

University of California
 Environmental Restoration Project, MS M992
 Los Alamos, New Mexico 87545
 505-667-0808/FAX 505-665-4747



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 17, 1996
 Refer to: EM/ER:96-546

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

**SUBJECT: VCA COMPLETION REPORT FOR TA-14, PRS 14-001(f)
 ACTIVITIES**


Dear Mr. Garcia:

Enclosed please find two copies of the Voluntary Corrective Action Completion Report for Technical Area 14, Potential Release Site (PRS) 14-001(f) cleanup activities completed in Fiscal Year 1996. The other appropriate entities within the Department 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 not 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, this report is being submitted for your information only.

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.

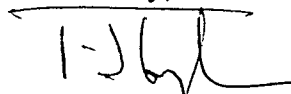
If you have any questions, please call Gene Gould at (505) 667-0402 or Everett Trollinger at (505) 667-5801.

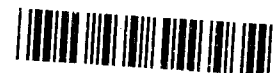
Sincerely,


 Jorg Jansen, Program Manager
 LAN/ER Project

JJ/TT/rfr

Sincerely,


 Theodore J. Taylor, Program Manager
 DOE/LAO



3848

Voluntary Corrective Action Completion Report for

**Potential Release Site
14-001(f)
Bullet Test Facility**

Field Unit 2

**Environmental
Restoration
Project**

September 1996

**A Department of Energy
Environmental Cleanup Program**

Los Alamos
NATIONAL LABORATORY

LA-UR-96-3317

1065

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 5

4.0 WASTE MANAGEMENT 5

4.1 Waste Management Activities 5

4.2 Waste Characterization Data 8

5.0 REFERENCES 9

APPENDIX A QA/QC 10

APPENDIX B RFI Characterization Data 12

APPENDIX C Cost Comparison 13

APPENDIX D Confirmatory Sampling Results Table 15

APPENDIX E Certification of Completion 16

APPENDIX F Transfer of Property 18

**VOLUNTARY CORRECTIVE ACTION COMPLETION REPORT
FOR POTENTIAL RELEASE SITE 14-001(f) -
INACTIVE BULLET TEST FACILITY**

1.0 Introduction

Potential Release Site (PRS) 14-001(f) consists of an inactive bullet test facility and its underlying sump at Technical Area (TA)-14 (Figure 1 shows the general area of the PRS). PRS 14-001(f) is not included 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 propose no further action (NFA) for PRS 14-001(f).

PRS 14-001(f) (Figure 2), the bullet test facility, is described in the RFI Work Plan for OU 1085 (LANL 1994, 1156) and the Voluntary Corrective Action (VCA) Plan for PRS 14-001(f) (LANL 1996, 1340). The bullet test facility is a steel cylindrical structure 13.3 ft by 13.6 ft by 8 ft tall, and the underlying sump is reinforced concrete approximately 13 ft by 13 ft by 4.5 ft deep. Tests at PRS 14-001(f) used many types of bullets including copper-jacketed lead, plastic, steel, and depleted uranium (DU). The firing, which occurred from the late 1970s until the mid-1990s, was conducted in the 10-ft-diameter steel tube; therefore, the test material was usually contained in the tube, in the sump below the tube, or was vaporized.

A VCA was conducted for health reasons based on the contaminants of concern (COCs) determined during the Phase I analytical results and because pieces of high explosives (HE) were visible within the sand on the site. During Phase I operations, three samples were collected, two from within the bullet test facility and one from the underlying sump. Analytical results from Phase I showed the high explosive RDX (cyclotrimethylenetrinitramine) and uranium above screening action levels (SALs), and manganese above background upper tolerance limit (UTL). Therefore the COCs for PRS 14-001(f) are RDX, uranium, and manganese. The appropriateness of a VCA at this site was confirmed in the VCA checklist (presented in the VCA Plan) (LANL 1996, 1340). 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 (LANL 1996, 1340).

A total of three surface samples were collected during Phase I operations, two from within the bullet test facility and one from the underlying sump, using the approved spade and scoop technique. The depths of the samples collected in the bullet test facility were 0-1 inch and 0-4 inches. The third sample was a 4-inch depth sample collected from the sump. This sample gave a positive result on the HE spot test and was sent to LANL's DX-2 Group for screening prior to off-site shipment. The three samples were used to characterize the sand within PRS 14-001(f), according to the RFI Work Plan (LANL 1994, 1156), and their locations were shown in the VCA Plan (LANL 1996, 1340).

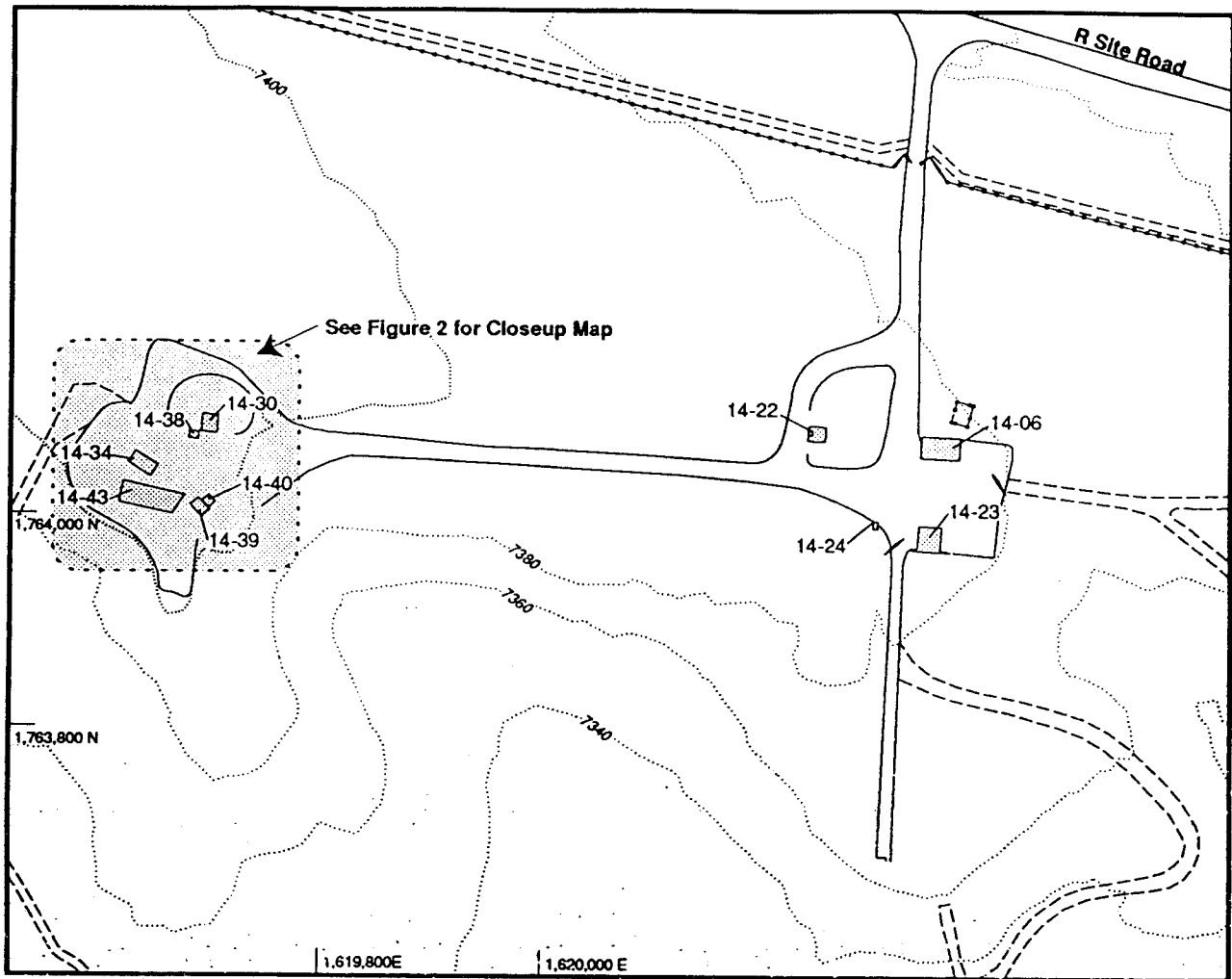


Figure 1. PRS 14-001(f)
General Location of PRS 14-001(f)

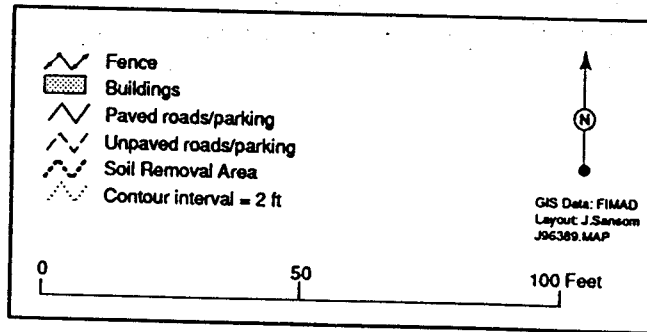
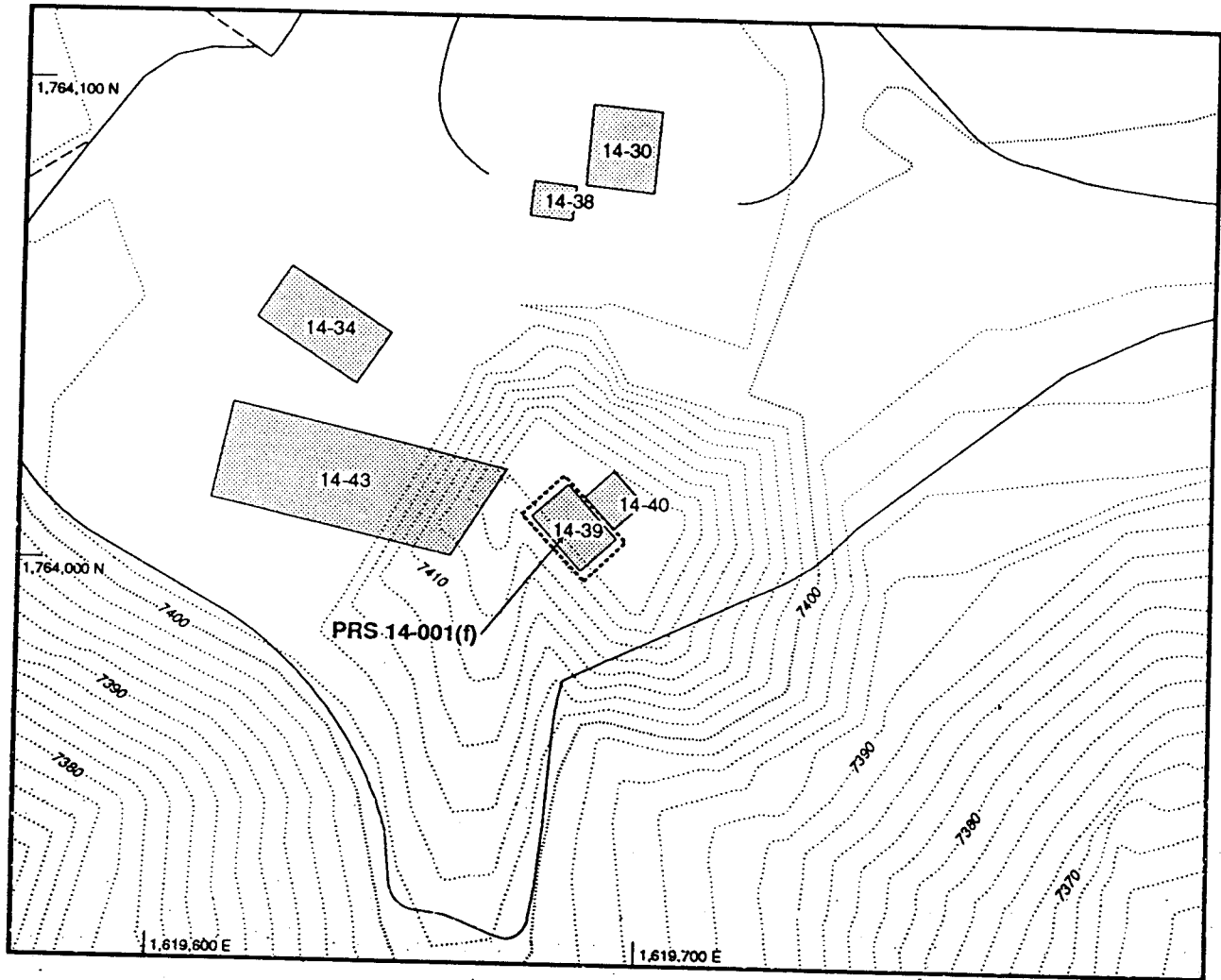


Figure 2. PRS 14-001(f)
Location of Soil Removal

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 14-001(f) (LANL 1996, 1340). The derivation of human health risk-based cleanup levels for PRS 14-001(f) 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 14-001(f)**

Chemical	Noncarcinogenic PRG (mg/kg)	Carcinogenic PRG (mg/kg)	PRG (lower of 2) (mg/kg)
Manganese	8.09 E +02	NA	8.09 E +02
RDX	6.13 E +03	5.2 E +01	5.2 E +01
Uranium	150 pCi/g RESRAD; 15 mrem/yr		

NA = Not Applicable

3.2 Remedial Implementation

This VCA was conducted in accordance with the approved VCA Plan (LANL 1996, 1340). The VCA was started on June 11, 1996, and was completed on June 14, 1996. All of the sand was hand shoveled from within the bullet test facility and the underlying sump into four B-25 containers. Pieces of DU, when found, were segregated according to the VCA Plan and placed in a plastic bag, which was placed in the fourth B-25 container based on the waste analytical results. No pieces of HE were found during the clean-up operation, but all four waste characterization samples tested positive for HE using LANL's HE spot test kit. Therefore, an HE sample from each waste sample was sent to DX-2 Division of the Laboratory for HE screening prior to shipping to a fixed analytical laboratory.

The total volume of waste deviated from the volume described in the VCA Plan. The total volume of contaminated soil removed was 20 yds³ (3-1/3 B-25 containers), versus the 1.4 yds³ anticipated. When conducting the Phase I operations, a hard layer of compacted sand was found at the 4 inch depth in the steel cylinder. Since the spade could not penetrate this layer of hard sand, it was thought that the base of the steel cylinder was 5 inches deep, when in reality it was a foot and a half deep. This resulted in an increased volume of waste and thus a greater volume of sand. Because the same operations produced all of the sand and small pieces of DU were seen throughout the sand, irregardless of depth, all of the sand was thought to be contaminated.

After the sand was removed, a radiological survey of the interior surfaces of the steel tube and the underlying sump was conducted using an Eberline ESP-1 beta/gamma meter with a HP-260 probe. Above-background readings (approximately 300 cpm) were found on both structures. Uranium was removed from the surfaces of the sump by brushing and washing with Fantastik[®] cleaner, but incompletely removed from the steel tube. Fifteen areas in the steel tube had surface readings above 1000 cpm (figure 3) and were determined to be fixed radioactivity, because repeated brushing and washing could not remove the radioactivity. The 15 areas where

the radioactivity was fixed were painted using two colors, yellow and red (figure 4), following LANL's ESH-1 requirements. A sign was placed in the bullet test facility indicating fixed radioactivity. The operating group has agreed to take control of this site (see Appendix F).

Site restoration was not necessary. Upon the operating group's request, the sump drain was plugged using quick drying cement in August, 1996. Prior to being plugged the sump drainline was the only potential pathway for environmental release. The sump drainline presently leads under the road to a drainage area where the line ends underground at PRS 14-010 (a drainage area), which is scheduled for a VCA in 1997, pending approval of the budget.

3.3 Confirmatory Sampling

No confirmatory sampling was necessary at PRS 14-001(f), since all sand was removed from the steel cylinder and concrete sump. There is no longer any potential for environmental release, since the contaminants have been removed and the drainline plugged.

4.0 Waste Management

4.1 Waste Management Activities

The total volume of waste deviated from the volume written in the VCA Plan. The total volume of soil removed was 20 yds³ (3-1/3 B-25 containers), versus the 1.4 yds³ anticipated. It was believed that the depth to the bottom of the bullet test facility was only 5 inches, based on the Phase I sampling effort. Actually, the depth to the bottom was approximately one and a half feet.

The waste was characterized by collection of composite samples as the B-25 containers were filled, followed by fixed laboratory analyses for TCLP metals, HE, isotopic uranium, PCBs, semivolatiles, and volatiles. After reviewing the waste characterization results, the type of waste was classified 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 (<10 gallons) generated during decontamination procedures onto the sand in the B-25 containers. This is an acceptable practice, as the Waste Acceptance Criteria (WAC) for TA-54 requires that liquids constitute <1% of the volume of the container.

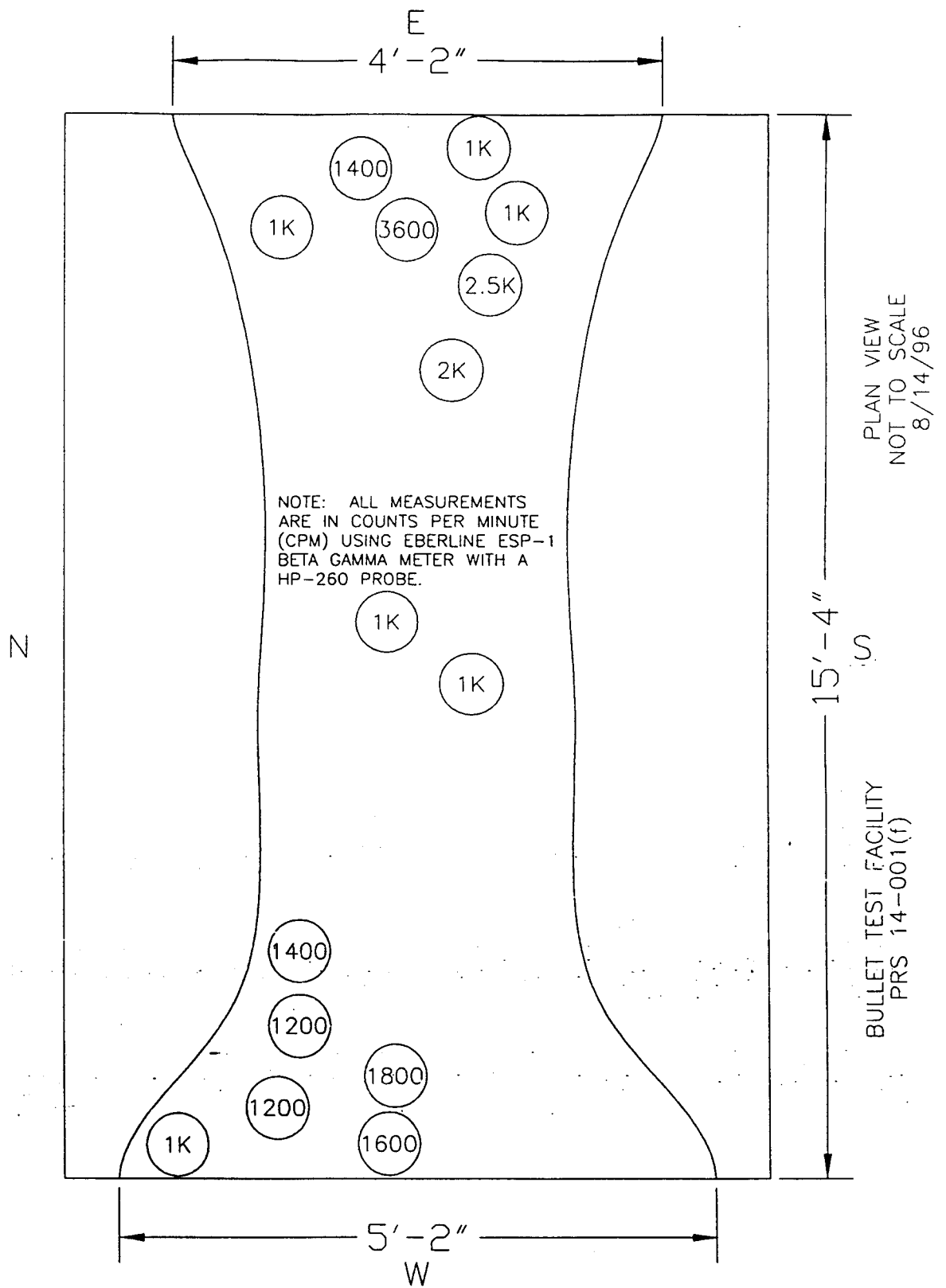


Figure 3. PRS 14-001(f)
Hot Spots in the Bullet Test Facility