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Los Alamos National Laboratory

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Environmental Restoration
Environmental Restoration Project
MS M992
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505-667-0808/FAX 505-665-4747

Date: May 23, 1996
Refer to: EM/ER:96-294

Mr. Ted Taylor
Los Alamos Area Office
US Department of Energy, MS A316
Los Alamos, NM 87544

SUBJECT: INTERIM ACTION PLAN FOR ACTIVITIES AT TECHNICAL AREA (TA) 18, POTENTIAL RELEASE SITES (PRSs) 18-003(a-d, g)

Dear Ted:

Enclosed for your records please find a copy of the Interim Action Plan for activities in TA-18, PRSs 18-003(a-d, g). This activity is planned for completion in Fiscal Year 1996. Informational copies of this plan are being distributed to the regulators.

If you have any questions, please call Gene Gould at (505) 667-0402 or Everett Trollinger at (505) 667-5801. Thank you for your cooperation in this matter.

Sincerely,

Jorg Jansen
Program Manager

JJ/bp

Enclosure: Interim Action Plan for TA-18, PRSs 18-003(a-d, g)

1497

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Interim Action Plan for

Potential Release Sites 18-003(a-d, g)

Field Unit 2

Environmental Restoration Project

May 1996

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY

5/23/96

LA-CP- 03-0092

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Title:	Interim Action Plan for Potential Release Sites 18-003(a-d, g)
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Submitted to:	New Mexico Environment Department

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Form 1756c (10/98)

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1.0 Rationale and Objective of Interim Action

The proposed interim action (IA) is a best management practice (BMP) that includes removal of the source of contamination to prevent further discharge to the environment or sanitary sewer. One industrial waste collection tank [PRS 18-003(a)] and four septic tanks [PRSs 18-003(b, c, d, and g)] at technical area (TA) 18 will be pumped free of sludge and liquid and will be decontaminated. The wastes, expected to be RCRA mixed waste and nonhazardous radioactive waste, will be managed appropriately.

In the RFI Report (Environmental Restoration Project 1995, 1283), these sites were proposed for an expedited cleanup. This interim action is consistent with, and contributes to, the final remedy for these sites.

1.1 Release Potential/Health and Environmental Risks

Floor drains in the TA-18 facilities, which formerly drained to the septic tanks, have been sealed. The sinks, showers, and sanitary facilities, however, are still physically connected to the septic tanks and their associated drainfields. Currently, the restrooms have been locked and the water service has been shut off. However, there is a continuing potential for release of hazardous constituents in the tanks. Removal of the contents will eliminate the potential for discharge of RCRA contaminants to the environment.

The integrity of the tanks themselves is apparently good and is sufficient to maintain tank water levels during the interval between sampling events. Nevertheless, the release of presently contained effluent, now known to contain radioactive or mixed waste, could result in increased health and environmental risks. PRS 18-003(g) contains trace quantities of RCRA-regulated constituents. Although this PRS does not discharge to the environment via a drainfield, the PRS is included in this IA because its discharge is routed via the site sanitary sewer system to the TA-46 Sanitary Wastewater System Consolidation (SWSC) treatment plant.

This cleanup is an IA only. It is not a final solution for potential soil and/or groundwater contamination at the septic systems. Further issues need to be resolved, including possible plugging of the waste lines, removal or backfilling of the tanks, and the relationship between the drainfields and the shallow alluvial aquifer at the site.

1.2 Regulatory Drivers

This IA is being conducted in compliance with the corrective action program as required by the Hazardous and Solid Waste Amendments (HSWA) module of the LANL RCRA permit. All of the PRSs included in this IA are listed in the permit.

1.3 Impact on Regulatory Compliance, Cost, and Schedule

This IA will not adversely impact regulatory compliance at the site. Instead, it will enhance compliance by removing the source of contamination to prevent further release. This IA is included in the 1996 baseline and schedule.

2.0 Site Description and Characterization Data

A description of the site location, environmental setting, history, geology, and the PRSs are included in the OU 1093 work plan (LANL 1993, 1085). The 1995 RFI report for OU 1093 (Environmental Restoration Project 1995, 1283) includes the results of the sampling conducted during the site investigation. Because the RFI report and its addendum discuss in detail the chemicals of potential

concern (COPCs) and the degree of risk to human health and the environment regarding contamination found at these PRSs, only a synopsis is presented in this IA plan. See Figure 2-1 for PRS locations.

2.1 Site Description and Proximity to Stream Channels/Aquifers

TA-18 is located in Pajarito Canyon and its tributary, Three Mile Canyon, which joins Pajarito Canyon at the southwest corner of TA-18 (Figure 2-1). Small intermittent creeks in each canyon join at TA-18 and flow eastward down the length of Pajarito Canyon, through White Rock to the Rio Grande. Seasonal flow in the creeks is maintained by springs in Three Mile Canyon and by perched groundwater in the shallow alluvial aquifer found in both canyons. The main source of water is runoff from upstream and from local summer thunderstorms. The Y-shaped site consists of a main complex of buildings and three outlying nuclear criticality facilities, one to the northwest in Pajarito Canyon, another in Three Mile Canyon, and a third southeast of the main complex. Each facility has a septic tank and associated drainfield. The tanks have not been used for several years. The drainfields are within a few tens of yards of the creeks. Depth to groundwater is generally several feet below the clay tile pipes of the drainfields.

2.2 Operational/Contamination History

PRS 18-003(a) is a concrete pit containing a removable steel catch tank. It has been used since 1947 to collect industrial wastewater from Building TA-18-23, a critical assembly building in the northwest part of TA-18. Solvents were used in the building, and uranium and plutonium are currently used in small fission experiments. Historically, the catch tank was emptied periodically. Any overflow from the catch tank would, however, enter the building's sanitary sewer line downstream from the septic tank. Because such discharge would reach the drainfield, water service to the building has been shut off and the catch tank's overflow line has been plugged. However, the concrete pit is open at the bottom, leaving a pathway to the soil for any leaks or spills from the tank.

PRS 18-003(b) is an abandoned sanitary septic system, placed in service in 1947, that serves a restroom in Building TA-18-23. The PRS consists of sewer lines, a septic tank, and a drainfield. Although water service to the building has been shut off and the doors to the restroom have been locked, the sewer lines have not been plugged. Solvents and beryllium were used in the building, and uranium and plutonium are currently used in small fission experiments.

PRS 18-003(c) is an abandoned sanitary septic system, placed in service in 1952, that serves a restroom in Building TA-18-32, the critical assembly building in the southwest part of TA-18. The PRS consists of sewer lines, a septic tank, a drainfield, and an outfall at the creek flowing from Three Mile Canyon. Although water service to the building has been shut off and the doors to the restroom locked, the sewer lines have not been plugged. Solvents and beryllium were used in the building, and uranium and plutonium are currently used in small fission experiments.

PRS 18-003(d) is an abandoned sanitary septic system, placed in service in 1960, that serves the restroom in Building TA-18-116. This PRS consists of sewer lines, a septic tank, and a drainfield. Although all sanitary facilities have been removed from Building TA-18-116, the sewer lines have not been plugged. Solvents and beryllium were used in the building, and uranium and plutonium are currently used in small fission experiments.

PRS 18-003(g) is a concrete septic tank that dates from 1943. This PRS serves the remainder of Building TA-18-1. Originally this PRS was a shop/lab/office with a restroom and a photolab. The building was demolished in 1968, except for the high bay, which is currently used as a work area for mechanical assembly. Inflow to the septic tank is only from the high bay's restroom, added in 1968. The tank has always functioned as a settling pit, originally with an outfall near the creek in Pajarito Canyon and later possibly connected to PRS 18-003(e) (septic tank and drainfield). When the septic tank associated with PRS 18-003(e) was abandoned in 1969, its input lines and the line from PRS 18-003(g) were connected to the site sewer system that routed effluent eastward to sanitary sewage lagoons in Pajarito Canyon.

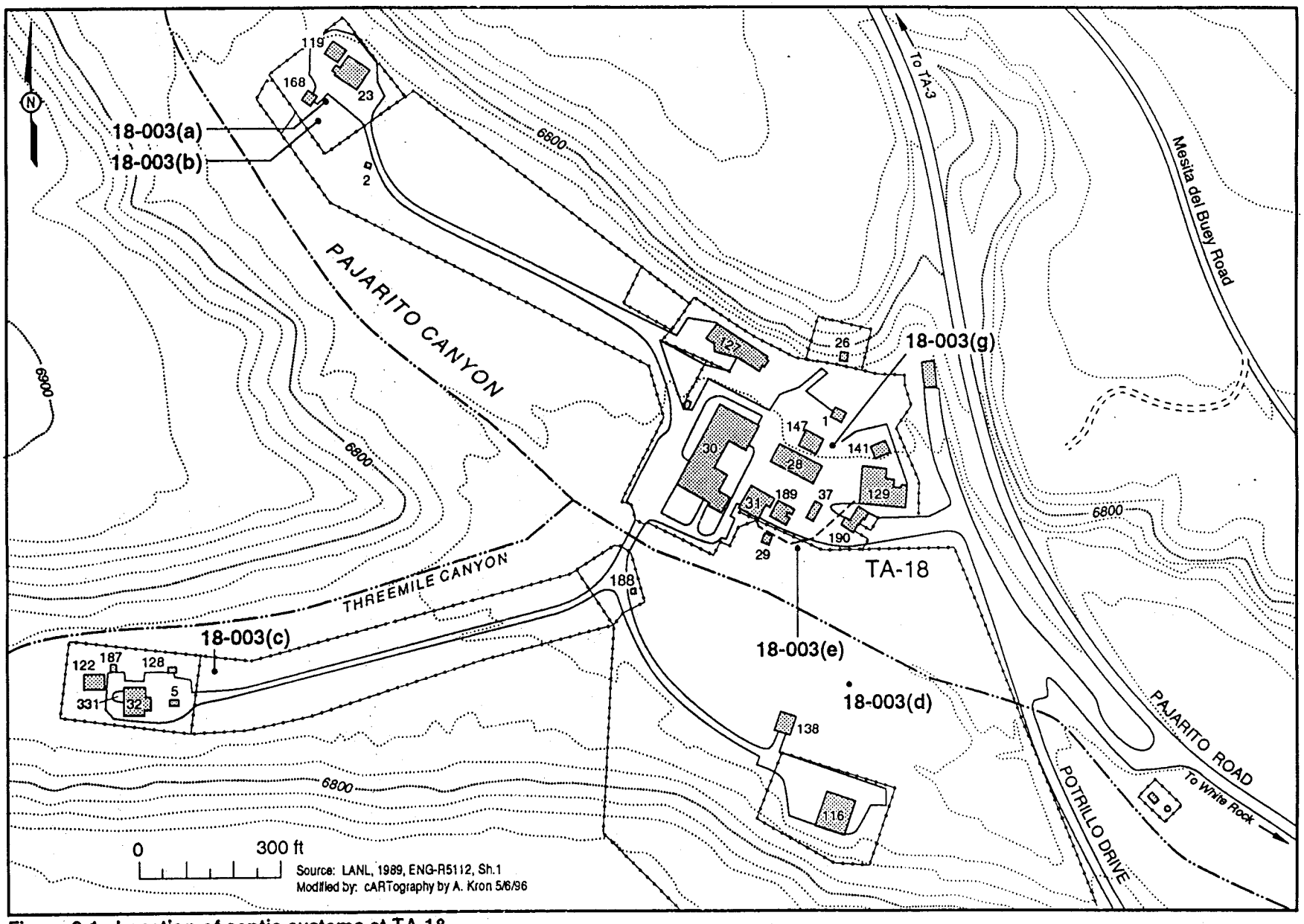

Figure 2-1. Location of septic systems at TA-18.

This site-wide system is now connected to the TA-46 treatment plant. The septic tank remains full to the outlet pipe and contains about 550 gallons of sewage.

2.3 RFI Information/Other Decision Data

Sampling of the liquid and sludge contents of the five tanks was first conducted during the 1993 site characterization. Results of the sampling are presented in the RFI report and its addendum. Because of preliminary indications of mixed waste, confirmatory sampling and more extensive analyses were done in 1996 to further characterize the waste in order to meet the stringent waste acceptance criteria of the treatment, storage, and disposal facility (TSDF) of Envirocare of Utah, Inc. The 1996 waste characterization data are summarized in Appendix A.

3.0 Interim Action

The field activities associated with this IA include the following:

- Setting up a RCRA less-than-90-day storage area.
- Setting up spill control measures.
- Removal, containerization, and stabilization of tank contents.
- Pressure-rinse of the tank interiors.

Liquids from the decontamination of the tank interiors and field equipment will be segregated and containerized. In-field stabilization of the tank liquids and the decontamination liquids will occur if these liquids are not accepted by the TA-50 Radioactive Liquid Waste Treatment Facility.

The outside surface of the catch tank at PRS 18-003(a) will be swiped to determine if alpha contamination is present, indicating that an overflow may have occurred. In addition, the gravel bottom of the pit will be sampled for contamination.

4.0 Monitoring and Confirmatory Activities

Not applicable

5.0 Maintenance and Inspection

Not applicable

6.0 Waste Management

Wastes generated at the five PRSs will be managed according to LANL-ER-AP-05.3, Management of Environmental Restoration Waste (or its replacement SOPs, due in May 1996) and LANL-ER-SOP-10.07, Field Monitoring for Surface and Volume Radioactivity Levels (LANL, 0875).

6.1 Waste Volumes and Characteristics

Based on depth measurements in the five tanks, the quantities (in gallons) and types of wastes that will be generated by this IA are shown in Table 6-1. The volume of personal protective equipment (PPE) and sampling/waste management equipment, which is estimated to be less than two 55-gallon drums, is not shown.

TABLE 6-1
WASTE VOLUMES GENERATED BY INTERIM ACTION

PRS Number	Liquid Waste (gal)	Returned Decon Liquid (gal)	Sludge Waste (gal)	Decon Liquid (gal)	Treatability Study Waste (gal)
18-003(a)	24	2	4	110[1]	2
18-003(b)	213	2	23	200[2]	2
18-003(c)	208	2	25	200	
18-003(d)	188	2	8	200	
18-003(g)	700	2	1	200	

[1]Triple rinse of PRS 18-003(a) at 30 gal/rinse plus decon of PPE and pump equipment at 20 gallons.

[2]Triple rinse of PRSs 18-003(a-d and g) at 60 gal/rinse plus decon of PPE and sampling equipment at 20 gal/tank.

6.2 Mixed Waste Treatment and Disposal

Table 6-2 shows the proposed disposition of the various waste types generated. Liquids, sludges, and slurries sent offsite for disposal will be stabilized before shipment. All waste will be characterized in accordance with an approved Waste Characterization Strategy Form.

Analytical results indicate that the liquid portion of PRS 18-003(c) is nonhazardous, radioactive waste. All other tank wastes (liquids and sludge) contain RCRA-regulated constituents. Only the liquid and sludge portions of the waste from PRS 18-003 and the sludge portion of the waste from PRS 18-003(b) will require treatment to meet the RCRA Land Disposal Restriction (LDR) treatment standards. As discussed below, the liquid portions of PRSs 18-003(b, c, and d) may be disposed of as nonhazardous, radioactive waste.

Tank Contents

Because of the presence of F-listed constituents, the liquids from PRSs 18-003(b, c, and d) would normally be classified as mixed waste. Under certain conditions, however, wastewater containing specified F-listed constituents are not defined as hazardous waste. According to 40 CFR 261.3(a)(2)(iv)(A) and (B), this exclusion applies (1) if the generator can demonstrate that the mixture consists of a wastewater the discharge of which is subject to regulation under the Clean Water Act and (2) maximum concentrations of the F-listed constituents (measured at the headworks of the wastewater treatment facility) are adhered to. A determination by ESH-19 regarding the use of this exclusion is pending. If it is determined that this exclusion cannot be used, these liquids will be stabilized and disposed of at Envirocare. If it is determined that this exclusion can be used, the liquids will be pumped into a pump truck using a 2-inch peristaltic pumping device. While the liquids are pumped, care will be taken to prevent disturbing the sludge layer, and pumping will cease if the sludge layer is disturbed. If

TABLE 6-2
PROPOSED DISPOSAL STRATEGY FOR
WASTE TYPES GENERATED BY INTERIM ACTION

PRS Number	Matrix	Type	Volume (gal)	RCRA Treatment	Disposal
18-003(a)	Liquid[1]	Nonhazardous, Radioactive[2]	80	None	TA-50 RLWTF
18-003(a)	Solid	Mixed	50	Onsite	Envirocare
18-003(b)	Liquid	Nonhazardous, radioactive[2]	302	None	TA-50 RLWTF
18-003(b)	Solid	Mixed	171	Onsite	Envirocare
18-003(c)	Liquid	Nonhazardous, radioactive[2]	298	None	TA-50 RLWTF
18-003(c)	Solid	Mixed	137	None	Envirocare
18-003(d)	Liquid	Nonhazardous, radioactive[2]	283	None	TA-50 RLWTF
18-003(d)	Solid	Mixed	115	None	Envirocare
18-003(g)	Solid[3]	Mixed	903	None	Envirocare
PPE	Solid	Mixed	110	None	Envirocare

[1]Tank and sampling/waste management equipment decontamination fluids only.

[2]Waste classification is based upon the final disposition of the waste. Before discharge at the headworks of the TA-50 RLWTF, these liquids will be managed as mixed waste.

[3]Includes solidified liquids, sludges, and decontamination liquids from PRS 18-003(g).

required by TA-50, the liquids will be filtered. The liquids will be transported to the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) and disposed of as nonhazardous, radioactive waste. The sludge portion of the waste from PRSs 18-003(c and d) and both the liquid and sludge portions of the waste from PRS 18-003(g) will be pumped into DOT-certified containers and will be segregated by PRS. These wastes will be stabilized and disposed of as mixed waste at Envirocare.

The liquid and sludge portions of the waste from PRS 18-003(a) and the sludge portion of the waste from PRS 18-003(b) will require treatment to meet the LDR standards. These wastes will be pumped into DOT-certified 55-gallon drums and segregated by PRS to be treated to meet the LDR treatment standards. After treatment, these wastes will be analyzed and disposed of as mixed waste at Envirocare.

Decontamination Liquids

After the waste is removed, the catch basin and septic tanks will be decontaminated by high pressure rinsing (three rinses). The first rinse will be added to the sludge that was removed from that PRS. These wastes will be treated and/or stabilized along with the sludges, as described previously.

Pending a final determination regarding the use of the aforementioned RCRA wastewater exemption, the second and third rinses, as well as the liquids used to decontaminate the PPE and sampling/waste management equipment, will be disposed of as either nonhazardous, radioactive waste at the TA-50 RLWTF or stabilized and sent to Envirocare for disposal as mixed waste. More than three rinses may be necessary to achieve effective decontamination.

PPE and Sampling/Waste Management Equipment

PPE and sampling/waste management equipment will be managed in accordance with an approved Waste Characterization Strategy Form. Efforts will be made during waste removal and tank decontamination to minimize the generation of radioactive, hazardous, or mixed waste. These items will be decontaminated after use and screened for radioactivity. If the items cannot be completely decontaminated, they will be managed as either radioactive or RCRA mixed waste.

Onsite Treatment

In-drum organic solidification is proposed for the liquid and sludge portions of waste from PRS 18-003(a) and for the sludge portion of the waste from PRS 18-003(b). (Waste volumes to be generated are too small to be treated by Envirocare.) Several polymers capable of chemically and/or physically binding the organic constituents known to be present are available commercially. Either onsite tests using surrogate waste or treatability studies conducted at an offsite commercial facility will determine the appropriate ratio of wastes to solidifying agent(s). Results of this testing will be used to complete the waste analysis plan that will be submitted to the New Mexico Environment Department (NMED) in accordance with 20 NMAC 4.1, Section 40 CFR 268.7(a)(4). Wastes generated from the onsite tests or treatability study will be added to the waste from PRSs 18-003(a and b) as appropriate.

Contractual arrangements with Envirocare are being done via an existing contract for waste disposal with DOE/Oak Ridge National Laboratory or with a new one being developed by the DOE Albuquerque Operations Office. A DOE Exemption Package is being prepared for offsite shipment of low-level mixed waste. When completed, this exemption package will be provided to the DOE Los Alamos Area Office for their review and approval.

7.0 Schedule and Cost

7.1 Estimated Interim Action Costs

Waste removal, tank decontamination, waste containerization and storage, onsite treatment, post-treatment waste characterization, waste shipment, and disposal will involve LANL groups and offsite contractors with whom negotiations have not yet been completed. Costs are, therefore, only estimates (see Table 7-1).

TABLE 7-1
ESTIMATED COST FOR TANK
DECONTAMINATION AND WASTE MANAGEMENT

Activity	Estimated Cost
Waste Treatment	$ 6,000
Waste Disposal	$ 64,000
Sample Analysis	$ 6,000
Equipment and Materials	$ 11,500
Waste Transportation	$ 3,000
Personnel	$ 38,500
Total	$129,000

7.2 Interim Action Schedule

All of the PRSs are located within secured areas at TA-18. Waste removal and tank decontamination are scheduled to begin May 15, 1996. The proposed IA schedule may be impacted by on-going facility operations. Wastes requiring treatment to RCRA LDR treatment standards are expected to be successfully completed within 90 calendar days. The time interval from waste generation to offsite shipment is estimated at 76 days. Timelines showing significant milestones follow.

Generator Treatment Schedule

Day	Milestone
1	Waste Generation
14	Treatability Study Complete
21	Waste Analysis Plan (WAP) Complete
28	WAP Submission to NMED
58	NMED WAP review period complete
65	Waste Treatment Complete
75	Verification Analysis Received
76	LANL Waste Profile/Disposal Request Submission
85	Waste Transported to TA-54

Waste Disposal Schedule

Day	Milestone
1	LANL Waste Profile Forms Approved
10	Envirocare Waste Profile Form Submission
15	Waste Generation Complete
45	Receive Envirocare Waste Acceptance Authorization
48	Preshipment Sample Submission
60	Receive DOE Offsite Disposal Authorization
65	LANL Shipping Manifests Complete
66	Submit 10-Day Notification to Ship
76	Ship Waste

8.0 References

Environmental Restoration Project, October 1995. "RFI Report for Potential Release Sites 18-002(a-c), 18-003(a-h), 18-004(a,b), 18-005(a), 18-008, 18-010(b-f), 18-011, 18-012(a-c), 18-013, 27-002 (located in former Operable Unit 1093), Field Unit 2," Los Alamos National Laboratory Report LA-UR-95-3833, ER ID No. 52183, Los Alamos, New Mexico. (Environmental Restoration Project 1995, 1283)

LANL (Los Alamos National Laboratory). "Los Alamos National Laboratory Environmental Restoration Program Standard Operating Procedures," Los Alamos National Laboratory report, Los Alamos, New Mexico. (LANL, 0875)

LANL (Los Alamos National Laboratory), May 1993. "RFI Work Plan for Operable Unit 1093," Los Alamos National Laboratory Report LA-UR-93-422, Los Alamos, New Mexico. (LANL 1993, 1085)

APPENDIX A

WASTE CHARACTERIZATION DATA

Table A-1
Comparison of Concentrations with Regulatory Levels
for PRS 18-003(a)
March 1996 Sampling

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Regulatory Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Liquid 0218-96-0001 24 gallons	Mixed Waste	NO	Methylene chloride	Total: .0815 mg/L	F001/F002	NA	.089 mg/L	30 mg/kg
		YES	Tetrachloroethylene	Total: .159 mg/L	F001/F002	0.7 mg/L	.056 mg/L	6.0 mg/kg
		YES	Trichloroethylene	Total: 49.2 mg/L	F001/F002	0.5 mg/L	.054 mg/L	6.0 mg/kg
		NO	Total Cresols (m-,p-,o- isomers)	Total: .076 mg/L	F004	200.0 mg/L	.88 mg/L	11.2 mg/kg
		NA	Plutonium-239/240[a]	0.2 pCi/L	NA	NA	NA	NA
		NA	Strontium-90	8.3 pCi/L	NA	NA	NA	NA
		NA	Thorium-228	0.2 pCi/L	NA	NA	NA	NA
		NA	Thorium-230	0.4 pCi/L	NA	NA	NA	NA
		NA	Tritium	360 pCi/L	NA	NA	NA	NA
		NA	Uranium-233/234[a]	2130 pCi/L	NA	NA	NA	NA
		NA	Uranium-235	65.6 pCi/L	NA	NA	NA	NA
		NA	Uranium-238	5.4 pCi/L	NA	NA	NA	NA
Sludge 0218-96-0002 4 gallons	Mixed Waste	NO	Tetrachloroethylene	TCLP: .702 mg/L Total: 2.0[b] mg/L	F001/F002	0.7 mg/L	.056 mg/L	6.0 mg/kg
		YES	Trichloroethylene	TCLP: 221.0 mg/L Total: 409.8[b] mg/L	F001/F002	0.5 mg/L	.054 mg/L	6.0 mg/kg
		NA	Americium-241	3.5 pCi/G	NA	NA	NA	NA
		NA	Cesium-137	1.7 pCi/G	NA	NA	NA	NA

Table A-1 (continued)
PRS 18-003(a)

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Regulatory Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Sludge 0218-96-0002 4 gallons	Mixed Waste	NA	Cobalt-57	2.6 pCi/G	NA	NA	NA	NA
		NA	Cobalt-60	0.6 pCi/G	NA	NA	NA	NA
		NA	Europium-152	0.7 pCi/G	NA	NA	NA	NA
		NA	Lead-212	0.4 pCi/G	NA	NA	NA	NA
		NA	Mercury-203	0.7 pCi/G	NA	NA	NA	NA
		NA	Plutonium-238	0.6 pCi/G	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	9.1 pCi/G	NA	NA	NA	NA
		NA	Potassium-40	1.1 pCi/G	NA	NA	NA	NA
		NA	Protactinium-234M	13.2 pCi/G	NA	NA	NA	NA
		NA	Strontium-90	4.8 pCi/G	NA	NA	NA	NA
		NA	Technicium-99	9.6 pCi/G	NA	NA	NA	NA
		NA	Thallium-208	0.1 pCi/G	NA	NA	NA	NA
		NA	Thorium-228	2.8 pCi/G	NA	NA	NA	NA
		NA	Thorium-230	11 pCi/G	NA	NA	NA	NA
		NA	Thorium-232	0.9 pCi/G	NA	NA	NA	NA
		NA	Uranium-233/234[a]	63,800 pCi/G	NA	NA	NA	NA
		NA	Uranium-235	2,730 pCi/G	NA	NA	NA	NA
		NA	Uranium-238	327 pCi/G	NA	NA	NA	NA

a - The analytical laboratory could not distinguish between these isotopes without knowing the original isotopic ratios. The generator does not know the original isotopic ratios that was in the plutonium and uranium that was used at the site.
b - Data are from the 1993 sampling: the March 1996 sample was inadvertently not analyzed for VOCs.

Table A-2
Comparison of Concentrations with Regulatory Levels
for PRS 18-003(b)
March 1996 Sampling

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Liquid 0218-96-0003 213 gallons	Mixed Waste	NO	Trichloroethylene	Total: .00616 mg/L	F001/F002	0.5 mg/L	.054 mg/L	6.0 mg/kg
		NA	Plutonium-239/240[a]	0.4 pCi/L	NA	NA	NA	NA
		NA	Potassium-40	93.3 pCi/L	NA	NA	NA	NA
		NA	Strontium-90	0.9 pCi/L	NA	NA	NA	NA
		NA	Thorium-230	0.2 pCi/L	NA	NA	NA	NA
		NA	Tritium	280 pCi/L	NA	NA	NA	NA
		NA	Uranium-233/234[a]	1190 pCi/L	NA	NA	NA	NA
		NA	Uranium-235	42.2 pCi/L	NA	NA	NA	NA
		NA	Uranium-238	5.4 pCi/L	NA	NA	NA	NA
Sludge 0218-96-0004 23 gallons	Mixed Waste	NO	Tetrachloroethylene	TCLP: .709 mg/L Total: ND	F001/F002	0.7 mg/L	.056 mg/L	6.0 mg/kg
		YES	Trichloroethylene	TCLP: 166.0 mg/L Total: .0038 mg/kg	F001/F002	0.5 mg/L	.054 mg/L	6.0 mg/kg
		NA	Actinium-228	0.1 pCi/G	NA	NA	NA	NA
		NA	Bismuth-214	0.1 pCi/G	NA	NA	NA	NA
		NA	Cesium-137	0.4 pCi/G	NA	NA	NA	NA
		NA	Cobalt-57	0.05 pCi/G	NA	NA	NA	NA
		NA	Iodine-129	0.2 pCi/G	NA	NA	NA	NA
		NA	Plutonium-238	0.003 pCi/G	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	0.7 pCi/G	NA	NA	NA	NA
		NA	Potassium-40	1.4 pCi/G	NA	NA	NA	NA

Table A-2 (continued)
PRS 18-003(b)

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Sludge 0218-96-0004 23 gallons	Mixed Waste	NA	Radium-226	0.1 pCi/G	NA	NA	NA	NA
		NA	Strontium-90	1.9 pCi/G	NA	NA	NA	NA
		NA	Strontium-95	0.04 pCi/G	NA	NA	NA	NA
		NA	Thallium-208	0.07 pCi/G	NA	NA	NA	NA
		NA	Thorium-228	1.4 pCi/G	NA	NA	NA	NA
		NA	Thorium-230	1.1 pCi/G	NA	NA	NA	NA
		NA	Thorium-232	1.3 pCi/G	NA	NA	NA	NA
		NA	Uranium-233/234[a]	1020 pCi/G	NA	NA	NA	NA
		NA	Uranium-235	43.6 pCi/G	NA	NA	NA	NA
		NA	Uranium-238	8.4 pCi/G	NA	NA	NA	NA

a - The analytical laboratory could not distinguish between these isotopes without knowing the original isotopic ratios. The generator does not know the original isotopic ratios that was in the plutonium and uranium that was used at the site.

Table A-3
Comparison of Concentrations with Regulatory Levels
for PRS 18-003(c)
March 1996 Sampling

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA/TSCA Constituents and Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Liquid 0218-96-0005 208 gallons	Low-Level Radioactive Waste	NA	PCB-1254	Total: .00307 mg/L	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	0.3 pCi/L	NA	NA	NA	NA
		NA	Strontium-90	1.8 pCi/L	NA	NA	NA	NA
		NA	Thorium-230	0.2 pCi/L	NA	NA	NA	NA
		NA	Tritium	289 pCi/L	NA	NA	NA	NA
		NA	Uranium-233/234[a]	548 pCi/L	NA	NA	NA	NA
		NA	Uranium-235	15.6 pCi/L	NA	NA	NA	NA
		NA	Uranium-238	5.5 pCi/L	NA	NA	NA	NA
Sludge 0218-96-0006 25 gallons	Mixed Waste	NO	Methylene Chloride	Total: .0018 mg/L	F001/F002	NA	0.089 mg/L	30 mg/kg
		NO	Methyl Ethyl Ketone	TCLP: ND Total: .0053 mg/kg	F005	200.0 mg/L	0.28 mg/L	36 mg/kg
		NA	Actinium-228	0.6 pCi/G	NA	NA	NA	NA
		NA	Americium-241	2.0 pCi/G	NA	NA	NA	NA
		NA	Bismuth-211	0.4 pCi/G	NA	NA	NA	NA
		NA	Bismuth-212	0.5 pCi/G	NA	NA	NA	NA
		NA	Cesium-137	5.8 pCi/G	NA	NA	NA	NA
		NA	Cobalt-57	0.8 pCi/G	NA	NA	NA	NA
		NA	Europium-152	0.3 pCi/G	NA	NA	NA	NA
		NA	Lead-212	0.8 pCi/G	NA	NA	NA	NA
		NA	Lead-214	0.2 pCi/G	NA	NA	NA	NA

Table A-3 (continued)
PRS 18-003(c)

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA/TSCA Constituents and Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Sludge 0218-96-0006 25 gallons	Mixed Waste	NA	Mercury-203	0.2 pCi/G	NA	NA	NA	NA
		NA	Plutonium-238	0.1 pCi/G	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	7.2 pCi/G	NA	NA	NA	NA
		NA	Potassium-40	1.9 pCi/G	NA	NA	NA	NA
		NA	Proactinium-234M	27 pCi/G	NA	NA	NA	NA
		NA	Radium-226	0.2 pCi/G	NA	NA	NA	NA
		NA	Strontium-90	28 pCi/G	NA	NA	NA	NA
		NA	Thallium-208	0.2 pCi/G	NA	NA	NA	NA
		NA	Thorium-228	3.6 pCi/G	NA	NA	NA	NA
		NA	Thorium-230	5.2 pCi/G	NA	NA	NA	NA
		NA	Thorium-232	3.6 pCi/G	NA	NA	NA	NA
		NA	Thorium-234	15.5 pCi/G	NA	NA	NA	NA
		NA	Uranium-233/234[a]	9680 pCi/G	NA	NA	NA	NA
		NA	Uranium-235	259 pCi/G	NA	NA	NA	NA
		NA	Uranium-238	97.9 pCi/G	NA	NA	NA	NA

a - The analytical laboratory could not distinguish between these isotopes without knowing the original isotopic ratios. The generator does not know the original isotopic ratios that was in the plutonium and uranium that was used at the site.

Table A-4
Comparison of Concentrations with Regulatory Levels
for PRS 18-003(d)
March 1996 Sampling

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Liquid 0218-96-0007 188 gallons	Mixed Waste	NO	1,1,1-Trichloroethane	Total: .0138 mg/L	F001/F002	NA	0.054 mg/L	6.0 mg/kg
		NO	Methylene Chloride	Total: .00207 mg/L	F001/F002	NA	0.089 mg/L	30 mg/kg
		NO	Trichloroethylene	Total: .00272	F001/F002	0.5 mg/L	0.054 mg/L	6.0 mg/kg
		NA	Plutonium-239/240[a]	0.2 pCi/L	NA	NA	NA	NA
		NA	Thorium-230	0.1 pCi/L	NA	NA	NA	NA
		NA	Tritium	287 pCi/L	NA	NA	NA	NA
		NA	Uranium-233/234[a]	23.9 pCi/L	NA	NA	NA	NA
		NA	Uranium-235	1.1 pCi/L	NA	NA	NA	NA
		NA	Uranium-238	0.2 pCi/L	NA	NA	NA	NA
Sludge 0218-96-0008 8 gallons	Mixed Waste	NO	1,1,1-Trichloroethane	Total: .092 mg/kg	F001/F002	NA	0.054 mg/L	6.0 mg/kg
		NO	Toluene	Total: .784 mg/kg	F005	NA	0.80 mg/L	10 mg/kg
		NO	Trichloroethylene	TCLP: ND Total: .030 mg/kg	F001/F002	0.5 mg/L	0.054 mg/L	6.0 mg/kg
		NO	Methyl Ethyl Ketone	TCLP: .0262 mg/L Total: ND	F005	200.0 mg/L	0.28 mg/L	36 mg/kg
		NA	Cesium-137	0.1 pCi/G	NA	NA	NA	NA
		NA	Plutonium-238	0.1 pCi/G	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	0.5 pCi/G	NA	NA	NA	NA
		NA	Radium-224	0.6 pCi/G	NA	NA	NA	NA
		NA	Strontium-90	8.4 pCi/G	NA	NA	NA	NA

Table A-4 (continued)
PRS 18-003(d)

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Sludge 0218-96-0008 8 gallons	Mixed Waste	NA	Thorium-228	1.1 pCi/G	NA	NA	NA	NA
		NA	Thorium-230	1.4 pCi/G	NA	NA	NA	NA
		NA	Thorium-232	1 pCi/G	NA	NA	NA	NA
		NA	Uranium-233/234[a]	182 pCi/G	NA	NA	NA	NA
		NA	Uranium-235	6.1 pCi/G	NA	NA	NA	NA
		NA	Uranium-238	0.8 pCi/G	NA	NA	NA	NA

a - The analytical laboratory could not distinguish between these isotopes without knowing the original isotopic ratios. The generator does not know the original isotopic ratios that was in the plutonium and uranium that was used at the site.

Table A-5
Comparison of Concentrations with Regulatory Levels
for PRS 18-003(g)
March 1996 Sampling

Matrix/ Sample Number/ Estimated Volume	Preliminary Regulatory Status	Needs Treatment: Exceeds LDR Standards	RCRA Constituents/ Radionuclides Due to DOE Operations	Maximum Concentration	Preliminary RCRA Waste Codes	TC Reg. Levels	LDR Treatment Standards Wastewaters (based on total analyses)	LDR Treatment Standards Non-Wastewaters (based on total analyses)
Liquid 0218-96-0009 700 gallons	Mixed Waste	NO	Benzene	Total: .00271 mg/L	F005	0.5 mg/L	0.14 mg/L	10 mg/kg
		NO	Trichloroethylene	Total: .00842 mg/L	F001/F002	0.5 mg/L	0.054 mg/L	6.0 mg/kg
		NA	Strontium-90	2.3 pCi/L	NA	NA	NA	NA
		NA	Thorium-230	0.1 pCi/L	NA	NA	NA	NA
		NA	Uranium-233/234[a]	5.2 pCi/L	NA	NA	NA	NA
		NA	Uranium-235	0.2 pCi/L	NA	NA	NA	NA
		NA	Uranium-238	0.7 pCi/L	NA	NA	NA	NA
Sludge 0218-96-0010 thickness was too thin to measure	Mixed Waste	NO	Total Cresols (m-,p-,o-isomers)	TCLP: .151 mg/L Total: ND	F004	200.0 mg/L	0.88 mg/L	11.2 mg/kg
		NA	Plutonium-238	0.05 pCi/G	NA	NA	NA	NA
		NA	Plutonium-239/240[a]	0.2 pCi/G	NA	NA	NA	NA
		NA	Potassium-40	0.8 pCi/G	NA	NA	NA	NA
		NA	Strontium-90	1.3 pCi/G	NA	NA	NA	NA
		NA	Thorium-228	0.4 pCi/G	NA	NA	NA	NA
		NA	Thorium-230	0.4 pCi/G	NA	NA	NA	NA
		NA	Thorium-232	0.4 pCi/G	NA	NA	NA	NA
		NA	Uranium-233/234[a]	6.2 pCi/G	NA	NA	NA	NA
		NA	Uranium-235	0.2 pCi/G	NA	NA	NA	NA
		NA	Uranium-238	1.5 pCi/G	NA	NA	NA	NA

a - The analytical laboratory could not distinguish between these isotopes without knowing the original isotopic ratios. The generator does not know the original isotopic ratios that was in the plutonium and uranium that was used at the site.

APPENDIX B

INTERIM ACTION APPROVAL FORM

INTERIM ACTION APPROVAL FORM

I, Theodore J. Taylor DOE-LAAO **APPROVE** the interim action as proposed in this Interim Action Plan for PRSs 18-003(a,b,c,d,g).

I,_____ DOE-LAAO **DO NOT APPROVE** the interim action as proposed in this Interim Action Plan for PRSs 18-003 (a,b,c,d,g).

The following reasons reflect the basis for this disapproval.

Signed:_____ Date: 5/23/96