

Kaiser-Hill

PROJECT BASELINE DESCRIPTION

Environmental Restoration Project

**Rocky Flats Environmental Technology Site
Closure Project**

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Approved:

Project Manager

date

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PROJECT BASELINE

The RFCP organization under the new contract is shown in Figure 1.

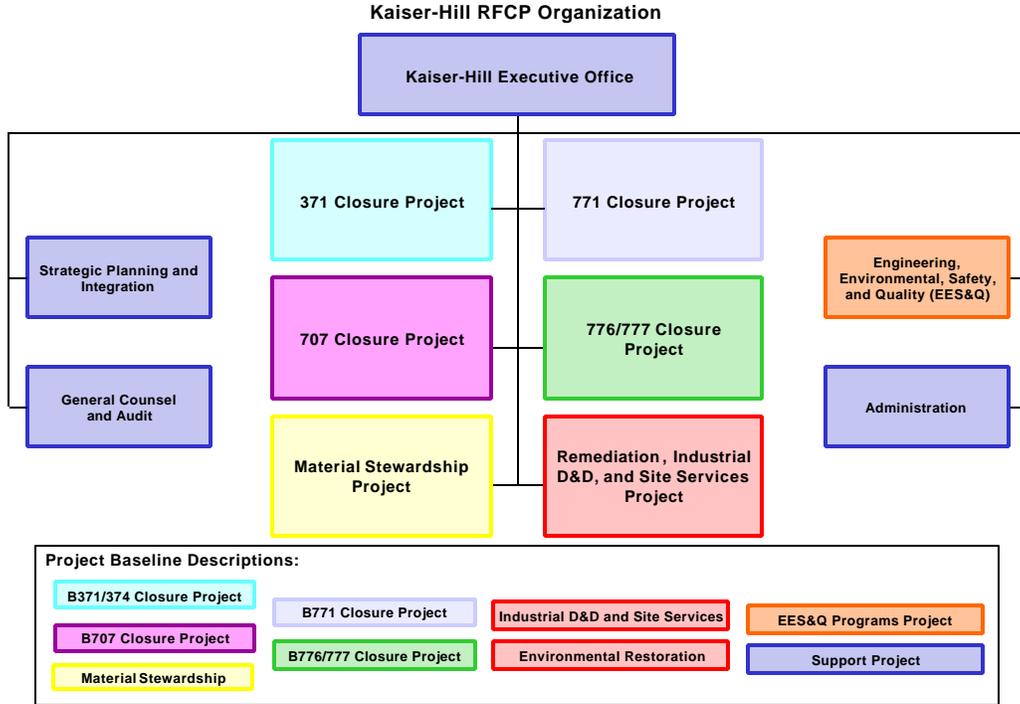


Figure 1: Kaiser-Hill RFCP Organization

1. Scope

This Project Baseline Document addresses the Environmental Restoration (ER) Program at the Rocky Flats Environment Technology Site (RFETS) as part of the Remediation, Industrial and Site Services (RISS) project. The overall scope includes environmental restoration including any remaining characterization. The ER cost account structure that supports the SOW is:

G ER Project
GAA Project Management
GAB Buffer Zone Closure
GAC Industrial Area Closure

1.1 ER Program

The scope of this program is as follows:

- Complete characterization
- Develop and recommend remediation alternatives
- Prepare decision documents
- Design and implement approved remedial actions
- Provide appropriate records to the Administrative Record

This program is divided into two zones: Buffer Zone (BZ) and Industrial Area (IA). The complete list of release sites, with the current status and assumed remedial actions, is included in the ER Action Tracking List (ERATL). Several Corrective Action Decision/Record of Decision (CAD/ROD) documents are pending based on the Rocky Flats Cleanup Agreement (RFCA) outline. However, discussions have been initiated and are being pursued with the regulatory agencies to consolidate the CAD/ROD documents into a single CAD/ROD for the site.

The ER scope for closure of the RFETS includes characterization and remediation of all remaining Individual Hazardous Substance Sites (IHSSs), UBCs and Potential Areas of Concern (PACs) where required and according to RFCA, and documentation of no further action (NFA) decisions where remediation is not required. The decisions will be documented in the following:

- IA SAP
- IA RSOP which will describe the remaining remedial actions in the IA.
- Additional sampling plans and Proposed Action Memorandum as required for IHSSs, UBCs and/or PACs that are not covered by the RSOP.
- Closeout Reports for the appropriate remedial actions.
- Interim Proposed Plan and CAD/ROD that will define land use and cleanup levels.
- Administrative Record for the appropriate areas and actions.

Following is the list of actions required for closure by cost account and by IHSS group. ERATL contains the listing of IHSS groups with the associated UBCs, PACs, IHSSs, and plumes required for closure.

1.1.1 GAA – Project Management

This cost account includes the scope for ER programmatic support including, cost and schedule reporting and controls, coordination with Closure Projects planning, coordination with other Site organizations and with regulators and citizen groups. Routine administrative support, supplies and training are also included in this cost account.

1.1.2 GAB - Buffer Zone Closure

Installation of three reactive barrier systems as remedial actions for the Mound Plume, Solar Ponds Plume and the East Trenches Plume have been completed. In addition, monitoring wells have been installed for monitored natural attenuation as required for the 903 Pad/Ryan's Pit Plume, the PU&D Yard Plume, and the Present Landfill Plume. Monitoring and maintenance of the barrier systems and monitoring wells will continue. Primary remedial actions remaining include the 903 Pad, Present Landfill, Trench 7, the Ash Pits, the B-series pond sediments, and final configuration of ponds and drainages at Site Closure. All other remedial actions for known release sites requiring remedial actions in the BZ have been completed. The detailed scope in this cost account follows.

1.1.2.1 GAB2 NE Area Closure Projects

Group NE-1 Pond Sediment Removal Project

Sediment characterization data indicate that Ponds A-1 and A-2 will not require sediment removal. This activity is currently scoped for removal of 10 percent of the sediments in Ponds B-1, B-2 and B-3, which is assumed to be the amount above RFCA Tier 2 Soil Action Levels. Additional characterization will be required to determine the extent of contaminated soils and the potential future impact to surface water quality. B-3 is assumed to be contaminated above Tier 2 action levels. The remaining A-, B- and C-series ponds are assumed to require no additional action.

Group NE-2 IHSS 111.4 Trench 7 Remediation

Trench 7 was used to dispose of sanitary wastewater treatment plant sludge. Investigation data indicate the presence of radiological and volatile organic compound contamination above RFCA Tier 1 subsurface soil action levels. The extent of radiological contamination appears to be limited to the trench to a depth of 5 to 8 feet. Trench dimensions are 115 feet long, 15-feet wide, and 10-feet depth. Trench 7 does not impact groundwater but will require a remedial action.

Group NE/NW NE-1407 OU 2 Treatment Facility, NE-1408 OU 2 Test Well, NE-1409 Modular Tanks and 910 Spill, NE-1412 Trench T-12 East Trenches, NE-

1413 Trench T-13 East Trenches, NW-1501 Asbestos Release at PU&D Yard & IHSS 174a.

With the exception of IHSS 174a, this group is expected to be designated NFA. In 1993, the OU 2 surface water treatment facility leaked approximately 50 gallons of water from a secondary containment line, but the water was collected. Potential contaminants of concern were low levels of VOCs and chromium. The OU 2 Test Well, Modular Tanks and 910 Treatment System Spill, and Asbestos Release at PU&D Yard were characterized and closed as NFA sites in 1999. Two of the East Trenches now lie beneath the East Access Road. During road construction in 1968, an unknown amount of trench material was removed, and T-12 (NE-1412) and T-13 (NE-1413) were covered by asphalt. These trenches were originally 10 feet deep with several feet of soil cover and were used for disposal of sanitary wastewater treatment sludge that may have been contaminated with low-levels of uranium and plutonium. Characterization data from these trenches are below action levels. IHSS 174a was characterized in 1997 and one sample was above action levels. This area will require an action.

Group 900-2, IHSS 153 Oil Burn Pit No. 2 and IHSS 154 Pallet Burn Site

These areas are located north of Central Avenue under the southern protected area fence. Drums containing oil contaminated with uranium were burned in two parallel trenches prior to 1965. Material in the drums included coolants, still bottoms, and waste oils from Buildings 444 and 881. Wooden pallets were reported to have been burned at IHSS 154 although no documentation can be found that confirms this. No documentation exists that details the fate of the constituents released to the environment. This area will be characterized after the Protected Area fence is removed. Remediation of this site will depend on the characterization results. However, much of the soils in the area were removed during construction of the Protected Area fence and it is assumed that these sites will be NFA.

Group 900-12 East Trenches Regrading

This group contains the East Disposal Trenches T5 through T-11, excluding Trench T-7 (IHSS 111.4). These trenches contain primarily sewage sludge, and were previously characterized during the OU 2 RCRA Facility Investigation/Remedial Investigations (RFI/RI) investigation and subsequent investigations. These trenches do not require additional characterization or remediation. However, these trenches require regrading and revegetation.

1.1.2.2 GAB3 SW Area Closure Projects

Group SW-1 Ash Pits- IHSSs 133.1, 133.2, 133.3, 133.4; PAC SW-1702

There are six Ash Pits located in the southwest Buffer Zone that were used to dispose of ash from the incinerator that operated from 1952 to 1968. The incinerator was used to burn general site wastes and small quantities of depleted uranium. The Ash Pits are approximately 150 to 200 feet in length, 12 feet wide, 10 feet deep and covered with 3 feet of earth. A sampling program documented approximately 1 to 8 kilograms of depleted uranium per ton of

ash. Contamination included uranium 233, 234, 235, and 238 isotopes, and low-levels of antimony, beryllium, cadmium, copper, molybdenum, mercury, nickel, and silver. Due to the limited mobility of metals and radionuclides in the underlying claystone and siltstone, contamination is assumed to be limited to the waste fill. The scope of this action is to remove the contents of the Ash Pits, but not to remove any underlying soils.

1.1.2.3 GAB4 SE Area Closure Projects

Group 900-11 IHSSs 112 and 155 - 903 Pad and Lip Area, PAC SE-1602, East Firing Range, IHSS 140 Hazardous Disposal Site, IHSS 183 Gas Detox area.

Releases at the 903 Pad and Lip Area are the primary cause of radiological contamination in the soil at RFETS. Drums containing radiologically contaminated oils and VOCs were stored at this location from 1958 to 1967. An estimated 5,000 gallons of contaminated liquid containing approximately 86 grams of plutonium leaked at this location. Some of the radiologically contaminated material was removed, the surrounding area was graded, and an asphalt cap was installed. Contamination also occurs east of the 903 Lip Area in an area known as the Americium Zone. Sampling and analysis results confirm that radiologically contaminated soils remain above RFCA Tier 1 action levels and remedial actions are required in these areas. The remaining scope for this task is to define the extent of contamination associated with the firing range, and identify and perform a remedial action for the contaminated soils. IHSSs 140 and 183 are within IHSS 155 and are expected to require no additional action.

1.1.2.4 GABA Buffer Zone Caps

Group 000-5 Present Landfill

The Present Landfill consists of approximately thirty acres and contains six additional IHSSs and PACs within its boundary, IHSS 114 – Present Landfill, IHSS 203 – Inactive Hazardous Waste Storage Area, IHSS 167.2 and 167.3 Spray Evaporation Areas, PACs NW 1502, 1503, and 1504. The six additional IHSSs and PACs have been proposed as NFA. The Present Landfill was operated as a municipal landfill from 1968 through 1998, is identified as an interim status unit under RCRA and is required to be closed under the provisions of RFCA Attachment 10 because it received hazardous waste. The remedial action for the Present Landfill is to close it by means of an engineered evapotranspiration earthen cap. As required by RCRA, post-closure monitoring and cap maintenance are required.

1.1.2.5 GABB Buffer Zone Miscellaneous Projects

Buffer Zone Groundwater Projects: IA Plume-Industrial Area Groundwater Plume Treatment System Installation

The IA groundwater plume is poorly defined. A remedial action may be required for this plume to meet RFCA surface water standards after Site closure. Data evaluation will be performed to determine the extent and behavior of the plume. If a treatment system is required, it is expected to be a passive or low maintenance collection and treatment system that will provide long-term protection of surface water. While an evaluation of the characterization data, passive/low maintenance treatment technologies will be completed prior to a remedial action, the current assumption is that the system will be similar to the passive collection system with reactive barrier technology installed for the East Trenches Plume. This scope includes evaluation, initial installation, and startup of the system. Long term monitoring, operation, and maintenance of the systems will be required, but is not included in this scope or estimate.

Landfill Caps Monitoring and Maintenance

Three caps are projected to be constructed: at the Solar Evaporation Ponds, at the Original Landfill and at the Present Landfill. All will require monitoring and maintenance to ensure that they are maintained in a stable condition and are remaining effective. Piezometers will be installed during construction to monitor water levels. This scope is to monitor the water levels in the cap areas and cap effectiveness until Site Closure.

Groundwater Plume Collection and Treatment Systems O&M

There are three groundwater collection and treatment systems currently in operation and one more is planned in the future. While these systems are passive and, therefore, low maintenance, there is an ongoing requirement to monitor system performance, perform preventive maintenance, and replace the treatment media every 5 to 10 years, based on the performance monitoring data.

OU 1 CAD/ROD Amendment/French Drain Removal

The 881 Hillside Area is comprised of ten IHSSs. All IHSSs except IHSS 119.1 were accepted as NFAs. A CAD/ROD for source removal at IHSS 119.1 was approved in 1997. Based on additional data, a source removal was not required. The CAD/ROD will be revised to reflect a remedial action of monitoring the existing collection system along with removal of the OU 1 French Drain.

Pond A-5 Indiana Street Dam/Walnut Creek Source Mitigation Measure

At closure, water leaving the Site must consistently meet the thirty-day moving average standard of 0.15 picoCuries per liter (pCi/L) for plutonium and americium. Construction of a new reservoir within the Walnut Creek drainage may be required to ensure that RFETS surface water meets state and federal water-quality requirements. The contaminant source in the Walnut Creek drainage basin is diffuse and a by-product of activities occurring throughout the

history of the Site. If required, the new reservoir will also serve as a detention pond to collect any legacy contaminants migrating through the drainage basin via surface water. As part of this activity, data will be evaluated to determine if a dam is required. If required, a compacted earth dam will be constructed located on Walnut Creek at Indiana Street.

1.1.2.6 GABC Buffer Zone Closure Documents

Interim CAD/ROD

This document will describe soil action levels and the future land use for the Rocky Flats Site. The document will serve as the required 5-year review for existing CAD/RODs, and will also serve to close out the following open OUs:

- OU-5 – Woman Creek Priority Drainage which consists of the Former Incinerator Area, Concrete Wash Pad, Detention Ponds C-1 and C-2, and Surface Disturbance. A Phase I RFI/RI for this OU was conducted in 1995. The Ash Pits are scheduled for an accelerated remedial action, and the other areas have been proposed for NFA.
- OU 6 – Walnut Creek Priority Drainage is comprised of 19 IHSSs along or within the North and South Walnut Creek drainages. A Final Phase I RFI/RI was completed for this OU in 1996 that concluded that OU-6 did not pose a risk and recommended no remedial action be taken. The RFI/RI was never approved by EPA or CDPHE.
- OU-7 – Present Landfill and six associated IHSSs and PACs. The six IHSSs are within the boundary of the landfill and are proposed no further action. The remedial strategy for the Landfill calls for capping as a presumptive remedy and final response.

1.1.3 GAC Industrial Area Closure

Most of the characterization and remediation for release sites in the IA is not completed and will be implemented following development of the IA Strategy. The strategy includes development of a single IA Sampling and Analysis Plan (SAP) and a single IA RFCA Standard Operating Protocol (RSOP). Characterization and remediation will then proceed according to the approved plans, requiring only notification of the regulators with no additional formal approval process. This will allow the work to proceed, as funding is available and the release sites become accessible. Remediation of under building contamination (UBC) and release sites near buildings and structures will be performed in conjunction and coordination with Decontamination and Decommissioning (D&D) so that remediation occurs immediately following building demolition.

1.1.3.1 GAC0 000 Area Closure Projects

Group 000-2 Old Process Waste Lines IHSSs 121, 123.2, 132, 127, 147.1, and 162, PAC 100-602 and Tanks T-29 and T-31

The scope consists of characterization and remediation of the original process waste lines. (OPWL). The OPWL consists of approximately six miles of older process waste lines. Approximately 50% of the process waste lines and most of the tanks were grouped with associated buildings. D&D will be responsible for the lines and tanks within and immediately under the buildings. All of the lines and tanks under the building slabs are considered part of the UBC and will be remediated with the UBC. This scope includes the main lines not associated with any specific building. Characterization is focused on the soil around the tanks and pipes. The observational approach will be used for additional sampling points as part of the same investigation. Remediation consists of removing leaking lines and the soil associated with those releases. It is assumed that for deep contamination where an exposure pathway does not exist, remediation will not be required. Lines not removed during source removal actions will be filled with foam or other appropriate material to prevent the lines from becoming a pathway for contaminant transport.

Group 000-3 Sanitary Sewer and Storm Sewer, PAC 000-500

Group 000-3 consists of the scope to characterize and remediate the sanitary sewer system and the storm drains. Sanitary Sewer lines near or beneath buildings are included in other groupings and only the larger main lines were considered in this estimate. The total length of the sanitary sewer lines requiring investigation and potential remediation is estimated to be 37,000 feet. Of this, it is assumed that only 5% is contaminated. Some structures associated with these systems will need to be removed. Characterization is focused on the soil around the lines. Remediation consists of removing leaking lines and the soil associated with those releases. It is assumed that about 6,155 cubic yards of soil for both systems will have to be excavated and disposed of off-site. It is assumed that thermal desorption will not be required and that any waste will be low-level mixed or low level. It is assumed that the sanitary sewer can be flushed and clean closed by filling the void space with foam. For the Storm Drains it is assumed that both ends of the pipes will be filled with grout to seal off the line.

Group 000-4 New Process Waste Lines PAC 000-504

The new process waste lines (NPWL) group is not an IHSS or a PAC. It overlaps IHSS 121 extensively and is a RCRA Unit. An estimated 6,300 feet of line will require characterization. This does not include lines that overlap with the OPWL. Like the OPWL, characterization is focused on the soil around the tanks and pipes. Remediation consists of removing leaking lines and the soil associated with those releases. It is assumed that 5% of the main lines are associated with contaminated soils. It is assumed that pipelines can be flushed and clean closed by filling the void space with foam.

1.1.3.2 GAC1 100 Area Closure Projects

Group 100-1 UBC-122 and Tank 1

This project includes the UBC for B122, the Medical Facility, and Tank 1 (T1), Underground Stainless Steel Waste Storage Tank. The soil beneath the building is potentially affected by nitrates and trace radionuclides. No characterization has been performed of the soils underlying the building. Tank 1 (T1) is an 800-gallon, stainless steel underground tank removed in January 1984 that held waste streams from B122. The scope of this action is to characterize the soils underlying B122 and the associated tank area, compare the characterization data to site action levels, and perform a source removal action if required.

Group 100-2 UBC-125 Remediation

This project includes the characterization and remediation of UBC for B125, the Standards Laboratory. The building footprint is approximately 17,00 square feet. The scope of this action is to characterize the soils underlying B125, compare the characterization data to site action levels and perform a source removal action.

Group 100-3 B111 Transformer PCB Leak

PAC 100-607, B111 Transformer Polychlorinated Biphenyls (PCB) Leak is located in the basement of B111. This transformer held approximately 500 gallons of cooling oil that contained PCBs. Leaks from this transformer have been documented from 1984 through mid-1986. Samples collected in 1984 indicated that PCB levels in the cooling oil were below the Environmental Protection Agency (EPA) regulatory limit of 50 parts per million. Residual stains on the transformer pad were noted in 1987. No documentation that details the fate of the constituents released to the environment exists. PAC 100-607 will be characterized after B111 is removed. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

Group 100-4 UBC-123, IHSS 148, PACs 100-603 and 100-611

This project includes the B123 UBC, the Health Physics Laboratories, two PACs, and one IHSS. The building footprint is approximately 18,500 square feet. Decontamination and demolition of Buildings 123, 123S, 113 and 114 was completed in 1998, with the B123 slab and foundation left in place. Areas of the slab that could not be decontaminated to unrestricted release were encapsulated with epoxy paint to fix any removable contamination and covered with steel plate. Preliminary soil characterization of the B123 area was conducted as part of the activities. Final characterization must occur to determine whether a remedial action is required. If required, the source removal action will include field implementation, confirmatory sampling, and preparation of a Closeout Report.

Group 100-5 PAC 100-609 - Security Incinerator

PAC 100-609 - Security Incinerator is located south of B121 and was used for incineration of classified documents. Dates of operation are unknown, but the incinerator was operating in 1980 and was still in existence in 1985. No Carbon Required (NCR) type paper containing PCBs was burned and the ash was disposed of at the Present Landfill. Dioxins and furans could have been generated from incineration of this paper. No documentation was found detailing the release of contaminants to the environment. Characterization will occur to determine whether a source removal action is necessary. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

1.1.3.3 GAC3 300 Area Closure Projects

Group 300-1 IHSSs 128, 134 (north), and 171

This project consists of characterization and remediation of three IHSSs: 128-Oil Burn Pit Number 1; 134 (north)-Metal Disposal Site (north); and 171-Fire Department Training Ground. In 1956 at the Oil Burn Pit, an estimated 5 to 10 barrels of depleted uranium contaminated oil were dumped into the south side of a pit located north of B331 and ignited. A direct survey of the soil and oil residues in the pit had alpha readings of up to 750 cpm. The material was left in place and the pit backfilled. Sage Avenue and the Sage Avenue Ditch are now built over the area. IHSS 134 includes two reactive metal disposal sites. At the Metal Disposal Site (north), magnesium, lithium, sodium, and calcium were disposed of by burning in a shallow depression. At the Fire Department Training Ground, diesel fuel mixed with gasoline and possibly waste solvents was burned in metal pans. No sampling or remedial action has taken place. The scope of this action is to characterize the soils of this group, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 300-2 UBC 331 and IHSS 300-134(S) Lithium Metal Destruction Site

B331 houses a vehicle maintenance garage and has a footprint of approximately 20,000 square feet. No characterization has been performed of the soils underlying the building. The Lithium Metal Destruction Site is located adjacent to the north side of B331 and includes a portion of the roof and adjacent parking lot. Lithium destruction took place at this site by placing the lithium on the ground and spraying it with water. The lithium was not radioactively contaminated. No documentation exists that details the fate of the constituents released to the environment. This group will be characterized after B331 is removed. Characterization will occur to determine whether a source removal action is necessary. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

Group 300-3 B371 Plutonium Recovery UBC

B371 Plutonium Recovery is one of five major facilities that make up the Plutonium Recovery and Waste Treatment complex. The building footprint is approximately 116,000 square feet. B371 housed the physical and chemical operations for recovering and refining plutonium metal and americium oxide. Current operations include material storage under an inert atmosphere, drum storage, and analytical and standards laboratories. The soils under B371 have not been characterized, and will be characterized after B371 is removed. The scope of this action is to characterize the soils, compare the characterization data to site action levels, and perform a source removal action.

Group 300-4 B374 Waste Treatment Facility UBC

B374 Waste Treatment Facility is located east of B371 and is one of five major facilities that make up the Plutonium Recovery and Waste Treatment complex. The building footprint is approximately 30,000 square feet. The B374 Waste Treatment Facility was designed to remove radioactive and chemical constituents from aqueous process effluents collected from operations throughout the Site. Processes include acid neutralization, radioactive decontamination, sludge solidification, and evaporation. Effluents are recycled or disposed of. Solid residues are monitored for radioactivity and packaged for offsite disposal. UBC 374 will be characterized after B374 is removed. Remediation of this site will depend on the characterization results, however, it is assumed that this site will require remediation.

Group 300-5 IHSS 206, Inactive Hazardous Waste Tank D-83

A 19,000-gallon, carbon steel tank is located at the northwest corner of B371 near Door 5 and was previously used for hazardous waste storage. Condensate water spilled from the tank when a line from the evaporator to the tank was disconnected. Tritium was found in this condensate water. Characterization will occur to determine whether a source removal action is necessary. Remediation of this site will depend on the characterization results, however, it is assumed that this site will be a NFA site.

Group 300-6 PAC 300-702, Pesticide Shed

The Pesticide Shed is B367 and was used to store and mix large quantities of pesticides and herbicides since 1952. Equipment and containers were cleaned and the water dumped onto the ground outside the building. An unknown number of spills also occurred over the years. In 1988, the unused chemicals were removed and disposed of and the area around the building was cleaned. Soil sampling was scheduled for fall 1988 but no documentation has been found that verifies that it was completed. Characterization will determine whether a source removal action is necessary. Remediation will depend on the characterization results, however, it is assumed that this site will be a NFA site.

1.1.3.4 GAC4 400 Area Closure Projects

Group 400-1 B439 UBC

B439 is located northeast of B440 with a footprint of approximately 5,000 square feet. Activities that were previously housed in B439 included an upholstery shop, Modification Center Machine Shop, Maintenance, Silver Recovery, Gamma Survey Instrumentation Maintenance, Painting, and Electronic Equipment Servicing. Scrap metal, wire, and wood have accumulated in the building but cannot be released due to uranium-238 contamination. It is assumed that this site will require remediation. UBC 439 will be characterized and remediated after B439 is removed.

Group 400-2 B440 UBC

B440 produced metal parts to support research and development operations in B439. Additionally, limited numbers of low-level radioactive waste drums were incidentally stored in and shipped from the building. The Modification Center was previously used to modify railcars, trucks, tractors, and trailers to support the safe and secure transport of nuclear materials within the DOE Complex. Radiological surveys were performed in the building and radioactive contamination levels were below unrestricted release limits. It is assumed that this site will require remediation. UBC 440 will be characterized and remediated after B440 is removed.

Group 400-3 UBCs for B444, B447, Tanks 4, 5, & 6, PACs 400-801 & 400-810, IHSSs 116.1, 116.2, 136.1, 136.2, 157.2, 182, 207 and 208

This project is to characterize and remediate the B444 and B447 UBCs along with other related sites after the 444 Area buildings are removed. The project will characterize soils around and under B444, then contaminated soils will be excavated. The buildings' process waste tanks will be removed during D&D and will require no additional characterization or remediation.

Group 400-4 PACs 400-803 and 400-804

This project includes the characterization and remediation of two PACs: 400-803, Miscellaneous Dumping, B446 Storm Drain; and 400-804, Road North of B460. In 1972, a contractor was found dumping paint, oil, and possible other materials into the storm drain immediately west of B446, which flowed along an open ditch. The contractor was directed to clean up the ditch, however, no documentation exists to verify if it was completed. In addition, the road north of B460 was damaged. Indirect counts up to 500 cpm and smears of up to 104 dpm were observed from the damaged area. The hot spots were covered with asphalt patching material. This action will characterize the soils in this group, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 400-5 IHSS 205, PACs 400-813 and 400-815

This project includes IHSS 205 –B460 Sump 3 and RCRA Unit No. 40.13, a fiberglass tank used as a staging area for acid wastes. In 1989, five to seven gallons of dilute nitric acid, hydrofluoric acid, and ammonia salts were released to a drain connected to an outdoor berm. RCRA Unit No. 40.12 is a regulated process waste collection tank in B460. Solutions containing 19 ppm cadmium and 13 ppm silver leaked under the concrete floor. RCRA Unit No. 40.15, Sump Tank ST-5, a hazardous process waste water collection tank in B460 overflowed into its secondary containment. The liquid waste contained 3 ppm cadmium. Potential under building contamination might exist due to leaks in the secondary containment for the tank. This area will be characterized and, if required, a remediation will be planned based on the characterization results.

Group 400-6 PAC 400-157.2

The Radioactive Site South is approximately 600' x 800', or 480,000 ft² and includes several other IHSSs and UBCs (UBC-439, UBC-440, UBC-444, UBC-460, and UBC-447). The soils surrounding B439, B440, B444, and B447 are known to contain low levels of uranium and chemical contamination. The soils around Buildings 439 and B440 also had possible infiltration of hydraulic oil and carbon tetrachloride. Numerous incidents indicate contamination releases to the area. The principal contaminants are uranium, beryllium, chlorinated hydrocarbon solvents, hydraulic oil, and carbon tetrachloride. It is estimated that an approximately 300,000 ft² area will be characterized and remediated under other IHSSs and UBCs. This leaves a potential area of contamination of 180,000 ft² that will be characterized then remediated.

Group 400-7 B442 UBC and Associated IHSSs

B442 UBC, the Filter Test Facility, and three nearby IHSSs are included in this group: IHSSs 129-Oil Leak, 157.1-Radioactive Site North Area, and 187-Sulfuric Acid Spill. B442 has a footprint of approximately 8,000 square feet and was originally used as a laundry for the garage, general maintenance and B444. The soil beneath the building is potentially affected by both radioactive and chemical contaminants. About 1972, the building was converted to its present use as a filter test facility. The Radioactive Site North Area consists of contamination associated with spills and releases from laundering operations at B442. The contamination may include depleted uranium, enriched uranium, beryllium, and solvents with an estimated area of 200 square feet. The Sulfuric Acid Spill site consists of spills and leaks sulfuric acid which were neutralized with lime. IHSS 129 consists of four, 11 by 20 feet underground oil storage tanks east of B443. The tanks leaked and are associated with spills. Tank 4 was emptied, cleaned and foamed as an accelerated action in 1996. These tanks and associated soils will be removed during D&D. Other soils for this group will be characterized, the characterization data compared to site action levels, and, if necessary, a source removal action will be performed.

Group 400-8 B441 UBC, IHSS 122-Tank 2, and Tank 3

This includes the B441 UBC and nearby IHSS-122, Under Concrete Tanks Area, which includes Tank 2 (T2), Concrete Waste Storage Tank and Tank 3 (T3), Concrete Waste Storage Tank and Steel Waste Storage Tank. The B441 footprint is approximately 17,000 ft². The building was originally used as a laboratory, and was converted in 1966 to an office building. Nitrates, volatiles, PCBs, and radioactive contaminants potentially affect the soil beneath the building. IHSS-122 is about 50' x 25' and consists of two interconnected underground waste storage tanks (T2 and T3) south of B441, and one above-grade tank directly above and considered part of T3. One 1,200-gallon release was documented in 1953. The tanks were abandoned in June 1982 and the underground tanks were decontaminated, filled with gravel, and covered with concrete. A south wing was added to B441, covering T2. Portions of the upper tank walls were removed at that time. The above-grade tank T3 was removed and the underground tank T3 was emptied, cleaned, and filled with polyurethane foam as part of an accelerated action in 1996. The tanks will be removed as part of D&D. The scope of this action is to characterize the soils underlying B441, T2 and T3, compare the characterization data to site action levels, and perform a source removal action if required.

Group 400-10 PAC 400-807, IHSS 161, and IHSS 120.2

The sandblasting area is located southwest of B444. A storage site approximately 200' x 200' is located west of B664 and may contain low-level residual contamination from plutonium and uranium resulting from punctured or leaking drums and boxes of solids and liquid wastes. A 1977 aerial radiometric survey indicated an area of elevated americium and gamma activity concentrations occurred near the northwest corner of B664. Soil was removed from this area in the early 1970s. The Fiberglass Area west of B664 is approximately 50' x 200', or 10,000 ft². These sites will be characterized and the data evaluated to determine if a remedial action is required. At this time, these IHSSs are all expected to be NFA due to the expected residual low-levels of contamination. The sandblasting area may require a remedial action.

1.1.3.5 GAC5 500 Area Closure Projects

Group 500-1 IHSSs 117.1, 186, and 197

The area northeast of B551 was used as a general warehouse storage yard until the early 1970s. Several incidents resulting in numerous releases to the environment are associated with the connected process waste lines south of B374 and associated Valve Vaults 11, 12, and 13. Remedial actions were taken to repair the various leaks and remove contaminated soils. Radiation levels were still above background when cleanup was completed. The 500 Area Scrap Metal Sites contained scrap metal components, mostly from the original plant construction program, which were buried in trenches west of B559. Some of the buried material could possibly be radioactively contaminated. The scope of this action is to characterize the soils of this group, compare the characterization data to site action levels, and, if

necessary, perform a source removal action. Part of this area lies beneath the current Protected Area Fence. Characterization and remediation of the site will occur after removal of this fence.

Group 500-2 IHSS 158- Radioactive Site –B551

North of B551, the loading dock and helium storage area of B553 were used for waste storage. Isolated spots of uranium contamination were found on the dock and in the helium storage area. The contamination spots were cleaned but no further documentation that details the fate of the constituents released to the environment exists. This area will be characterized after B551 is demolished. Remediation of this site will depend on the characterization results, however, it is assumed that this site will be a NFA site.

Group 500-3 UBC-559, UBC-528 IHSS-159, and Associated Tanks

UBCs for B559-Analytical Laboratory and B528-Temporary Waste Holding Building were combined with a nearby IHSS and three tank areas inside these buildings for characterization and remediation. The B559 footprint is approximately 35,000 ft². The original Pyrex process waste lines broke soon after installation. After 4 years, PVC pipe was installed as a replacement. Cores taken beneath the building confirmed some contamination in the soils beneath the building. B528 is south of B559 with a footprint of approximately 745 ft² and was used as a temporary holding point for process wastes. There is a 155' x 30' area on the southeast side of B559 identified as a Radioactive Site. The scope of this action is to characterize the soils for contamination, compare the characterization data to site action levels, and perform a source removal action.

Group 500-4 IHSS 117.2 Middle Site Chemical Storage

This project includes the characterization and remediation of IHSS 117.2, the Middle Site Chemical Storage, a chemical storage area east of B551 where several drums leaked an oily substance, and a 55-gallon drum of aluminum nitrate spilled. Characterization of the area will be followed by a source removal action.

Group 500-5 PAC 500-904

Characterization and remediation of PAC 500-904, Transformer Leak, an area with two transformers, numbers 223-1 and 223-2, located north of B549, which had leaked small amounts of oil prior to 1987. The total investigation area for this group is approximately 360 square feet. The scope of this action is to characterize the soils of this group, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 500-6 PAC 500-906, Asphalt Surface near B559

Approximately 1 gallon of wastewater was spilled at PAC 500-906 Asphalt Surface near B559 in 1993. This water exceeded Segment 5 stream standards for some analytes. The water contained carbon tetrachloride, trichloroethene, and 1,1-dichloroethylene. Oil-dry was used to absorb the water but the asphalt absorbed portions of the release. This area will be characterized with data compared to action levels. However, it is assumed that this site will be a NFA site.

Group 500-7 PAC 500-907, Tanker Truck Release of Hazardous Waste From Tank 231B

During a transfer of sludge from a stationary tank to a truck in 1994, approximately one-half pound of dried sludge was released to the soil, and four gallons of liquid were released to a secondary containment spill basin. The highest detected level of radioactive contamination was 651 dpm. Contaminated soil was containerized and the basin area decontaminated. The area will be characterized. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

1.1.3.6 GAC6 600 Area Closure Projects

Group 600-1 PAC 600-1001 UBCs B662 & B663

This group consists of the area under and around B662 and 663. B662 is 40 ft x 60 ft and B663 is 30 ft x 120 ft for an area of 6,000 ft². These buildings are constructed on slabs and were used for storage of drums containing liquid waste. Numerous incidents of leaking drums and spills have occurred and elevated levels of radionuclides have been detected both on the slab and in cracks in the slab. It is likely that radionuclides are present under the slab as well. It is also possible that volatile organic compounds (VOCs) are present at this PAC since liquid wastes were stored in the drums. There was also a gasoline spill at the site. The scope of this action is to characterize the soils, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 600-2, PAC 400-802 Storage Area, South of B334

The Storage Area, South of B334 was originally a metal or wooden structure built on a concrete slab. By 1955, the building had been removed but the concrete slab was still used for storage. Drums containing depleted uranium in oil leaked onto the slab. The drums were removed and the slab cleaned in 1956 with tetrachloroethene but contamination up to 10,000 dpm remained. The area was then used as equipment storage. By 1957 low-level radioactivity extended to the fuel storage tank located south of B551. This area will be characterized after buildings T452A, T452B, T452F, and T452G are removed. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site. The slab will need to be removed or buried by at least 3 feet of fill prior to Site closure.

Group 600-3 IHSS 120.1 Fiberglassing Area North of B664

This area, where waste packing boxes were fiberglassed, is north of B664. Some polyester resin, epoxy components and solvents may have spilled at this location. In 1977, aerial radiological measurements detected elevated gamma-radiation and americium activities in the vicinity of this site. No documentation has been found that provides an explanation or confirms this data. This area will be characterized after B664 is removed and these results will determine whether a source removal is required. It is assumed that this site will be a NFA site.

Group 600-4 IHSS 160 - B444 Parking Lot

Prior to installation of the parking lot for B444, the area was used to store drummed and boxed wastes prior to off-site disposal, including the waste resulting from the May 1969 fire in B776 and B777. Based on surficial soil sampling, a 50' x 100' area in the northeast corner is contaminated with plutonium. This site will be characterized then remediated based on characterization results.

Group 600-5, PAC 600-1004, Central Avenue Ditch Cleaning Incident

When the Central Avenue Ditch was cleaned out in September 1993, soil and sediment removed from the Ditch was spread into IHSS 152. No radiological contamination was observed in the Central Avenue Ditch soils. However, this area must be characterized, and remediation of this site will depend on the characterization results. It is assumed that this site will be a NFA site.

Group 600-6 PAC 600-1005, Former Pesticide Storage Area

The former pesticide storage area is located several hundred feet north of B850 in what is currently parking lot No. 881. Around 1982, the shed was moved to west and south of B371. Pesticides may have been spilled at the former locations. This area must be characterized, and remediation of this site will depend on the characterization results. It is assumed that this site will be a NFA site.

1.1.3.7 GAC7 700 Area Closure Projects

Group 700-1 PAC 700-1115

Between 10 and 15 gallons of diesel fuel spilled onto the asphalt near the northeast corner of B708 in 1993 while refueling the emergency generator. Fuel has since been noted in the subsurface soils. The scope of this action is to characterize the soils, compare the characterization data to the site action levels, and perform source removal, if necessary.

Group 700-2 UBC-707, UBC-731, Tanks T-11 & T-30

This project includes the B707 UBC, the Main Plutonium Components Production Facility, B731 UBC, the B707 Process Waste Pit, and Tanks T-11 and T-30 in B731. The B707 footprint is approximately 108,000 square feet. The building houses general fabrication and assembly operations for plutonium. During construction, excavation of the area revealed that the process waste drain from B881 was corroded and leaking. The entire footprint of the building is considered contaminated and will require characterization and remediation. B731 is approximately 213 square feet, is located east of B707 and houses the process waste tanks for B707. In 1991, these process waste tanks overflowed and 750 gallons of process waste went into the secondary containment. The possibility exists that the soils near B731 are contaminated. Tanks T-11 and T-30 are located in B731 and will be removed during D&D. The scope of this action is to characterize the soils underlying this group, compare the characterization data to site action levels, and perform a source removal action.

Group 700-3 UBC-776, UBC-777, UBC-778, UBC-701; IHSSs 118.1, 118.2, 131, 144, 150.2 (south), 150.4, 150.7; PACs 700-1100, 700-1116; and Tanks T-9, T-10, and T-18

This group includes the UBCs for the connected Buildings 776, 777, and 778, nearby B701, and numerous nearby or underlying associated IHSSs, PACs and tanks. B776 was used as a plutonium foundry and has a footprint of approximately 72,000 square feet. A fire on May 11, 1969 released plutonium to all of Buildings 776 and 777 and areas of Buildings 771, 778, and 779. In 1964, a glove box explosion resulted in release of plutonium to the building interior and exterior. In 1964, contaminated carbon tetrachloride overflowed from a lathe box into a crack in the floor. In 1989, liquid from process waste tanks was found on the floor and in a bermed area. B777 has a footprint of approximately 74,000 square feet and was used for production of plutonium components until 1969. B778 has a footprint of approximately 33,500 square feet. B701 has a footprint of approximately 5,800 square feet and originally housed a carpentry and paint shop. In 1972, process waste from the laundry waste holding tanks backed up into a toilet and sink in this building. Tanks, process waste lines and utilities within the buildings will be removed during D&D. The scope of this action is to characterize the underlying soils, compare the data to site action levels and perform a source removal.

Group 700-4 UBC-771, UBC-774; IHSSs 124.1, 124.2, 124.3, 125, 126.1, 126.2, 139.2, 146.1, 146.2, 146.3, 146.4, , 46.5, 146.6, 150.1, 150.2 (north), 150.3, 163.1, 163 215; and Tanks T-8, T-12, T-13, T-14, T-15, T-16, T-17, T-36, and T-37

This group includes the UBCs for the connected Buildings 771 and 774 and a large number of nearby/underlying IHSSs, PACs and Tanks. The B771 footprint is approximately 90,000 square feet. This was the original plutonium component production facility. In 1957, the plutonium components production operations were transferred to B776 and 777. The building was used for chemical recovery of plutonium and americium. The B774 footprint is approximately 15,500 square feet and the building was used for the treatment of radioactive aqueous wastes, waste oils, and non-radioactive waste photographic solutions. There were

numerous known or suspected releases, spills, and leaks of radioactive, organic, and inorganic contamination. Tanks, process waste lines and utilities within the building will be removed during D&D. The scope of this action is to characterize the soils underlying this group, compare the characterization data to site action levels, and perform a source removal.

Group 700-5 UBC-770

This project includes characterization and remediation of the UBC for B770, Waste Storage Facility. The building footprint is approximately 3,000 square feet and houses waste storage facilities for radioactive operations. In 1972, a punctured scrap box and drum resulted in up to 200,000 dpm/100 square centimeters in and around the building. After the building and slab are removed by D&D, the soils underlying and around B770 will be characterized, compared to action levels, and a source removal action will be performed if necessary.

Group 700-6 IHSS 137 Cooling Tower Blowdown Buildings 712 and 713 and IHSS 139.1 (S) Caustic/Acid Spills: Hydroxide Tank Area

The Cooling Tower Blowdown Buildings 712 and 713 are associated with B776. A leak from the cooling towers was reported at between 5 and 20 gallons per minute for several months. Additional potential contamination may have occurred from cooling water blowing off the towers onto the surrounding area. The potential contaminant of concern is chromium. An above ground 5,400 gallon potassium hydroxide tank south of B771 has leaked in the past and caustic may have seeped through the soil and infiltrated underneath the building. Contaminated soil was removed in 1989, but there is no documentation of response to earlier leaks. The area will be characterized after Buildings 712, 713, 714, 714A, 702, and 703 are removed. Remediation of this site will depend on the characterization results, however, it is assumed that this site will be a NFA site.

Group 700-7 UBC-779; IHSSs 138, 150.6, 150.8; PAC 700-1105; and Tanks T-19, T-20, T-38

This project includes B779 UBC, the Main Plutonium Components Production Facility; three associated IHSSs; one associated PAC; and three associated tanks. The B779 footprint is approximately 44,000 square feet. The building housed minor production and plutonium recovery operations but was primarily a research and development facility. B779 was erected over one of the original solar evaporation ponds. During excavation in 1962, radioactive readings from 11-150 dpm/l, primarily from uranium, were noted. In 1969, an improperly opened waste drum resulted in the spread of radioactive material throughout the building and adjacent grounds. In addition, 400 gallons of water containing chromium and radionuclides leaked from a broken underground pipeline from the Cooling Tower Blowdown B779. An estimated 1,000 gallons of cooling water also overflowed from B783 cooling tower onto the ground. A small amount of radioactive contamination was spread by a pedestrian to the east and south of the building, but the contaminated soil was removed. Transformers 779-1/779-2

on the northeast side of B779 leaked PCB containing oil and were moved. Various tanks also leaked or overflowed in the building. The scope of this action is to characterize the soils underlying the building and associated IHSSs, PACs and Tanks, compare the characterization data to site action levels, and perform a source removal action. D&D removed all building structures down to the slab. ER will remove the slab and foundation structures to 3 feet below grade.

Group 700-8 IHSS 214-750 Pad Pondcrete and Saltcrete Storage Unit 25

The 750 Pad Pondcrete and Saltcrete Storage Unit is 6 storage tents located east of Building 750. Pondcrete and saltcrete were spilled at the pad on several occasions. Run-off water from the storage area has shown elevated nitrate and gross beta levels. Spilled pondcrete and saltcrete was cleaned from the pad surface and repackaged. No characterization data exists. The area is a RCRA unit and will be characterized after the 750 Pad Tents are removed. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

Group 700-10 PAC 700-1101 - Laundry Tank Overflow

The laundry tank overflow area is located west of B778 in B732. The laundry wastewater tank overflowed into the tank pit and was released to the environment. Because of the nature of building activities, it is probable that this material was low-level waste. The area will be characterized. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

Group 700-11 PAC 700-1108, Bowman's Pond Remediation and IHSS 139.1 (N), Hydroxide Tank Area

Bowman's Pond is a small pond north of B774. Footing drain flows from B771 and 774 both daylight in the general location of the pond. Physical failure of process waste storage tanks south of B774 is a major contributor of chemical and radioactive contamination on the soil around B774 and it was suspected that some minor leakage from these tanks has seeped to the building footing drain tiles. A leaking process waste line located southeast of B774 and a storm drain that daylights on the south side of Buildings 771 and 774 may have also contributed to the contamination. Based on water samples collected from Bowman's Pond, the soil may be contaminated with radionuclides, nitrate/nitrite, sodium hydroxide, and PCBs. Characterization of the pond was completed in FY99 and showed elevated PCB levels. If a remedial action is required, this pond will be remediated as an accelerated action. The Hydroxide Tank Area is grouped with Bowman's Pond and is assumed to be an NFA site.

Group 700-12 PAC 700-1106, Process Waste Spill – Portal 1

Approximately 10 gallons of process waste water spilled from a tank truck on to the street at the entrance to Portal 1 in 1986. It was determined at the time of the incident that there was no radioactivity on the street. No documentation was found that further detailed responses to this occurrence. The area will be characterized after the Protected Area fence is removed. Remediation of this site will depend on the characterization results however, it is assumed that this site will be a NFA site.

1.1.3.8 GAC8 800 Area Closure Projects

Group 800-1 UBC-865, IHSS-1204, IHSS-1212, and Tank T-23

This project includes B865 UBC - Materials Process Building, two nearby IHSSs, and Tank T-23. This building was used for fabrication, processing and testing of metal parts. Depleted uranium and beryllium were processed in this building. The building footprint is approximately 39,000 ft² and overlays IHSS 179, the B865 Drum Storage Area, which is included in the UBC 865 area. The T23 area is the Electronic Beam Furnace Sump in B865 that will be removed during D&D. There have been no documented releases and, based on a visual inspection in November 1986, there was no visual evidence of spills. Due to the use of B865, the soil beneath the building may be potentially affected by volatiles, beryllium, and radioactive wastes. B866 holds five process waste tanks that service B865 and 889. Contamination releases originating from the filling of the tanks have been documented. The scope of this action is to characterize the soils, compare the characterization data to site action levels, and perform a source removal action.

Group 800-2 UBC-881; PAC 800-1205; and Tank T-39

This project includes the B881 UBC - Laboratory and Office Support Operations; one related PAC, 800-1205, B881 East Dock; and Tank T-39. B881 was an enriched uranium component production building until 1969, then it was converted to a non-radioactive metals fabrication facility. In 1984, B881 was converted to various analytical support and administrative functions. B881's footprint is approximately 86,000 square feet and it is believed that there are leaking process waste lines under the building. The B881 East Dock may have been contaminated in 1960, but there is no documentation of what may have caused the contamination. Tank T-39 was four above-ground 250-gallon steel process waste tanks located in Room 114A of B881 that were removed in the mid-1970s. The room will be characterized and decontaminated under the D&D. This scope addresses only the possible UBC. The scope of this action is to characterize the soils, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 800-3 B883 UBC, PACs 800-12200 , 800-1201, Tanks 25 & 26

This project includes the B883 UBC - Roll & Form Building, two nearby PACs, and two Tank Locations, consisting of five tanks inside B883. The building footprint is approximately 51,000 square feet and the building was used for uranium fabrication operations. Beryllium metal was also rolled and machined in this building. In 1989, process wastewater was noted to be overflowing from a tank and some water flowed under the wall. The Radioactive Site South of B883 consists of radioactive contamination of unspecified origin. Studies conducted in 1958 identified contamination, including significant plutonium contamination in the area between Buildings 883 and 881. No documentation of cleanup activities was found. Field surveys conducted during installation of a telephone line in 1978 identified several "hot spots" in the same area. Removal of contaminated soil in two small areas near B883 was completed in April 1981. The tanks are above ground tanks in the basement that will be removed during D&D activities. The scope of this action is to characterize the soils adjacent to and underlying B883, compare the data to site action levels and, if necessary, perform a source removal.

Group 800-4 UBC-886; IHSS 164.2 Radioactive Site 800 Area Site No. 2 B886 Spills; and Tanks T-21, T-22, T-27

This project includes the B886 UBC - Critical Mass Laboratory; one associated IHSS; and three associated tanks. The IHSS is 164.2, the Radioactive Site 800 Area Site No. 2 B886 Spills. The building housed the Critical Mass Laboratory, where criticality experiments were performed, along with offices and a small electronics/machine shop. Enriched uranium solutions, solid enriched uranium, and plutonium metal were used in this building. Tanks, T-21, T-22, and T-27 are located in the basement of B886. The building footprint is approximately 14,000 square feet. The area around the building is a radioactive site, however, there is no documentation of spills.

B828, the B886 Process Waste Pit, contains Tank T-21, an open top 250-gallon concrete sump and T-22, two 250-gallon above-grade steel tanks. T-21 contained incidental overflow from T-22 and groundwater infiltration and was abandoned in 1978. There were no known releases at this location. T-22 contained uranium, plutonium, and fissile uranium waste in the past, but is abandoned. Tank T-27 was a 500-gallon portable steel tank called the Portable Liquid Dumpster that was located on a concrete pad outside of B886 and used to store and transfer process waste. When T-27 was decontaminated and removed, no radioactive contamination was found on the pad. The tanks will be closed and removed by D&D. This action will characterize the soils, compare characterization data to site action levels, and perform a source removal action.

Group 800-5 UBC-887; IHSS 177- B885 Drum and Paint Storage; and Tanks T-24 and T-32

This project includes B887 UBC, the Process and Sanitary Waste Tanks; one nearby IHSS 177, B885 Drum and Paint Storage; and two Tanks T-24 and T-32. B887 houses Tanks T-24

and T-32 process and sanitary waste holding tanks and has a footprint of approximately 350 square feet. In 1989, the process waste tanks overflowed onto the floor. These tanks will be removed with the slab during D&D. B885 Drum and Paint Storage is located south of B881. Paint cans and drums were stored haphazardly and rainwater was allowed to flow through the building. There are records of inadvertent dumping of radioactive contaminated oil sludge into an open top dumpster at B885. It is not clear if there was a release to the environment. Characterization of the UBC-887 or IHSS 177 has not taken place to date. The scope of this action is to characterize the soils underlying B887 and IHSS 177 for contamination, compare the characterization data to site action levels, and, if necessary, perform a source removal action.

Group 800-6 UBC-889; IHSS 164.3 Radioactive Site 800 Area Site #2; and Tanks T-28, T-40

B889 housed decontamination and waste reduction operations for wastes from outside the PA. IHSS 164.3 – Radioactive Site 800 Area Site #2, B889 Storage Pad was a storage pad for uranium contaminated equipment and drums. In 1982, a waste drum containing uranium chips spontaneously ignited. In 1983, the cover over nine uranium contaminated machine tools stored outside blew off. In 1984, a waste drum containing uranium chips caught fire. Tank T-28, located in B889, consists of two open top 1,000-gallon concrete sumps that contained decontamination wastewater. B889 was demolished in 1996 but the tanks remain. Tank T-40 is two 400-gallon underground concrete tanks located in a vault west of B889 and the tanks were abandoned in 1982. The pumps and piping were removed and the tanks were decontaminated and abandoned. The tanks were filled with polyurethane foam in 1996. Stormwater runoff from the area is some of the most actinide-contaminated water on site ranging from 3 pCi/L to 90 pCi/L Pu-239,240. The scope of this action is to D&D the tanks, characterize the soils, compare the data to action levels and perform a source removal and/or stabilize surface contamination.

1.1.3.9 GAC9 900 Area Closure Projects

Group 900-1, UBC 991; IHSSs 173; 184; and PAC 900-1301

B991 was the first building at Rocky Flats. Its primary function was assembly of weapons components, shipping, receiving and storage. Four large underground storage vaults and tunnels connect to the building and comprise the 991 UBC. The vaults and tunnels are B996, B997, B998, and B999. On the south dock of the building, small parts and equipment were routinely washed with solvents and radioactively-contaminated equipment and drums were steam cleaned. An area approximately 50 ft wide along the south side of B991 was used for the storage of radioactively contaminated drums and materials. Volatile organic compounds were previously identified in these areas. Characterization of this area will occur during and immediately follow the D&D activities. The characterization data will be compared to site action levels, and if necessary, a source removal will be performed.

Group 900-3, IHSS 213 904 Pad

The 904 Pad is located west of the 903 Pad and south of Central Avenue. This area is currently used for storage of pondcrete, saltcrete, sewage sludge, and miscellaneous materials in cargo containers inside of tents. Several small spills have occurred but were not reportable quantities. Small amounts of leakage under the berm have been observed and the berms have overflowed with runoff during periods of heavy rainfall. Elevated levels of gross alpha, and beta activity and nitrate have been noted in the runoff. The area will be characterized after the 904 Pad tents are removed. Remediation of this site will depend on the characterization results. It is assumed that this will be an NFA site.

Group 900-Area Group IHSS 175 Contractor Storage Facility, PAC-1308 Gasoline Spill Outside of B980, PAC-1307 Explosive Bonding Pit, PAC-1309 OU 2 Field Treatability Unit Spill, PAC-1311 Septic Tanks East of B991, PAC-1312 OU 2 Water Spill, and PAC-1313 Seep Area Near OU 2

IHSS 175 Contractor Storage Facility is located south of B980 and was used for the storage of 55-gallon drums. Drums generally contained waste oils and thinners. No documentation was found identifying leaks or spills although soil staining was noted. The gasoline spill is located southeast of B980. Approximately 0.7 gallons of gasoline was released on the ground. The contaminated soil was excavated and removed. These areas will be characterized and it is assumed that these sites will be NFA. The Explosive Bonding Pit, Operable Unit (OU) 2 Field Treatability Unit Spill, Septic Tanks East of B991, OU 2 Water Spill, and Seep Area Near OU 2 Influent were previously characterized and submitted to the regulatory agencies as NFA recommendations in 1999.

1.1.3.10 GACA Industrial Area Caps

Group 000-1 Solar Evaporation Ponds

The Solar Evaporation Ponds (SEP) are located in the northeastern quadrant of the Protected Area and were used to evaporate liquid wastes. The process waste lines that discharge into the SEP are considered under this scope of work along with the Swinerton and Walberg (S&W) Contractor Storage Yard and the Triangle Area. Additional characterization is planned after D&D and Resource Conservation and Recovery Act (RCRA) closure of B964. The Triangle Area-IHSS 165 was previously characterized; no further investigations are anticipated and it is assumed that it will be a NFA. The remaining activities are to characterize the process waste lines that discharged to the ponds, and either remove them or close them in place by foaming depending on their contamination levels. After disposition of the process waste lines the Solar Ponds area will be closed in place by backfilling the ponds to grade. The area will then be available for use as a staging area if necessary. The baseline assumption is that an evapo-transpiration cap will be installed later to cover the area. This action will cover the area of PAC

900-1310, a spill of interceptor trench water at the north side of pond 207B North. However, the need for this cap will be evaluated further in the project life.

Group SW-2: IHSSs 115-Original Sanitary Landfill and 196-Water Treatment Plant Backwash Pond

This activity will close the Original Landfill and the overlying Water Treatment Plant Backwash Pond. An estimated 2 million cubic feet of miscellaneous wastes are buried in the landfill including construction-related debris, waste metal, glass, solvents, paints, paint thinners, oil, pesticides, and cleaners. The landfill may also contain beryllium, uranium, lead, and chromium. It was reported that ash containing an estimated 20 kilograms of depleted uranium was placed in the landfill when 60 kilograms of uranium were incinerated and only 40 kilograms were recovered. There is erosion and sloughing on the south side of the landfill closest to Woman Creek. The Water Treatment Plant Backwash Pond is located on top of the landfill and was an evaporation/settling pond for backflushing sand filters from the B124 water treatment facility. The scope of this activity is to compare the characterization data to site action levels, design a cover and buttress wall to prevent erosion and sloughing, perform hot spot removal actions for areas above Tier 1 action levels, construct the cover and buttress wall, and prepare a Closeout Report. The landfill will be closed using an evapo-transpiration cover. Post-closure maintenance will be required, but is not funded in this activity.

1.1.3.11 GACB Industrial Area Miscellaneous Projects

Preliminary Characterization 123 UBC and 886 UBC

This project includes final characterization of the B123 UBC and preliminary characterization of B886 UBC prior to demolition. The investigation is funded by EM50 and is in addition to the baseline scope for Groups 100-4 and 800-4. The purpose of this project is to demonstrate the feasibility of using horizontal drilling techniques with real time monitoring at RFETs and to determine whether UBC exists at these locations.

Industrial Area Strategy and Characterization

The IA Strategy and Characterization project will provide the coordination for characterization of IHSSs, PACs and UBCs in the IA. Specific activities include development of Data Quality Objectives (DQOs), development of the sampling and analysis plan, data validation and data management, quality assurance, yearly IA characterization report, overall schedule and project management coordination, regulatory agency interface, and public meeting support.

Site Water Balance - Hydrologic Basis for Closure

Designing the final Site configuration requires quantifying Site hydrology for present and planned future conditions. A Site Water Balance will be completed with sufficient detail to assist with design of Site closure strategies and long-term natural resources management. Hydrologic

modification of the Site will affect the extent to which present and future D&D and environmental restoration projects must be implemented. The Site Water Balance will evaluate the surface hydrology to develop management options for the final Site configuration, model the Site hydrogeology and impacts to surface water from current and future groundwater fluxes, and evaluate the closure options such as building foundation removal, pond removal or operational changes, wetlands options and final cap/cover configuration.

Miscellaneous Foundation Removal

Current D&D activities will remove structural materials within 3 feet of the existing ground surface, including building slabs and foundations. In the event that D&D of a facility with a high potential for UBC occurs well before scheduled soil remedial actions, ER may specify that building slabs be left in place to provide continued containment on probable contaminated soil. The scope of this activity consists of the removal of foundations not removed during D&D including those for Building 123, Building 779, Building 889 and several small guard shacks. Because all other building foundations that will require removal have not yet been identified, it was assumed that six other foundations for similar size buildings would require removal. It is assumed that all nine building foundations will be removed using one set of planning documents and one procurement action is required, and that the none of the slabs are contaminated.

Land Configuration Design Basis

This activity will develop the data to design the final land surface configuration for RFETS closure based on land use designations and surface water protection established by RFCA. Several ongoing studies and data gathering efforts will contribute to the design criteria for final surface configuration. These include the actinide migration study, the soil erosion study, water balance study, groundwater monitoring and air monitoring. Additional information will also be required and obtained under this activity to support construction of a final land surface configuration that will include final configuration of IA, surrounding areas of the BZ and the drainages. This information will be used for the Interim CAD/ROD.

Regrade and Revegetate

The scope for this activity includes the final re-contouring, regrading and revegetation of the IA, surrounding areas of the BZ and the drainages as required after D&D and ER work is completed. Buildings and infrastructure such as roads, parking lots, stormwater drainage control and wastewater impoundments have altered the topography of the Site. As these structures are removed, the resulting topography will promote erosion and water runoff that will impact earlier remediation actions, natural drainage systems and surface water protection standards on site and at the Site boundary. The regrade and revegetation objective is to develop and implement an engineered final land surface configuration that will be protective of human health and the environment and will meet surface water protection standards consistent with future land use.

Road Removal

This project includes the removal of the site wide asphalt pavements including paved roads and parking areas that would then be disposed as uncontaminated fill. The east and west access roads and north perimeter road will be left to allow access to monitoring locations.

1.2 Boundaries

The ER Action Tracking List (ERATL) contains a complete listing of the IHSSs, PACs, UBCs, and Plumes as well as the current status and assumed actions required. The ERATL is updated, as required, to accurately reflect the status and current plan for addressing each of the release sites.

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

Project interface points are as follows:

- Generally, the ER schedule will be integrated with decommissioning schedules. ER characterization will start during facility deactivation or decommissioning.
- Whenever possible, the subcontractor with primary responsibility for facility demolition will also conduct remediation. Demolition and remediation will proceed as an uninterrupted two-phase operation culminating in closeout of the associated IHSSs, PACs and UBCs.
- Decommissioning will remove all electrical and water utilities associated with the facilities. Underground utilities will be left in a stable condition outside of the facility footprint, and a map maintained annotating the locations and sources of these utilities.
- Decommissioning will remove new process waste lines, tanks and any other lines associated with the process waste transfer system within or as part of the facilities, and will blank off the process waste lines at the facility perimeter. A map will be maintained with the annotated locations and sources of the process lines.
- Decommissioning will remove old process waste lines within or as part of the facilities, and ensure that any remaining lines at the facility perimeter are blocked. A map will be maintained with the annotated locations and sources of the process lines.
- Decommissioning will flush and remove sanitary sewer lines, tanks and equipment associated with facilities to the isolation valve of the main system line. The flushing conducted by Decommissioning will consist of flushing the system with clean water.
- In general, Decommissioning will remove any structural material within 3 feet of the existing ground surface. This will include facility slabs and foundations unless otherwise required by ER based on remediation requirements.
- Decommissioning will remove any structures below 3 feet of the existing ground surface when the structure prevents access to underlying soil that requires remediation, or when the structure cannot be released for unrestricted use. The removal will include the foundation

and at least three feet of the footings/pilings. Any remaining footings/pilings will be removed during ER activities.

- ER will characterize and/or remediate contaminated soil and associated process waste lines beneath slabs.
- ER will remove sidewalls of facilities below the 3-foot mark if the wall exterior is contaminated to the extent that the wall must be removed to meet remediation goals.
- ER will remove slabs that are below the 3-foot mark if necessary to remediate UBC.
- When decommissioning of a facility with a high potential for UBC occurs well before scheduled soil remedial actions, ER may specify that facility slabs be left in place to provide continued containment on probable contaminated soil. This decision will be made on a case-by-case basis and will be documented in writing with concurrence from both groups and will be included in the project administrative record.
- In the event that a schedule gap occurs between the decommissioning and ER phases as described above, the Site’s landlord organization will provide surveillance and maintenance of the facility slab during the interim. The hand-off from decommissioning to the landlord organization will be documented in writing with concurrence by decommissioning, ER and the landlord organization.
- If the dispositioning of a facility involves groundwater intrusion, sampling will be conducted by ER to determine if the groundwater is contaminated. If the groundwater is contaminated, an assessment will be made by ER to determine if the groundwater could impact surface water. If the water is contaminated, but there is no threat to surface water protection standards, the groundwater will be left in the subsurface structure with appropriate controls to protect the health and safety of workers and the public until remediation by ER. If the water is contaminated and is a threat to surface water protection standards, the water will be pumped to a treatment facility until remediated by ER. The following table lists potential conditions and actions with respect to groundwater and surface water actions during decommissioning. Project-specific controls will be detailed in the Demolition Plan and IWCP package for the demolition activity. ER actions, details, and requirements will be detailed in the ER RSOP.

Matrix of Groundwater Actions	
Condition	Action
Groundwater, surface water, utility water or precipitation is collecting in the excavation or work areas during decommissioning, and it must be managed to ensure safe work areas and protection of the environment.	As required, temporarily manage water as per the Incidental Water Program during D&D and/or ER activities.
Prior to decommissioning activities, water is collecting in sumps, vaults, or other below ground structures and pumped to Site treatment facilities.	This water will continue to be collected and treated at Building 374 or other Site facilities as required to protect surface water and to maintain appropriate work environments until D&D is completed and/or until ER work is completed as required.
Prior to decommissioning activities, water is collecting in sumps, vaults, or other below ground structures but is not pumped or treated.	Water will not be collected, removed, or treated unless required to protect surface water quality or workers.

Matrix of Groundwater Actions	
Condition	Action
There are potential surface water impacts from foundation drains	The pathway to surface water from foundation drains will be removed by ER, either through drain removal, grouting or other effective mechanism unless these are disturbed during D&D. In that case, D&D will remove the foundation drains.
Potential future surface water impacts from D&D activities	Pathways to surface water from building D&D activities will be monitored by the Surface Water and Groundwater Monitoring Programs as required in the Integrated Monitoring Plan.

The second major boundary for ER is with the Integrated Monitoring Program (IMP). The IMP was established under RFCA and requires that the Site collect and report data required to ensure the protection of human health and the environment. Under the IMP Plan, the Site conducts regular and periodic monitoring of surface water, groundwater, air and ecological parameters. Monitoring consists of field sampling at specified locations and frequencies, and comparison of sample values to established compliance values. Monitoring data is reported to internal organizations and the regulatory agencies.

The IMP's role is compliance and has two interface points with ER. First, monitoring can indicate potential source locations for contaminants. Once indicated, ER conducts further sampling to confirm the presence or absence of a source. Secondly, the IMP monitors compliance parameters during remediation activities. Exceedances or potential exceedances are reported immediately to the ER project manager who modifies the project to bring it into compliance.

2. Budget

The Environmental Restoration Project Baseline Budget is shown in Table 2 on the following page.

Table 2. Environmental Restoration Project Baseline Budget

Burdened Cost (\$000)

<i>Project/Cost Account</i>		<i>F00</i>								
		<i>Feb-Sep</i>	<i>F01</i>	<i>F02</i>	<i>F03</i>	<i>F04</i>	<i>F05</i>	<i>F06</i>	<i>F07</i>	<i>Total</i>
G	Remediation Project									
	GA ER									
	GAA Project Management	326	947	972	1,079	929	1,281	1,531	306	7,372
	GAB Buffer Zone	1,233	1,509	2,618	12,298	29,818	21,530	755	293	70,054
	GAC Industrial Zone	1,942	4,725	13,007	35,728	33,483	80,926	38,288	5,696	213,795
	Project G Totals:	3,501	7,181	16,598	49,106	64,229	103,738	40,574	6,295	291,221

Thursday, June 22, 2000

rev. 2

Source: Cost Account Flash Price Spread Report, Kaiser-Hill P&I Reporting System (rpt_fps_ca, Project: BaslDevl_0622a)

FY00 Actuals from P&I Reporting System, FY00 May Database 6/28/00

3. Schedule

A summary of the Environmental Restoration Project Baseline Schedule is shown in Figure 2 on the following page.

Activity ID	Activity Description	Orig Dur	Baseline Start	Baseline Finish	FY00		FY01		FY02		FY03		FY04		FY05		FY06		FY07				
					03	04	01	02	03	04	01	02	03	04	01	02	03	04	01	02	03	04	01
1 Rocky Flats Closure Project																							
1.G Remediation Project																							
1.GA ER																							
+ 1.G.A.A Project Management																							
		1,488	22MAY00	04DEC06	[Gantt bar spanning FY00 Q3-Q4, FY01 Q1-Q4, FY02 Q1-Q4, FY03 Q1-Q4, FY04 Q1-Q4, FY05 Q1-Q4, FY06 Q1-Q4, FY07 Q1-Q4]																		
+ 1.G.A.B Buffer Zone																							
		2,382	22MAY00	28NOV06	[Gantt bar spanning FY00 Q3-Q4, FY01 Q1-Q4, FY02 Q1-Q4, FY03 Q1-Q4, FY04 Q1-Q4, FY05 Q1-Q4, FY06 Q1-Q4, FY07 Q1-Q4]																		
+ 1.G.A.C Industrial Zone																							
		2,398	22MAY00	14DEC06	[Gantt bar spanning FY00 Q3-Q4, FY01 Q1-Q4, FY02 Q1-Q4, FY03 Q1-Q4, FY04 Q1-Q4, FY05 Q1-Q4, FY06 Q1-Q4, FY07 Q1-Q4]																		

Start Date: 01FEB99 Finish Date: 14DEC06 Data Date: 22MAY00 Run Date: 22JUN00 17:07	CPBB	ROCKY FLATS CLOSURE PROJECT BASELINE Cost Account Summary	Sheet 1 of 1 	
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Figure 2: Environmental Restoration Project Baseline Schedule

4. Assumptions

Following are the technical assumptions used to develop the baseline.

4.1 Overall Assumptions

The Site will maintain compliance with applicable laws, regulations, and legally binding agreements in force at the time of the Kaiser-Hill/DOE contract.

All IHSSs will be remediated or dispositioned as per the Rocky Flats Cleanup Agreement (RFCA), amended as of 10/01/99. The Site will comply with negotiated RFCA milestones.

Contamination sites were grouped together for characterization and remediation to the extent practical to maximize documentation and operational efficiency.

ER soil action levels will conform to those in the 10/01/99 revision of RFCA.

Both the Buffer Zone and Industrial Area will be remediated to Tier 1 action levels. All remedial actions will be performed as accelerated actions (including caps).

Actions will not be required for contamination above Tier 1 if there is no exposure pathway. Deep Under Building Contamination and portions of the OPWL, etc that do not have the potential to impact surface water will not be remediated.

Remediation projects will return all soils with radioactivity less than the Tier 1 levels, as defined in RFCA, Attachment 5, to the remediation site.

Engineered caps are an integral part of the Site's environmental closure strategy, and the regulatory agencies will agree to the use of evapo-transpiration caps.

The designated land use for the Industrial Area will be limited industrial use and open space. The designated land use for the Buffer Zone will be open space.

Site water treatment facilities will remain functional during the timeframe when water generated by ER projects will require treatment. These costs are not included in the ER baseline.

Remediation wastes will be removed from the project sites except for those that can be left in place, recycled, or used as fill materials. Road materials and uncontaminated foundation slabs will be used as fill for deep basements.

Waste treatment, transportation and disposal costs are not included in the ER baseline, but are included in the Material Stewardship baseline.

Monitoring costs for surface water and groundwater are not included in the project baseline.

Building foundations, utilities, other remaining structures, paved roads and/or parking lots will be removed or covered by a minimum of three feet of fill after final grade.

Surface water onsite will meet health-based standards based on open space use calculated using methodology and toxicity assumptions utilized for the July 19, 1996 surface water action level (in RFCA).

Water leaving the site in Woman and Walnut Creeks will meet the water quality standards established as of 10/01/99 by the Colorado Water Quality Control Commission.

The NFA decision process and documentation will follow guidance in Attachment 6 of RFCA.

Remedial actions and no further action decisions in the ER baseline were scoped and developed using available information. When additional data are obtained, it is anticipated that some of these decisions will also change.

Contract and baseline estimates of waste volumes from ER projects are based on available historical records and data. These estimates will change as more data are gathered.

The east and west access roads and north perimeter road will be left after site closure to allow access to monitoring locations.

4.2 Project Specific Assumptions

The 903 Pad will be remediated to Tier 1 levels. Enhancements of the South Interceptor Ditch will allow the site to meet health-based standards based on open space use calculated using methodology and toxicity assumptions utilized for the July 19, 1996 surface water action level (in RFCA).

The Present Landfill and Original Landfill caps will be evapo-transpiration caps. The Present Landfill cap will be minimized and will not cover the Landfill Pond area.

The Solar Ponds area will be scoped to first be flattened for use as a staging area, then capped later if necessary with an evapo-transpiration cap.

The present dams will remain past site closure, no new wetlands will be constructed or acquired. The dams will be converted from an actively managed system to a flow-through system.

Contaminated sediments will be removed from Ponds B-1, B-2 and B-3 to meet surface water standards.

The treatment system for the Industrial Area Plume will be similar to that for the East Trenches Plume.

The final site configuration will not match the original land surface. Rather, the surface configuration will be engineered to meet the esthetics, surface water protection standards, and exposure values consistent with open space land use. Fence posts, sign posts and utility poles are not considered structures. These will be cut off at or below ground level and the remaining portions will not be removed or covered with 3 feet of fill unless necessary for other reasons.

4.3 Industrial Area Assumptions

One overall sampling plan will be developed for IA characterization. Sampling, health and safety, and QA plans will be addenda to the IA Sampling and Analysis Plan and will be developed as needed for specific projects.

DQOs will be developed and approved before the sampling plan is developed.

Characterization of and remedial planning for UBCs, PACs and IHSSs beneath or near structures will be performed during the last year of D&D of the facility.

OPWL areas beneath buildings will be characterized as part of the UBC characterization. There will be areas of OPWL that are not characterized.

5. Project Organization

Figure 3 presents the organization chart for the Environmental Restoration Program as a part of the Remediation, Industrial and Site Services Project.

Remediation, Industrial and Site Services Organization Chart

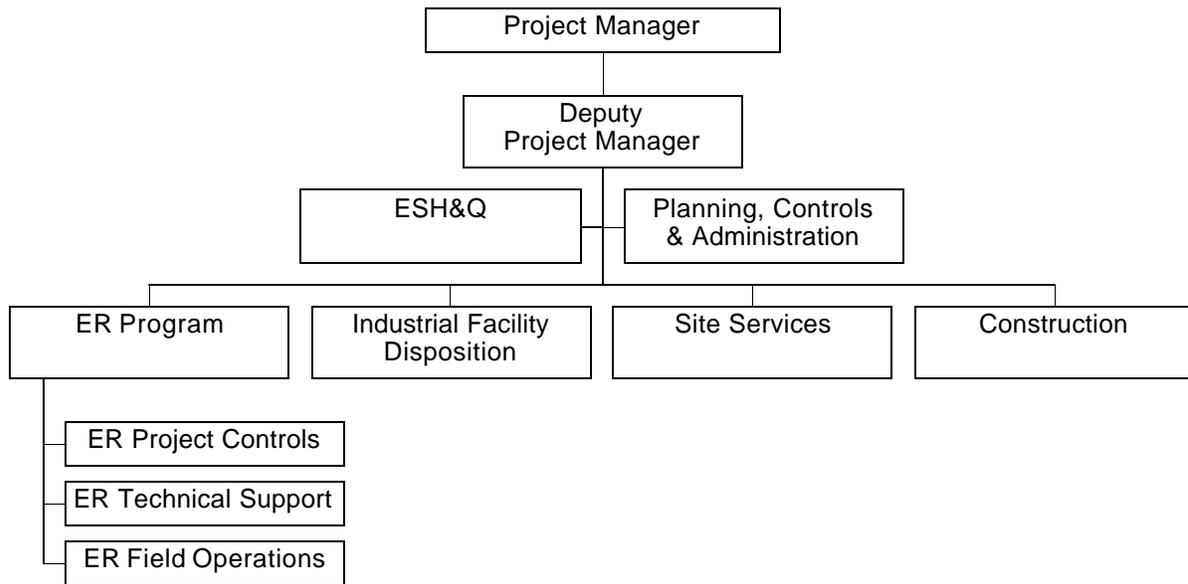


Figure 3: Organization Chart for RISS Closure Project