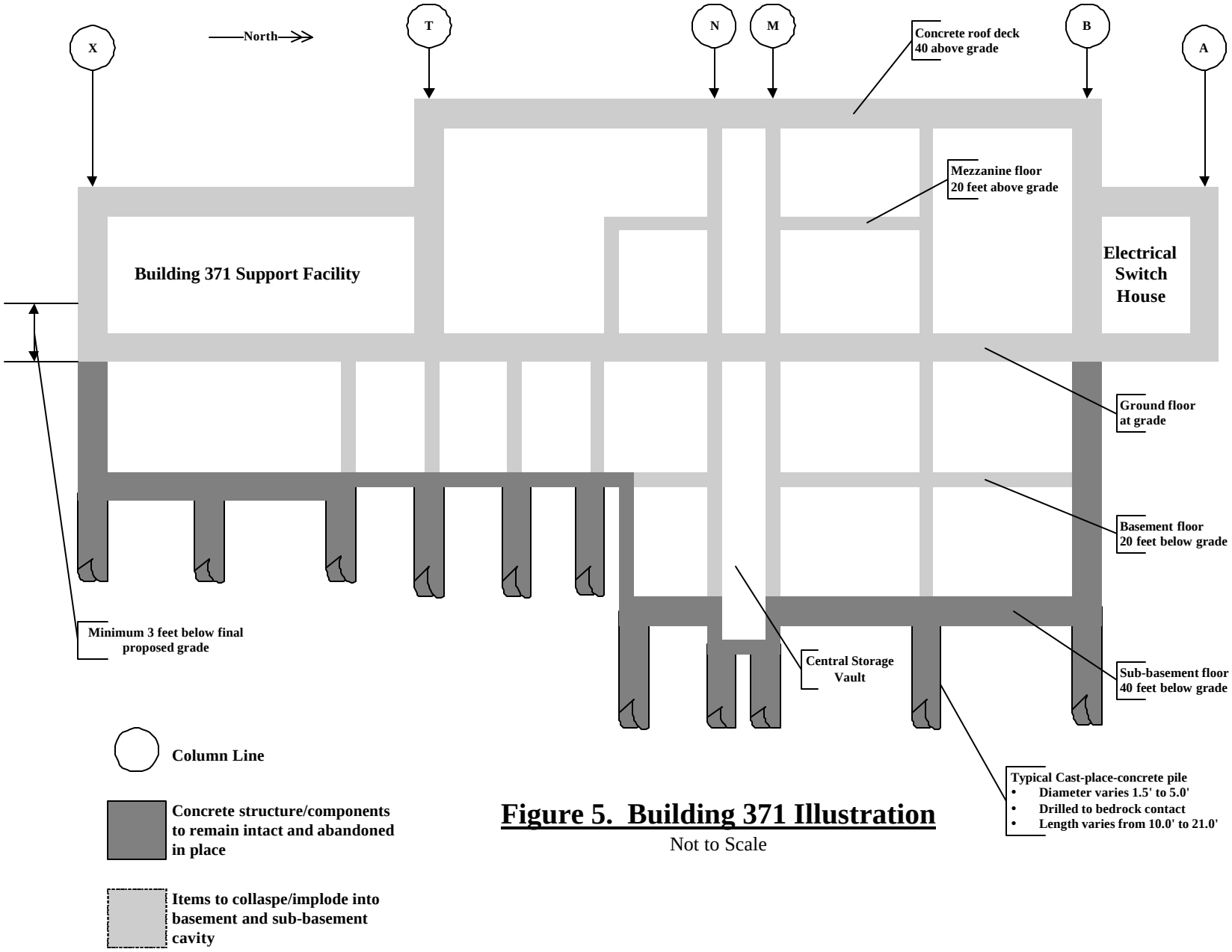


Figure 5. Building 371 Illustration

Not to Scale

The Building 371 structure would appear at the start of demolition as a two-story concrete box with the concrete roof system intact, bordered on the south and east sides by the exposed intact concrete ground floor slab representing the Building 374 and Building 371 Support Facility footprints. The building will have been decontaminated, with equipment and building materials that meet unrestricted release criteria still intact as originally installed. Also remaining in the facility could be large waste storage tanks classified as LLW-SCO, awaiting removal for direct shipment to NTS. It is assumed that all testing, evaluation, and debris characterization will have been accomplished by this point as well, with all painted components evaluated for lead-based paint issues and all ACM sources identified and removed/abated.

With all site preparation and surrounding demolition complete, building strip out will commence. All solid waste, non-recyclable, items that remain within the structure will be removed and disposed in a permitted off site Subtitle D landfill. All salvage equipment items will be removed at this time as well. Passage doors, vault doors, overhead roll up doors, elevator components, windows, grates, diffusers, stairway assemblies, and associated frames will be removed for recycle or salvage for reuse. Openings will be created as required, and all remaining SCO tanks will be lifted out of the facility for direct loading for transport to NTS. This strip out action will include the items currently mounted to the building roof, to include: aerial landing deterrent systems, security systems, HVAC equipment, lighting, lightning protection, roofing membrane, and roof insulation.

With hundreds of miles of non-process piping systems installed in the building, it is assumed that a significant amount of these systems will remain in place, as construction materials that meet the unrestricted release criteria, when the building phases to demolition. Some of these systems will be fairly easy to remove for recycle purposes, while others will be located such that removal will be unsafe and costly. For areas where access is appropriate (e.g. the mezzanine/attic utility systems), the systems will be removed to the point that these areas will appear as clean concrete rooms or surfaces. For less accessible areas (e.g. sub-basement or basement rooms and pipe chases), these items or systems will be abandoned-in-place to become part of the backfill, **only** if components or systems can be verified to meet the unrestricted release criteria specified in the RSOP for Recycling Concrete. This abandonment will be applied to piping systems only, with all other components, equipment, instruments, and alarm systems to be removed prior to initiating full demolition actions.

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With all strip out and building preparation complete, crews from an explosive demolition specialty contractor will begin preparation of the building for collapse. With an engineered plan in hand, typical activities for these crews will be to drill into appropriate structural members and key connections to place calculated charges. Charges can also be wrapped around a member, such as a column base, depending on the size of the member and the action intended by the specific charge. With all charges in place the initiation system will installed, also according to an engineered sequence for timing of explosions on any given floor and as progressing upward from one floor to the next. Blast mats or chain link fencing will be wrapped around charges that may be near an uncovered opening of the building to control projectiles from being ejected from the building.

A simplified overview of the demolition approach will be to initiate an explosion sequence along appropriate points of the sub-basement structure (along the east-west axis of the central storage vault) that would be timed to move upward and outward through the basement, ground floor, and mezzanine structures. The sequencing will be started in the sub-basement as the lowest overall point of the building, allowing a void to be created into which the walls and columns supporting the basement floor can collapse. It is also likely that the sequence starts in the center of the building and moves outward, thereby directing the collapse action and momentum into the center of the building/sub-basement area. As the connections for these interior structural framing elements are removed by the explosives, and fall into the basement/sub-basement level, the exterior walls and the roof structure would also be freed to collapse onto the top of the rubble created by the interior materials. Exterior basement walls would be left intact, with the top of these walls extending to a point no closer than three feet below final proposed grade.

This explosive induced collapse of the structure would create a pile of clean rubble consolidated in the basement/sub-basement level, that should be fairly flat and uniform, and free of large voids. It is proposed that this collapse configuration be left as is, with the backfilling operation commencing directly over it. Any large voids created by large pieces of concrete structure leaning against an adjacent wall or support column stub would be eliminated by using a crane mounted wrecking ball operating from outside the foundation wall. With the collapse complete, an opening in the basement wall will be made by removing soil from a portion of an exterior basement wall, with an appropriate side sloping for safety, and then nibbling down the exposed concrete wall with the excavator mounted hydraulic shear. Once a ramp and opening are completed, a bulldozer could drive out onto the center of the collapsed building structure to

manipulate the surface into a reasonably uniform, flat surface. This opening will also be required to facilitate placement, manipulation, and compaction of backfill materials.

3.2.14.9 Site Cleanup and Demobilization

The final task to be completed by the decommissioning contractor is to perform any backfill and compaction necessary to render the site safe for personnel involved in follow-on site closure actions. Appropriate placement of the 3-inch minus concrete backfill material created from the recycle of demolition debris would fill any remaining visible voids and air spaces, and would initiate a flat backfilling surface. Once this material was exhausted, a soil backfill would be placed to complete the backfilling operation. This material would need to exhibit the appropriate quantity of clay material to initiate a bridging action over the now entombed building structure debris to guarantee a fill that would exhibit future subsidence within the tolerances approved in the RSOP for Recycling Concrete. The decommissioning contractor shall also be required to install final, or stabilize existing, temporary run-on/run-off controls or erosion controls. The decommissioning contractor shall then clean up the site for trash and miscellaneous debris, and demobilize.

In order to establish a baseline of activities to be performed under the demolition phase of the 371 Closure Project, the following assumptions for the demolition strategy were documented:

- Interior tanks that meet SCO or unrestricted release criteria for disposal can be left in place until such time as the demolition process opens an access to the tanks sufficient for removal of the tank intact. Large whole tanks (i.e. larger than a standard waste box) removed from the building with an SCO designation can be shipped intact as-is, with little exterior preparation beyond verifying all openings have been sufficiently controlled and closed.
- Site water will remain accessible as a source for implementing dust control measures.
- All building components to be removed and disposed under this demolition task shall be free released.
- Large, non-process related, unrestricted-released equipment or materials not removed during the deactivation or decontamination phases of the Project will be salvaged and the salvage value should be factored into the bidding philosophy of potential decommissioning contractor.
- During building demolition tasks, all underground utilities will be cut and capped within the building footprint, with the remaining utility abandoned in-place as it proceeds away from this boundary.
- Suitable unrestricted release concrete debris will be used for on-site non-structural backfill.
- Clean debris and materials suitable for recycle will be transferred to an off-Site recycling facility (i.e. metal items for smelting/melting only; clean asphalt for crushing and sizing for reuse).
- For metallic recycled materials, Certificates of Destruction will be required of the recycling agent once material has been successfully thermally processed.
- Lead-based paint notifications will be made to all recycling recipients, and inspections for adequacy of off-site sizing and processing with respect to lead paint-coated materials areas will be made, as required.
- No lead-based paint abatement actions will be required.
- All debris streams generated from demolition actions shall be segregated, evaluated (additional characterization, if required), sized, staged, and surveyed for final release at the demolition site, and direct loaded into disposal containers or trucks, without having to be removed to a separate remote location at the RFETS.

- PPE for demolition personnel shall be limited to Level D constraints to include: hard hat, safety glasses, steel-toed footwear, and hearing protection (as appropriate). Personnel monitoring shall be limited to real-time measurements for total airborne dust.
- A demolition plan will be prepared to include pre-approved and well-defined scenarios to accommodate previously unknown site conditions, with respect to the presence of contaminants or hazards, should the condition arise. However, it is assumed that during the normal course of the demolition, workers will not encounter unknown pockets of SNM holdup or environmental/worker hazards.
- Reasonable unrestricted equipment and personnel access will be available around the entire perimeter of all structures to be demolished, and to the overall demolition site in general, so the project is not constrained with respect to choices of demolition technique or on transfer routes for moving debris and equipment.
- All demolition activities shall be planned and implemented such that personnel safety (demolition worker, as well as others with potential for impact) is primary.
- The engineered use of explosives to facilitate the demolition process shall not be excluded.
- Some quantity of under slab soil will have become impacted from prior operational activities.
- Soil removal will be coordinated with ER and will not impact the overall 371 schedule.
- Limited migration of contaminants from the presence of past operational spills has occurred through the concrete floor slab into the soil below. A formal structural evaluation of the foundation system will be required. If limited excavation is required beneath the slab, and extending under load bearing walls, it is assumed that the load bearing wall are all simply supported by the foundation caisson system. No underpinning will be required to remove soils found in this configuration.
- A structural engineer licensed to practice in the State of Colorado will approve the demolition plan.
- A structural engineer licensed to practice in the State of Colorado will monitor the progress of the project.
- With the exception of Building 371/374, all other buildings or facilities in the 371 Closure Project to be demolished and removed shall have potential for impacts associated with environmental media adequately investigated and defined, before demolition commences, such that demolition activities shall not be hindered or constrained.
- All soil moving or handling will be planned and coordinated through ER. ER related investigation tasks required to fully identify conditions that might affect the demolition schedule will be executed and coordinated in conjunction with ongoing decommissioning planning tasks to fully optimize existing containments and environmental controls. ER will have the soil adequately characterized for removal and stockpiling by the decommissioning contractor in a schedule that is synchronized with that of demolition actions.
- No unidentified use of atypical facility design or construction was incorporated into the construction of facilities/structures within the 371 Closure Project that will unduly affect the choice of demolition technique or equipment.
- In-place abandonment of concrete foundation structures at a point three feet below grade is acceptable.
- There will be no restrictions placed upon soil movements in order to safely access areas to accomplish demolition goals. It is also assumed that this soil movement task will be limited to

removal, loading, hauling to a PA stockpiling location, and dumping the soil to be placed into a stockpile

- The decommissioning contractor will move any soil in order to protect the decommissioning schedule.
- All interior partition walls and columns that do not act to maintain the structural integrity of any structure within the primary footprint of Building 371, not including the support portion of the building, will be removed as a part of the equipment dismantling or structural decontamination phases.
- Non-process related building system equipment, piping, electrical circuitry, and communication or security system components will be successfully decontaminated in place and may remain after the equipment dismantling or structural decontamination phases, and will be included in the building demolition action, to be segregated as necessary from the overall building demolition debris stream.
- All buildings, outbuildings, and support structures currently identified in the 371 Closure Project will be available for demolition in any sequence deemed appropriate by the Building 371 Closure Team. Should a previously unidentified site condition arise during the demolition of one structure (e.g. contaminated soil under the exterior caustic/nitric acid supply tanks), an alternate will be available so that multiple mobilization actions will not be required. This also assumes that all features within the 371 Closure Project are scheduled for demolition, and that no roadways and walkways have removal restrictions placed on them.
- All interior ACM will have been removed as a part of the decontamination activities for the particular structure, prior to mobilization of the decommissioning contractor. The exception to this assumption would be the transite paneling found on surfaces of all fire rated walls on the interior of Building 374. This material would likely be removed by the demolition contractor as an initial task.
- The 371 Closure Project primary decommissioning contractor will contract with an asbestos abatement contractor to accomplish any exterior asbestos abatement tasks, and that the abatement contractor will be available to work within a timeframe designated and controlled by the primary 371 Closure Project decommissioning contractor.
- The built-up roofing membrane does not contain any radioactive contamination and has been unrestricted released as a part of the PDS.
- Any potential for hazard from biological sources (e.g. rodent droppings as a Hantavirus source, bird droppings as a histoplasmosis source) will have been addressed as a part of the decontamination phase as well.
- No issues exist for the wetland areas immediately north of the current inner asphalt PA access/perimeter road. Recreating wetland areas will not be a part of a final site restoration design upon completion of the post-demolition backfill operation.
- All remaining USTs will have been investigated and prepared for abandonment prior to the start of demolition actions. The method for dispositioning USTs is to abandon-in-place through cleaning and then filling with a foam inerting agent.
- All demolition workers shall be required to comply with monitoring requirements dictated in the OSHA lead and chromium standards for worker protection.
- All buildings will have been successfully characterized prior to the start of demolition actions for all possible non-radiological hazardous materials of concern, based upon both historic use and

operations and visual inspection for staining and discoloration of components indicative of past spill events.

The following table documents the potential risks and uncertainties associated with the demolition strategy:

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Unacceptability of leaving SCO tanks within the building until such time as demolition allows then to be removed intact.	Cost and schedule impact	Medium	Early involvement with regulators and stakeholders for approval of approach, Develop cost and schedule saving impact information to document choice.
Use of explosives for demolition of the Building 371 structure is not allowed.	Cost and schedule impact	Low	Early involvement with engineering, DOE, remaining stakeholders, and regulators to provide timely concurrence and/or approval.
Regulator and stakeholder acceptance of debris streams intended to be abandoned within the engineered fill of the Building 371 footprint.	Cost and schedule impact	Medium	Early involvement with engineering, DOE, remaining stakeholders, and regulators to provide timely concurrence and/or approval. Early detailed sampling and waste characterization for suitability of being included in the backfill mass. Adequate documentation regarding minimal impact of steel items in the fill mass (e.g. No O_2 in soil mass to promote oxidation, so no additional subsidence).
Acceptance of the backfill and compaction scenario with respect to future subsidence issues.	Cost and schedule impact	Medium	Early involvement with engineering department, use geotechnical SME to design the backfill process, early regulator and stakeholder awareness.
Size and condition of materials (primarily concrete) to be abandoned in the engineered fill is not consistent with that approved in the RSOP. This is unacceptable to the regulators and/or stakeholders.	Cost and schedule impact	Medium	Early involvement with engineering, DOE, remaining stakeholders, and regulators to provide timely concurrence and/or approval.
ER unable to characterize soil in time to support demolition logistics/schedule.	Cost impact due to schedule delays	Low	Identify alternate structure for backup, Early and frequent schedule communication with ER
Unexpected building collapse during demolition due to unplanned structural member failure or sequence issue.	Cost and schedule impact	Low	Early planning and ongoing involvement and oversight of structural PE, detailed demolition sequence designed and laid out in IWCP package

Uncertainty/Risk	Impact	Probability of Occurrence*	Mitigation Measures
Excessive groundwater in excavation or building footprint.	Cost and possibly schedule	Low	Ensure adequate planning and sequencing of tasks to accommodate continuous long-term operation of the existing foundation drains and building sumps
Unanticipated contamination present in the soils planned to be moved to facilitate demolition.	Cost and schedule impact to halt work and characterize the nature and extent	Medium/ High	Ensure comprehensive ER characterization of all subsurface conditions in areas planned to be disturbed

*High, Medium, or Low

3.3 Environmental

The 371 Closure Project views environmental stewardship as a critical success factor in achieving 2006 closure. The 371 Closure Project success will be measured, in part, based on environmental stewardship metrics. For this project, environmental stewardship is embodied in the three following areas:

- Environmental monitoring
- Recycling and waste reduction
- Environmental compliance

3.3.1 Environmental Monitoring

The Integrated Monitoring Plan (IMP), required under the RFCA, specifies how decommissioning projects are to be monitored during the active phase of building removal. The IMP establishes the routine surface water, groundwater, air, and ecology monitoring programs. Surface water and groundwater monitoring activities are conducted by the Environmental Systems and Stewardship Project, but the monitoring efforts are supported fiscally by the decommissioning Projects. The Projects are expected to support the cost of monitoring equipment and installation, analytical costs, and follow-on actions if project activities adversely impact water quality.

Project related surface water activities include the identification of the appropriate monitoring location or locations, installation of flow measuring and water sampling equipment, operation and maintenance of the equipment, and collection of data and water quality samples for analysis. Groundwater monitoring is similar. All monitoring is done in accordance with established protocols. A typical surface water installation includes a telemetry node to connect the newly installed site to the surface water data collection system so that each location can be remotely monitored, and serviced as needed. For Building 371/374, two monitoring locations have been identified but have not yet been installed. When fully equipped, these stations will capture all runoff from the decommissioning activities. A small portion of the area disperses stormwater and can not be monitored, but this runoff will not be impacted by decommissioning activities.

Surface water performance monitoring establishes a baseline of water quality information for the sub-basin or sub-basins, which collect stormwater runoff in the project area. Monitoring during the actual decommissioning activities is designed to detect changes from the established baseline water quality. If changes are observed, project activities are reviewed, and, if necessary, additional monitoring activities initiated. These additional activities fall under the IMP Source Location monitoring and would focus on

such sources as groundwater seeps, foundation drains, if present, or other water flows capable of being sampled.

Foundation drains for Building 371/374 were described in a 1992 report entitled "A Description of Rocky Flats Foundation Drains." This report indicates that six foundation drains were located in the area of Building 371/374. The report goes on to say that currently, only one identifiable foundation drain remains. Under dry conditions, there is no foundation drain flow. The proposed IMP monitoring locations will capture the stormwater run-off, including foundation drain discharge, from the area of building decommissioning.

Surface water monitoring will only determine if a project has had an impact on water quality and, perhaps, identify the source of adverse impacts. The PMP and the implementing IWCPs describe actions that will be taken in the event that project activities impact surface water. Such activities include contaminant removal, erosion controls, stormwater containment or run-on diversion, and other management practices as may be appropriate.

The existing Site Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be used for ambient air monitoring. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-seven samplers comprise the RAAMP network. Fourteen of these samplers are deployed at the Site perimeter and are used to confirm Site compliance with the 10 millirem standard mandated in 40 CFR 61, Subpart H. Filters from the 14 perimeter RAAMP samplers and from one on-Site sampler near the 903 Pad are collected and analyzed monthly for uranium, plutonium, and americium isotopes.

In addition to the perimeter network, enhanced radionuclide ambient air sampling will be performed on an as-needed basis utilizing RAAMP samplers in the immediate vicinities of the 371 Closure Project. Currently, it is anticipated that the 371 structures will be free released prior to demolition. Under this scenario, no additional monitoring is anticipated.

3.3.2 Recycling and Waste Reduction

Recycling and waste reduction will be accomplished through decontamination, automated size reduction, plasma arc cutting, and optimization of materials handling. Decontamination will be used to reduce the amount of TRU waste. Automated size-reduction and plasma arc cutting technologies will allow more efficient packaging of waste, minimizing the number of waste containers, and reducing worker involvement, thereby reducing exposure and generation of secondary wastes. Automated size-reduction allows components to be cut into small pieces and waste containers to be filled to weight capacity. The cerium (IV) nitric acid decontamination method, if effective, will reduce the amount of TRU significantly.

Process optimization efforts led by the MSP will be implemented by the 371 Closure Project. Specifically, the LLW and TRU streamlining processes will be implemented. The 371 Closure Project team will also receive incentives to reduce sanitary waste by recycling and other waste minimization techniques.

3.3.3 Environmental Compliance

Each major work element of the 371 Closure Project is under jurisdiction of at least one environmental regulation, typically RCRA or CERCLA. The 371 Closure Project has transitioned primarily to a CERCLA facility during the closure process. This transition occurs after deactivation activities are completed within each area. For the purposes of RFCA, deactivation is a set of activities that occurs

primarily in buildings that were used as part of the nuclear weapons production mission. RFCA does not regulate deactivation activities; instead, they are regulated pursuant to the Atomic Energy Act, overseen by the DNFSB, and RCRA, overseen by CDPHE.

RFCA provides that process wastes and wastes generated during deactivation are CHWA/RCRA-regulated, whereas wastes generated during decommissioning are CERCLA-regulated. However, this Project is engaged simultaneously in deactivation and decommissioning. At times, it may prove safer, more cost-effective, and expeditious from an operational stance, to manage the wastes generated from both activities in the same manner. For example, if Site personnel engaged in deactivation and decommissioning in different rooms of the same building are generating both process and remediation mixed transuranic wastes, the project manager may choose to store all such wastes in a single area and commingle such wastes in common containers. If this practice occurs, the wastes will be managed under CHWA/RCRA. However, in most cases, process wastes will be managed separately from remediation wastes.

Closure of preexisting and active RCRA units will be conducted in accordance with 371/374 DOP. The DOP is expected to eliminate the need for closure description document (CDD) submittals.

3.4 Waste Projections

Table 9 provides the projected waste quantities throughout the 371 Closure Project. The table information is preliminary and will be modified in subsequent revisions of the PMP.

Table 9. Waste Projections

Waste	FY01			FY02				FY03				FY04	FY05	FY06
Type	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q			
TRU/M	28	40	62	86	117	154	193	259	269	306	342	632	43	0
LLW/M	124	187	245	316	412	584	733	1237	2644	4081	5559	12409	1719	0
ACM	0	0	1	0	0	2	2	2	3	3	4	15	1	0
Sanitary	0	0	0	0	0	0	244	141	10	18	53	0	6213	5998

All waste quantities are reported in 1,000 cubic feet
Q = quarter
TRU/M is radiological and mixed radiological transuranic waste
LLW/M is radiological and mixed radiological low level waste
ACM is asbestos containing waste, the radiological level has not yet been characterized
Sanitary is sanitary waste to be disposed off-site
Building rubble to be used for fill and recyclable metal from the structure are not included in the table. The estimate quantity of recyclable material is 9,296 cubic meters of concrete and 1,400 cubic meters of steel.

4. IDENTIFICATION OF PROJECT RISKS

This section will identify and analyze the potential hazards associated with the 371 Closure Project. The hazards identified in this section are upper level and may require subsequent analysis through the ISM process based on the complexity of the hazard. The hazard identification has been divided into several areas including safety, environmental, safeguards and security, quality assurance, and scope, budget, and schedule. In addition to hazards, areas of uncertainty have been identified for each of the potential hazard areas.

In addition to the physical hazards and risks, risks and uncertainties associated with the Project baseline have been included in this section. Risks and uncertainties have also been included with the individual strategies in Section 3.0.

4.1 Safety

The principle hazards in these buildings consist of plutonium, beryllium, TRU, LLW, chemicals, ACM, lead-based paint, and other standard industrial hazards. Most of these hazards will exist throughout the project and are of concern during characterization, hazardous material removal, deactivation, decommissioning, and demolition.

In addition to exposure to radiological and chemical hazards, workers will be exposed to a variety of industrial hazards such as heavy machinery, repetitive motion tasks, and physical agents such as heat and cold. Using a general industry rate for construction to estimate injury and illness cases, Site closure activities are estimated to result in 584 cases of injury and illness during the peak activity period (1997 - 2006) (CID, Section 5.8.3). The portion of these cases that would be estimated to result from the 371 Closure Project alone would be less than the total Site figure.

The general industry rate of injury and illness is considerably higher than the historic incidence rate for the Site; occupational hazards will be controlled and monitored in accordance with the RFCP occupational health and industrial safety programs. The safety and associated hazards to the workers will be mitigated through extensive planning. The ISM process will be utilized for each work activity and will be documented in IWCP packages. Subsequent revisions of this document will contain specific information of the different work activities, associated hazards, and IWCP packages.

4.1.1 Building Operations

Facility management functions are those activities required to keep the facility habitable and in a functional condition. Facility management functions can be divided into three primary activities: maintenance, custodial, and operations missions. Hazardous materials removal operations activities include transition to decommissioning, disposition of property, personnel relocation, hazardous chemical disposition, disconnect and stabilization of utilities, and removal of files and documents.

Maintenance and construction activities present inherent physical hazards to the worker and, to some degree, the public. Those hazards are associated with work done on or with electrical systems, pressure systems, mechanical systems, elevated work, confined space, chemicals, heavy equipment, power equipment and tools, and hand tools. Maintenance and construction activities and their associated hazards are controlled through the use of craft journeymen, specific job training, and the IWCP.

Custodial activities present inherent physical hazards primarily to the worker. Those hazards include chemical hazards and work with power and hand tools. Activities performed include cleaning, material handling, snow removal, and moving furniture and personal supplies.

Custodial activities also incorporate ISM, but not through IWCP packages as is the case with maintenance. Hazards associated with custodial activities are controlled through training, repetition, and supervisory oversight. To a large degree, hazards associated with Stationary Operating Engineer (SOE) activities are handled in the same manner. The scope of work has been well defined over time for custodians and SOEs such that they are seldom subjected to unfamiliar work activities and if so, are trained to accomplish those activities in a safe manner. Feedback and work process improvement is attained through the supervisors.

Hazards for facility management include those associated with office and administrative personnel and SOEs. Hazards for office and administrative personnel include falls, slips, and cuts. SOEs could be subjected to operation of pressure systems, electrical systems, mechanical systems, and thermal hazards. The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to Building 371 operations.

4.1.2 Building Stabilization/Deactivation

The principal hazards in the deactivation phase include the handling of hazardous materials, hazards from liquids, and other physical hazards. Section 3.0 contains additional risks and uncertainties associated with the deactivation of Buildings 371 and 374.

4.1.3 Decommissioning

During decommissioning, there are numerous hazards to the worker, which include: industrial hazards from lifting heavy equipment, cuts and bruises from moving large items and exposure to internal contamination from high radioactive airborne conditions through cuts from contaminated size reduction operations.

For building demolition activities, principal safety hazards are those associated with falling materials and movement of heavy equipment used to remove buildings and load demolition debris into hauling containers. Some building components may contain ACM and lead-based paint. Some building components may be contaminated with low-level radiological materials. Some confined space entry into pump vaults and belowground tanks to perform characterization and equipment removal activities will be required. A fall hazard will exist when working around tanks that extend below grade and when working on the roofs of buildings. The uncertainties associated with decommissioning are addressed with the individual strategies in Section 3.0.

4.2 Environmental

The 371 Closure Project success will be measured, in part, based on environmental stewardship metrics. For this project, environmental stewardship is embodied in environmental monitoring, recycling and waste reduction, and environmental compliance. The following are the 371 Closure Project assumptions associated with environmental stewardship:

- No air monitoring in addition to the perimeter samplers will be required during demolition if the building has met the unrestricted release criteria

The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to environmental monitoring.

Uncertainty/Risk	Impact	Probability of Occurrence	Mitigation Measures
Surface water is contaminated during decommissioning activities	Budget and schedule	Low	Provide training and ensure that run-on and run-off controls are maintained.

*High, Medium, or Low

The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to recycling and waste reduction.

Uncertainty/Risk	Impact	Probability of Occurrence	Mitigation Measures
Automated size reduction technologies are not cost effective	Schedule, budget, and waste reduction potential	low	Pursue alternative waste reduction technologies

*High, Medium, or Low

The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to environmental compliance.

Uncertainty/Risk	Impact	Probability of Occurrence	Mitigation Measures
Closure strategy is not sufficient to eliminate need for future CDD submittals	Schedule and budget	low	Prepare CDDs as needed
Remediation waste determined to be process waste not exempt from RCRA	Schedule and budget	low	Manage waste as RCRA process waste prolonging the need for active RCRA units

*High, Medium, or Low

4.3 Safeguards and Security

The 371 Closure Project is inside the PA and will be the only Project within the restructured PA. Section 3.1.1 contains a detailed strategy on the complete removal of the PA and elimination of the MAA. Once the MAA within 371 is closed, there will still be numerous areas that contain classified material and significant SNM holdup; access to these areas is controlled. The classified matter and the SNM will be properly dispositioned as decommissioning progress, which will allow the controls in these areas to be diminished.

There may be special requirements for support from SPO within the scope of this Project. In the event that during decommissioning SNM is removed and containerized; SPO will need to be available to move this material to a secured area. Depending on the category and quantity of this material, the 371 Closure Project could be locked down until a material surveillance team could be mobilized from another project to secure the area. The material surveillance team will have to be Personnel Security Assurance Program (PSAP), Q-cleared individuals, and there are no such individuals on the 371 Closure Project team.

There are needs for termination of safeguards and control and disposition of classified matter. The deactivation, hazard stabilization, and property removal activities will remove classified matter, allowing termination of safeguards and elimination of requirements prior to the major decommissioning activities. The following bullets outline the assumptions associated with safeguards and security on the 371 Closure Project:

- Safeguards and security requirements will not terminate until the PDS is complete, and it indicates that the facility meets free release criteria.
- Limited areas will be discontinued when the set activities are complete.
- An exemption will be received from document classification after the SNM hold-up is complete, so that future documents will not have to be classified.

4.4 Quality Assurance

Quality activities will be managed through the ESH&Q organization and a 371 Closure Project Quality Control (QC) organization. The Project QC organization will provide all Project quality support with the exception of independent assessments. The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to quality assurance/quality control.

Uncertainty/Risk	Impact	Probability of Occurrence	Mitigation Measures
Quantity of work controlling documents (IWCPs, etc.) increases beyond available QC support.	Delay in work implementation.	Medium	Hire additional QC support
Changes to quality requirements are made.	Program and work controlling documents change. Potential cost/schedule impact.	Low	Hire additional temporary QC support
PAAA issues are identified or have Site wide implications.	Work slowdown/stoppage	Low	Effective continuous improvement/assessment

*High, Medium, or Low

4.5 Scope, Budget, and Schedule

The following table provides the specific activities within the project that may pose a degree of uncertainty with respect to technology, scope, budget, and schedule.

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
Increased efficiency from robotic size reduction of 25% is not realized	Increase cost of $10 million in FY03 and FY04. Schedule extension of 90 days	Medium	Develop manipulators and other higher speed techniques for inner tent chambers
Find additional contamination then assumed	Potential increase of $5 million in decontamination and extension of schedule by 60 days	High	Conduct additional characterization as material is removed
Unable to decontaminate the facility as planned. Required to perform contaminated demolition	Four-month delay in schedule for approval of modification to the decision document. Increase disposal costs of $40 million	Low	Obtain approval of contaminated demolition as an alternative in the 371 DOP before demolition. Conduct additional characterization as components are removed.
Insufficient labor force (cleared/non-cleared)	Delay of 4 months to project. Increase of $3 million.	Medium	Steelworkers have already been obtained and the building trades will be started early to increase float and reduce risk
Unanticipated building repairs	Cost increase to repair	Medium	None

*High, Medium, or Low

The following table documents the uncertainties and potential risks associated with the resource strategy:

Uncertainty/Risk	Impact	Probability of Occurrence *	Mitigation Measures
The steelworker contract changes significantly	Schedule and budget	Low	None
Insufficient number of trades	Schedule due to inability of staff to meet work load projections	Medium	Hire outside the state

*High, Medium, or Low

5. PROJECT CONTROLS

This section addresses the controls necessary for project initiation including safety, environmental stewardship, safeguards and security, quality assurance, and scope, budget, and schedule. The controls are carefully selected, developed, and implemented to prevent or mitigate hazards posed by the activity. The controls presented in the section are not detailed enough for floor-level implementation; however, these controls listed in this section will be expanded upon when the IWCP packages are developed for the individual projects/activities.

5.1 Project Documents

This section documents the primary project documents that govern 371 Closure Project. The following are the primary project documents that govern the 371 Closure Project:

- Rocky Flats Cleanup Agreement (RFCA)
- Decommissioning Program Plan (DPP)
- Facility Disposition Program Manual (FDPM)
- 371/374 Basis For Interim Operation, Rev. 4 (BIO)
- 371/374 Decommissioning Operations Plan
- RFCP RCRA Part B Permit
- 371/374 Project Baseline Description (PBD)
- 371 Closure Project Management Plan (this document)

RFCA

RFCA is a legally binding agreement between DOE, CDPHE, and EPA to accomplish the decommissioning of RFETS. The objectives of RFCA are the disposition of usable fissile material and TRU waste; safe on-site and off-site waste management; acceptable surface and groundwater quality after cleanup activities are complete; establish cleanup guidelines; recommend land use; outline environmental monitoring requirements/needs; address building disposition; and reduce operating costs.

DPP

The DPP established the regulatory steps for decommissioning facilities. The DPP is the RFCA decision document for facility disposition execution activities. The DPP consolidates and summarizes many of the requirements of RFCA specifically related to decommissioning and the documentation necessary during decommissioning.

FDPM

The FDPM establishes the processes and requirements for facility decommissioning, and outlines the project-specific documentation requirements and how facility decommissioning activities relate to the Site programs. The FDPM outlines the steps and requirements for each phase of decommissioning, and should be used by project management as a roadmap through the decommissioning process.

371 BIO Rev. 4

The 371/374 BIO is the nuclear license under which this Project operates. The buildings are currently operate under Revision 4 of the Building 371/374 Complex Basis for Interim Operation (BIO), which authorizes the performance of all baseline activities (including nuclear material storage and assaying), residue processing, wastewater treatment, and most deactivation activities. PuSPS and most decommissioning activities are not currently authorized. A page change to Revision 4 will authorize the startup and operation of PuSPS in December 2000

371/374 DOP
RFETS has implemented the CERCLA cleanup process using the RFCA. RFCA describes the process to undertake cleanup of the site through the facility disposition process. Due to the significant levels of contamination found within the 371 Closure Project, the 371/374 Buildings are considered to be Type 3, and require a DOP. The DOP is in preparation and scheduled for approval in the third quarter of FY01. The LRA for the 371 Closure Project is the CDPHE.

RFCP RCRA Part B Permit
There are a large number of RCRA units within the 371 Closure project. Throughout deactivation and decommissioning, efforts will be made to bring each RCRA unit to a RCRA stable configuration, thus reducing inspections. Formal closure of permitted and interim status areas is subject to the provisions of 6 CCR 1007-3, Parts 264 or 265, wherein basic closure methods are described in state approved closure plans and each closure is certified by an independent Colorado professional engineer. The operating record of each RCRA unit will be reviewed to determine the appropriate closure criteria.

371/374 PMP
The 371/374 PMP is the detailed project control document under which this Project operates. The PMP will be modified as the project progresses to indicate the current status and short- and long-range planning goals and activities.

5.2 Safety
The primary mechanism for assuring safety in the execution of project work is the Site work planning process, IWCP. All work on Site is required to be planned in accordance with this manual. The IWCP incorporates ISM into the planning process, with particular emphasis on hazard identification. The job hazard analysis (JHA) tool contained in the IWCP manual provides a comprehensive hazard identification process that involves the floor-level workers as well as safety discipline subject matter experts early in the planning phase. This provides an efficient and effective work plan that greatly minimizes the chances of encountering unexpected hazards.

The IWCP provides the necessary links to incorporate elements from each of the Site Safety Management Programs (SMP). SMP, which are largely managed within the ESH&Q organization, follow a requirement flow-down strategy that assures contractual requirements are met at the floor. SMP manuals have been developed for each program that establishes Site requirements based on DOE directives and other regulatory drivers. These top-level documents establish the safety infrastructure governing the development of implementing procedures and work plans within the project. SMP resources have been assigned directly to the Project. These personnel are responsible for incorporating the SMP program requirements in work execution documents. Involvement of appropriate SMP resources in the planning phase is determined by the IWCP JHA.

The IWCP work packages document the tasks to be performed; who is to perform the task; what hazards are present; and controls to be taken to mitigate the hazards. Controls include implementation of safety programs and/or permits such as lockout/tagout, confined space, asbestos mitigation, chemical exposure, elevated surfaces, radiological controls, welding/cutting, excavation, noise, and various other hazards. Finally, the IWCP provides for feedback expressly for the purpose of improving future work packages including hazard identification and mitigation.

5.2.1 Building Operations

The project-specific controls and authorization basis for the 371 Closure Project include the existing building Programs and the facility AB.

5.3 Environmental Stewardship

Environmental stewardship for the 371 Closure Project is embodied in the following areas: environmental compliance, environmental monitoring, ecology and natural resource protection, natural resource conservation, and recycling and waste reduction. The environmental stewardship activities that will be conducted as part of the project include:

- Conduct all activities in compliance with environmental regulations.
- Reduce worker/environmental risks by conducting deactivation/stabilization/hazard removal, and decommissioning
- Minimize waste.
- Establish environmental stewardship goals for the project, including employee performance.

Environmental stewardship is included in the 371 Closure Project through the Integrated Environmental Management System (IEMS). The IEMS incorporates environmental aspects into the project planning and execution stages for all work performed as part of this project. It defines the environmental requirements, endorses continuous improvement, and measures and verifies compliance through assessments. Specifically, the Environmental Checklist is used during the planning stages and periodically reviewed for each major work activity on this Project. Managers will evaluate the potential adverse offsite releases their activities could cause and implement appropriate controls to minimize or eliminate the release.

Environmental stewardship will be incorporated into the IWCP packages for the specific decommissioning activities. Environmental monitoring activities will have a specific IWCP work package, if the sampling is not associated with a specific activity. For project-specific compliance, an environmental plan will be developed that includes the following descriptions:

- Compliance activities such as inspections that are budgeted and scheduled.
- Environmental Management Systems (EMSs) project-specific requirements. Specifically, the approach to environmental assessments, ECATS responsibilities, and project environmental stewardship reporting and metrics will be described.
- Type of work that is or will be conducted under the IWCP process. Under the IWCP process, work activities will be evaluated to determine their environmental impact. For example, the IWCP process identifies what risks/hazards need to be controlled during decontamination of a wall. Another example is identifying emissions or other waste streams that an activity may generate.

The following activities must be completed to reduce worker/environmental risks:

- Identify high maintenance cost/low value RCRA units within the geographical confines of this project. Close or make RCRA stable.
- Develop necessary regulatory documents with the decommissioning program and ESH&Q to allow stabilization/hazard removal and decommissioning to be initiated in the industrial areas as soon as possible.
- Provide technical support to ESH&Q for the site monitoring during and previous to demolition.

Waste minimization requires close coordination with the MSP. Material Stewardship waste minimization/optimization processes such as bar coding waste will be implemented, as appropriate.

A variety of means will be employed to enable the worker to ensure compliance with the correct regulation depending on the work being performed. Work packages will be reviewed by the 371 Closure Project Material Stewardship organization prior to the start of work to ensure that the waste will be appropriately handled, segregated, and categorized. Additional methods of control may include administrative controls, such as identification of the activity and regulating agency on the work package, and physical controls, such as locking waste containers. At all times, process wastes will be managed to the current Federal, State, and Local regulations, as mandated by current site procedures. Remediation wastes will be managed in accordance with the ARARs identified in the 371 Closure Project DOP.

Any 371 Closure Project environmental findings will be tracked on the ECATS. The 371 Closure Project Environmental Compliance group will be responsible for assigning and tracking the finding. The 371 Closure Project group responsible for closing out the finding must do so within 30 days or seek an extension approval from the 371 Closure Project Manager.

5.4 Safeguards and Security

The 371 Closure Project is inside the PA and has an MAA. Therefore, many of the areas within Building 371 require Q-clearance or escort by an individual with a Q-clearance. Once the MAA within 371 is closed, there will still be areas that contains classified material and several area with significant SNM holdup; access to these areas will be controlled.

In addition to the physical controls, documents developed by the 371 Closure Project that require review from the public or the regulators must be reviewed for document classification purposes. Once the SNM hold-up removal activities are complete, a letter can be written requesting an exemption from this procedure. The letter will document the current status of the building and why document classification activities are not longer necessary.

5.5 Quality Assurance

The Site Quality Assurance Program Manual has been developed to meet the requirements of 10CFR820.130. The Quality Assurance Program is managed by the ESH&Q organization. This organization maintains the program requirements, and performs those assessments and audits of the Project that require independence of the line organization. All assessments not requiring strict line independence are performed within the Project by quality control personnel matrixed from the ESH&Q organization. The ESH&Q organization will conduct external assessments with personnel not associated with the 371 Closure Project.

Quality control resources have been supplied to the Project. These individuals are responsible for implementing Site quality assurance requirements at the Project level including but not limited to: inspection of work and items; records maintenance and management; assessment; corrective action identification and tracking; and purchase order review. The Project quality control resources will perform internal assessments, self assessments, and project support to include identifying and implementing work processes. In addition, the Project quality control resources will support the project record and administrative record personnel and function as the Project Price-Anderson interface.

Quality assurance hold points will be incorporated into the IWCP packages. The quality control personnel will be responsible for tracking the hold points and signing off on activities as completed.

5.6 Scope, Budget, and Schedule

Section H.1 of the Rocky Flats Closure Contract between the DOE and K-H states that "…the Contractor shall establish, maintain and use a project control system meeting the requirements specified in the contract…". The overall intent of the Project Control System (PCS) is to support the definition of work scope, assist with organizing project data, and use processes best suited to the RFCPs needs, environment, and K-Hs management philosophy.

As part of its support function in the project organization of the RFCP, the Strategic Planning and Integration (SP&I) organization is responsible for issuing project control standards and instructions for use by the Project organizations and for maintaining the systems required for planning and project management. The standards maintained include those for organizing, planning, scheduling, estimating, authorizing, monitoring and changing work on the RFCP. Each standard is further defined through an integrated set of process or task-oriented instructions, responsibility assignment authority designations, and record management instructions. Additional detail can be found in the Project Control System Description (PCSD) on the Site Intranet on the SP&I web page. The PCS maintained by SP&I include:

- Basis of Estimate Software Tool (BEST)
- Primavera Project Planner (P3) ©
- P&I Reporting System
- PMP/PBD Database
- Baseline Change Proposal Tracking System
- Milestone Tracking System
- Project Management Reporting System
- Resource Management and Allocation System

These documents and systems provide the project planning and management tools required by the Projects to implement the Closure Project.

5.6.1 Earned Value

Earned value (BCWP) will be measured two different ways: one is for schedule variance and the other is for cost variance. For schedule variance, earned value will be quantitatively measured for mission work (i.e., deactivation and decommissioning WBS elements) only. Mission work earned value is taken when a defined, quantifiable end product is substantially complete. For cost variance, earned value will be taken for all in-progress and completed activities. The accepted methods for measuring earned value are level of effort (LOE), quantities, modified milestone, milestone, and percent complete (based on a pre-determined method of measurement). The 371 Closure Project will use percent complete for earned value for the majority of activities.

5.6.2 Subcontractor Invoice and Claim Management

Following the reorganization of the RFCP around six main projects, the subcontract management and administration functions were also reorganized. The formerly centralized procurement organization has been decentralized to give each of the Projects control of their subcontracting functions, with the Administration Organization serving in a support function to the projects.

Specifically, each of the projects has a Subcontract Administrator Lead and necessary professional and support staff, working directly for the Manager of Project Planning in managing and administering all subcontract work for the project. The Administration Organization supports the projects by administering

the Master Task Agreements that all of the projects utilize. The administration organization also manages subcontract close out and provides the small business liaison.

The Procurement Systems Organization within the Material Stewardship Project provides matrixed Procurement Leads to each of the projects for the procurement of commodities. This organization also provides procurement engineering and quality assurance and material logistics management to the projects.

Management of subcontracts, including subcontractor invoicing and claims management, will continue to follow the guidance as described in the Acquisition Procedure For Requisitioning Commodities And Services.

5.6.3 Change Management

The change control process governs the documentation and approval of changes to the Closure Project Baseline, ensuring the validity of the project technical scope, schedule, estimated cost, and allocation of funding is maintained. Change control actions may result in modifications to the contract between DOE and K-H, and as such documentation and actions are subject to rigorous oversight (additional detail on change management can be found in the PCSD).

Under the RFCP Contract there are two sub-projects under: (1) the contract baseline - developed and submitted to the DOE for baseline approval; and (2) the working target - used to manage the Closure Project's day-to-day activities. DOE has authorized K-H to complete the full scope of work in the Closure Project Contract. This authorization allows K-H to accelerate or defer work without having to seek DOE approval for changes in the working target.

The Project Manager has authority to make changes within the project up to certain thresholds (Type III changes). Generally speaking, these changes include: funding transfers between cost accounts within the project; adjustments to schedule duration and logic ties that don't affect the Project end date; and, minor editorial changes to scope documents. Additionally, the Project Manager has certain responsibilities for change control. The Project Manager:

- Authorizes actions necessary to sustain operations in a manner consistent with applicable environmental, safety, and health statutes, regulations, and procedures, regardless of established SCCB or ICCB change control approval thresholds.
- When such corrective actions are necessary, notifies the K-H Contracting Officer who in turn notifies the DOE Contracting Officer in writing within 24 hours of any action taken pursuant to this provision.
- Forwards a copy of this notification to the K-H Change Control Manager.
- Manages the contingency account for the project.
- Requests formal written direction from the DOE Contracting Officer prior to performing requested work if the DOE-directed changes are received in an informal manner (e.g., e-mail, voice mail, verbal, informal notes).
- Reviews correspondence from K-H Correspondence Control, project initiated correspondence, external correspondence from the regulators, changes to Standards, Directives or regulations and determines if contract modification is necessary.
- Prepares a draft Notice of Pending Change letter if responses are not received from the DOE within the requested timeframe or if DOE responses may result in a change to the Contract Baseline. Forwards the letter to K-H Contracts Administration (copy K-H Change Control Manager) for submittal to the DOE Contracting Officer.

- Monitors GFS/I requests and deliveries to determine if an excusable delay or other contract modification is necessary.
- Prepares draft Notice of Pending Change letter when an excusable delay or other contract modification is warranted, and provides letter to K-H Contracts Administration (copy K-H Change Control Manager) within three (3) days of first knowledge of impact (e.g., K-H Correspondence Control receipt date).
- Prepares and submits initial REA/Type I baseline change proposal (BCP) for changes to the Contract Baseline, documenting the scope, schedule, and cost impact of the change. Forwards the REA/CP to the K-H Change Control Manager after the Notice of Pending Change is submitted to DOE.
- Ensures necessary reviews and approval signatures (including K-H Contracts Administration review, other impacted projects, and scope/cost/schedule impact analyses) are completed in a timely manner, enabling CPs processing to be completed according to the designated reporting cycle schedule.
- Uses the Integrated Change Control Checklist to review all potential life-cycle scope, schedule, and cost impacts to the Contract Baseline, are completely and accurately documented.
- Compares internally generated changes against the change control thresholds (audit findings, planning changes) and, if warranted, prepares appropriate change documentation to update the K-H Working Target or Contract Baseline.
- Ensures the Project Management Plan is appropriately updated according to established configuration control procedures.
- Maintains the record file for all Type III changes
- Notifies Cost Account Managers (including those of other impacted projects) regarding the disposition of submitted CPs.

6. PERFORMANCE FEEDBACK

This section addresses the processes by which feedback will be incorporated into the project activities. Feedback occurs within and between all of the functions of K-H ISM system. Feedback is an integral part of the management system and will not be used occasionally to detect and study current and potential problems or only when necessary to counter a problem. The following table documents the methods that will be used to ensure that feedback is incorporated into project.

Area of Interest	Feedback Activity	Potential Outcome
Safety Performance	Radiation survey monitoring and review – the data will be collected and evaluated pursuant to specific performance objectives and criteria – all data will undergo this evaluation	Should indicate whether the project scope is within the original parameters and if additional scoping and controls are needed
	Industrial hygiene monitoring and review – the data will be collected and evaluated pursuant to specific performance objectives and criteria – all data will undergo this evaluation	Should indicate whether the project scope is within the original parameters and if additional scoping and controls are needed
	Site Monthly Safety Report – summarizes the safety across the RFCP for a particular month	The report can be used as feedback to share with floor level workers to stimulate safe practices, additional feedback, and lessons learned
	Monthly/Quarterly Safety Meetings – provides a forum to cover safety topics about reoccurring safety concerns or upcoming events that could have unusual safety concerns	Provides a forum for feedback at a level outside an individual project
	Self assessment – all levels of project will participate from management to floor level workers – conducted at least annually	Identification and elimination of performance weaknesses; increases overall safety and health of worker and public
Environmental Stewardship	Environmental monitoring and review – the data will be collected and evaluated pursuant to specific performance objectives and criteria – all data will undergo this evaluation	Should indicate whether the project scope is within the original parameters and if additional scoping and controls are needed
	Self assessment – all levels of project will participate from management to floor level workers – conducted at least annually	Identification and elimination of performance weaknesses; increases overall safety and health of worker and public
Safeguards and Security	Self assessment – all levels of project will participate from management to floor level workers – conducted at least annually	Identification and elimination of performance weaknesses; increases overall safety and health of worker and public
Production	Self assessment – all levels of project will participate from management to floor level workers – conducted at least annually	Identification and elimination of performance weaknesses; increases overall safety and health of worker and public
Project Controls	Self assessment – all levels of project will participate from management to floor level workers – conducted at least annually	Identification and elimination of performance weaknesses; increases overall safety and health of worker and public
	Subcontractor evaluation program – subcontractor will be assessed throughout their subcontract	Elimination of subcontractors that cannot perform in accordance with the RFCP standards and schedule

In addition to the feedback activities noted in the table, there are specific processes and programs on-Site that will ensure that feedback is received for all areas of interest within the project. Those programs are:

- Conduct of Operations, particularly the Plan-of-the-Day – Provides an opportunity for feedback associated with the next day's activities; it facilitates coordination between groups with activities in the same areas.
- Toolbox meetings – Provide a daily opportunity to provide feedback on the activities planned for that particular day and to provide lessons learned from the previous day's activities.
- Personnel Performance Reviews – Provide feedback to individual employees on job performance and gives the employee an opportunity to provide feedback.
- Site Lessons Learned/Generic Implications Requirements Manual – Describes the responsibilities and requirements for performing lessons learned and generic implication process and provides programmatic requirements for performing lessons learned.
- Site Integrated Oversight Manual – Requires management assessments of processes under a manager's control; requires knowledge of the process under assessment; and provides reasonably objective assessment of effectiveness of the process under review, corrective action, and/or feedback to program owners and processes under review.
- Occurrence Reporting Process – Reports occurrences as defined by the process; identifies occurrences; and results in corrective actions and lessons learned.
- Integrated Work Control Program – Describes formal mechanisms for providing feedback and post job evaluation; requires knowledge of the work activity planning and/or execution; and results in post job review, lessons learned, and work document reference library.

6.1 Reporting

This section will detail how the project will report performance and status of safety, environmental stewardship, safeguards and security, and project controls.

6.1.1 Safety

Safety metrics must be reported as the raw numbers based on the actual hours and numbers normalized for 200,000 hours per year. The metrics that must be reported are the raw numbers and case rate for first aid cases, recordable cases, day away from work cases, and number of restricted days.

6.1.2 Environmental Stewardship

Reporting requirements associated with environmental stewardship include the data associated with the surface, groundwater, and air monitoring programs and recycling and waste minimization statistics. The monitoring data will be managed by the environmental personnel matrixed to the 371 Closure Project. The surface water monitors are set-up on a continuous monitoring system and the data are compiled monthly. The groundwater wells are sampled every six months. Currently, there are no special air samplers set-up around the 371 Closure Project; therefore, air monitoring data will come from the RAAMP system. All of the air monitoring data is compiled annually into the RFETS Integrated Monitoring Report.

The recycling and waste minimization metrics will be maintained by the MSP personnel matrixed to the 371 Closure Project. In addition to these specific reporting items, environmental stewardship reporting could involve the Lessons Learned Program, Price-Anderson Amendment Act requirements, event/spill reporting, and nonconformances.

6.1.3 Safeguards and Security

Reporting requirements associated with safeguards and security include the material inventory, including hold-up quantities. These inventories are currently scheduled every six months and are completed by the MSP personnel matrixed to the 371 Closure Project.

In addition to the material inventory, every other month an inventory must be conducted and submitted on the tamper indicating devices within the 371 Closure Project. Other safeguard and security submittal requirements are driven by decommissioning requirements. For instance, a submittal will be prepared requesting an exclusion from document classification. This is a one time submittal.

6.1.4 Project Controls

Section H.1.03 of the Rocky Flats Closure Contract between the DOE and Kaiser-Hill requires that "Differences between planned and actual performance, shall be analyzed and reviewed monthly against the total project baseline and the Target Cost and Target Schedule for the current fiscal year portion of the total project." Additionally, this contract clause states that "Once each quarter, the Contractor shall prepare and submit a comprehensive report [Quarterly Critical Analysis (QCA)] which critically analyzes the overall status of the closure project as well as many key metrics."

The responsibility for reporting project performance will be shared by the Project and SP&I. In general, the 371 Closure Project will be responsible for maintaining current and accurate cost, scope and schedule status information in the Project Control System integrated databases. Utilizing this information, SP&I will roll-up project information into consistent monthly and quarterly project performance reports.

For the QCA, the 371 Closure Project will prepare the following specific project information that will be included in the QCA (format and submittal instructions are issued by SP&I):

- Cost and schedule performance status
- Critical path schedule
- Critical path analysis, including analysis of schedule trends and float analysis at the PBD level
- Project issues including analysis of critical labor skills and other resources

The Project will also prepare updates to project risk management/mitigation plans and the risk-based contingency analysis. This information will be provided to SP&I for incorporation into the Site Summary Briefing.

7. REFERENCE INFORMATION

7.1 Acronyms

AB	Authorization Basis
ACM	asbestos containing material
ACWP	actual cost of work performed
APR	air purifying respirator
ARAR	applicable or relevant and appropriate requirement
BCP	baseline change proposal
BCWP	budgeted cost of work performed (earned value)
BCWS	budgeted cost of work scheduled
BEST	basis of estimate description
BIO	Basis for Interim Operations
BNFL	British Nuclear Fuels Limited
CCA	configuration control authority
CDD	Closure Description Document
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPB	closure project baseline
CPPF	cost plus performance fee
CSRF	central size reduction facility
CSV	central storage vault
CV	cost variance (BCWP-ACWP)
CWTS	Caustic Waste Treatment System
CY	calendar year
DDCP	RFETS D&D Characterization Protocol
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOE/HQ	DOE Headquarters
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
DPP	Decommissioning Program Plan
EAC	estimate at completion
ECATS	Environmental Corrective Action Tracking System
EMS	Environmental Management System
EPA	Environmental Protection Agency
ER	Environmental Restoration
ESH&Q	environmental, safety, health and quality
FDPM	Facility Disposition Program Manual
FY	fiscal year
HCl	hydrochloric acid
HEPA	high efficiency particulate air
HF	hydrofluoric acid
HR	human relations
HVAC	heating ventilation and air conditioning
IAEA	International Atomic Energy Agency
IDC	item description code

IEMS	Integrated Environmental Management System
IHSS	individual hazardous substance site
IMP	Integrated Monitoring Plan
I/O	in/out
IPM	in process material
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISSR	in situ size reduction
ITC	inner tent chamber
IV	independent verification
IVC	independent verification contractor
IWCP	Integrated Work Control Program
IX	ion exchange
JHA	job hazard analysis
kgs	kilograms
K-H	Kaiser-Hill
LAA	limited access area
LDR	land disposal restriction
LLW	low-level waste
LLMW	low-level mixed waste
LLNL	Lawrence Livermore National Laboratory
LOE	level of effort
LRA	Lead Regulatory Agency
m	meter
MAA	material access area
MAP	Management Assessment Program
MC&A	material control and accountability
MSP	Material Stewardship Project
MTA	master task agreement
NDA	nondestructive assay
NEPA	National Environmental Policy Act
NTS	Nevada Test Site
PA	protected area
PAPR	powered air purifying respirator
PATS	Plant Action Tracking System
PBD	project baseline description
PCB	polychlorinated biphenyls
PCS	project control system
PCSD	project control system description
PDS	Pre-Demolition Survey
PDSP	Pre-Demolition Survey Report
PDSR	Pre-Demolition Survey Report
PMP	Project Management Plan
POC	pipe overpack containers
PPE	personal protective equipment
PSAP	Personnel Security Assurance Program
Pu	plutonium

PuSPS	Plutonium Stabilization and Packaging System
QA	quality assurance
QC	quality control
QCA	quarterly critical analysis
RAAMP	Radioactive Ambient Air Monitoring Program
RCRA	Resource Conservation and Recovery Act
RCT	radiation control technician
RFCA	Rocky Flats Cleanup Agreement
RFCP	Rocky Flats Closure Project
RFCSS	Rocky Flats Closure Site Services
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RISS	Remediation, Industrial Decommissioning, and Site Services Project
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RMRS	Rocky Mountain Remediation Services
RSOP	Rocky Flats Cleanup Agreement Standard Operating Protocol
RTR	real time radiography
SCO	surface contaminated object
SFE	Supercritical Fluid Extraction
Site	Rocky Flats Environmental Technology Site
SIZ	security isolation zones
SNM	special nuclear material
SME	subject matter expert
SMP	Safety Management Program
SOE	Stationary Operating Engineer
SOW	statement of work
SPO	security police officers
SP&I	Strategic Planning & Integration
S/R	stacker retriever
SRS	Savannah River Site
SS&C	sand, slag and crucible
SSOC	Safe Sites of Colorado
SST	site secure transport (vehicle)
SV	schedule variance (BCWP-BCWS)
SWB	standard waste box
TCLP	Toxicity Characteristic Leaching Procedure
TRU	transuranic
TRM	mixed transuranic
TSR	technical safety requirement
USQD	unreviewed safety question determination
UST	underground storage tank
VMC	valve maintenance corridors
WAC	waste acceptance criteria
WBS	work breakdown structure
WIPP	Waste Isolation Pilot Plant

Appendix A
Contract Statement of Work

Special Nuclear Material

The Contractor will be required to perform the work listed below for the removal of all Special Nuclear Material (SNM).

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS[1]
A. Plutonium Ship all non-classified plutonium metals and oxides to the Savannah River Site or other DOE approved alternative[2] by September 30, 2002 (except for Pu holdup discovered and/or removed after 9/30/02). Ship all classified, by shape, plutonium metal to the Savannah River Site or DOE approved alternative by September 30, 2002. Ship all plutonium fluorides to the Savannah River Site or DOE approved alternative by September 30, 2002. Ship all plutonium metal composites to Lawrence Livermore National Laboratory or DOE approved alternative by September 30, 2002. Ship all IAEA material to Savannah River Site or DOE approved alternative by September 30, 2002. .			Non classified plutonium metal and oxide must be packaged to the DOE-STD-3013-96 prior to shipment to the DOE approved receiver site. All Special Nuclear Material must be shipped in a DOE approved shipping container (i.e. 9965, 9975, DT22, etc.) DOE Orders 5610.12, 5610.14 and 460.1A must be followed.	Safe, Secure Transport services (e.g., escorts, tractor and trailer) at a rate and number sufficient to support SNM shipments (average number of 5 shipments per month not to exceed 9 shipments per month) started on 10/01/99 and ending as early as 10/1/01 and no later than 9/30/02 for a total of 175 shipments. DOE approved receiver sites that can receive SNM and plutonium fluorides and IAEA materials at a rate to support shipment completion as early as 10/1/01 and no later than 9/30/02 (average number of 5 shipments per month not to exceed 9 shipments per month). DOE-provided containers for SNM at a rate and number

[1] As used throughout this Technical Exhibit A, "None" is used solely to indicate that the Government has not identified a specific service or item to be provided by the Government in support of the particular scope description.

[2] Dependent upon the completion of the NEPA process for the Record of Decision for Disposal.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS INTERFACE WBS		REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS[1]
				consistent with the planning and approval process described in C.3 to support the SNM shipping schedule. (DOE to certify but not provide 9975 and 3013 containers) Specific container list TBD
B. Highly Enriched Uranium Ship all highly enriched uranium metal that is contaminated with plutonium to the DOE approved receiver site by September 30, 2002. **C. Other Nuclear Materials** Ship all depleted uranium, 4.5% LEU, radioactive sources, thorium samples, U-233 non-combustibles to designated DOE or other approved receiver sites by September 30, 2002.			All Special Nuclear Material must be shipped in a DOE approved shipping container (i.e. 9965, 9975, DT22, etc.) DOE Orders 5610.12, 5610.14 and 460.1A must be followed.	Same items as for Section A. Plutonium. In addition for C, NEPA as required Designated receiver sites Certified shipping containers DOE-provided containers for SNM at a rate and number consistent with the planning and approval process described in C.3 to support the SNM shipping schedule. (DOE to certify but not provide 9975 and 3013 containers) Specific container list TBD

II. Facility Deactivation, Decommissioning and Demolition

The Contractor will be required to deactivate, decommission and demolish the Rocky Flats facilities in accordance with the Rocky Flats Cleanup Agreement, except for those facilities specifically defined by DOE to remain as detailed below:

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS INTERFACE WBS		REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
A. SNM Buildings The Contractor shall deactivate, decontaminate and demolish all former Special Nuclear Material building clusters & supporting facilities to include (See Project Baseline Descriptions, for cluster descriptions) Building 371/374 cluster by March 1, 2006, Building 371/374 cluster by October 1, 2004, B707/750 cluster by February 1, 2005, B776/777 cluster by March 1, 2004, and B559 cluster by September 1, 2004.	AAC, AAD CAC, CAD BAC, BAD DAC, DAD		Planning, characterization, area preparations, physical decontamination, dismantlement, demolition and reporting requirements shall be accomplished in accordance with the Rocky Flats Cleanup Agreement.	CERCLA Administrative Record Repository DOE shall provide comments on draft decision documents and regulatory reports within 20 business days of receipt.
B. Other Facilities The Contractor shall decontaminate and demolish the remaining building clusters & supporting facilities by September 30, 2006. (See Project Baseline Descriptions for cluster and supporting facility descriptions.)	ECC, ECD, EDC, EDD, EEC, EED, waste storage bldgs		Planning, characterization, area preparations, physical decontamination, dismantlement, and demolition shall be accomplished in accordance with the Rocky Flats Cleanup Agreement.	CERCLA Administrative Record Repository DOE shall provide comments on draft decision documents and regulatory reports within 20 business days of receipt.

III. Waste Management

The Contractor shall store, process and/or package and ship to DOE approved or other storage, treatment or disposal sites all wastes. These wastes consist of transuranic (TRU) and transuranic mixed (TRU mixed), low level radioactive (LLW) and low level radioactive mixed (LLW mixed), hazardous, and sanitary waste. These wastes must be processed and/or packaged to meet disposal or receiver site criteria as stipulated below:

SCOPE	CORRESPONDING WBS ELEMENT EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
A. Transuranic and Transuranic Mixed Waste Ship to the Waste Isolation Pilot Plant (WIPP) and other DOE designated sites, all transuranic and transuranic mixed waste by December 15, 2006.			The Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC) Rev. 5, dated April 1996, and DOE Order 435.1. The TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) procedure and Site-Specific TRAMPAC for TRU waste loading requirements. The TRUPACT-II SARP (Safety Analysis Report) and TRUCON (TRUPACT-II Content Code). All DOT transportation requirements applicable at the time of shipment for hazardous and radioactive waste must be met as well. --10 CFR Parts 70 & 71 (packaging) --49 CFR Parts 107, 110, 171, 173 (transportation) --Packaging QA Program Plan	TRUPACT II containers and trailers to support transuranic and transuranic mixed waste (including classified waste) shipments to WIPP and other DOE approved storage, treatment or disposal sites. TRUPACT IIs were delivered to Rocky Flats Site beginning on 10/01/99, and will be delivered at the following rates per month: FY00 36/mo FY01 72/mo FY02 120/mo FY03 120/mo FY04 120/mo FY05 80/mo FY06 36/mo FY07 36/mo DOE will also provide all transportation services from the loading facilities at Rocky Flats to all DOE approved sites.

SCOPE	CORRESPONDING WBS ELEMENT EXECUTION WBS	CORRESPONDING WBS ELEMENT INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
B. Low Level Waste Ship to approved DOE or commercial disposal sites all low-level waste by December 15, 2006. The Contractor shall provide transportation services to the disposal site and disposal site fees unless otherwise stipulated by DOE.			Disposal site waste acceptance criteria and DOE Order 435.1, All applicable DOT requirements at the time of shipment for radioactive waste must be met. Currently available disposal site – the DOE Nevada Test Site (NTS) in accordance with NTS Waste Acceptance Criteria dated August 1997, Rev 1, or Commercial Waste Acceptance Criteria if that disposal option is chosen.	DOE receiver sites that can accept waste at a rate and number consistent with the planning and approval process described in C.3. to support low level waste shipments.
C. Low Level Mixed Waste (less than 10 nanocuries per gram) Ship to approved DOE or commercial treatment and disposal sites all low level mixed waste less than 10 nanocuries per gram by December 15, 2006. The Contractor shall provide transportation services to the disposal site and treatment and disposal site fees unless otherwise stipulated by DOE.			Disposal site waste acceptance criteria and DOE Orders 5480.3 and 435.1. All applicable DOT requirements for shipment of radioactive and hazardous waste must be met.	DOE fulfills its commitment in the Waste Management Programmatic Environmental Impact Statement to designate DOE or commercial receiver site(s) that can accept waste at a rate and number consistent with the planning and approval process described in C.3 to support low level mixed waste shipments.

SCOPE	CORRESPONDING WBS ELEMENT EXECUTION WBS	CORRESPONDING WBS ELEMENT INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
D. Low Level Mixed Waste (greater than 10 nanocuries per gram and less than 100 nanocuries per gram) Ship to approved DOE or commercial treatment and disposal sites all low-level mixed waste greater than 10 nanocuries per gram by December 15, 2006. The Contractor shall provide transportation services to the disposal site and treatment and disposal fees (up to the unit price in III.C. above) unless otherwise stipulated by DOE.			Disposal site waste acceptance criteria and DOE Orders 5480.3 and 435.1, All applicable DOT requirements for shipment of radioactive and hazardous waste must be met.	DOE fulfills its commitment in the Waste Management Programmatic Environmental Impact Statement to designate DOE or commercial receiver site(s) that can accept waste at a rate and number consistent with the planning and approval process described in C.3 to support low level mixed waste shipments.
E. Sanitary Waste Ship to commercial facilities for disposal, or recycle, all sanitary waste by December 15, 2006.			Local and state regulations regarding waste acceptance at sanitary landfills as well as any requirements associated with individual disposal sites. Sanitary waste leaving the Rocky Flats Site must be inspected to assure that no radioactive materials are present in accordance with Colorado Sanitary Waste regulations (6 CCR 1007-2) for landfills and individual landfill permits.	None
F. RCRA Regulated Hazardous Waste Ship to commercial facilities, all RCRA Regulated Hazardous Waste by December 15, 2006.			Disposal sites waste acceptance criteria, the Resource Conservation Recovery Act and DOE Order 435.1	None

SCOPE	CORRESPONDING WBS ELEMENT EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
G. Waste Minimization The Contractor shall develop and implement a pollution prevention program incorporating waste prevention, recycling and an affirmative procurement program. The Contractor shall establish waste reduction goals for transuranic, low-level waste, low level mixed and RCRA regulated hazardous waste.			Executive Order 12856 Executive Order 13101 DOE Order 5400.1	None

IV. Environmental Remediation

The Contractor shall prepare a draft interim final record of decision (ROD), submit to DOE for DOE, EPA, and CDPHE approval, and complete all actions required by the approved interim final ROD to remediate soil, surface water, ground water, and other contaminated media. The remediation shall be completed as stipulated below:

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS INTERFACE WBS		REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
A. Remediation The Contractor shall remediate Individual Hazardous Substance Sites (IHSS)[3], Potential Areas of Concern (PAC), or under building contamination (UBC) by December 15, 2006. **The total waste volumes for this environmental remediation portion of the project are assumed not to exceed those quantities as follows:** Non-Rad Waste: 11,000 cubic yards Low Level Waste: 107,000 cubic yards Low Level Mixed Waste <1 nanocurie: 41,000 cubic yards Low Level Mixed Waste >1 nanocurie: 220 cubic yards			Planning, characterization, area preparations, remediation, disposition, final regulatory approvals and reporting requirements shall be accomplished in accordance with RFCA Remediation shall be specified in the approved interim final Record of Decision (ROD) and Proposed Plan Contractor must transport and maintain CERCLA administrative record IAW 40 CFR 300-311	CERCLA Administrative Record Repository DOE shall provide comments on draft decision documents and regulatory reports within 20 business days of receipt.

[3] If the 903 Pad Remediation Project removal option is exercised, then the project planning, execution and completion as identified in WBS #1.1.03.12.06.02 shall be removed from the scope of work and this contract.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
B. Post Closure Care under RCRA Permit The Contractor shall perform the closure and post-closure care requirements for RCRA permitted and interim status units during the performance of this contract.			The Contractor shall comply with closure and post closure care requirements under the RCRA permit in accordance with RCRA, 40 CFR Parts 264 and 265, the Colorado Hazardous Waste Act requirements, 6 CCR 1007-3 and RFCA.[4]	None
C. End State The Contractor shall develop and submit for RFFO and regulatory approval a Draft Interim Final ROD and Proposed Plan. The end state is defined in Clause C.1.2.			Draft Interim Final ROD shall be in accordance with RFCA and be of sufficient quality and completeness to obtain regulatory approval and issuance of an approved Interim Final ROD and Proposed Plan. Draft Interim Final ROD will be prepared and presented in sufficient time to allow: Public and regulatory review as provided in RFCA Regulatory approval and publication Completion of remediation actions described in the ROD and Proposed Plan prior to December 15, 2006 Contractor must transport and maintain CERCLA administrative record in accordance with 40 CFR 300-311.	CERCLA Administrative Record Repository DOE shall provide comments on draft decision documents and regulatory reports within 20 business days of receipt. DOE will use its best efforts to obtain an approved Interim Final ROD.

[4] Assumes RCRA Permit is not extinguished and its requirements are not absorbed into RFCA.

V. Infrastructure and General Site Operations

The Contractor shall perform the infrastructure operations and general support services listed below in support of the site closure mission.
All items listed below are required until the end of this contract unless otherwise approved for termination by DOE.
These items are generally required to support the items listed Sections I through IV above, or the general operation of the site until closure
It is recognized that this is a closure site, all facilities have a limited life span, and the nuclear safety risk and required controls should be steadily declining throughout the project. The standard requirements referenced in this contract are generally designed for continuous ongoing facility operations. this will create the desirability for a number of interpretations and/or exceptions and deviations from the standard requirements to ensure that project costs are being deployed for the maximum net government risk reduction. The Contractor and DOE shall actively engage in early identification and appropriate requirements reduction activities to ensure a safe and cost effective closure.
The Contractor shall provide any other services or operations not listed below as required by other contract requirements including those DOE Orders listed in Section J, Attachment B.
Safety services are subdivided into three sections: 1) Nuclear safety requirements which apply to handling and processing fissile material and to the operation of facilities that house fissile material, 2) radiological safety requirements that apply to handling and processing of radioactive waste and operations in facilities that are radiologically contaminated or house radioactive materials, and 3) industrial safety requirements which apply to all work activities and facilities at the Site.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS INTERFACE WBS		REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
A. Environmental Monitoring The Contractor shall conduct required environmental monitoring in compliance with environmental laws, regulations, permits, agreements, decision documents and in support of emergency response activities. The Contractor shall provide annual updates to the Historical Release Report and CERCLA Administrative Record. The Contractor shall maintain the current and any new enforceable agreements at the Site as identified in the technical exhibit D in this section C.	H..	F.. (for information to better plan characterization and remediation), AAB, BAB, CAB, DAB, ECB, EDB, EEB, waste storage bldgs (for access to monitoring locations)	Environmental Monitoring shall be accomplished in accordance with the provisions of Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Clean Air Act; the Clean Water Act; the Colorado Water Quality Control Commission (CWQCC) standards; natural resource management regulations, and RFCA. [5]	DOE will provide necessary access to accomplish all offsite environmental monitoring.
B. Facility Operation and Material Storage The Contractor shall operate all facilities until they are demolished in accordance with applicable safety, security requirements and store all materials (chemicals, etc.), waste, property, etc., in accordance with applicable requirements.	AAB, BAB, CAB, DAB, ECB, EDB, EEB, waste storage bldgs		Applicable requirements for facility operation or material storage are listed in Section J, Attachment B..	None

[5] Requirements will be revised if RFCA is amended to include above stated requirements as ARARs.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
C. Safeguards & Security The Contractor shall ensure appropriate levels of protection against unauthorized access; theft, diversion, loss of custody of Special Nuclear Material; espionage; loss or theft of classified matter or Government property; and other hostile acts that may cause unacceptable adverse impacts on national security or the health and safety of DOE and contractor employees, the public or the environment. The Contractor shall promptly prepare and submit applications for security clearances as required for work under this contract. The Contractor shall deter, prevent, detect and respond to unauthorized possession, use, or sabotage of Special Nuclear Materials. The Contractor shall provide an integrated system of activities, systems, programs, facilities and policies for the protection of classified information, nuclear materials, and DOE and certain DOE contractor property and personnel as required by the Atomic Energy Act of 1954, as amended, other Federal statutes, Executive orders, and other directives.			Program Management, DOE Order 470 Series Personnel Security, DOE Order 472 Series Protection Operations, DOE Order 5632 and DOE Order 473 Series Materials Control And Accountability, DOE Order 5633 and DOE Order 474 Series Information Security, DOE Order 5639 and DOE Order 471 Series	DOE shall promptly process Contractor security clearances. On average, processing time will be in accordance with DOE Order 472 guidelines which for clear cases will be at or below the following: Q clearance- 75 calendar days L clearance - 75 calendar days AAA clearance - 60 calendar days Processing time begins upon receipt of the case from the Contractor.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
D. Analytical Services The Contractor shall perform and maintain Analytical Services and/or Laboratories. The Contractor shall ensure that any lab samples analyzed by off-site laboratories will be disposed of from the laboratory and not returned to the Rocky Flats Site for disposal unless there is prior contractual agreement for the return of specific samples for which no other disposition is possible.			Analytical Services and laboratories shall be operated in accordance with one or more of the following references: 10 CFR 830.120, DOE Order 414.1, ASME-NQA-1, ANSI/ASQC E4, and/or ISO 9000.	DOE shall maintain a quality National Analytical Management Program or a DOE alternative program which supports the analytical services necessary to close the site.
E. Public Relations & Media Support The Contractor shall provide communication services to include Citizens Advisory Board representation, tours and visits and other stakeholder support.			Communication services shall be provided as needed to maintain stakeholder support for the Rocky Flats Closure Project. Contractor must transport and maintain supporting community documents in the established DOE Reading room(s).	DOE Reading Room(s)

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
F. Litigation Management The Contractor shall maintain a legal function and demonstrate sound litigation management practices to include litigation, arbitration, legal advice on environmental matters, procurement, employment, labor, and the Price-Anderson Act (PAA); review and interpretation of legislation and laws; research and drafting of memorandum, and the management and oversight of outside legal counsel; for both the prime and subcontractors. The Contractor shall provide litigation support to the Government when judged necessary by the Contracting Officer (or Contracting Officer Representative) in cases of actual or threatened litigation, regulatory matters, or third-party claims and subject to applicable rules and regulations. Litigation support includes, but is not limited to: case preparation assistance; document retrieval, review and reproduction; witness preparation and testimony; expert witness testimony; and assisting Government counsel as necessary in response to discovery or other information related activities responsive to any legal proceeding.			Litigation management practices shall be provided in accordance with the RFFO approved Litigation Management Plan. Department of Energy, Office of General Counsel, Legal Services and Litigation Management Policies and Procedures	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
G. Audit Support Services The Contractor shall provide audit support services for GAO, IG, DNFSB, EPA, CDPHE and other external audits that examine and evaluate Site-wide activities.			Audit Support Services shall be provided in accordance with DOE Order 2300.1B, Audit Resolution and Follow-up, DOE Order 2320.1C, Cooperation with the Office of Inspector General, DOE Order 2321.1B, Auditing of Programs and Operations; and, Department of Energy, Office of General Counsel, Legal Services and Litigation Management Policies and Procedures	DOE /OIG Rocky Flats Audit Plan
H. Utilities & Infrastructure The Contractor shall provide and maintain the infrastructure, utilities, etc. necessary to support the closure mission. DOE will provide at a later date a specific definition of which roads and components of the site utility system that will remain after closure.	EA..		Utilities and infrastructure shall be maintained in accordance with DOE Order 430.2 and the Site Safety Analysis Report.	DOE shall provide and pay for site utilities to include raw water, electricity, natural gas and heating oil.
I. Radiological Assistance Program The Contractor shall provide a field unit under the Radiological Assistance Program (RAP) until the RAP program is terminated by DOE.			DOE Order 5530.3 provides the requirements for the Radiological Assistance Program.	DOE shall provide additional funding for the RAP and one member and may provide up to three (3) members for the RAP team.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
J. Health Effects The Contractor shall provide support for health programs/ambulatory care, beryllium and radiation worker health surveillance programs and personnel monitoring program. These services are required to assess, monitor, record data, and provide medical support for current site workers who are or may be exposed to radiological and hazardous materials. This is expected to encompass 6500 (+/-1000) current site workers through the term of this contract. The Contractor shall maintain medical records of former workers and make them available for health effects studies as requested by DOE.			Health effects shall be maintained in accordance with Public Law 102-484, DOE Order 440.1, and will last until the program and documents are turned over to DOE at the end of this contract.	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
K. Occupational Health The Contractor shall provide the following classes of examinations for the purpose of providing initial and continuing assessment of employee health: pre-placement in accordance with the Americans with Disabilities Act (42 United States Code 12101), qualification examinations, fitness for duty, medical surveillance and health monitoring, return to work health evaluations, and termination examinations. The occupational medical department shall be informed of all job transfers and shall determine whether a medical evaluation is necessary. The physician responsible for the delivery of medical services or his/her designee shall inform contractor management of appropriate employee work restrictions.			DOE Order 440.1A provides the requirements for employee health examinations. This applies to all contractor and sub-tier contractor personnel as required by DOE Order 440.1A.	None
L. Emergency Management The Contractor shall provide Site Emergency Management Services to include emergency planning and preparedness as well as response to possible incidents involving nuclear, radiological and hazardous materials on site. The Contractor shall provide a fully equipped and adequately staffed Emergency Operations Center on the site.	EA…		DOE Order 151.1 specifies the performance requirements, capabilities and response times for emergency management services. Emergency management shall be performed at the levels specified until the major nuclear facilities' hazards are removed or ameliorated, or the facilities are demolished. A reduced level of emergency services may be allowed once the major hazards on-site are removed and as they are approved by DOE. DOE Order 225.1A specifies the requirements for conducting accident investigations.	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
M. Nuclear Criticality Safety The Contractor shall maintain a Nuclear Criticality Safety Program which ensures that operations with fissionable materials which pose a criticality accident hazard shall be evaluated and documented to demonstrate that the operation will be subcritical under both normal and credible abnormal conditions. Fissionable material operations shall be conducted in such a manner that consequences to personal and property that result from a criticality accident will be mitigated. No single credible event or failure shall result in a criticality accident having unmitigated consequences.			DOE Order 420.1 provides the requirements and invokes the applicable ANSI/ANS 8 Standards. Sabotage and seismic events that are predicted to result in facility collapse are exempt from the requirement for double contingency. The Criticality Safety Program will be required in each facility until fissile materials inventories are reduced to less than that stipulated in ANSI/ANL8.	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
N. Nuclear Safety The Contractor shall develop and maintain the safety analysis and controls for nuclear facilities, operations, and activities. Readiness determinations for restart of activities and for start-up of new activities will be required to demonstrate readiness to safely start the activity.			DOE Orders 420.1, 425.1, 5480.21, 5480.22, and 5480.23 specify the requirements for nuclear safety.	DOE complies with the following authorization basis review schedule: Justification for Continued Operation – 4 calendar weeks Page Change- 4 calendar weeks New -Authorization Basis- 2 calendar months Authorization Basis revision- 6 calendar weeks Positive unreviewed safety question - 2 calendar weeks DOE will work cooperatively with the Contractor to improve upon this review schedule as a part of the best efforts approach of the Nuclear Licensing Statement of Commitment.
O. Occupational Safety The Contractor shall meet all occupational safety and health requirements (including but not limited to industrial safety, fire protection, construction safety, firearms safety, explosive safety, industrial hygiene, pressure safety and motor vehicle safety) for all site-related operations and conditions.			Occupational safety requirements are as stipulated in DOE Orders 420.1, DOE Order 440.1A.	None
P. Fire Protection The Contractor shall maintain an acceptable fire protection program which supports a level of fire protection and fire suppression capability sufficient to minimize losses from fire and related hazards consistent with the best in class of protected property in private industry.			DOE Order 420.1 provides the requirements and invokes the National Fire Protection Association Standards.	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
Q. Quality Assurance Program The Contractor shall perform all work on site in accordance with applicable quality assurance requirements.			DOE Order 414.1 and 10 CFR 830.120 specify basic requirements that apply to the quality assurance program. For site activities where transuranic waste will be characterized, packaged, or shipped, the DOE Carlsbad Area Office Quality Assurance Program Document, CAO-94-1012 and DOE Carlsbad Area Office Quality Assurance Program Plan, CAO-94-1010 shall apply. The Nevada Test Site Waste Acceptance Criteria shall apply for those activities where Low Level Waste is characterized, certified, packaged, or shipped.	None
R. International Agreements The Contractor shall support 12 inspections per year by the International Atomic Energy Agency (IAEA) as well as maintain material surveillance equipment.			IAEA agreement INFCIRC 288 and DOE Order 1270.2B This requirement will remain in effect until IAEA materials have been permanently removed from the Site.	None

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
S. Records Management and Document Control The Contractor shall provide on an ongoing basis the maintenance, storage, protection, and disposition of active and inactive classified and unclassified records, retrieval from on-site and off-site storage facilities and support in ongoing discovery efforts for litigation. All Government records, regardless of media, in the Contractor's custody must be properly inventoried, indexed, moved to DOE approved off-site storage facilities, and possess a disposition schedule or equivalent thereof pending a schedule being developed, including those records that are required to document closure activities. Those records that are radiologically, beryllium or otherwise contaminated shall be handled and dispositioned in accordance with site procedures including applicable free release levels. The Contractor will provide a complete records inventory list in a hardcopy and electronic format to the post closure records custodian identified by the DOE Contracting Officer.			Records management and document control will be conducted in accordance with DOE Order 200.1, 36 CFR Chapter 12, Subchapter B and the Joint Records Management Strategy for Site Closure.	DOE approved receiver site(s).

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
T. Radiation Protection Program The Contractor shall ensure that all site activities are conducted in compliance with a documented Radiation Protection Program to minimize occupational exposure to internal radiation, direct, external exposure to ionizing radiation as well as to minimize the spread of contamination. The As Low As Reasonably Achievable (ALARA) process will be applied to all site activities.			10 CFR 835 and the Departmental Implementing Guides shall apply.	None.
Environmental Permits The Contractor shall obtain, maintain, and comply with environmental permits as required and allowed by law.	H…	AA, BA, CA, etc.	Contractor's compliance with environmental permits shall be in accordance with the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Clean Air Act; the Clean Water Act; and the Rocky Flats Cleanup Agreement.[6]	None

[6] Requirements will be revised if RFCA is amended to include above stated requirements as ARARs.

VI. DOE Office Accommodations

The Contractor shall provide basic office accommodations for DOE personnel as specified below. A central DOE office will be needed as well as smaller office accommodations in a few critical facilities until they are decommissioned. During the final stages of closure it is expected that DOE will relocate its office off-site.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS INTERFACE WBS		REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
DOE will continue to occupy Building 460 until the facility is scheduled for demolition or until the Contractor provides alternate office space, whichever occurs first. This includes space for up to 250 DOE and support service personnel. Regardless of location, DOE will require that at least 150 of the individual offices must be located in one building until the end of FY04. Up to a maximum total of 10 office spaces (no more than three in each building) must be maintained in or within 150 feet of Buildings 371, 750, 371, and 707 until the Contractor closes the facilities. DOE will require additional space for approximately 10 regulators doing Site inspections. Lunch services must be provided within 500 feet of the single large DOE office on-site until 2005. The Contractor shall provide for movement of DOE furniture property and other materials if offices are moved from the satellite offices, or from B460. Adequate access for DOE personnel is required through closure.			DOE office accommodations will be provided in Building 460, or an alternative. Any central office location besides Building 460 requested to house the DOE offices must be approved by the Manager, RFFO.	None

VII. Tri-Party Agreement

The Contractor shall continue to implement the Three Party Transfer Agreements.

SCOPE	CORRESPONDING WBS ELEMENTS EXECUTION WBS	INTERFACE WBS	REQUIREMENT(S)	GOVERNMENT FURNISHED SERVICES & ITEMS
Tri-Party Agreement The Contractor shall ensure the continued support and assistance to Rockwell and EG&G as prescribed by the RFP Three Party Transfer Agreement dated June 30, 1995.	I…		RFETS Three Party Transfer Agreement with DOE, EG&G Rocky Flats, Inc., and Kaiser-Hill Company, L.L.C., June 30, 1995, and as incorporated by reference, the RFP Three Party Transfer Agreement with DOE, EG&G Rocky Flats, Inc., and Rockwell International Corporation, October 23, 1989.	None

APPENDIX B
Baseline Budget

Burdened Dollars

CLOSURE PROJECT BASELINE

1A*

FY:	00	01	02	03	04	05	06	07	Total
1A - 371 Complex Project									
1AAA - Project Management	1,525,875	5,706,544	4,677,190	1,717,330	364,141	359,089	0	0	14,350,170
1AAB - Facilities Management	14,797,958	19,614,417	16,252,575	12,566,213	6,523,738	6,392,914	0	0	76,147,815
1AAC - Deactivation	3,144,926	5,833,333	6,887,349	6,900,000	503,838	0	0	0	23,269,447
1AAD - Decommissioning	584,944	9,161,041	22,075,285	30,155,272	43,407,639	43,528,354	27,331,976	0	176,244,511
1AAE - B374 Waste Operations	3,099,136	5,151,461	4,516,203	3,957,716	0	0	0	0	16,724,516
1AAF - PuSPS	11,298,916	7,281,481	848,105	0	0	0	0	0	19,428,501
1AAG - Wet Residues	4,833,136	12,317,702	6,139,122	0	0	0	0	0	23,289,961
1AAH - Salt Residues	3,732,046	1,148,997	0	0	0	0	0	0	4,881,043
1AAJ - SS&C Residues	428,862	2,535,299	0	0	0	0	0	0	2,964,161
1AAK - Dry Residues	0	5,046,122	4,974,199	18,903	0	0	0	0	10,039,225
1A - 371 Complex Project	43,445,798	73,796,399	66,370,028	55,315,434	50,799,357	50,280,357	27,331,976	0	367,339,349
	43,445,798	**73,796,399**	**66,370,028**	**55,315,434**	**50,799,357**	**50,280,357**	**27,331,976**	**0**	**367,339,349**

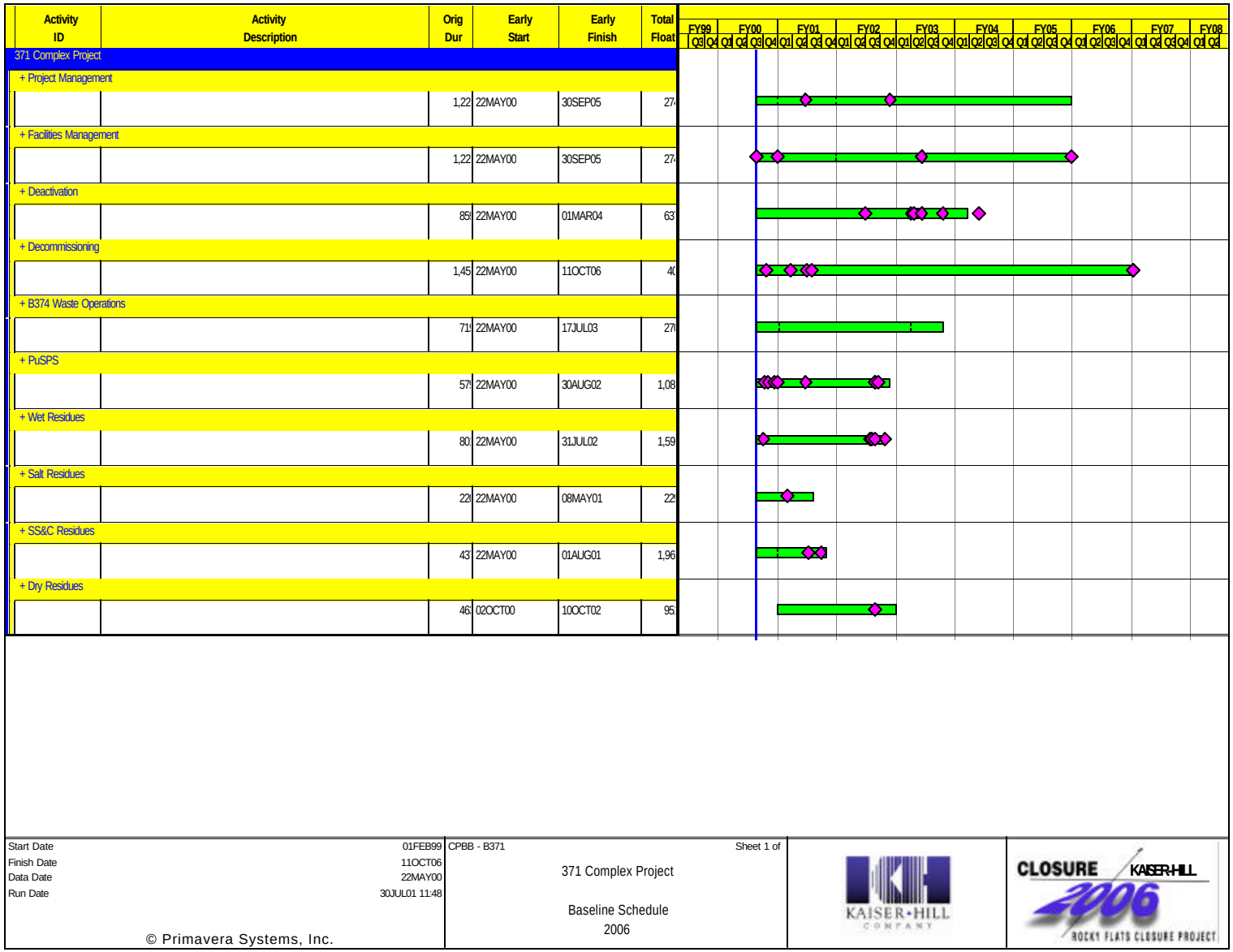
APPENDIX C
Working Budget

Burdened Dollars

KH WORKING PLAN
Project A
2005 Plan

Project/Cost Account	FY: 00	01	02	03	04	05	06	07	Total
1A - 371 Complex Project									
1AAA - Project Management	1,525,875	5,475,625	4,107,096	1,377,621	311,808	0	0	0	12,798,025
1AAB - Facilities Management	14,797,958	18,820,676	14,271,578	10,080,458	5,561,819	0	0	0	63,532,489
1AAC - Deactivation	3,256,673	6,543,123	6,601,188	4,474,745	0	0	0	0	20,875,729
1AAD - Decommissioning	619,553	10,388,086	21,646,586	29,476,051	42,478,568	49,346,862	0	0	153,955,705
1AAE - B374 Waste Operations	3,244,139	5,480,771	4,200,101	2,290,392	0	0	0	0	15,215,403
1AAF - PuSPS	11,298,916	6,984,384	728,003	0	0	0	0	0	19,011,303
1AAG - Wet Residues	5,062,253	13,082,133	3,984,948	0	0	0	0	0	22,129,333
1AAH - Salt Residues	3,736,086	1,098,164	0	0	0	0	0	0	4,834,250
1AAJ - SS&C Residues	428,862	2,432,170	0	0	0	0	0	0	2,861,032
1AAK - Dry Residues	0	4,861,439	4,237,539	0	0	0	0	0	9,098,978
1A - 371 Complex Project	43,970,314	75,166,571	59,777,039	47,699,266	48,352,194	49,346,862	0	0	324,312,247

APPENDIX D
Baseline Schedule


Activity ID
Activity Description
Orig Dur
Early Start
Early Finish
Total Float
FY99
FY00
FY01
FY02
FY03
FY04
FY05
FY06
FY07
FY08
371 Complex Project
+ Project Management
1,22 22MAY00 30SEP05 27
+ Facilities Management
1,22 22MAY00 30SEP05 27
+ Deactivation
85 22MAY00 01MAR04 63
+ Decommissioning
1,45 22MAY00 11OCT06 4
+ B374 Waste Operations
71 22MAY00 17JUL03 27
+ PuSPS
57 22MAY00 30AUG02 1,08
+ Wet Residues
80 22MAY00 31JUL02 1,59
+ Salt Residues
22 22MAY00 08MAY01 22
+ SS&C Residues
43 22MAY00 01AUG01 1,96
+ Dry Residues
46 02OCT00 10OCT02 95
Start Date 01FEB99
Finish Date 11OCT06
Data Date 22MAY00
Run Date 30JUL01 11:48
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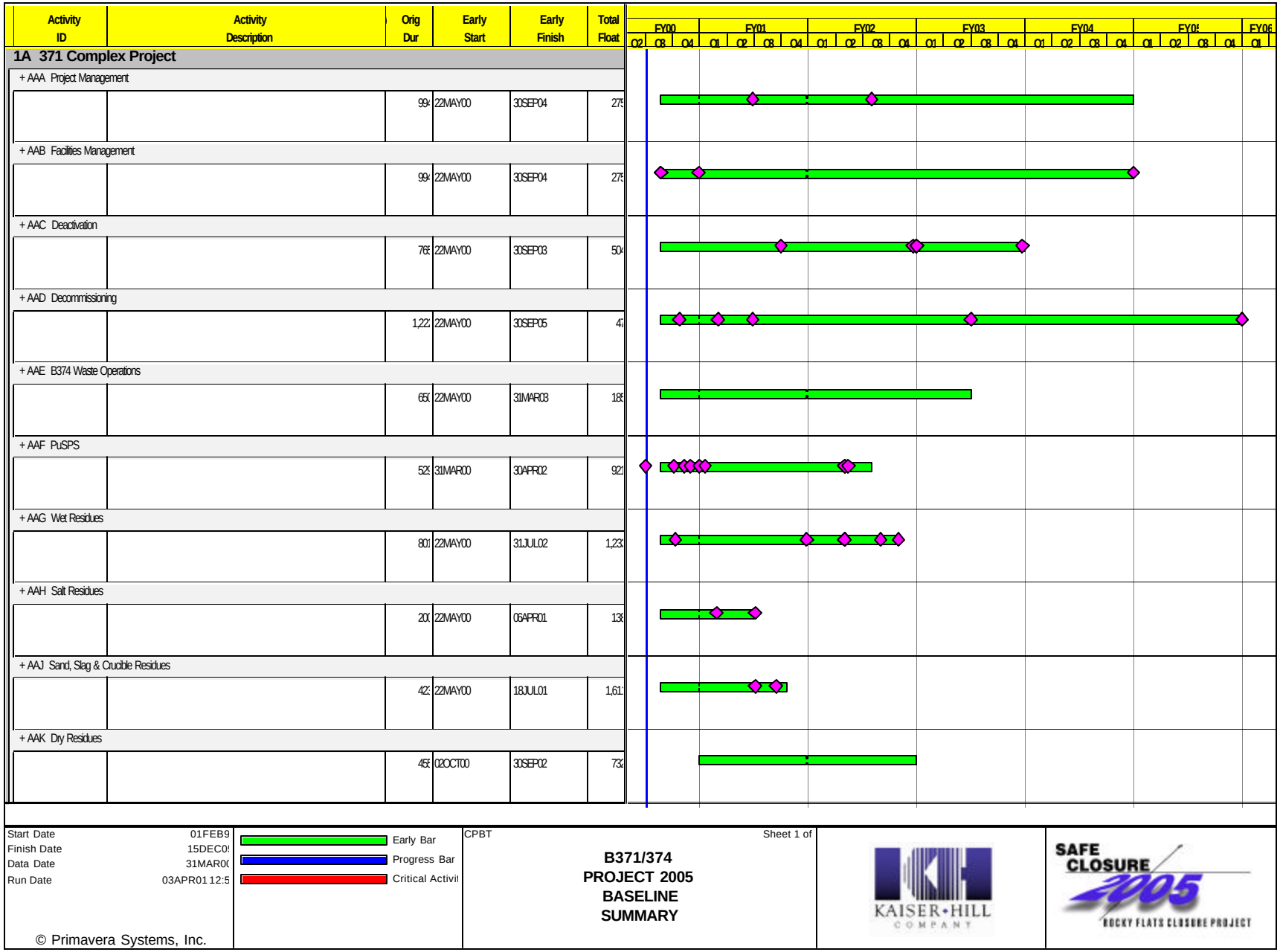
CPBB - B371
Sheet 1 of
371 Complex Project
Baseline Schedule
2006
KAISER-HILL COMPANY
CLOSURE KAISER-HILL 2006 ROCKY FLATS CLOSURE PROJECT

APPENDIX E
Working Schedule


Activity ID
Activity Description
Orig Dur
Early Start
Early Finish
Total Float
FY00
FY01
FY02
FY03
FY04
FY05
FY06
1A 371 Complex Project
+ AAA Project Management
99
22MAY00
30SEP04
27
+ AAB Facilities Management
99
22MAY00
30SEP04
27
+ AAC Deactivation
76
22MAY00
30SEP03
50
+ AAD Decommissioning
1,22
22MAY00
30SEP05
4
+ AAE B374 Waste Operations
65
22MAY00
31MAR03
18
+ AAF PuSPS
52
31MAR00
30APR02
92
+ AAG Wet Residues
80
22MAY00
31JUL02
1,23
+ AAH Salt Residues
20
22MAY00
06APR01
13
+ AAJ Sand, Slag & Crucible Residues
42
22MAY00
18JUL01
1,61
+ AAK Dry Residues
45
02OCT00
30SEP02
73
Start Date 01FEB9
Finish Date 15DEC0
Data Date 31MAR0
Run Date 03APR01 12:5
Early Bar
Progress Bar
Critical Activi
CPBT
Sheet 1 of
B371/374
PROJECT 2005
BASELINE
SUMMARY
KAISER-HILL COMPANY
SAFE CLOSURE 2005
ROCKY FLATS CLOSURE PROJECT
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APPENDIX F
Tank Tables

Several hundred tanks in Building 371 and 374 must be removed during the project. Some are currently in use, many were never placed into service. The first table provides information on all tanks associated with the 371 Closure Project. The second table provides tank disposition information specific to Building 374.

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
4	East Side--CWTS	12	1117	AA	170	31-17		in place	PN	0.5	12	2	18	67	19	194				X	
4	East Side--CWTS	12	1117	AA	171	31-17		in place	PN	0.5	12	2	18	67	19	194				X	
4	East Side--CWTS	12	1115	AA	166A	31-6		in place	PN	0.5	25	5	37	139	39	401			X		
4	East Side--CWTS	12	1115	AA	166B	31-6		in place	PN	0.5	25	5	37	139	39	401			X		
4	East Side--CWTS	12	1115	AA	167	31-6		in place	PN	0.5	6	1	9	33	10	98				X	
4	West Side CWTS	12	1103	AB	2401A	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2401B	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2401C	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2401D	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2402A	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2402B	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	?		X		
4	West Side CWTS	12	1103	AB	2403	31-17		in place	AN	4.94	7.25	139	1,039	3,935	134	1,356	**N**		X		
5	South Side-Basement	14	2325	AD	24D	31-5	13	in place	PN	0.33	3.58	0	2	9	4	39				X	
5	South Side-Basement	14	2325	AD	169	31-8	12	in place	PN	0.5	2.6	1	4	14	4	44	?			X	
5	South Side-Basement	14	2325	AD	15A	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	15B	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	15C	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	16A	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	16B	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	16C	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	17A	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	17B	31-9	10	in place	PN	0.33	3.5	0	2	8	4	38	?			X	
5	South Side-Basement	14	2325	AD	1575	?		in place	AN								?		X		
10	Wet Combustibles/PuSPS	29	3717	AG	1581	?		in place	PN										X		
10	Wet Combustibles/PuSPS	30	3701	AG	1548	?	1516	in place	AN								**N**		X		
10	Wet Combustibles/PuSPS	29	3717	AG	1549A	?		in place	AN								**N**		X		
10	Wet Combustibles/PuSPS	29	3717	AG	1549B	?		in place	AN								**N**		X		
10	Wet Combustibles/PuSPS	29	3717	AG	1549C	?		in place	AN								**N**		X		
2	Main Aqueous Processing	6	3545	AH	192	31-11	58	in place	PN	0.33	2	0	1	5	2	22				X	
2	Main Aqueous Processing	6	3545	AH	61	31-11		in place	PN	0.5	8.2	2	12	46	13	133				X	
2	Main Aqueous Processing	6	3549	AH	173A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	173B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
2	Main Aqueous Processing	6	3549	AH	6A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	6B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	6C	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	6D	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	7A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	7B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	7C	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	7D	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	9A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3549	AH	9B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	4A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	4B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	4C	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	5A	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	5B	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	5C	31-11		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3557	AH	191	31-11	59	in place	PN	0.33	2	0	1	5	2	22				X	
2	Main Aqueous Processing	6	3553	AH	72A	31-12		in place	PN	0.5	10.66	2	16	59	17	172				X	
2	Main Aqueous Processing	6	3553	AH	72B	31-12		in place	PN	0.5	10.66	2	16	59	17	172				X	
2	Main Aqueous Processing	6	3549	AH	68A	31-14		in place	PN	0.42	6	1	6	24	8	82				X	
2	Main Aqueous Processing	6	3549	AH	68B	31-14		in place	PN	0.42	6	1	6	24	8	82				X	
2	Main Aqueous Processing	6	3553	AH	66A	31-14		in place	PN	0.42	6	1	6	24	8	82				X	
2	Main Aqueous Processing	6	3553	AH	66B	31-14		in place	PN	0.42	6	1	6	24	8	82				X	
2	Main Aqueous Processing	6	3553	AH	28A	31-17		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	28B	31-17		in place	PN	0.42	12	2	12	47	16	162				X	
2	Main Aqueous Processing	6	3553	AH	28C	31-17		in place	PN	0.42	12	2	12	47	16	162				X	
6	Main Aqueous Processing	16	3523	AH	23A	31-5	0	in place	PN	0.33	7.58	0	2	9	4	39				X	
6	Main Aqueous Processing	16	3523	AH	23B	31-5		in place	PN	0.33	7.58	0	2	9	4	39				X	
6	Main Aqueous Processing	16	3523	AH	23C	31-5		in place	PN	0.33	7.58	0	2	9	4	39				X	
6	Main Aqueous Processing	16	3523	AH	23D	31-5		in place	PN	0.33	7.58	0	2	9	4	39				X	
3	Americium Processing/SGS	7	3303	AJ	127A	31-22		in place	PN	0.5	9.75	2	14	54	16	158				X	
3	Americium Processing/SGS	7	3303	AJ	127B	31-22		in place	PN	0.5	9.75	2	14	54	16	158				X	
3	Americium Processing/SGS	7	3305	AJ	148	31-22	38	in place	PN	0.33	2	0	1	5	2	22				X	
3	Americium Processing/SGS	7	3303	AJ	147A	31-30		in place	PN	0.5	7.33	1	11	41	12	119				X	

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3	Americium Processing/SGS	7	3303	AJ	147B	31-30		in place	PN	0.5	7.33	1	11	41	12	119				X	
3	Americium Processing/SGS	7	3303	AJ	153A	31-30		in place	PN	0.5	7.33	1	11	41	12	119				X	
3	Americium Processing/SGS	7	3303	AJ	153B	31-30		in place	PN	0.5	7.33	1	11	41	12	119				X	
3	Wet Residue/SS&C	8	3206	AK	186	3107	45	in place	PN	0.42	5.5	1	6	22	7	75				X	
3	Wet Residue/SS&C	8	3206	AK	100	31-21		in place	PN	0.42	3.08	0	3	12	4	43				X	
3	Wet Residue/SS&C	8	3206	AK	101	31-21		in place	PN	0.33	0.83	0	1	2	1	10				X	
3	Wet Residue/SS&C	8	3206	AK	106A	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	106B	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	109	31-21	42	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	110	31-21	42	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	115	31-21		in place	PN	0.42	2	0	2	8	3	28				X	
3	Wet Residue/SS&C	8	3206	AK	117	31-21	43	in place	PN	0.33	2	0	1	5	2	22				X	
3	Wet Residue/SS&C	8	3206	AK	124B	31-21	46	in place	PN	0.42	1.5	0	2	6	2	22				X	
3	Wet Residue/SS&C	8	3206	AK	154	31-21	44	in place	PN	0.25	1	0	0	1	1	9				X	
3	Wet Residue/SS&C	8	3206	AK	97	31-21		in place	PN	0.42	2	0	2	8	3	28				X	
3	Wet Residue/SS&C	8	3206	AK	98A	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	98B	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	99A	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	99B	31-21		in place	PN	0.5	12.5	2	18	69	20	201				X	
3	Wet Residue/SS&C	8	3206	AK	10	31-7	41	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	11	31-7	41	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	12	31-7	41	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	13	31-7	41	in place	PN	0.42	8	1	8	31	11	109				X	
3	Wet Residue/SS&C	8	3206	AK	14	31-7	41	in place	PN	0.33	2	0	1	5	2	22				X	
3	Wet Residue/SS&C	8	3206	AK	41	31-7	45	in place	PN	0.5	1	0	1	6	2	18				X	
3	Wet Residue/SS&C	8	3206	AK	9	31-7	45	in place	PN	0.33	2	0	1	5	2	22				X	
3	Wet Residue/SS&C	8	3206	AK	118A	31-21	43	in place	TK	1.5	2.17	4	29	109	12	124				X	
3	Wet Residue/SS&C	8	3206	AK	118B	31-21	43	in place	TK	1.5	2.17	4	29	109	12	124				X	
3	Wet Residue/SS&C	8	3206	AK	119	31-21	43	in place	TK	1.5	2.17	4	29	109	12	124				X	
3	Wet Residue/SS&C	8	3206	AK	120	31-21	43	in place	TK	1.5	2.17	4	29	109	12	124				X	
3	Wet Residue/SS&C	8	3206	AK	121	31-21	43	in place	TK	1.5	2.17	4	29	109	12	124				X	
4	East Side--CWTS	12	2327	AA	3	?		in place	PN	0.5	11.33	2	17	63	18	183	X			X	
4	East Side--CWTS	12	1107	AA	44A	31-9		in place	PN	0.42	12	2	12	47	16	162	X			X	
4	East Side--CWTS	12	1107	AA	44B	31-9		in place	PN	0.42	12	2	12	47	16	162	X			X	

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4	East Side--CWTS	12	1109	AA	43A	31-9		in place	PN	0.42	10	1	10	39	13	135	X			X	
4	East Side--CWTS	12	1109	AA	43B	31-9		in place	PN	0.42	10	1	10	39	13	135	X			X	
4	East Side--CWTS	12	1115	AA	312	31-33		in place	PV	1.67	4.25	9	70	264	25	251	X			X	
4	East Side--CWTS	12	1117	AA	238A	31-4		in place	RR	3	3	21	159	600	36	366	X			X	
4	East Side--CWTS	12	1117	AA	238B	31-4		in place	RR	3	3	21	159	600	36	366	X			X	
4	East Side--CWTS	12	1117	AA	240A	31-4		in place	RR	3	3	21	159	600	36	366	X			X	
4	East Side--CWTS	12	1117	AA	240B	31-4		in place	RR	3	3	21	159	600	36	366	X			X	
4	East Side--CWTS	12	1115	AA	400A	31-17		in place	RR	5	6	118	881	3,336	116	1,176	X		X		
4	East Side--CWTS	12	1115	AA	400B	31-17		in place	RR	5	6	118	881	3,336	116	1,176	X		X		
4	East Side--CWTS	12	1115	AA	400C	31-17		in place	RR	5	6	118	881	3,336	116	1,176	X		X		
13	East Side--CWTS	10	2217	AA	718	35-4		in place	PV	5	6	118	881	3,336	116	1,176	X		X		
4	East Side--CWTS	12	1115	AA	160A	31-17		in place	RR	6	7	198	1,481	5,604	163	1,655	X		X		
4	East Side--CWTS	12	1115	AA	160B	31-17		in place	RR	6	7	198	1,481	5,604	163	1,655	X		X		
4	East Side--CWTS	12	1117	AA	157A	31-17		in place	RR	5.5	10	238	1,777	6,727	199	2,019	X		X		
4	East Side--CWTS	12	1117	AA	157B	31-17		in place	RR	5.5	10	238	1,777	6,727	199	2,019	X		X		
4	East Side--CWTS	12	1117	AA	2A	31-17		in place	RR	3	22.75	161	1,203	4,554	222	2,255	X		X		
4	East Side--CWTS	12	1117	AA	2B	31-17		in place	RR	3	22.75	161	1,203	4,554	222	2,255	X		X		
4	East Side--CWTS	12	1127	AA	293A	31-24		in place	RR	6	10	283	2,115	8,006	220	2,229	X		X		
4	East Side--CWTS	12	1127	AA	293B	31-24		in place	RR	6	10	283	2,115	8,006	220	2,229	X		X		
4	East Side--CWTS	12	2327	AA	10	31-7		in place	RR	3.5	26	250	1,871	7,083	296	3,009	X		X		
4	East Side--CWTS	10	1210	AA	230A	36-6		in place	RR	6	19	537	4,019	15,212	389	3,951	X		X		
4	East Side--CWTS	10	1210	AA	230B	36-6		in place	RR	6	19	537	4,019	15,212	389	3,951	X		X		
5	West Side CWTS	13	2319	AB	129A	34-19		in place	RR	2	4.5	14	106	400	32	322	X			X	
5	West Side CWTS	13	2319	AB	129B	34-19		in place	RR	2	4.5	14	106	400	32	322	X			X	
5	West Side CWTS	13	2319	AB	228A	34-19		in place	RR	2	4.5	14	106	400	32	322	X			X	
5	West Side CWTS	13	2319	AB	228B	34-19		in place	RR	2	4.5	14	106	400	32	322	X			X	
5	West Side CWTS	13	2319	AB	130A	34-20		in place	RR	3	6	42	317	1,201	64	653	X			X	
5	West Side CWTS	13	2319	AB	130B	34-20		in place	RR	3	6	42	317	1,201	64	653	X			X	
5	West Side CWTS	13	2319	AB	233A	34-20		in place	RR	3	6	42	317	1,201	64	653	X			X	
5	West Side CWTS	13	2319	AB	233B	34-20		in place	RR	3	6	42	317	1,201	64	653	X			X	
4	West Side CWTS	12	1105	AB	229A	34-19		in place	RR	6	19	537	4,019	15,212	389	3,951	X		X		

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4	West Side CWTS	12	1105	AB	229B	34-19		in place	RR	6	19	537	4,019	15,212	389	3,951	X		X		
4	West Side CWTS	12	1105	AB	131A	36-6		in place	RR	7	19	731	5,470	20,705	460	4,671	X		X		
4	West Side CWTS	12	1105	AB	131B	36-6		in place	RR	7	19	731	5,470	20,705	460	4,671	X		X		
13	South Side-Basement	46	2307	AD	67	31-12		in place	PV	1.17	4	4	32	122	16	161	X			X	
5	South Side-Basement	14	2323	AD	934A	31-24		in place	RR	6	6	170	1,269	4,804	144	1,464	X		X		
5	South Side-Basement	14	2323	AD	934B	31-24		in place	RR	6	6	170	1,269	4,804	144	1,464	X		X		
13	South Side-Basement	45	2202	AD	711	36-4		in place	PV	8	18.5	930	6,956	26,331	520	5,281	X		X		
5	North Side-Basement	13	2317	AE	292A	31-24		in place	RR	6	6	170	1,269	4,804	144	1,464	X		X		
5	North Side-Basement	13	2317	AE	292B	31-24		in place	RR	6	6	170	1,269	4,804	144	1,464	X		X		
5	North Side-Basement	13	2307	AE	922A	34-11		in place	RR	7	7	269	2,015	7,628	196	1,992	X		X		
5	North Side-Basement	13	2307	AE	922B	34-11		in place	RR	7	7	269	2,015	7,628	196	1,992	X		X		
2	Main Aqueous Processing	6	3559	AH	63A	31-11		in place	PN	0.5	3	1	4	17	5	50	X			X	
2	Main Aqueous Processing	6	3559	AH	63B	31-11		in place	PN	0.5	3	1	4	17	5	50	X			X	
2	Main Aqueous Processing	6	3563	AH	57A	31-11		in place	PN	0.42	2.5	0	3	10	3	35	X			X	
2	Main Aqueous Processing	6	3563	AH	57B	31-11		in place	PN	0.42	2.5	0	3	10	3	35	X			X	
2	Main Aqueous Processing	6	3563	AH	57C	31-11		in place	PN	0.42	2.5	0	3	10	3	35	X			X	
2	Main Aqueous Processing	6	3563	AH	57D	31-11		in place	PN	0.42	2.5	0	3	10	3	35	X			X	
2	Main Aqueous Processing	4	3571	AH	133	31-18		in place	PV	1.33	8	11	83	315	35	355				X	
2	Main Aqueous Processing	4	3571	AH	150	31-18		in place	PV	1.5	15.5	27	205	776	75	761			X		
2	Main Aqueous Processing	4	3571	AH	151	31-18		in place	PV	3	4	28	212	801	45	462				X	
2	Main Aqueous Processing	6	3559	AH	51A	31-11		in place	RR	2.5	5.5	27	202	764	49	493	X			X	
2	Main Aqueous Processing	6	3559	AH	51B	31-11		in place	RR	2.5	5.5	27	202	764	49	493	X			X	
2	Main Aqueous Processing	6	3559	AH	56	31-11		in place	RR	2	7	22	165	623	47	481	X			X	
2	Main Aqueous Processing	6	3559	AH	69A	31-12		in place	RR	2.5	6	29	220	834	53	533	X			X	
2	Main Aqueous Processing	6	3559	AH	69B	31-12		in place	RR	2.5	6	29	220	834	53	533	X			X	
2	Main Aqueous Processing	6	3559	AH	69C	31-12		in place	RR	2.5	6	29	220	834	53	533	X			X	
2	Main Aqueous Processing	6	3545	AH	305E	31-33		in place	PV	1.33	3.54	5	37	139	16	166	X			X	
2	Main Aqueous Processing	6	3557	AH	305F	31-33		in place	PV	1.33	3.54	5	37	139	16	166	X			X	
8	Main Aqueous Processing	17	3515	AH	305H	31-33		in place	PV	1.33	3.54	5	37	139	16	166	X			X	
2	Main Aqueous Processing	3	3517	AH	64	31-11		in place	RR	4	7	88	658	2,491	102	1,033	X		X		
2	Main Aqueous Processing	3	3517	AH	65	31-11		in place	RR	4	7	88	658	2,491	102	1,033	X		X		

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
2	Main Aqueous Processing	6	3559	AH	50A	31-11		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	6	3559	AH	50B	31-11		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	6	3559	AH	55A	31-11		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	6	3559	AH	55B	31-11		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	6	3559	AH	59	31-11		in place	RR	4	6.5	82	611	2,313	96	969	X		X		
2	Main Aqueous Processing	6	3563	AH	49A	31-11		in place	RR	4.5	6.75	107	803	3,040	113	1,146	X		X		
2	Main Aqueous Processing	6	3563	AH	49B	31-11		in place	RR	4.5	6.75	107	803	3,040	113	1,146	X		X		
2	Main Aqueous Processing	6	3563	AH	49C	31-11		in place	RR	4.5	6.75	107	803	3,040	113	1,146	X		X		
2	Main Aqueous Processing	6	3563	AH	49D	31-11		in place	RR	4.5	6.75	107	803	3,040	113	1,146	X		X		
2	Main Aqueous Processing	6	3563	AH	52A	31-11		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	6	3563	AH	52B	31-11		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	5	3573	AH	289A	31-12		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	5	3573	AH	289B	31-12		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	5	3573	AH	289C	31-12		in place	RR	3	8	57	423	1,601	83	844	X			X	
2	Main Aqueous Processing	5	3573	AH	134A	31-17		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	5	3573	AH	134B	31-17		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	5	3573	AH	134C	31-17		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	5	3573	AH	135A	31-17		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	5	3573	AH	135B	31-17		in place	RR	4.5	7	111	833	3,152	116	1,182	X		X		
2	Main Aqueous Processing	3	3517	AH	132A	31-18		in place	RR	5.5	7	166	1,244	4,709	147	1,493	X		X		
2	Main Aqueous Processing	3	3517	AH	132B	31-18		in place	RR	5.5	7	166	1,244	4,709	147	1,493	X		X		
2	Main Aqueous Processing	3	3517	AH	132C	31-18		in place	RR	5.5	7	166	1,244	4,709	147	1,493	X		X		
2	Main Aqueous Processing	4	3571	AH	152A	31-18		in place	RR	5	8.5	167	1,248	4,726	155	1,574	X		X		
2	Main Aqueous Processing	4	3571	AH	152B	31-18		in place	RR	5	8.5	167	1,248	4,726	155	1,574	X		X		
3	Americium Processing/SGS	7	3305	AJ	305G	31-33		in place	PV	1.33	3.54	5	37	139	16	166	X			X	
3	Americium Processing/SGS	7	3305	AJ	305J	31-33		in place	PV	1.33	3.54	5	37	139	16	166	X			X	
3	Americium Processing/SGS	7	3305	AJ	311	31-33		in place	PV	2	5.75	18	135	512	40	402	X			X	
8	Wet Residue/SS&C	25	3412	AK	304A	31-33		in place	PV	1.5	3	5	40	150	16	163	X			X	
8	Wet Residue/SS&C	25	3412	AK	304B	31-33		in place	PV	2	5.75	18	135	512	40	402	X			X	
	Attic South/Chem Make-Up	20	4101	AM	849A	31-23		in place	PV			10					X			X	
	Attic South/Chem Make-Up	20	4104	AM	849B	31-23		in place	PV			10					X			X	
			4103	AM	200			in place	PV			10					X			X	

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
			4103	AM	241			in place	PV			10					X			X	
			4103	AM	242			in place	PV			10					X			X	
			4103	AM	243			in place	PV			10					X			X	
1	Attic South/Chem Make-Up	20	4101	AM	206	31-23		in place	PV	3	3.5	25	185	701	41	414	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	211	31-23		in place	PV	2.5	2.5	12	92	347	25	254	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	212	31-23		in place	PV	2	4	13	94	356	29	290	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	213	31-23		in place	PV	3	4.5	32	238	901	50	509	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	214	31-23		in place	PV	2.5	3.5	17	129	486	33	334	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	216	31-23		in place	PV	0.84	2.5	1	10	39	7	73	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	217	31-23		in place	PV	2.5	4.5	22	165	625	41	414	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	840A	31-23		in place	PV	0.84	6	3	25	94	16	167	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	840B	31-23		in place	PV	0.84	6	3	25	94	16	167	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	841	31-23		in place	PV	0.84	6	3	25	94	16	167	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	201	31-23		in place	TK	2.5	4	20	147	556	37	374	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	207	31-23		in place	PV	3	3.5	25	185	701	41	414	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	226	31-23		in place	PV	0.33	2	0	1	5	2	22	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	256	31-23		in place	PV	1.17	3	3	24	91	12	124	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	261A	31-23		in place	TK	3	3.5	25	185	701	41	414	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	261B	31-23		in place	TK	3	3.5	25	185	701	41	414	X			X	

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
1	Attic South/Chem Make-Up	20	4104	AM	306	31-23		in place	PV	0.5	2.5	0	4	14	4	42	X			X	
1	Attic South/Chem Make-Up	20	4104	AM	309	31-23		in place	PV	0.84	2.5	1	10	39	7	73	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	2860	PROV		in place	PV	2	3	9	71	267	22	226	X			X	
1	Attic South/Chem Make-Up	20	4101	AM	208	31-23		in place	PV	3	8	57	423	1,601	83	844	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	251	31-23		in place	PV	4	6	75	564	2,135	89	906	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	837A	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	837B	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	838A	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	838B	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	839A	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4101	AM	839B	31-23		in place	PV	4.5	6	95	714	2,702	102	1,039	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	203	31-23		in place	PV	4	5.5	69	517	1,957	83	842	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	204	31-23		in place	PV	4	6	75	564	2,135	89	906	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	205	31-23		in place	PV	4	6.25	79	588	2,224	92	937	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	210	31-23		in place	PV	4	5.5	69	517	1,957	83	842	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	223	31-23		in place	PV	4	6	75	564	2,135	89	906	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	224	31-23		in place	PV	4	7.5	94	705	2,669	108	1,097	X		X		

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
1	Attic South/Chem Make-Up	20	4104	AM	249	31-23		in place	PV	4	4.25	53	400	1,512	67	682	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	250	31-23		in place	PV	4	5.5	69	517	1,957	83	842	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	255	31-23		in place	PV	4	5.5	69	517	1,957	83	842	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	253A	31-23		in place	PV	6	6	170	1,269	4,804	144	1,464	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	253B	31-23		in place	PV	6	6	170	1,269	4,804	144	1,464	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	254A	31-23		in place	PV	6	6	170	1,269	4,804	144	1,464	X		X		
1	Attic South/Chem Make-Up	20	4104	AM	254B	31-23		in place	PV	6	6	170	1,269	4,804	144	1,464	X		X		
7	Waste Processing-B 374	19	2804	AN	852	41-18		in place	PN	9	8	509	3,807	14,411	296	3,006	?		X		
7	Waste Processing-B 374	19	2804	AN	804A	41-5		in place	PN	11	14	1,330	9,953	37,674	588	5,972	?		X		
7	Waste Processing-B 374	19	2804	AN	804B	41-5		in place	PN	11	14	1,330	9,953	37,674	588	5,972	?		X		
7	Waste Processing-B 374	19	2804	AN	804C	41-5		in place	PN	11	14	1,330	9,953	37,674	588	5,972	?		X		
7	Waste Processing-B 374	19	2804	AN	804D	41-5		in place	PN	11	14	1,330	9,953	37,674	588	5,972	?		X		
7	Waste Processing-B 374	19	2804	AN	853	41-5		in place	PN								?		X		
7	Waste Processing-B 374	19	2804	AN	875	41-5		in place	PN	4	5	63	470	1,779	77	778	?		X		
7	Waste Processing-B 374	19	2804	AN	843	41-6		in place	PN	4.5	4.5	72	535	2,027	81	823	?		X		
7	Waste Processing-B 374	18	3801	AN	806	41-6		in place	PN	5	7	137	1,028	3,892	132	1,335	?		X		
7	Waste Processing-B 374	19	2804	AN	811A	41-8		in place	PN	12	14	1,583	11,844	44,835	652	6,620	?		X		
7	Waste Processing-B 374	19	2804	AN	811B	41-9		in place	PN	12	14	1,583	11,844	44,835	652	6,620	?		X		
7	Waste Processing-B 374	21	4805	AN	825A	41-10		in place	PN	2.5	3	15	110	417	29	294	X			X	
7	Waste Processing-B 374	21	4805	AN	825B	41-10		in place	PN	2.5	3	15	110	417	29	294	X			X	
7	Waste Processing-B 374	21	4805	AN	880	41-12		in place	PN	1.33	4.52	6	47	178	20	207	X			X	

Org Set	Designation	New Set	Room #	Area	Tank #	System #	IN GB #	Status	Type	Diameter (ft)	Length (ft)	Cubic Feet	Gallons	Liters	Sq Ft	Weight, lb	SCO	Cold Tank Remov.	ISSR	CSRF	RCRA Unit #
7	Waste Processing-B 374	19	2804	AN	802A	41-4		in place	PN	15	15.75	2,783	20,820	78,811	937	9,506	X		X		
7	Waste Processing-B 374	19	2804	AN	802B	41-4		in place	PN	15	15.75	2,783	20,820	78,811	937	9,506	X		X		
7	Waste Processing-B 374	19	2804	AN	802C	41-4		in place	PN	15	15.75	2,783	20,820	78,811	937	9,506	X		X		
7	Waste Processing-B 374	18	3801	AN	808	41-6		in place	TK	3	4	28	212	801	45	462	?			X	
7	Waste Processing-B 374	18	3801	AN	813	41-9		in place	TK	3	4	28	212	801	45	462	?			X	
7	Waste Processing-B 374	18	3801	AN	817	41-9		in place	TK	3.5	4.5	43	324	1,226	60	610	?			X	
7	Waste Processing-B 374	18	3801	AN	877	41-9		in place	TK	2	4	13	94	356	29	290	X			X	
7	Waste Processing-B 374	18	3801	AN	814	41-9		in place	TK	4.5	6	95	714	2,702	102	1,039	?		X		
7	Waste Processing-B 374	18	3801	AN	818	41-9		in place	TK	5	6	118	881	3,336	116	1,176	?		X		
7	Waste Processing-B 374	18	3801	AN	821	41-9		in place	TK	4	5	63	470	1,779	77	778	?		X		
7	Waste Processing-B 374	18	3810	AN	845	41-13		in place	TK	5	7	137	1,028	3,892	132	1,335	X		X		
7	Waste Processing-B 374	18	3801	AN	807A	41-6		in place	TK	7	8	308	2,303	8,718	218	2,215	?		X		
7	Waste Processing-B 374	18	3801	AN	807B	41-6		in place	TK	7	8	308	2,303	8,718	218	2,215	?		X		
7	Waste Processing-B 374	18	3801	AN	812	41-9		in place	TK	7	9	346	2,591	9,808	240	2,439	?		X		
7	Waste Processing-B 374	18	3801	AN	815	41-9		in place	TK	11	9	855	6,398	24,219	416	4,218	?		X		
7	Waste Processing-B 374	18	3801	AN	816	41-9		in place	TK								?		X		
7	Waste Processing-B 374	18	3801	AN	819	41-9		in place	TK	13	7	929	6,950	26,309	432	4,384	?		X		
7	Waste Processing-B 374	18	3801	AN	820	41-9		in place	TK	9	11	700	5,235	19,815	381	3,867	?		X		
7	Waste Processing-B 374	18	3801	AN	822	41-9		in place	TK	6	7.5	212	1,586	6,005	172	1,751	?		X		
7	Waste Processing-B 374	18	3801	AN	823	41-9		in place	TK	16	9	1,810	13,536	51,240	674	6,837	?		X		
7	Waste Processing-B 374	18	3801	AN	826A	41-9		in place	TK	15	13.75	2,430	18,176	68,803	842	8,550	?		X		
7	Waste Processing-B 374	18	3801	AN	826B	41-9		in place	TK	15	13.75	2,430	18,176	68,803	842	8,550	?		X		
7	Waste Processing-B 374	18	3801	AN	826C	41-9		in place	TK	15	13.75	2,430	18,176	68,803	842	8,550	?		X		
7	Waste Processing-B 374	18	3810	AN	827	41-13		in place	TK	11	11	1,045	7,820	29,601	485	4,919	X		X		
7	Waste Processing-B 374	19	2804	AN	801A	41-3		in place	TK	18	15.75	4,008	29,981	113,488	1,171	11,881	X		X		

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7	Waste Processing-B 374	19	2804	AN	801B	41-3		in place	TK	18	15.75	4,008	29,981	113,488	1,171	11,881	X		X		
7	Waste Processing-B 374	19	2804	AN	801C	41-3		in place	TK	18	15.75	4,008	29,981	113,488	1,171	11,881	X		X		
4	East Side--CWTS	10	1210	AA	715	36-9		in place	RR	8.5	6.5	369	2,759	10,444	236	2,395		X	X		
4	West Side CWTS	12	1103	AB	927	34-9		in place	PV	0.91	6.5	4	32	120	19	196		X		X	
4	West Side CWTS	12	1103	AB	713	36-9		in place	RR	9	6.25	398	2,974	11,259	247	2,504		X	X		
5	North Side-Basement	13	2317	AE	227A	34-20		in place	ANNUL	2.5	8	39	294	1,112	68	693		X		X	
5	North Side-Basement	13	2317	AE	227B	34-20		in place	ANNUL	2.5	8	39	294	1,112	68	693		X		X	
5	North Side-Basement	13	2307	AE	933	34-11		in place	PV	3	3	21	159	600	36	366		X		X	
5	North Side-Basement	13	2307	AE	914	34-8		in place	PV	3	5.33	38	282	1,067	58	589		X		X	
5	North Side-Basement	13	2307	AE	916	34-8		in place	PV	2	2.33	7	55	207	18	184		X		X	
5	North Side-Basement	13	2307	AE	912	34-8		in place	PV	3	10	71	529	2,002	102	1,036		X		X	
5	North Side-Basement	13	2307	AE	710	36-4		in place	PV	8	20	1,005	7,520	28,466	558	5,663		X	X		
14	Outbuildings/Trailers	56	OUT	AQ	262A	23-9		in place	TK	12	55	6,220	46,531	176,136	2,198	22,308		X	X		
14	Outbuildings/Trailers	56	OUT	AQ	222	31-23		in place	TK	12.5	16.5	2,025	15,147	57,336	783	7,947		X	X		
14	Outbuildings/Trailers	56	OUT	AQ	225	31-23		in place	TK	13	28	3,717	27,801	105,237	1,290	13,089		X	X		
14	Outbuildings/Trailers	56	OUT	AQ	842	31-23		in place	TK	11	14	1,330	9,953	37,674	588	5,972		X	X		

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
T-808 A	Product Water Storage Tank	Empty	No	Outside	Evaporator	N/A	N/A	N/A		N/A	Today
T-808 B	Product Water Storage Tank	Empty	No	Outside	Evaporator	N/A	N/A	N/A		N/A	Today
C-14	Air Compressor Unit	Empty?	No	Bldg. 377	Saltcrete/ DCP	N/A	No	N/A		N/A	Today
S-1	Air Dryer	Empty?	No	Bldg. 377	Saltcrete/ DCP	N/A	No	N/A		N/A	Today
SL-8	Cement Silo	Empty?	No	Outside	Saltcrete/ DCP	N/A	N/A	N/A		N/A	Today
D-222	Concentrated Nitric Acid Storage Tank	Empty?	Maybe	Outside	Reagents/ Vacuum Filter	N/A	D002?	N/A		N/A	Today
D-225	Potassium Hydroxide Storage Tank	Empty?	Maybe	Outside	371 Reagent/ Neutralizer	N/A	D002?	N/A		N/A	Today
T-231 A	Evaporator Feed Storage Tank	In Use	Yes	Outside	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009,	1.03E+01 to 1.30E+04 pCi/L		N/A	TBD
T-231 B	Evaporator Feed Storage Tank	In Use	Yes	Outside	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009,	1.03E+01 to 1.30E+04 pCi/L		N/A	TBD
D-842	Potassium Hydroxide Receiving Tank	Empty?	Maybe	Outside	374 Reagent/ Neutralizer	N/A	D002?	N/A		N/A	TBD
D-200	HF Scrubber	Empty?	No	Rm. 4103	371 Reagents	N/A	N/A	N/A		N/A	Today
D-203	Nitric Acid Mixing Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-204	12N Nitric Acid + 1% Hydrofluoric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-205	0.35N Nitric Acid Tank	Empty?	Maybe	Rm. 4104	Vacuum Filter	N/A	D002?	N/A		N/A	TBD
D-206	Hydrogen Peroxide Tank	Empty	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-207	Cake Wash Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
D-208	Potassium Hydroxide Storage Tank	In Use	No	Rm. 4101	371 Reagent/374 Reagent	N/A	N/A	N/A		N/A	TBD
D-210	Nitric Acid Mix Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-211	Ferrous Sulfamate Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-212	Sodium Nitrite Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-213	Phosphoric Acid Storage Tank	Empty	No	Rm. 4101	Evaporator	N/A	N/A	N/A		N/A	Today
D-214	Ammonium Thiocynate Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-216	Ammonium Thiocynate Measure Tank	Empty?	No	Rm. 4101	371 Reagent		N/A	N/A		N/A	TBD
D-217	Aluminum Nitrate Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-223	9N Nitric Acid + 1% Hydrofluoric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-224	7.5N Nitric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-241	HF Storage Tank	Empty?	No	Rm 4103	371 Reagent	N/A	N/A	N/A		N/A	Today
D-242	HF Vaporaizer	Empty?	No	Rm. 4103	371 Reagent	N/A	N/A	N/A		N/A	Today
D-249	12N Nitric Acid Tank	Empty?	Maybe	Rm. 4104	Vacuum Filter	N/A	D002?	N/A		N/A	TBD
D-250	7.5N Nitric + 1% Sulfuic Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-251	MOX Detergent Tank	In Use	No	Rm. 4101	Building cleanup	N/A	N/A	N/A		N/A	TBD
D-253 A	Recovered Distillate Tank	Empty?	Maybe	Rm. 4104	371 Processes	N/A	D002?	N/A		N/A	TBD
D-253 B	Recovered Distillate Tank	Empty?	Maybe	Rm. 4104	371 Processes	N/A	D002?	N/A		N/A	TBD

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
D-254 A	Recovered 12N Nitric Acid Tank	Empty?	Maybe	Rm. 4104	371 Processes	N/A	D002?	N/A		N/A	TBD
D-254 B	Recovered 12N Nitric Acid Tank	Empty?	Maybe	Rm. 4104	371 Processes	N/A	D002?	N/A		N/A	TBD
D-255	Nitric Acid Mixing Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-256	Hydrogen Peroxide Measure Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-261 B	0.1N Hydrochloric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-261 A	7.5N Hydrochloric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-306	Sulfuric Acid Measure Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-309	Nitric Acid Measure Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	TBD
D-723	Sulfuric + Hydrofluoric Acid Tank	Empty?	Maybe	Rm. 4104	371 Reagents	N/A	D002?	N/A		N/A	TBD
D-837 A	Ferric Sulfate Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-837 B	Ferric Sulfate Reagent Tank	In Use	No	Rm. 4101	Decontamination Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-838 A	Magnesium Sulfate Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-838 B	Magnesium Sulfate Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-839 A	Calcium Chloride Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-839 B	Calcium Chloride Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-840 A	Purifloc Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01

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D-840 B	Purifloc Reagent Tank	In Use	No	Rm. 4101	Decon. Precipitation	N/A	N/A	N/A		N/A	9/30/01
D-841	Potassium Hydroxide Supply Tank	In Use	No	Rm. 4101	374 Reagent/ Neutralizer	N/A	N/A	N/A		N/A	TBD
D-849 B	Boric Acid Tank	Empty	No	Rm. 4101	Evaporator	N/A	N/A	N/A		N/A	Today
D-849 A	Boric Acid Tank	Empty	No	Rm. 4101	Evaporator	N/A	N/A	N/A		N/A	Today
D-850	Hot Water Tank	Empty?	No	Rm. 4101	Caustic System	N/A	N/A	N/A		N/A	Today
D-2860	Hydrogen Peroxide Reagent Tank	Empty?	No	Rm. 4101	371 Reagent	N/A	N/A	N/A		N/A	Today
D-155 A	Neutralized Waste Tank	Empty	No	Rm. 2804	Never Installed	N/A	N/A	N/A		N/A	Today
D-155 B	Neutralized Waste Tank	Empty	No	Rm. 2804	Never Installed	N/A	N/A	N/A		N/A	Today
D-801A	Auxiliary Concentrate Storage Tank	In Use	Yes	Rm. 2804	Evaporator/ Spray Dryer	Apr-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	11,289 +/- 2,922 pCi/L		60.8	9/30/01
D-801B	Auxiliary Concentrate Storage Tank	In Use	Yes	Rm. 2804	Evaporator/ Spray Dryer	Apr-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	12,934 +/- 2,744 pCi/L		64.3	9/30/01
D-801C	Auxiliary Concentrate Storage Tank	In Use	Yes	Rm. 2804	Evaporator/ Spray Dryer	Apr-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	5,800 +/- 2,499 pCi/L		83.6	9/30/01
D-802A	Evaporator Feed Storage Tank	In Use	Yes	Rm. 2804	Evaporator	11/19/00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	5.94E+02 +/- 3.73E+02 pCi/L		31.4	9/30/01

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
D-802B	Evaporator Feed Storage Tank	In Use	Yes	Rm. 2804	Evaporator	10/10/00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	5.43E+02 +/- 3.73E+02 pCi/L		24.7	9/30/01
D-802C	Evaporator Feed Storage Tank	In Use	Yes	Rm. 2804	Evaporator	9/14/00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	2.65E+02 +/- 4.22E+02 pCi/L		44.7	9/30/01
D-804A	2nd & 3rd Stage Precipitation Feed Storage Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	NA	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.48E-07 to 8.08E-06 +/- 9.18E-07 g/L Pu		0	9/30/01
D-804B	2nd & 3rd Stage Precipitation Feed Storage Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	NA	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.48E-07 to 8.08E-06 +/- 9.18E-07 g/L Pu		0	9/30/01
D-804C	2nd & 3rd Stage Precipitation Feed Storage Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	TBD
D-804D	2nd & 3rd Stage Precipitation Storage Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	TBD
D-806	Non-Nitric Waste Acid Storage Tank	Empty	Yes	Rm. 3801	Neutralizer	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		5.4	12/31/00
D-807A	Waste Nitric Acid Tank	Empty	Yes	Rm. 3801	Neutralizer	1/8/88	D001, D002, D004-D011, F001-F003, F005-F009	1.03E-03 g/L Pu		4.7	12/31/00

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D-807B	Waste Nitric Acid Tank	Empty	Yes	Rm. 3801	Neutralizer	1/7/88	D001, D002, D004-D011, F001-F003, F005-F009	3.69E-03 g/L Pu		0	12/31/00
D-808	Neutralizer Tank	Acid and Water	Yes	Rm. 3801	Neutralizer	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		27.7	12/31/00
D-811A	Basic Process Waste Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	NA	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.21E-07 +/- 8.08E-08 to 2.19E-03 g/L Pu		44.1	9/30/01
D-811B	Basic Process Waste Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	NA	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.21E-07 +/- 8.08E-08 to 3.08E-07 +/- 1.30E-07 g/L Pu		28.4	9/30/01
D-812	1st Stage Precipitation Feed Tank	Semi-dried Sludge	Yes	Rm. 3801	Decon. Precipitation	NA	D001, D002, D004-D011, F001-F003, F005-F009	2.44E-07 +/- 3.26E-07 to 5.18E-07 +/- 5.15E-08 g/L Pu		11.2	TBD
D-813	1st Stage Precipitation Reactor Tank	Empty?	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		0	1/15/01
D-814	1st Stage Precipitation Flocculator Tank	Empty?	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		1.8	1/15/01
D-815	1st Stage Precipitation Clarifier Tank	Dried Sludge	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		0.4	1/31/01
D-816	2nd Stage Precipitation Feed Tank	Liquid waste/sludge	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	1/31/01

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D-817	2nd Stage Precipitation Reactor Tank	Dried Sludge	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		8.3	1/15/01
D-818	2nd Stage Precipitation Flocculator Tank	Dried Sludge	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		7.4	1/15/01
D-819	2nd Stage Precipitation Clarifier Tank	Liquid waste/sludge	Yes	Rm. 3801	Decon. Precipitation	Mar-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.84E-07 +/- 9.97E-07 to 4.84E-07 +/- 5.70E-08 g/L Pu		0	TBD
D-820	3rd Stage Precipitation Feed Tank	In Use	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		1.4	9/30/01
D-821	3rd Stage Precipitation Reactor Tank	In Use	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	9/30/01
D-822	3rd Stage Precipitation Flocculator Tank	In Use	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		7.9	9/30/01
D-823	3rd Stage Precipitation Clarifier Tank	In Use	Yes	Rm. 3801	Decon. Precipitation	Mar-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	1.92E-07 +/- 2.29E-08 to 4.14E-07 +/- 4.17E-08 g/L Pu		1.2	TBD

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D-824A	Filter Feed Tank	Sludge	Yes	Rm. 2804	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		2.2	TBD
D-824B	Filter Feed Tank	Sludge	Yes	Rm. 2804	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	TBD
D-825A	Filtrate Tank	Empty	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		3	1/15/01
D-825B	Filtrate Tank	Empty	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		1.9	1/15/01
D-826A	Clarifier Effluent Storage Tank	Clarifier Effluent	Yes	Rm. 3801	Decon. Precipitation	12/5/00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	7.13E+03 +/- 1.14E+03 pCi/L		0	9/30/01
D-826B	Clarifier Effluent Storage Tank	Clarifier Effluent	Yes	Rm. 3801	Decon. Precipitation	11/18/00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	6.08E+02 +/- 3.90E+02 pCi/L		8.6	9/30/01
D-826C	Concentrate Storage Tank	In Use	Yes	Rm. 3801	Spray Dryer	Apr-00	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	107,303 +/- 9,514 pCi/L		0	9/30/01
D-827	Evaporator Feed Tank	In Use	Yes	Rm. 3810	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0	9/30/01

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D-830	Flash Tank	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-832	Flash Tank	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-834	Condensate Tank	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-843	Unloading Sump Tank	RCRA stable	Yes	Rm. 2804	Neutralizer	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
D-844A	Mist Tank	In Use	Yes	Rm. 4807	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		0	1/15/01
D-844B	Mist Tank	In Use	Yes	Rm. 4807	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		3.3	1/15/01
D-845	Descale Acid Tank	In Use	No	Rm. 3810	Evaporator	N/A	N/A	N/A		N/A	9/30/01
D-847	Liquid Seal Tank	In Use	Yes	Rm. 2804	Building Service	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0.8	TBD
D-848	Precoat Mix Tank	Empty?	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		1.3	1/31/01
D-851	Liquid Seal Tank	In Use	Yes	Rm. 2804	Building Service	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		0.6	TBD

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
D-852	Building Sump Tank	In Use	Yes	Rm. 2804	Building Service	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		3.8	TBD
D-875	Neutralizer Mix Tank	In Use	Yes	Rm. 2804	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		7.9	9/30/01
D-876	Flash Tank	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-877	Precoat Mix Tank	Empty?	No	Rm. 3801	Decon. Precipitation	N/A	N/A	N/A		N/A	1/31/01
D-878	Spray Dryer Feed Tank	In Use	Yes	Rm. 3809	Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-879	Tower Water Tank	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
D-880	Expansion Tank	Empty?	No	Rm. 4805	Chill Water System	N/A	N/A	N/A		N/A	Today
D-881	Air Separator	Empty?	No	Rm. 4805	Chill Water System	N/A	N/A	N/A		N/A	Today
D-882	Pot Feeder	Empty?	No	Rm. 4805	Chill Water System	N/A	N/A	N/A		N/A	Today

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
D-883A	Saltcrete Mix Tank	Empty?	Yes	Rm. 3809	Spray Dryer/Saltcrete	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	12/31/00
D-883B	Saltcrete Mix Tank	Buildup inside tank	Yes	Rm. 3809	Spray Dryer/Saltcrete	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	12/31/00
D-884	Spray Dryer Salt Hopper	Empty?	Yes	Rm. 3809	Spray Dryer/ Saltcrete	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	12/31/00
D-885	Spray Dryer Cement Hopper	Empty?	No	Rm. 3809	Spray Dryer/ Saltcrete	N/A	N/A	N/A		N/A	1/31/01
E-804 A	Scrubber Cooler	Empty?	No	Rm. 4805	Vent Scrubber	N/A	N/A	N/A		N/A	Today
E-804 B	Scrubber Cooler	Empty?	No	Rm. 4805	Vent Scrubber	N/A	N/A	N/A		N/A	Today
E-804 C	Scrubber Cooler	Empty?	No	Rm. 4805	Vent Scrubber	N/A	N/A	N/A		N/A	Today
E-806 A	1st Effect Heat Exchanger	Out of Service	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-806 B	1st Effect Heat Exchanger	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-807	2nd Effect Heat Exchanger	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
E-808	3rd Effect Heat Exchanger	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-809	4th Effect Heat Exchanger	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-810	Condenser	In Use	Yes	Rm. 4814 Mezz.	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-812 A	Cooler	Empty?	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
E-812 B	Cooler	Empty?	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
E-813	Tank Water Heater	Empty?	No	Rm. 4101	Caustic System	N/A	N/A	N/A		N/A	Today
E-817 B	Chill Water Exchangers	Empty?	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
E-817 A	Chill Water Exchangers	Empty?	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
E-820	Ejector Aftercooler	In Use	Yes	Rm. 4814 Mezz.	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
E-920	Coolant Heat Exchanger	In Use	No	Rm. 4812 Mezz.	Spray Dryer	N/A	N/A	N/A		N/A	9/30/01
F-801	Spray Dryer Furnace	In Use	No	Rm. 4802	Spray Dryer	N/A	N/A	N/A		N/A	9/30/01

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
FL-802A	Rotary Drum Filter	Empty?	Yes	In GB-120	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
FL-802B	Rotary Drum Filter	Empty?	Yes	In GB-120	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
FL-803	Bag Filter House	Dried Salt	Yes	Rm. 4802	Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
FL-804A	Process HEPA Filter Stage	In Use	Yes	Rm. 4802	Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
FL-804B	Process HEPA Filter Stage	In Use	Yes	Rm. 4802	Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
FL-831	Polishing Filter	Empty?	Yes	Rm. 3801	Decon. Precipitation	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		7.4	1/31/01
GB-117A	P-853A Vacuum Pump Enclosure	Empty?	Yes	Rm. 4807	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
GB-117B	P-853B Vacuum Pump Enclosure	Empty?	Yes	Rm. 4807	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
GB-118	Vacuum Filter Enclosure	Dried Sludge	Yes	Rm. 3803	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
GB-120	Vacuum Filter Enclosure	Dried Sludge	Yes	Rm. 4805	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
H-2	Cement Hopper	Cement	No	In GB-120	Vacuum Filter	N/A	N/A	N/A		N/A	Today
H-3	Sludge Hopper	Dried Sludge	Yes	In GB-118/120	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
H-5	Receiving Hopper	Dried Sludge	Yes	In GB-118/120	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
H-807	Filter Aid Hopper	Empty?	No	Rm. 4101	Vacuum Filter	N/A	N/A	N/A		N/A	Today

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
J-804	Vent Gas Venturi Scrubber	In Use	No	Rm. 4805	Vent Scrubber	N/A	N/A	N/A		N/A	TBD
P-823A	Concentrated Salt Pump	Empty	Yes	Rm. 3810	Evaporator/ Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	Today
P-823B	Concentrated Salt Pump	Empty	Yes	Rm. 3810	Evaporator/ Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	Today
P-859	Basement Sump Pump	In Use	Yes	Rm. 2804	Building Service	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	TBD
P-860	Basement Sump Pump	In Use	Yes	Rm. 2804	Building Service	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		2.6	TBD
T-802	1st Effect Vapor Body	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
T-803	2nd Effect Vapor Body	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01

Equipment Number	Description	Status	RCRA	Location	System Associated With	Date Last Sampled	RCRA EPA Codes	Rad. Range for Contents	Rad. Data When Empty	Gamma Scan Results (Total Nuc. Material, gms.)	Turnover to Facility Dispositioning
T-804	3rd Effect Vapor Body	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
T-805	4th Effect Vapor Body	In Use	Yes	Rm. 4814	Evaporator	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
T-807	Vent Gas Absorber	In Use	No	Rm. 4805	Vent Scrubber	N/A	N/A	N/A		N/A	TBD
W-801	Sludge Dryer	Dried Sludge	Yes	In GB-118/120	Vacuum Filter	N/A	D001, D002, D004-D011, F001-F003, F005-F009	N/A		N/A	Today
W-803	Spray Chamber	In Use	Yes	Rm. 4812	Spray Dryer	N/A	D001, D002, D004-D011, F001-F003, F005-F009, P030, P098, P099, P106, U002, U103, U108, U117, U154, U161, U213	N/A		N/A	9/30/01
	Settling Tank	In Use	No	Rm. 3801	Reagent Disposal	N/A	N/A	N/A		N/A	TBD

APPENDIX G
Glovebox Tables

Set	Rm #	GB #	Designation	Area	Lgth (ft)	Hght (ft)	Wdth (ft)	ft^3	Lead Shield (sq ft)	Water wall (sq ft)	Power Conns	Light Window/ Fixtures	# Vents	# Vent Cuts	# Glove Ports	# Windows	ISSR	CSRF	RCRA Unit #	Notes	Org. Set
3	3517	0061	Main Aqueous Processing	AH	8	5	2	80	40		9	2			7	9		x			2
3	3517	0063	Main Aqueous Processing	AH	26	5	2	260	130		15	6	3		20	20	x				2
3	3517	0065	Main Aqueous Processing	AH	21	5	2	210	105		13	4	1		16	20	x				2
4	3571	0066	Main Aqueous Processing	AH	15	2	5	150	75		10	4	1		12	16	x				2
5	3573	0064	Main Aqueous Processing	AH	8	5	2	80	40		13	2	2		5	8		x			2
5	3573	0067	Main Aqueous Processing	AH	16	5	2	160	80		19	4	2		15	10	x				2
6	3543	0058	Main Aqueous Processing	AH	64	6	2	768	384		35	13	1	4	82	47	x				2
6	3543	0059	Main Aqueous Processing	AH	52	5	2	520	260		10	13	2	8	76	35	x				2
7	3305	0036	Americium Processing/SGS	AJ				1,900	550		107	16	3	0	233	149	x				3
7	3305	0037	Americium Processing/SGS	AJ				1,559	1,347		43	9	4	0	189	71	x		90.104		3
7	3305	0038	Americium Processing/SGS	AJ	40	14	3.5	1,960	196		15		2		142	130	x				3
7	3305	0075	Americium Processing/SGS	AJ	11	2	5	110	100		10	3	1		16	13		x			3
7	3305	I/O 05	Americium Processing/SGS	AJ	7	5	5	175			1	2			18	9	x			PT has 738 cf, Includes transition to CSV	3
8	3206	0045	Wet Residue/SS&C	AK				587	0		50	10	2		66	45	x			Sum of 0045-1, 0045-2 and AL-45 = 587, PT has 599	3
8	3206	0039	Wet Residue/SS&C	AK	20	3	3	180	258		14	5	2		27	18		x	90.143	PT has 252, wd "39A"?	3
8	3206	0040	Wet Residue/SS&C	AK	37	3	3	333			19	12	2		40	23	x		90.143		3
8	3206	0041	Wet Residue/SS&C	AK	25	7	4	700			35	7	1		87	62	x				3
8	3206	0042	Wet Residue/SS&C	AK	15.5	2.5	3	116	144		13	6	2		49	33	x		90.143	PT has 355	3
8	3206	0043	Wet Residue/SS&C	AK	3	13	6	234	0		72	5	1	3	33	27	x			PT has 265	3
8	3206	0044	Wet Residue/SS&C	AK	5	5.42	3	81	236		7	4	2		17	16	x		90.143	PT has 285	3
8	3206	I/O 06	Wet Residue/SS&C	AK	7.5	6.5	5.5	268			5	2			11	7	x			PT has 728 cf, including transition to CSV	3
8	3206	MD10	Wet Residue/SS&C	AK	3	3	3	27	0		4	1	2		4	3	x				3
8	3206	ME9	Wet Residue/SS&C	AK	5	3	3	45	0		4	1	2		8	5	x				3
9	1216	0082	Central Storage Vault	AC	19	8	18	2,736	1,000		4	7	2		31	34		x			4
9	2216	0083	Central Storage Vault	AC				100										x			4
9	2216	0101	Central Storage Vault	AC				460									x				4
12	1103	2402	West Side CWTS	AB	12	5	3	180			35	3	2		41	8		x			4

Set	Rm #	GB #	Designation	Area	Lgth (ft)	Hght (ft)	Wdth (ft)	ft^3	Lead Shield (sq ft)	Water wall (sq ft)	Power Conns	Light Window/ Fixtures	# Vents	# Vent Cuts	# Glove Ports	# Windows	ISSR	CSRF	RCRA Unit #	Notes	Org. Set
12	1103	2403	West Side CWTS	AB	15	5	3	225	275		18	4	4	15	49	32		x			4
12	1105	2401	West Side CWTS	AB	17	4	2.5	170	199		17	6	4		58	34		x			4
12	1111	0068	East Side--CWTS	AA	5	3.5	3	53	120		4	2	1		9	12		x			4
12	1111	0069	East Side--CWTS	AA	6	5	3.5	105	120		3	2	1		9	13		x			4
12	1111	0070	East Side--CWTS	AA	20	3	3	180	108		20	6	7	7	23	37	x			confirm - WD data shows L-shaped GB with additional 10'x3'x3'	4
12	1111	0074	East Side--CWTS	AA	10	5	3	150	150		5	3	1		20	21		x			4
12	1111	I/O 08	East Side--CWTS	AA	5	6	6	180	84		12	3	4	5	10	15	x				4
12	1115	0014	East Side--CWTS	AA	6	4	2	48			1		1		32	31		x			4
12	1115	0017	East Side--CWTS	AA	11	9	4	396			18	3	2		35	34	x			PT has 324	4
12	1115	0018	East Side--CWTS	AA				480	320		7	4	2		43	33	x		91.001/ 006	GB's with no dimentions include the sums (ie an L-shaped GB)	4
12	1115	0019	East Side--CWTS	AA	10	7	3	210	30		18	4	1		29	22	x				4
12	1115	0020	East Side--CWTS	AA	10	7	3	210	30		18	4	1		29	22	x				4
12	1115	0021	East Side--CWTS	AA				618	20		32	6	1		50	45	x				4
12	1115	0022	East Side--CWTS	AA	8	3	3	72			2	2	2		24	15		x			4
12	1115	0023	East Side--CWTS	AA	16	5	4	320			15	3	3		17	10	x				4
12	1115	0027	East Side--CWTS	AA	20	3	3	180	0		8	4	1		11	16	x				4
12	1115	0062	East Side--CWTS	AA	12	9	3	324			10	5	2	4	43	23	x				4
12	1115	2404	East Side--CWTS	AA	14	4	3	168	75		17	3	1		42	20	x		91.001/ 006		4
13	2317	0077	North Side-Basement	AE				120										x			5
13	2317	0078	North Side-Basement	AE				120										x			5
14	2325	0007	South Side-Basement	AD				396	8		11	6	1		50	50		x			5
14	2325	0008	South Side-Basement	AD	15	6	4	360	300		5	2	1		11	7		x			5
14	2325	0009	South Side-Basement	AD				276			11	10	1		38	27		x		PT has 378 cf	5
14	2325	0010	South Side-Basement	AD				1,227	112		30	7	4		140	78	x				5
14	2325	0012	South Side-Basement	AD	25	12	4	1,200	112		30	7	4		93	96	x				5
14	2325	0013	South Side-Basement	AD	25	12	4	1,200	112			10	2		108	76	x				5
14	2325	0086	South Side-Basement	AD	5	3	3	0												Clean Removal, Loose removal 1 ton	5

Set	Rm #	GB #	Designation	Area	Lgth (ft)	Hght (ft)	Wdth (ft)	ft^3	Lead Shield (sq ft)	Water wall (sq ft)	Power Conns	Light Window/ Fixtures	# Vents	# Vent Cuts	# Glove Ports	# Windows	ISSR	CSRF	RCRA Unit #	Notes	Org. Set
16	3511	0033	Main Aqueous Processing	AH				904			56	11			58	48	x			PT has 832	6
16	3511	I/O 04	Main Aqueous Processing	AH				676									x			Includes transition to CSV	6
17	3515	0032	Main Aqueous Processing	AH				522	180		25	8			66	50	x		371.3C		11
17	3515	I/O 03	Main Aqueous Processing	AH				252									x				11
23	3321	0052	Americium Processing/SGS	AJ				239	0		13	5	1		44	25	x			PT has 896	8
23	3321	0054	Americium Processing/SGS	AJ				409	300		14	1	2		84	30	x			PT has 798	8
24	3408	0071	Wet Residue/SS&C	AK	13	3	3	117	78		10	4			10	7	x				8
24	3408	0072	Wet Residue/SS&C	AK	22	3	3	198	162		24	5	1		15	13	x		90.142		8
24	3408	0073	Wet Residue/SS&C	AK	17	3	3	153	0		23	8	4		0	12	x				8
25	3412	0047	Wet Residue/SS&C	AK				405	0		32	14	2		47	30	x				8
25	3412	0048	Wet Residue/SS&C	AK	25	3	2	150			32	7	4		16	13	x		90.18		8
25	3412	0049	Wet Residue/SS&C	AK	14	3	2	84	0		31	8	7		12	11		x			8
25	3412	0050	Wet Residue/SS&C	AK	18	4	3	216	0		42	5	3		16	10		x			8
25	3412	0051	Wet Residue/SS&C	AK	18	3	3	162	18		8	4			7	8		x			8
25	3412	I/O 07	Wet Residue/SS&C	AK	9	6	7	378	0		13	4			15	8	x			PT has 838 cf, includes transition to CSV	8
26	3602	0001	Wet Combustibles/PuSPS	AG				804	0		351	14	1		51	44	x		90.70/141	PT has 612	8
26	3602	0002	Wet Combustibles/PuSPS	AG	19	7	4	532	0		30	4			30	15	x			PT has 728	8
26	3602	0003	Wet Combustibles/PuSPS	AG				280									x				8
26	3602	I/O 01	Wet Combustibles/PuSPS	AG				336									x			Includes transition to CSV	8
29	3717	3302	Wet Combustibles/PuSPS	AG	7	4	4	112										x			10
29	3717	3303	Wet Combustibles/PuSPS	AG	27	4	4	432	0		10		6	6		37		x			10
29	3717E	1521 A	Wet Combustibles/PuSPS	AG	6	7	3	126	141		7	1	2	8	38	22		x			10
29	3717E	1521B	Wet Combustibles/PuSPS	AG	6	7	3	126	126		7	1	2	8	38	22		x			10
29	3717E	1521C	Wet Combustibles/PuSPS	AG	6	7	3	126	126		7	1	2	8	38	22		x			10
30	3701	1509	Wet Combustibles/PuSPS	AG				0											371.3B	Clean Removal, Loose removal 33.5 tons	10
30	3701	I/O 02	Wet Combustibles/PuSPS	AG				757									x			Includes transition to	10

Set	Rm #	GB #	Designation	Area	Lgth (ft)	Hght (ft)	Wdth (ft)	ft^3	Lead Shield (sq ft)	Water wall (sq ft)	Power Conns	Light Window/ Fixtures	# Vents	# Vent Cuts	# Glove Ports	# Windows	ISSR	CSRF	RCRA Unit #	Notes	Org. Set
																				CSV	
TOTAL		**80**	**Gloveboxes**					**31,462**	**8,251**	**0**	**1,609**	**352**	**131**	**76**	**2,803**	**2,014**	**51**	**27**			