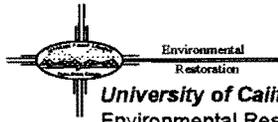


glu



University of California
Environmental Restoration Project, MS M992
Los Alamos, New Mexico 87545
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U. S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: October 7, 1996
Refer to: EM/ER:96-522

Mr. Benito Garcia
NMED - HRMB
P.O. Box 26110
Santa Fe, NM 87502



**SUBJECT: FINAL VCA COMPLETION REPORT FOR TA-12,
PRS 12-001(a) ACTIVITIES**

Dear Mr. Garcia:

Enclosed please find two copies of the Final Voluntary Corrective Action Completion Report for Technical Area 12, Potential Release Site 12-001(a) cleanup activities completed in Fiscal Year 1996. One report is for your information; the second should go to your technical branch. The other appropriate entities within your bureau have been included on distribution. The Environmental Restoration Project believes that this completion report justifies no further action (NFA) at this PRS. This PRS is listed in the Hazardous and Solid Waste Amendments (HSWA) Module of the Los Alamos National Laboratory's Resource Conservation and Recovery Act operating permit. Therefore, we are asking for your concurrence in our recommendation to remove this site from the HSWA Module.

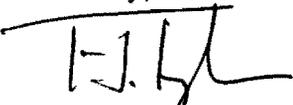
The Department of Energy has reviewed and approved this report and agrees with the recommendation for NFA. The approval form is attached to the report. The Certification of Completion has been signed and is included in the enclosed report.

If you have any questions, please call Gene Gould at (505) 667-0402 or Everett Trollinger at (505) 667-5801.

Sincerely,


Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,


Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/bp



3817

Enclosures: (1) Final VCA Completion Report for TA-12, PRS 12-001(a)
(2) Certification of Completion
(3) DOE Approval Form

Cy (w/ encs.):

S. Anderson, NMED-AIP, MS J993
G. Gould, ESA-EPE, MS G787
D. Griswold, AL- ERD, MS A906
J. Harry, EM/ER, MS M992
B. Hoditschek, NMED-HRMB
M. Leavitt, NMED-GWQB
N. Naraine, DOE-HQ, EM-453
D. Neleigh, EPA, R.6, 6PD-N (2 copies)
J. Piatt, NMED-SWQB
M. Shaner, CIO, MS A117 (2 copies)
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W. Spurgeon, DOE-HQ, EM-453
J. Vozella, LAAO, MS A316
K. Zamora, LAAO, MS A316
EM/ER File, MS M992

CERTIFICATION

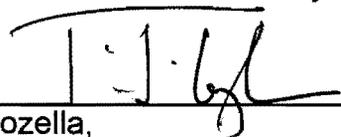
I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title: Final VCA Completion Report for TA-12, PRS 12-001(a)

Name:  Date: 10-7-96
Jorg Jansen, Program Manager
Environmental Restoration Project
Los Alamos National Laboratory

or

Tom Baca, Program Director
Environmental Management
Los Alamos National Laboratory

Name:  Date: 10/7/96
Joseph Vozella,
Acting Assistant Area Manager of
Environment Projects
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

or

Theodore J. Taylor
Program Manager
Environment Restoration Program
DOE-Los Alamos Area Office

Voluntary Corrective Action Completion Report for

**Potential Release Site
12-001(a)
Inactive Firing Site**

Field Unit 2

**Environmental
Restoration
Project**

September 1996

**A Department of Energy
Environmental Cleanup Program**

Los Alamos
NATIONAL LABORATORY

LA-UR-96-3316

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 SITE CHARACTERIZATION PRIOR TO REMOVAL 1

3.0 REMEDIAL ACTIVITIES AND RESULTS OF CONFIRMATORY SAMPLING 4

3.1 Risk Calculations and/or Cleanup Level Derivation 4

3.2 Remedial Implementation 4

3.3 Confirmatory Sampling 4

4.0 WASTE MANAGEMENT 4

4.1 Waste Management Activities 4

4.2 Waste Characterization Data 5

5.0 REFERENCES 6

APPENDIX A QA/QC 7

APPENDIX B RFI Characterization Data 9

APPENDIX C Cost Comparison 10

APPENDIX D Confirmatory Sampling Results Table 12

APPENDIX E Certification of Completion 13

**VOLUNTARY CORRECTIVE ACTION COMPLETION REPORT
FOR POTENTIAL RELEASE SITE 12-001(a) -
INACTIVE FIRING SITE**

1.0 Introduction

Potential Release Site (PRS) 12-001(a) consists of a below-ground, steel-lined firing pit and an above-ground cover at Technical Area (TA)-12 (Figure 1 shows the general area of the PRS). PRS 12-001(a) is listed in Table A of the Hazardous and Solid Waste Amendments (HSWA) Module of the Laboratory's RCRA permit. This report serves as the mechanism to request concurrence to remove this PRS from the HSWA module of the Laboratory's RCRA operating permit in a Class 3 permit modification.

The structure at PRS 12-001(a) (Figure 2) was used for recovery shots, including uranium, from 1945 to 1953, when it was abandoned. PRS 12-001(a) is described in Section 5.1 of the RFI Work Plan for OU 1085 (LANL 1994, 1156) and in the Voluntary Corrective Action (VCA) Plan for PRS 12-001(a) (LANL 1996, 1339). The pit is hexagonal in shape, measuring 10.5 ft on each side and is 11.5 ft deep. A steel cover 20 ft by 22 ft by 5 ft filled with soil covers the top. The base of the cover is at ground surface and has 1 ft high by 7 ft long openings on four sides. A small amount of soil (approximately 10 cu ft. [1.3 55-gallon drums]) covers the floor of the pit. The soil was probably blown in from the surrounding area outside the container through the four openings.

A VCA was conducted because one of the soil samples collected from inside the firing pit was contaminated with arsenic above the screening action level (SAL) and the background upper tolerance limit (UTL). A multiple chemical evaluation (MCE) from the same soil sample indicated that barium, chromium, copper, nickel, thallium, and total uranium were also chemicals of concern (COCs). Based upon these results, and the fact that this site may be preserved as a historical site, a cleanup was necessary. The appropriateness of a VCA at this site was confirmed in the VCA checklist (presented in the VCA Plan) (LANL 1996, 1339). Because the remedy was obvious, straightforward, and relatively inexpensive, a VCA for this site was recommended.

2.0 Site Characterization Prior to Removal

Sampling data from the 1995 sampling campaign and the data quality evaluation is summarized in the VCA Plan for PRS 12-001(a) (LANL 1996, 1339).

Two surface samples were collected inside the steel-lined firing pit using the approved spade and scoop technique during Phase I operations. The depths of the samples were 0-1 inch and 0-3/4 inches. The two samples were used to characterize the sand within PRS 12-001(a), according to the RFI Work Plan (LANL 1994, 1156), and their locations were shown in the VCA Plan (LANL 1996, 1339).

A radiological screening of the steel-lined firing pit was conducted in June 1995, but no elevated readings were found.

Six surface soil (0 - 6 inches) were collected outside the steel-lined firing pit to determine if contamination was present. Three of these samples were submitted to a fixed laboratory according to the RFI Work Plan (LANL 1994, 1156), and none of them showed analytical results above SALs. All of the data for this site is presented in the VCA Plan (LANL 1996, 1339).

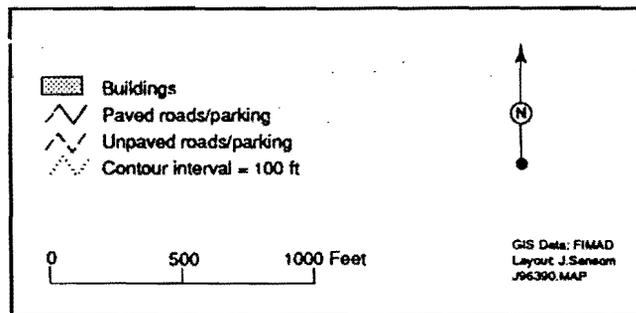
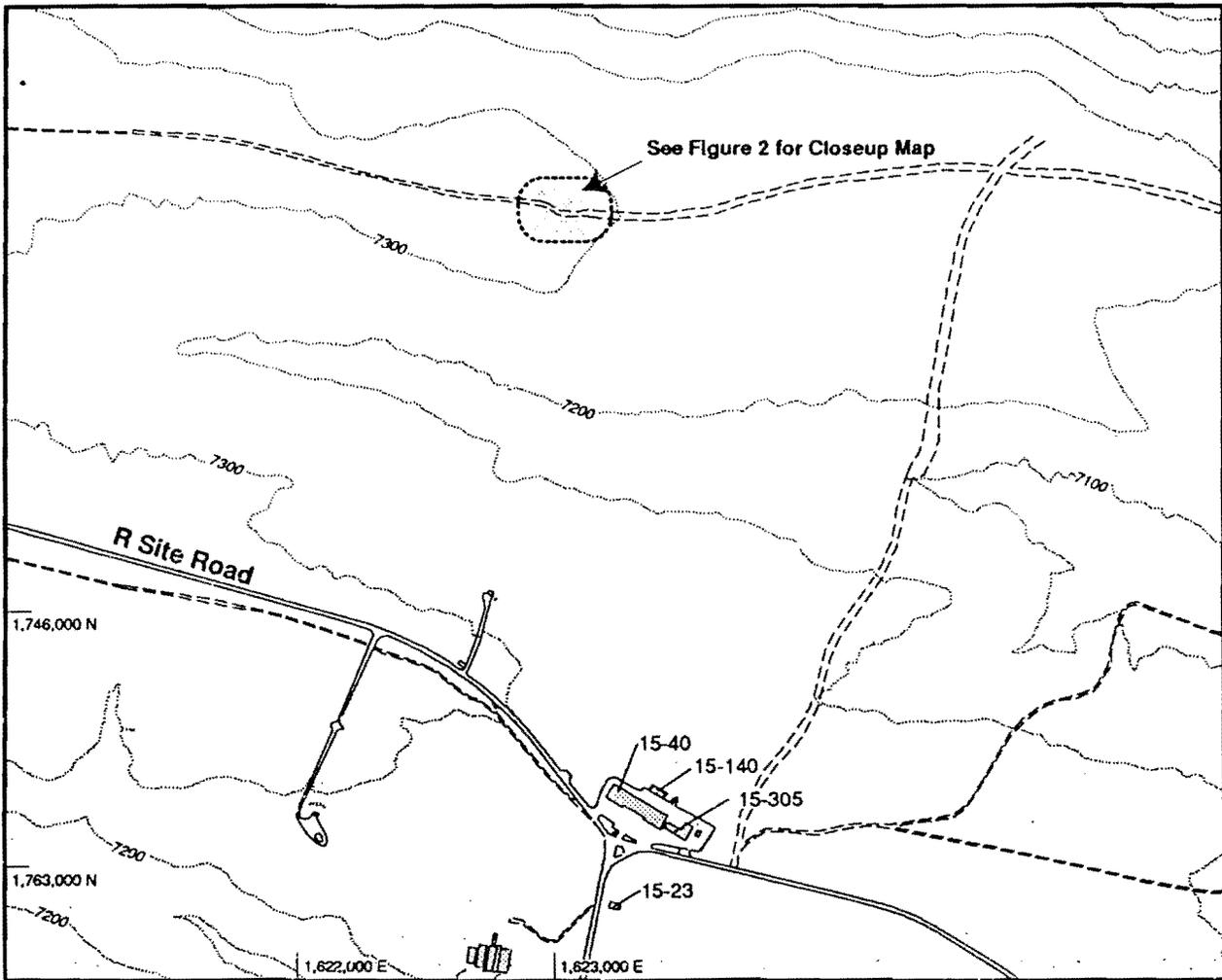


Figure 1.
General Location of PRS 12-001(a)

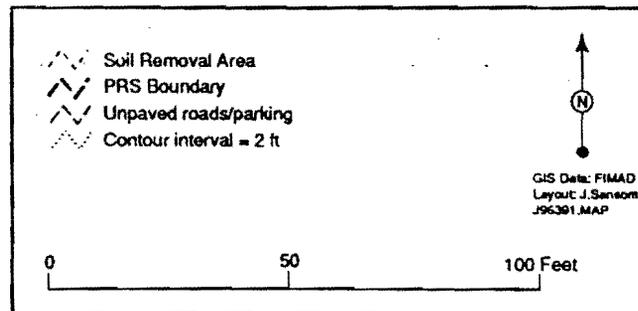
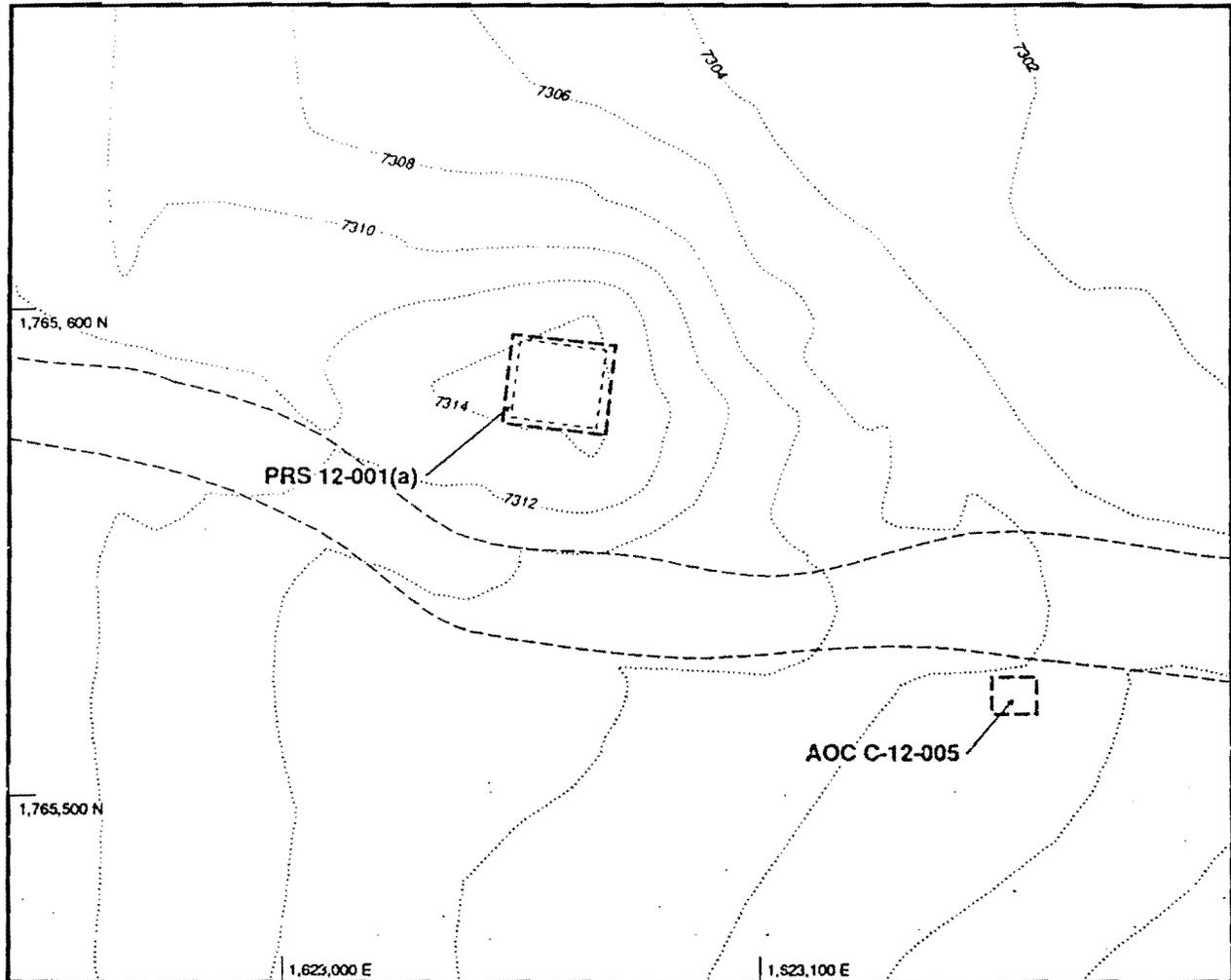


Figure 2. PRS 12-001(a)
Location of Soil Removal

3.0 Remedial Activities and Results of Confirmatory Sampling

3.1 Risk Calculation and/or Cleanup Level Derivation

The Preliminary Remediation Goals (PRGs) presented in Table 3.1-1 were calculated for this site using the modified U.S. Environmental Protection Agency (EPA) equations and LANL site-specific input parameters, which were presented in the Voluntary Corrective Action Plan for PRS 12-001(a) (LANL 1996, 1339). The derivation of human health risk-based cleanup levels for PRS 12-001(a) is based on a nonintrusive industrial exposure scenario using Laboratory-specific default parameters for a generic worker. These default exposure parameters assume an exposure frequency of 250 days per year and a duration of 25 years. Exposure routes considered in the calculations of the PRGs include incidental ingestion and inhalation of contaminated soil.

**Table 3.1-1
PRGs for Nonintrusive Industrial Exposure Scenario for PRS 12-001(a)**

Chemical	Noncarcinogenic PRG (mg/kg)	Carcinogenic PRG (mg/kg)	PRG (lower of 2) (mg/kg)
Arsenic	6.13 E +02	2.15 E +00	2.15 E +00
Barium	7.68 E +03	NA	7.68 E +03
Copper	8.18 E +04	NA	8.18 E +04
Nickel	4.09 E +04	NA	4.09 E +04
Thallium	1.84 E +02	NA	1.84 E +02
Uranium	378 mg/kg RESRAD; 15 mrem/yr		

NA = Not Applicable

3.2 Remedial Implementation

This VCA was conducted in accordance with the approved VCA Plan (LANL 1996, 1339). The VCA was started on June 26, 1996, and was completed the same day. All of the soil was hand shoveled from within the steel-lined firing pit into the 55-gallon drums. After removal, the remaining soil particles were swept up using a whisk broom.

No deviations from the VCA Plan occurred.

Site restoration was not necessary.

3.3 Confirmatory Sampling

No confirmatory sampling was necessary at PRS 12-001(a), because all soil was removed from the steel-lined firing pit. No potential for environmental release is or was present at this site.

4.0 Waste Management

4.1 Waste Management Activities

The volume of waste generated was approximately 75 gallons, 1-1/3 55-gallon drums. The VCA Plan projected that less than two 55-gallon drums of waste would be produced.

The waste was characterized by collection of composite samples as the drums were being filled, followed by fixed laboratory analyses for TCLP metals, HE, isotopic uranium, total uranium,

semivolatiles, and volatiles. Recovery shots involving uranium were conducted in the pit. After reviewing the waste characterization results, the type of waste was managed as low-level radioactive.

The waste was disposed at the Laboratory's low level radioactive storage facility at TA-54. The waste was removed from the <90 day storage area on September 20, 1996. Although the waste was not RCRA hazardous waste, it was placed in a <90 day storage area as a precautionary measure when it was generated.

Waste minimization activities included sorbing the small amount of water (<2 gallons) generated during decontamination procedures onto the soil in the 55-gallon drums. This is an acceptable practice, as the Waste Acceptance Criteria (WAS) for TA-54 requires that liquids constitute <1% of the volume of the container.

4.2 Waste Characterization Data

Table 4.2-1 shows the results of the waste characterization samples.

**Table 4.2-1
Waste Characterization Samples**

Sample ID Number	Compound	Result	Units	Result Qual
0212-96-0100	Barium	4610 *	UGL	B
	Cadmium	4.1 *	UGL	
0212-96-0101	Barium	11400 *	UGL	B
	Cadmium	20.5 *	UGL	B
	Lead	14.5 *	UGL	B
	Selenium	31.3 *	UGL	B
0212-96-0100	Di-n-butylphthalate	1500	UGKG	J
0212-96-0101	Di-n-butylphthalate	790	UGKG	J
0212-96-0100	Toluene	29	UGKG	U
0212-96-0101	Toluene	25	UGKG	U
0212-96-0100	U234	6.721+/-0.885	pCi/G	
	U235	0.384+/-0.109	pCi/G	
	U238	8.394+/-1.081	pCi/G	
0212-96-0101	U234	8.98+/-1.122	pCi/G	
	U235	0.555+/-121	pCi/G	
	U238	10.098+/-1.253	pCi/G	

B = Value is less than the Contract Required Detection Limit but greater than or equal to the Instrument Detection Limit

J = Estimated

* = TCLP Analysis

U = Not detected, contamination artifact since trip blank also showed Toluene. There is no source for the toluene at PRS 12-001(a)

5.0 References

Los Alamos National Laboratory, "RFI Work Plan for Operable Unit 1085," Final Draft, Los Alamos National Laboratory Report LA-UR-94-1033, Los Alamos, New Mexico, May 1994 (LANL 1994, 1156).

Los Alamos National Laboratory, "Voluntary Corrective Action Plan for Potential Release Site 12-001(a) Inactive Firing Site, Field Unit 2," Final Draft, Los Alamos National Laboratory Report LA-UR-96-1874, Los Alamos, New Mexico, April 1996 (LANL 1996, 1339).

**APPENDIX A
QA/QC**

**Data Quality Evaluation
for Soil Samples 0212-96-0100 and 0212-96-0101
at PRS 12-001(a)**

The analytical data generated from the soil samples collected from PRS 12-001(a) at TA-12 were analyzed for inorganics (TCLP metals only), radionuclides (isotopic and total uranium), volatile and semivolatile organics, and high explosives. The data quality and usability were determined by the analysis of a variety of QA/QC samples, including blanks, internal standards, duplicates, surrogates, laboratory control samples, and matrix spikes. The sample data were compared to the QA/QC sample data using numerical acceptance criteria established by either the analytical laboratory or EPA. The data that do not meet these criteria are qualified to indicate to the data user those sample results that may have potential deficiencies associated with sampling handling and analysis. These qualifiers include U (undetected), J (estimated), UJ (undetected estimated), and R (unusable).

The QA/QC data indicated that 100% of the sample data were acceptable and defensible. The QA/QC problems included surrogate and internal standard area recoveries for the volatile organic analyses that were outside of the QC limits. The data are qualified as UJ, if undetected, and J+ and J,PM, if detected, based on these deficiencies, and are representative of the concentrations of materials that should be present. The surrogate recovery was above the upper QC limits for one surrogate (dibromofluoromethane) for sample 0212-96-0100. Re-analyses of the surrogates found recoveries for two surrogates (4-bromofluorobenzene and dibromofluoromethane) above the upper QC limits. The usability of the data is not affected by the surrogate recoveries because the data are biased high. The internal standards were outside of the QC limits for both samples and were re-analyzed. The re-analyses were also outside the limits, and matrix spike analyses indicated that the inconsistent recoveries were due to matrix effects. The data are qualified as UJ and J,PM and are usable because the responsiveness and sensitivity of the instrument were not compromised and the other QC samples (except for the surrogates) were acceptable.

Methylene chloride and acetone were detected in the method blank. The sample values for these analytes were less than 10X the blank value, indicating that detection could be the result of blank contamination. Therefore, the sample values are considered to be nondetects and the detection limit for methylene chloride was raised to the reporting limits for each sample. In addition, methylene chloride, acetone, and toluene were detected in the trip blank (sample # 0212-96-0102). The sample values for these three organic analytes were less than 10X the blank value, indicating possible contamination. The sample values for methylene chloride, acetone, and toluene are considered to be nondetects and the detection limits should be raised to the reporting limit. The data are qualified as U and are usable as nondetects. All other volatile data are usable as reported.

The QA/QC problems associated with the semivolatile analyses included recovery for one surrogate that was below the established lower limit for both samples. These data are not qualified and are usable because the other surrogates were within established limits. In addition, di-n-butyl phthalate was qualified as J in both samples because it was detected below the estimated quantitation limit. The sample results have a high degree of uncertainty because they cannot be accurately distinguished from the instrument "noise" level. As a result, the data are usable as estimated values and should be used with caution in the screening assessment. All other semivolatile data are usable as reported.

VCA Completion Report

The inorganic, radionuclide, and high explosives data did not have any QA/QC problems, are qualified as U, and are usable as reported.

**APPENDIX B
RFI CHARACTERIZATION DATA**

RFI characterization data are available in FIMAD, or will be provided upon request.

**APPENDIX C
COST COMPARISON**

The estimated costs of this VCA are compared with the actual costs through September 11, 1996 in Table C-1. Differences between estimated and actual costs are discussed in the following sections.

**TABLE C-1
ESTIMATED VERSUS ACTUAL COST FOR VCA AT PRS 12-001(a)**

Activity	Budget Cost	Actual Cost *
Plan Development	\$ 28,000	\$ 1,500
Mobilization	\$ 7,000	\$ 1,000
Cleanup	\$ 16,000	\$ 3,600
Verification Sampling	\$ 0	\$ 0
Waste Disposal	\$ 3,500	\$ 1,500
Field Screening	\$ 1,500	\$ 500
Demobilization/Site Restoration	\$ 1,000	\$ 1,000
Reporting	\$ 11,000	\$ 1,000
Total Cost	\$ 68,000	\$ 10,100

C.1 Plan Development

The actual cost for plan development was significantly less than the budget due to consolidation of plan writing with other plans.

C.2 Mobilization

Mobilization costs were less than planned because the pit was not classified as a confined space, as had been anticipated.

C.3 Cleanup

Cleanup costs were less than planned because the volume of waste was less than anticipated, and no delays occurred during implementation of the VCA.

C.4 Verification Sampling

No verification sampling was conducted.

C.5 Waste Disposal

Waste disposal costs are below budget because the waste is characterized as low level radioactive, which is significantly less expensive to dispose of than the anticipated mixed waste.

C.6 Field Screening

Field screening costs were below budget because no radiation was found in the pit.

C.7 Demobilization/Site Restoration

Demobilization costs reflect staging drums in the storage area, radiological screening of all equipment, and transporting equipment to the appropriate storage areas. The costs were as anticipated.

C.8 Reporting

Report costs include writing the final report, as well as compilation of files for the Records Processing Facility (RPF). Because the VCA occurred without any problems, and the reports were consolidated with other reports, less reporting time was required.

C.9 Total Cost

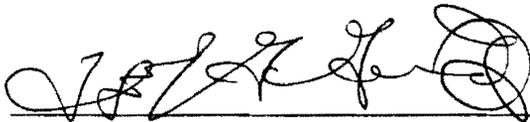
Because of cost savings by consolidating plan and report writing, and due to the simple nature of the VCA, the costs were significantly less than planned.

**APPENDIX D
CONFIRMATORY SAMPLING RESULTS TABLE**

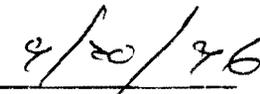
No confirmatory samples were collected.

**APPENDIX E
CERTIFICATION OF COMPLETION**

I certify that all the work pertaining to the voluntary corrective action PRS 12-001(a) has been completed in accordance with the Department of Energy approved VCA plan entitled VCA Plan for Potential Release Site 12-001(a), Former Firing Site. Based on my personal involvement or inquiry of the person or persons who managed this cleanup, a review of all data gathered and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of this VCA is protective of both human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



Field Unit 2, Field Project Leader
Environmental Restoration Project
Los Alamos National Laboratory


Date Signed

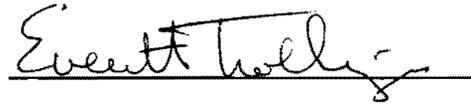
**VOLUNTARY CORRECTIVE ACTION (VCA) COMPLETION REPORT
APPROVAL/DISAPPROVAL FORM**

PRS(s) 12-001(a)

The undersigned have reviewed the VCA Completion Report and believe that the intent and goals of the VCA plan have been met.

FPL 

Date 9/20/96

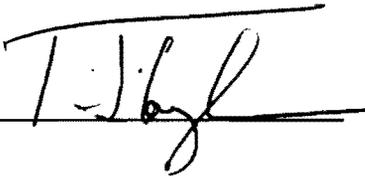
FPC 

Date 9/26/96

.....

I, Theodore J. Taylor, DOE-LAO, **APPROVE** , **DISAPPROVE** the accompanying Voluntary Correction Action Report for PRS(s) 12-001(a), TA- 12.

The following reasons reflect the decision for disapproval:

Signed: 

Date: 9/26/96