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Closure Plan for Building 123 Components of RCRA Unit 40

U. S. Department of Energy

Rocky Flats Environmental Technology Site

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CLOSURE PLAN FOR BUILDING 123
COMPONENTS OF RCRA UNIT 40

REVISION 0

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CLOSURE PLAN FOR BUILDING 123 COMPONENTS OF RCRA UNIT 40

1 0 INTRODUCTION

Partial closure of RCRA Unit 40 includes the closure of the RCRA regulated process waste lines, sumps, and pumping stations associated with Building 123 at the Rocky Flats Environmental Technology Site (RFETS) This system includes above ground process waste lines and ancilliary equipment (sumps, etc) that are currently used in the building, as well as one active underground line The Building 123 area encompasses overlapping Individual Hazardous Substance Sites (IHSS) 121 and 148 IHSS 121 includes the underground Original Process Waste Lines (OPWLs) P-1, P-2, and P-3 Figure 1-1 shows the location of Building 123 and IHSS 121 and 148 Leakage from old process waste lines and possible spills from operations may have resulted in contaminated soil beneath and adjacent to Building 123 This potentially contaminated soil has been designated IHSS 148 The OPWL is a network of tank and underground pipelines constructed to transport and temporarily store process waste from point of origin to on-site treatment and discharge points Both the active and inactive systems include above and underground lines that transfer the process waste to valve vaults or holding tanks All process waste lines inside the building are currently active Closure will include deactivation, dismantlement, and remediation of all system components in Building 123, and the active underground pipeline that leaves the building and extends to Valve Vault 18

Partial closure of RCRA Unit 40 is part of a larger project to decontaminate and decommission (D&D) Building 123 and surrounding area This project will remove Buildings 123, 123S, 113, and 114 at RFETS, eliminate IHSS 148, and close a portion of RCRA Unit 40 The Building 123 slab and foundation will be removed as required to remediate contamination beneath the building as dictated by soil sampling results The overall project is being conducted as an accelerated action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) approved under the Building 123 Proposed Action Memorandum (PAM) The PAM is a decision document for the D&D of Building 123 and has been approved by the Colorado Department of Public Health and Environment (CDPHE) The Building 123 PAM references this unit closure plan RCRA Unit 40 is currently under Interim status, and as a result, partial closure activities fall under Colorado Hazardous Waste Regulations Part 265, Subpart G -"Closure and Post Closure"

1 1 APPLICABILITY

This RCRA Closure Plan applies to both the aboveground and subsurface Process Waste Tank System found in and beneath Building 123 This Closure Plan will identify the options available for the management, and the removal and/or remediation of this system This Closure Plan does not apply to

- the inactive portion of the P-1 Pipeline,
- to Pipelines P-2, or P-3,
- nor to any soil contamination found under this building

The above ground and underground process waste line connecting Building 123 to Valve Vault 18 and ancilliary equipment (sumps, etc) that are the active part of RCRA Unit 40 associated with Building 123 Pipeline P-1 was modified in 1989 Part of the line (exterior to the building) was removed and replaced with new double walled piping This line runs from the exterior of the building to Valve Vault 18 This new line is part of RCRA Unit 40 and will be closed in accordance with this plan

Building operations prior to 1985 that generated mixed waste were not regulated under RCRA, and, therefore, these pipelines are not part of RCRA Unit 40 Non-regulated underground pipelines that were abandoned prior to RCRA regulation include pipelines P-2 and P-3 (Blue and red on attached First Floor Plan) In 1974, pipelines P-2 and P-3 were grouted in place The Building 123 PAM and Building 123 IHSS Sampling and Analysis Plan (SAP) address the investigation and potential remediation of the abandoned lines and any soil contamination created by the lines The implementation of the RCRA Closure Plan is a component of the facility decommissioning plan

The following is a summary of the decommissioning plan for the process waste piping system in Building 123

The Decommissioning of Building 123 has been divided into four main phases

- I Strip-Out and Utility Isolation
- II Asbestos Abatement
- III Demolition
- IV Characterization and Remediation of IHSS 121 and 148

During Phase I, the above grade section of the process waste line (shown in pink on Attachment 1, First Floor Plan) will be removed under either Option 1, 2 or 3 as described in Section 7 0 of this Closure Plan The piping will be plugged where it goes below ground in Rooms 156, 157 and 158 After removal, all the above ground piping will be packaged as either Low Level Waste or Mixed Waste depending the results of rinsate sampling The piping will be removed to prepare the building for demolition in Phase III

The underground process waste lines will be managed during Phase IV The underground process waste lines refer to the inactive section of P1 (yellow on the attached sketch), P2 (blue), P3 (orange), and the active underground section of piping which goes to Valve Vault 18 (green) During Phase IV, the soil and the concrete slab will be sampled (drilled) for characterization Closure activities for the inactive underground process waste lines, the building slab and surrounding soil will be determined based upon the results of the characterization study Final disposition of the underground portion of the active process waste line (green) will depend on sample analysis of the rinsate

2.0 FACILITY CONTACT

The RFETS contact for closure activities is

Manager, Rocky Flats Field Office
U S Department of Energy
P O Box 928
Golden, Colorado 80402-0928

Phone (303) 966-2025

3.0 UNIT CLOSURE NOTIFICATION, CERTIFICATION AND SCHEDULE

The closure of the Building 123 above ground process waste system, sumps, and underground pipelines will be conducted as a partial closure of Unit 40 Notification will be submitted to the Director of the Colorado Department of Public Health and Environment (CDPHE) of the intent to close the process waste system 45 days prior to the planned start of closure activities

If the total time necessary for closure is expected to exceed 180 days, the facility will notify the Director within 30 days of such a determination (Part 265 113(b)) and at least 30 days prior to the expiration of the 180 day closure period (Part 265 113(c))

Within 60 days after completion of closure activities, the facility will notify CDPHE through submittal of proper certification that the unit has been closed in accordance with the approved closure plan The certification package will be signed by the owner or operator and by an independent, Colorado-registered Professional Engineer

4.0 REGULATORY REQUIREMENTS

A plan for closure of RCRA hazardous waste treatment and storage units at RFETS is required pursuant to 6 CCR 1007-3, Part 265 of the Colorado Hazardous Waste Regulations Part 265, Subpart G - "Closure and Post Closure", Sections 265 110 through 265 120 No demonstration of financial responsibility is required because compliance with 6 CCR 1007-3, Part 266, Subpart A - "Financial Requirements", is not required for government owned facilities

5.0 UNIT DESCRIPTION

RCRA Unit 40

RCRA Unit 40 is the site-wide network of tanks, pipelines, and sumps constructed to transport and temporarily store process waste from the point of origin to on-site treatment and discharge points Operation of the process waste system in Building 123 began in 1952 in the east and central wings An extension to the east wing was added in 1968, and the west wing was added in 1972 The process waste system for Building 123 was modified with each of the expansions to the building

The process waste system incorporated into RCRA Unit 40 includes the system components in Rooms 103, 103A, 105, 111, 112, 113B, 121, 123, 123A, 124, 125, 126C, 127, 155, 155B, 156, 157, and 158 in the building, and the active underground line that connects to Valve Vault 18 A drawing of the building and the process waste piping is included in Appendix A The history of the Building process waste system is described below

Underground Section The original process waste lines (P2) were installed below grade in 1952 The southern portion of this system in the east wing was modified in 1968 when the east wing addition was constructed The process waste line installed in 1968 is referred to as the P3 line

In 1972, an additional underground process waste piping system was installed which serviced the construction of the west wing The 1972 line is the P1 line Construction of the west wing included three large interconnected concrete sump pits in Rooms 156, 157, and 158

In 1974 an above grade process piping system (see below) was installed to replace the old P2 and P3 lines When this new above-grade system was installed, the P2 and P3 lines were filled with grout

In 1989 the below grade process waste piping system was upgraded The sections of P1 that lie outside of Building 123 were removed A new below grade piping system was installed in 1989 that went from the south west corner of Building 123 to Valve Vault 18 The 1989 section of the underground process waste piping was used until 1997

Above Ground Section In 1974 a process waste piping system was installed above-grade in Building 123 This above grade system tied into the P1 below grade system, and later was tied into the 1989 below-grade piping system In 1995, approximately 40% of the above-grade piping were modified and upgraded The above grade piping system was used until 1997

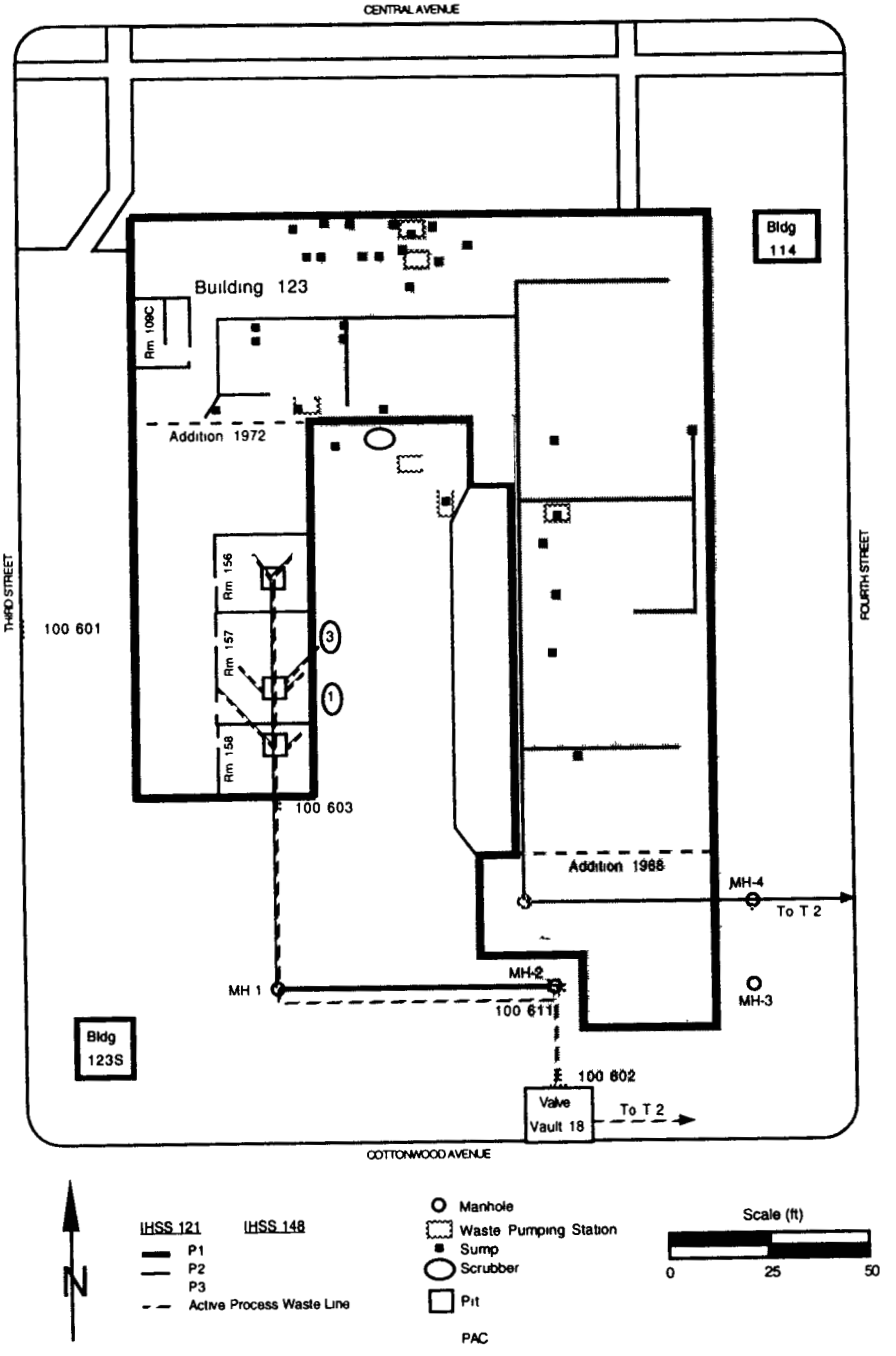


Figure 1-1 Location of Building 123 and Associated IHSS 121 and 148

6.0 CHARACTERIZATION

6 1 EPA WASTE CODES ASSOCIATED WITH THIS UNIT AND SAMPLING PARAMETERS

The following EPA Waste Codes were listed in the Part A application for RCRA Unit 40 D001, D002, D004-D011, D018, D019, D028, D029, D035, D040, F001, F002, F003, F005, F007, F008, and F009 However, not all of the above referenced waste streams have been identified as being disposed of in RCRA Unit 40 in Building 123 The WSRIC identifies the following process wastes as being disposed of in the process waste system

- From 1987 to 1997, organic compounds such as Dibutyl-n-diethyl carbamoyl phosphate, (DDCP) and toluene were used in very small quantities for Americium separation in Building 123,
- Acids nitric acid, hydrofluoric acid, sulfuric acid, hydrochloric acid, acetic acid, formic acid, oxalic acid, and perchloric acid,
- Bases ammonium hydroxide and sodium hydroxide,
- Radionuclides various isotopes of plutonium, americium, uranium, and curium,
- Metals Calcium, Magnesium, and Iron effluents, beryllium (trace amounts),
- Ammonium nitrate, ammonium thiocyanate, ammonium chloride, ammonium oxalate, ammonium hydroxylamine, ethylene glycol, Diethylenetriaminepentaacetate (DTPA) potassium permanganate, potassium permanganate, sodium nitrate, and sodium carbonate

After treatment, using either Option 1 or Option 3, a representative sample of the final rinse water will be taken in Building 428 near Tank #853 where a sampling tap is located All liquid wastes from Building 123 flow into this tank This sample will be tested for

- The Target Analyte List for Metals (Table 6-1),
- Volatile Organics (as identified in Table 6-2), and
- Fingerprinting (pH, flash point, TSS, turbidity, etc)

These sample parameters will account for all of the EPA Waste codes associated with RCRA Unit 40 except for F007, F008, F009 These listed waste codes are for cyanide wastes from electroplating operations No electroplating operations utilizing cyanide were conducted in Building 123 and are therefore omitted from testing Tables 6-1 and 6- 2 list the contaminants to be analyzed for, and their associated EPA Waste Codes

Based upon process knowledge and application of the Contained-In Policy, materials from this unit (pipelines, pumps, sumps, etc) must be managed as RCRA mixed waste and analyzed for characteristics unless Options 1 and 3, Rinsate or Debris Treatment standards, identified in this document are met

TABLE 6-1 MODIFIED TARGET ANALYTE LIST METALS AND ASSOCIATED EPA WASTE CODES

Aluminum, Al	Antimony, Sb	Arsenic, As **D004**
Barium, Ba **D005**	Beryllium, Be	Cadmium, Cd **D006**
Cesium, Cs	Chromium, Cr **D007**	Cobalt, Co
Copper, Cu	Iron, Fe	Lead, Pb **D008**
Lithium, Li	Magnesium, Mg	Manganese, Mn
Mercury, Hg * **D009**	Molybdenum, Mo	Nickel, Ni
Potassium, K	Selenium, Se **D010**	Silicon, Si
Silver, Ag **D011**	Sodium, Na	Strontium, Sr
Thallium, Tl	Tin, Sn	Vanadium, V
Zinc, zn		

Mercury is not part of the TAL metal list but was added because of its common usage in laboratories

TABLE 6-2 MODIFIED TARGET COMPOUND LIST OF VOLATILE ORGANIC COMPOUNDS AND ASSOCIATED EPA WASTE CODES

1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane **F002**	1,2-Dichloroethene (total)
1,2-Dichloropropane	1-1-1-Trichoethane **F001/F002**	1-1-Dichloroethane
1,1-Dichloroethylene **D029**	1-2-Dichloroethane **D028**	2-Hexanone
Bromoform	Bromomethane	Carbon disulfide **F005**
Carbon tetrachloride **D019/F001**	Chloroethane	Chlorobenzene **D021/F002**
Chloroform **D022**	Chloromethane	cis-1,3-Dichloropropene
Dibromochloromethane	Ethylbenzene **F003**	Methyl ethyl ketone (butanone) **D035/F005**
Methylene chloride **F001/F002**	Pyridine **F005**	Styrene
Tetrachloroethylene **D039/F001/F002**	Toluene **F005**	trans-1,3-Dichloropropene
Trichloroethylene **D040/F001/F002**	Vinyl Chloride **D043**	Xylenes (total) **F003**
Acetone **F003**	4-Methyl-2-pentanone	Benzene **D018/F005**

6 1 1 Above Ground Portion of RCRA Unit 40 in Building 123

Building 123 has always housed laboratory operations Laboratories routinely generate organic compounds most of which (prior to 1987) were disposed of in the process waste system Some of these chemicals would today be characterized as listed wastes In 1987, administrative controls were established that prohibited the disposal of listed hazardous waste to the waste process system In addition, satellite accumulation areas were established to manage all listed hazardous wastes generated in Building 123 Beginning in 1989, this system was used predominately as an elementary neutralization unit for D002 corrosive waste streams and was in use until the building ceased operations in 1997 The above ground pipeline system was upgraded in 1995 when approximately 40% of this system was replaced

6 2 SOIL CHARACTERIZATION

A complete soil characterization of the Building 123 area will be conducted as part of the activities outlined in the Building 123 Proposed Action Memorandum Soil characterization will include sampling and analysis of the soil beneath and surrounding Building 123 Following removal of the building superstructure, samples will be collected through the slab to determine the necessity for soil remediation The Building 123 and IHSS 121 SAP has been written to guide characterization activities in these areas The SAP incorporates a review of existing records to establish the location of potentially contaminated areas and to define sampling protocol The RFETS Statistical Applications Group will be used to ensure that statistically valid and representative samples of each waste stream are taken Current planning indicates a need for approximately fifty (50) soil samples beneath the slab of Building 123 and from areas surrounding underground, abandoned OPWLs Samples will be collected at depths immediately below the pipe to locate any contamination that may have leaked from the lines Samples will be analyzed for Volatile Organic Compounds (VOCs), Target Analyte List (TAL) Metals, radionuclides, and nitrates Data quality requirements supporting the analysis effort will conform to criteria established in "Guidance for the Data Quality Objective Process", EPA QA/G-4 (EPA 1994) The Data Quality Objectives are listed in the "Building 123 and IHSS 121 SAP" (See RF/RMRS-97-023)

7.0 CLOSURE PERFORMANCE STANDARD

The closure performance standard specifies that hazardous waste facilities are to be closed in such a way as to (1) minimize the need for further maintenance at the facility, and (2) protect human health and the environment by controlling, minimizing, or eliminating potential releases of hazardous waste to the environment (6 CCR 1007-3, Section 265 111)

For ease in achieving RCRA Closure Performance Standards, that portion of RCRA Unit 40 associated with Building 123 will be divided into two components above ground piping and associated ancilliary equipment and below ground piping These units will be treated independently, however, RCRA Closure will not be completed until both components achieve the RCRA Closure Performance Standards and are certified closed by an independent Colorado Registered Professional Engineer Any of the three closure options described below may be used to achieve closure For example, the above ground piping may be closed using the Decontamination Option while the below ground might be closed using Debris Treatment

To achieve closure of this unit, a selection of one of the following options will be made by DOE/Kaiser-Hill based on characterization data

7 1 OPTION 1: DECONTAMINATION OF RCRA UNIT 40 ASSOCIATED WITH BUILDING 123

If this option is selected for either the above ground and/or the below ground portions of this unit, closure will consist of decontaminating the pipe and any associated ancilliary equipment with a solution capable of removing the contaminants of concern and testing the final rinsate to verify treatment standards This decontamination will be conducted in accordance with the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, Section C, Clean Closure by Decontamination

7 1 1 Closure Performance Standards For Both Above Ground and Below Ground Portions of RCRA Unit 40

Closure Performance Standards for decontamination identified in this section include, but are not limited to

- The selection of an appropriate solution for decontamination Selection of the decontamination solution was based on the types of wastes previously managed in the unit and the contaminants that are present Water containing sodium carbonate and trisodium phosphate will be used as the decontamination solution,
- Flushing the system with a decontamination solution to remove any remaining trace amounts of acids or bases,
- The final rinsate closure performance standards for internal surfaces of tanks (as described in RFCA Permit, Part X Closures) will be used to evaluate the effectiveness of the decontamination, and
- The final rinsate volume will not exceed 5% of the capacity of the piping system

The above ground and/or below ground portion of this unit will be considered decontaminated and meet Closure Performance Standards if

- All visible waste residuals have been removed and,
- The final rinsate contains concentrations of priority pollutants (identified as being managed in the unit) and heavy metals (268 48 UHC listing) below the Tier 2 action levels as defined in Attachment 5 of the Rocky Flats Compliance Agreement (RFCA) and,
- The pH of the rinsate is between 6 and 9

7 1 2 Rinsate Meets Performance Standards

Above Ground Piping System and Ancilliary Equipment

Once the rinsate solution meets the performance standards, as identified above and is certified by an independent engineer, all above ground portion of this unit will be removed and managed as LLW This LLW will be stored on-site until it can be disposed in an approved facility (e g , Nevada Test Site, Envirocare),

Below Ground Piping System

Once the rinsate solution meets the performance standards, as identified above and is certified by an independent engineer, the soil sampling program approved in the 123 PAM will be initiated Dependent upon the results of the sampling, one of the following actions will occur

- If the soil contamination is above levels defined in Section 261 Subpart C, the pipeline will be removed as part of the soil remediation program
- If the soil contamination is below Section 261 Subpart C levels the lines will be grouted and capped in place

Any remaining soil contaminants will be evaluated as part of the 123 PAM and/or final Record of Decision (ROD) for the facility

7 2 OPTION 2. MANAGED AS HAZARDOUS WASTE WITH NO ON-SITE TREATMENT

7.2.1 Rinsate Fails to Meet Performance Standards, Manage Piping/Ancilliary Equipment and Rinsate as Hazardous Waste

If this option is selected, the process waste system will be managed as RCRA mixed waste with the EPA Waste Codes of F001/F002/ F005 The piping and ancilliary equipment will be removed, size reduced and placed into storage on-site at a TSDFs until shipment to an off-site TSDF for final disposition All hazardous waste and/or mixed wastes generated from this project will be managed in accordance with all applicable state and federal regulations Further description of waste management activities can be found in Section 10

Any rinsate generated from the operation, will be sent to Building 374 for treatment

7 3 OPTION 3. DEBRIS TREATMENT OF THE ABOVE AND BELOW GROUND PORTIONS OF RCRA UNIT 40

If this option is selected for either the above ground and/or below ground portions of RCRA Unit 40, the process waste system will be managed as RCRA Hazardous Debris in accordance with 40 CFR 268 45 It is anticipated that this option would be selected only for the above ground portion of this unit

7 3 1 Debris Treatment Closure Performance Standards

Hazardous debris will be considered decontaminated if the process meets the performance standards identified in the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, Section D, Debris Rule Decontamination Requirements identified in this section include, but are not limited to

- Material must meet the definition of debris found in 40 CFR 268 45,
- Selection of a specified technology as identified in 40 CFR 268 45 Extraction or destruction technologies should be selected over immobilization technologies whenever possible For decontaminating hazardous debris piping, tanks and associated ancillary equipment in Building 123 , chemical extraction using water washing and spraying will be selected Water washing and spraying is defined as application of water sprays or water baths of sufficient temperature, pressure, residence time, agitation, surfactants, acids, bases and detergents to remove hazardous contaminants from debris surfaces and surface pores or to remove contaminated debris surface layers Water containing sodium carbonate and trisodium phosphate will be used as decontamination solution,

- A volume of approximately three times the piping/tanks volume of this unit will be used to decontaminate the piping and ensure adequate residence time, and
- Clean surface debris standards as specified in 40 CFR 268 45 must be met

All treatment residuals generated from extraction and/or destruction technologies used in the Closure of Building 123 (including rinsates) will be characterized in accordance with 40 CFR 262 11 and managed accordingly Treatment residuals do not meet the definition of debris

In the event that closure performance standards for debris are not met, the piping will be removed and handled as RCRA mixed waste

8.0 SPECIFIC CLOSURE ACTIVITIES

Closure activities will be performed to achieve the objectives of the closure performance standard (See RCRA Permit, Part 10 Closure, Section C-6, "Closure Performance Standards") The activities will be conducted with decontamination and decommissioning activities covered by the Building 123 PAM, which includes remediation of the remainder of the building and abandoned OPWLs under the building Closure activities will be implemented to ensure the protection of human health and the environment, and waste minimization

The following sections outline the procedures necessary to close active process waste lines in Building 123, and the active underground line between Building 123 and Valve Vault 18

8.1 PREPARATION OF ENGINEERING PACKAGES AND WORK PACKAGES

Engineering and work packages will be used to govern the deactivation and decommissioning activities Engineering designs will be developed for removal and decommissioning activities The engineering package will define the sequence of activities and methods of size reducing, dismantling, and packaging of the building materials The packages are being prepared for the Building 123 project in three phases

1) Deactivation of the building,
2) Demolition of the building,
3) Remediation of underground contamination and/or closure of the underground pipeline as required

8 2 HEALTH AND SAFETY

The RFETS Health and Safety Practices Manual defines general health and safety measures to be followed at the Site All closure activities will be conducted in accordance with the manual In addition, a specific Health and Safety Plan has been written for Building 123 D&D activities, which specifically addresses D&D and RCRA Unit 40 closure activities As Low As Reasonably Achievable (ALARA) principles will be followed regarding personnel radiation dosage and exposures to hazardous materials Radiation Control Technicians will survey all rooms in the building for radiation, and the pipelines and sumps will be monitored for radiological contamination

In accordance with Site procedure 1-74000-IWCP, September 4, 1996, Integrated Work Control Program (IWCP) work packages will be prepared to direct and control all work The packages will be organized similarly to the engineering packages Each work package will contain a Job Safety Analysis (JSA), which addresses all health and safety issues in detail

8 3 TANK SYSTEM CLOSURE ACTIVITIES

8 3 1 Closure of System Components

Closure of the above ground and underground portions of RCRA Unit 40 is dependent upon the amount of contamination (if any) discovered in the final characterization These units will meet

1 The rinsate standards (Option 1) or

2 Will be removed, characterized and managed in accordance with all applicable rules and regulations (Option 2), or
3 Debris Treatment Standards

The WSRIC system documents that the process waste system in Building 123 has been used as an elementary neutralization unit from 1989 to date There is little information regarding disposal practices prior to 1989 However, it seems clear that the majority of the discarded liquids were acids and bases According to the WSRIC data, no listed wastes were disposed in the system since 1989

Both the above ground and below ground portions of RCRA Unit 40 will be closed following an approved RCRA Closure Plan using one of the following options

1 Pipelines and ancilliary equipment will be decontaminated using a solution of water, sodium carbonate and trisodium phosphate The rinsate will be tested to determine if it meets the Tier 2 levels identified in Attachment 5 of RFCA If the rinsate meets these standards, then the system will be considered closed If the rinsate is above the standards, the pipe will be removed

2 The process waste system can be removed and managed as Mixed Waste, or

3 The process waste system can be Debris Treated in accordance with 40 CFR 268 45 and exit RCRA once debris treatment performance standards are met

If soil contamination is present that requires removal/remediation, the pipeline will be removed at that time as part of the soil remediation

8 3.2 Closure Scenarios Associated with Soil Contamination

The choice of closure options for the underground pipelines will be influenced by the extent of hazardous contamination, found in soil sampled near the pipeline One or more sets of activities will be pursued, based upon the amount of RCRA regulated contaminants that are found

Contamination above RCRA levels, Subpart C, 261 levels

Soil surrounding the pipelines contaminated above RCRA, Subpart C, 261 levels will require thorough decontamination, including removal of the contaminated soil and pipeline Soil contaminated above RCRA regulated levels will be removed and managed as hazardous waste

If sampling shows an extensive contamination plume in the soil, other management options such as soil vapor extraction, thermal drying, or on site stabilization may be pursued upon agreement with CDPHE personnel If any these options are necessary, an addendum to this closure plan will be submitted

Contamination below RFCA levels, below Tier 2 levels

If analytical results indicate that the soil is below RFCA Tier 2 levels, the following actions will be taken Underground pipelines will be filled with grout, capped and left in place

Contamination below RCRA Subpart C, 261 levels, and above RFCA Tier 2

If analytical results indicate that the soil is below RCRA Subpart C, 261 levels, but above the RFCA Tier 2 levels, the following actions will be taken Underground lines will be filled with grout, capped, and left in place Soil will be left undisturbed As part of the RFCA Plant Closure, a risk assessment will be conducted Remediation, if required, will then be conducted on the pipelines and soil in accordance with a CDPHE approved RFCA Decision Document

9.0 DISPOSITION OF WASTE GENERATED DURING CLOSURE

Remediation and closure activities may generate a combination of radioactive, hazardous, and mixed wastes Contaminated soil, pipeline, sumps and ancilliary equipment are expected to be the major sources of waste Wastes consisting of plastic, tools, personal protective equipment and other materials associated with demolition and remediation will also be a major source of waste Contaminated waste will be handled by qualified waste packaging technicians who will work with decontamination specialists and radiation control technicians to identify and segregate the Hazardous or Low Level waste Waste packaging technicians will package and label the waste, and will arrange for radioactive waste to be certified Liquid hazardous or radioactive waste generated after the process waste lines are no longer in service will be collected in drums and shipped to Building 374 for processing Solid waste in drums or boxes will be managed by the Waste Disposal group in an appropriate storage area prior to off-site shipment

9.1 ESTIMATE OF WASTE VOLUMES TO BE GENERATED

Table 9-1 describes the types, estimated quantities of waste to be generated, and how the waste will be handled and disposed

Table 9-1 Estimated Volume of Waste to be Generated if Options are Successful

Waste Forms	Waste Type	Disposition of Waste	Estimated Quantity
Option 1 Decontamination			
Process waste pipelines/ancilliary equipment	Low Level	LLW will be recycled at SEG, Oak Ridge, TN or sent to the Nevada Test Site	800 Linear Ft or 100-200 Cubic Ft
Rinsate	Low Level Mixed	Building 374, WWTU	200-1000 gallons
Plastic, paper, etc decontamination or LLW handling	Low Level	Nevada Test Site	100-200 Cubic Ft
Remediation of underground pipelines/soils	Low Level Mixed Waste	Approved TSDF	Up to 2100 Cubic Ft (Waste will be generated only if contamination indicates the need to exhume soil/pipeline)
Option 2 Handle as Hazardous Waste			
Process Waste Pipeline/ancilliary equipment	Low Level Mixed Waste	Approved TSDF	800 Linear Ft or 100-200 Cubic Ft
Rinsate	Low Level Mixed Waste	Building 374, WWTU	200-1000 gallons
Plastic, paper, etc that comes in direct contact with listed waste	Low Level Mixed Waste	Approved TSDF	< 100 Cubic Ft
Remediation of underground pipelines/soil	Low Level Mixed Waste	Approved TSDF	Up to 2100 Cubic Ft (Waste will be generated only if contamination indicates need to exhume pipeline)
Option 3 Debris Treatment			
Process waste pipelines/ancilliary equipment	Low Level Waste	Nevada Test Site	800 Linear Ft or 100-200 Cubic Ft
Plastic, paper, etc coming in to direct contact with listed waste	Low Level Mixed Waste	Mixed Waste will be stored on-site in a TSDF awaiting shipment to Envirocare or another approved TSDF	Up to 2100 Cubic Ft (Waste will be generated only if contamination indicates need to exhume pipeline)
Remediation of contaminated soil	Low Level Mixed Waste		

10.0 RECORD KEEPING

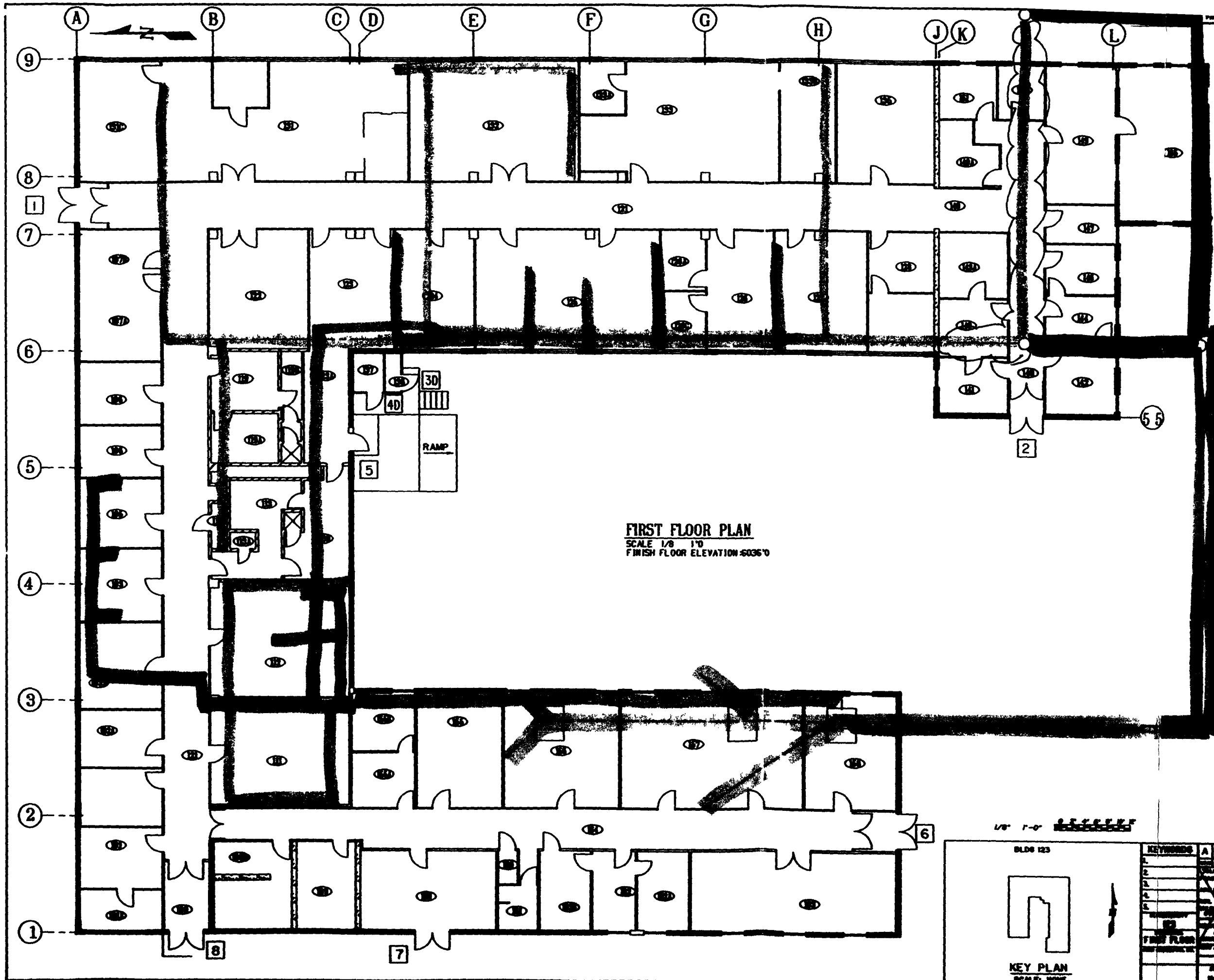
The following closure documentation will be maintained

- A field logbook indicating the date, number, and type of sampling activities
- Analytical results
- Records of actions taken to decontaminate equipment or structures
- Work control packages developed to govern closure activities

Certification and other documentation indicating that closure was conducted in accordance with the closure plan

Attachment 1

First Floor Plan


A
B
C
D
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L
9
8
7
6
5
4
3
2
1
1
2
3D
4D
5
5 5
6
7
8
RAMP
FIRST FLOOR PLAN
SCALE 1/8 1"0
FINISH FLOOR ELEVATION:6036'0
LEGEND
ROOM NUMBER
DOOR NUMBER
P1
P2
P3
OVERHEAD, IN USE
UNDERGROUND, IN USE
BUILDING AREA
18,891 SQUARE FEET
VALVE VAULT 18
Notes Piping History
1 1952 P2 piping installed
2 1968 P3 piping installed and eastern extent of P2 piping removed (clouded area)
3 1972 P1 piping installed
4 1974 Drains for P1 and P3 piping grouted
5 1974 Current above-grade piping installed
6 1989 P1 piping exterior to the building removed and new double walled pipe installed to Valve Vault 18
7 1995 Upgrades to approximately 40% of the above-grade piping
1/8" 1'-0"
BLDG 123
KEY PLAN
SCALE: NONE
KEYWORDS
A ORIGINAL ISSUE
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
GOLDEN, COLORADO
BUILDING 123 FIRST FLOOR
D
SEL LAY 19 ECN LAY 1 20
CV COMPUTER GENERATED R.B.FP123.BOBCAMPBELL2