START

0022110

JUL 15 1992 ENGINEERING DATA TRANSMITTAL

Sta. 21 (20)

Page 1 of 1

1. EDT 159711

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Environmental Remedial Action Group/81225	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: ERA/ERE/ED	6. Cog. Engr.: P. J. Valcich	7. Purchase Order No.: N/A
8. Originator Remarks: Approval/Release		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date:

JUL 1992 RECEIVED EDMC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-AP-095		0	Sodium Dichromate Barrel Landfill ERA Project Plan	3 Q	1/2		

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1/2	1	Cog.Eng. P. J. Valcich	P. J. Valcich	7/14/92	H4-55	T. Davidson	T. Davison	7-14-92	H4-16	3	
1/2	1	Cog. Mgr. G. C. Henckel	for	7/14/92	H4-55	H. D. Downey			L4-96	3	
1/2	1	QA T. L. Bennington	for	7/14/92	H4-16	C. E. Heiden			H4-55	3	
3		Safety D. O. Hess			L6-57	W. L. Johnson			H4-55	3	
		Env.				N. R. Kerr			N1-75	3	
3	7/15					R. G. McCain			H4-55	3	
3		EDMC (2)			H4-22	R. W. Perusse			H4-16	3	
3		IRA Clearance			H4-17	R. C. Roos			H4-55	3	
3		Central Files			L8-04	J. Vaughn			N3-06	3	

18.	19.	20.	21. DOE APPROVAL (if required)
P. J. Valcich 7/14/92 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	G. C. Henckel for 7/14/92 Cognizant/Project Engineer's Manager / Date	Ltr. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/89) (EF) GEF097

9212634 1273

BD-7400-172-1 (02/89)

Date Received: 7/9/92 DS

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- ☐ Speech or Presentation
  - ☐ Full Paper
  - ☐ Summary
  - ☐ Abstract
  - ☐ Visual Aid
  - (Check only one suffix)
- ☐ Speakers Bureau
- ☐ Poster Session
- ☐ Videotape
- ☐ Reference
- ☒ Technical Report
- ☐ Thesis or Dissertation
- ☐ Manual
- ☐ Brochure/Flier
- ☐ Software/Database
- ☐ Controlled Document
- ☐ Other

ID Number (include revision, volume, etc.): WHC-SD-EN-AP-095, Rev. 0

List attachments.

Date Release Required: JULY 15, 1992

Title: Sodium Dichromate Barrel Landfill ERA Project Plan

Unclassified Category: UC-

Impact Level: 3Q

New or novel (patentable) subject matter? ☒ No ☐ Yes
If "Yes", has disclosure been submitted by WHC or other company?
☒ No ☐ Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
☒ No ☐ Yes (Identify)

Copyrights? ☒ No ☐ Yes
If "Yes", has written permission been granted?
☒ No ☐ Yes (Attach Permission)

Trademarks?
☒ No ☐ Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting: NA

Group or Society Sponsoring: NA

Date(s) of Conference or Meeting: NA

City/State: NA

Will proceedings be published? ☐ Yes ☐ No
Will material be handed out? ☐ Yes ☐ No

Title of Journal: NA

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	☐	☒			
Patent-General Counsel	☒	☐	S W BERGLIN	[signature]	7/14/92
Legal-General Counsel	☒	☐	BD Williamson	BD Williamson	7/14/92
Applied Technology/Export Controlled Information or International Program	☐	☒			
WHC Program/Project	☐	☒			
Communications	☐	☒			
RL Program/Project	☐	☒			
Publications Services	☒	☐	L. Hermann Clearwater	Linda Hermann	7/15/92
Other Program/Project	☐	☒			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	☒	☐
Transmit to DOE-HQ/Office of Scientific and Technical Information	☐	☒

Author/Requestor (Printed/Signature): P.J. VALCICH [signature] Date: 7/7/92

Intended Audience: ☐ Internal ☐ Sponsor ☒ External

Responsible Manager (Printed/Signature): for G.C. HENCKEL [signature] Date: 7/7/92

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE — OFFICIAL DOCUMENT — V.B. — 7/15/92

Date Cancelled

Date Disapproved

BD-7400-062 (08/91)
Part 1

SUPPORTING DOCUMENT

1. Total Pages 59

2. Title

Sodium Dichromate Barrel Disposal Landfill Expedited Response Action Project Plan

3. Number

WHC-SD-EN-AP-095

4. Rev No.

0

5. Key Words

Sodium dichromate barrel, Characterization Activities, Screening of Alternatives, Project Schedule, Sampling Plan

APPROVED FOR PUBLIC RELEASE

7/15/92 V. Birkland

6. Author

Name: P. J. Valcich

Signature

Organization/Charge Code 81225/P3C1A

7. Abstract

The document contains the Sodium Dichromate Barrel Landfill Expedited Response Action Project Plan. The Plan describes the site characterization activities, preliminary screening of alternatives, site evaluation tasks, ERA proposal tasks, and Project Schedule.

9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC 20

DATE JUL 15 1992

Sta. 21

9 2 1 2 7 - 1 1 2 7 5

A-6400-073 (11/91) (EF) WEF124

THIS PAGE INTENTIONALLY
LEFT BLANK

CONTENTS

1.0 INTRODUCTION . . . 1
- 1.1 PURPOSE . . . 1
- 1.2 BACKGROUND . . . 1
- 1.3 ORGANIZATION . . . 5

2.0 SITE CHARACTERIZATION . . . 5
- 2.1 SURFACE DEBRIS COLLECTION . . . 5
- 2.2 GEOPHYSICAL SURVEYS . . . 5
- 2.3 SAMPLING . . . 12
  - 2.3.1 Nonintrusive Surface Sampling . . . 12
  - 2.3.2 Sample Pit/Trenches . . . 12

3.0 PRELIMINARY SCREENING OF ALTERNATIVES . . . 12
- 3.1 PRELIMINARY ASSUMPTION . . . 13
- 3.2 SCREENING EVALUATION . . . 13

4.0 SITE EVALUATION TASKS . . . 13
- 4.1 DATA OBJECTIVES . . . 13
- 4.2 FIELD INVESTIGATION TASKS . . . 14
- 4.3 DATA EVALUATION . . . 14

5.0 ERA PROPOSAL AND ACTION MEMORANDUM . . . 14

6.0 ERA IMPLEMENTATION . . . 15

7.0 PROJECT SCHEDULE . . . 15

8.0 REFERENCES . . . 15

ATTACHMENTS

1 Sampling and Analysis Plan . . . 1-1
2 Quality Assurance Project Plan . . . 2-1
3 Health and Safety Plan . . . 3-1
4 Project Management Plan . . . 4-1
5 Data Management Plan . . . 5-1
6 Community Relations Plan . . . 6-1

FIGURES

1 Sodium Dichromate Barrel Landfill Site Map . . . 2
2 Surface Debris Grid Location . . . 3
3 Cheat Grass Growth Abnormality Locations . . . 4
4 Initial Electromagnetic Induction Survey . . . 8
5 Blowup Showing Surface Debris Interference with Electromagnetic Induction Survey . . . 9
6 Initial Ground-Penetrating Radar Survey . . . 10

CONTENTS (cont)

FIGURES (cont)

7 Blowup Showing Surface Debris Interference with Ground-Penetrating Radar Survey 11
8 Project Schedule 17

TABLE

1 Surface Debris Location Table 6

1.0 INTRODUCTION

1.1 PURPOSE

This document provides the plan for conducting the Sodium Dichromate Barrel Landfill Expedited Response Action (ERA). The U.S. Environmental Protection Agency (EPA) and Washington State Department of Ecology (Ecology) requested this ERA (Ecology 1992) in their April 30, 1992, letter to the U.S. Department of Energy-Richland Field Office (DOE-RL), Hanford Project Manager.

1.2 BACKGROUND

The Sodium Dichromate Barrel Landfill Site was used in 1945 for crushed sodium dichromate barrel disposal. The 100 Area water treatment systems used the sodium dichromate.

The landfill is the only waste site identified in the 100-IU-4 Operable Unit (Figure 1). Technical assumptions were used to develop an unofficial site description. The primary assumption is that the crushed barrels contained 1% residual sodium dichromate at burial time. Burial depth appears to be shallow since visual inspection finds surface barrel debris (Figure 2). At present, the crushed drums could be considered empty as contained under the Washington Administrative Code (WAC) regulations (WAC 173-303).

The site is located in a small depression (Figure 3) between the 100 D and H areas within the 100-HR-3 Operable Unit. The immediate area surrounding the site still shows evidence of its' original agricultural use. Field rows are noticeable on the west perimeter. A fence line runs along the top of the east slope. The south boundary is a paved road. An old farm road marks the north boundary. The site is about 1,540 ft long and 300 ft wide. The site's homestead surface debris includes barbed and fencing wire, stove pipe, and various tin cans. The site may have been used as a general landfill.

Chrome exists in the 100-HR-3 Operable Unit area groundwater but this site is not the suspected source. Groundwater samples from an adjacent monitoring well (699-93-46) do not report detectable levels of chrome. The groundwater depth is 29.2 ft.

Site radiation surveys have not detected any elevated surface radioactivity hazards.

The site contains many bare patches (most in circular shape with diameters from about 1 ft to 8 to 10 ft) surrounded by healthy cheat grass. A Hanford Site survey (Figure 3) identified areas containing this natural phenomena.

Figure 1. Sodium Dichromate Barrel Landfill Site Map.

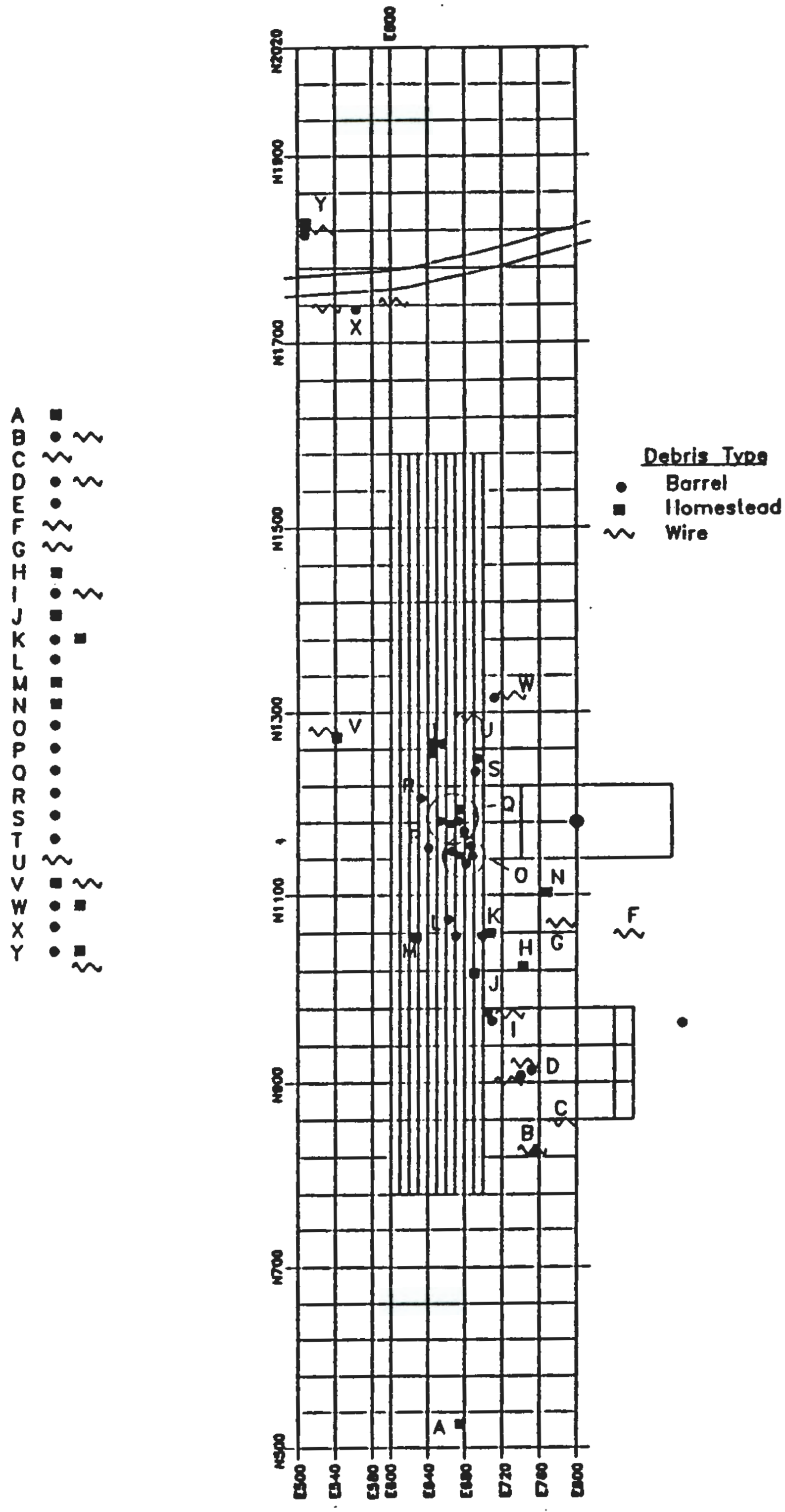


Figure 2. Surface Debris Grid Location.

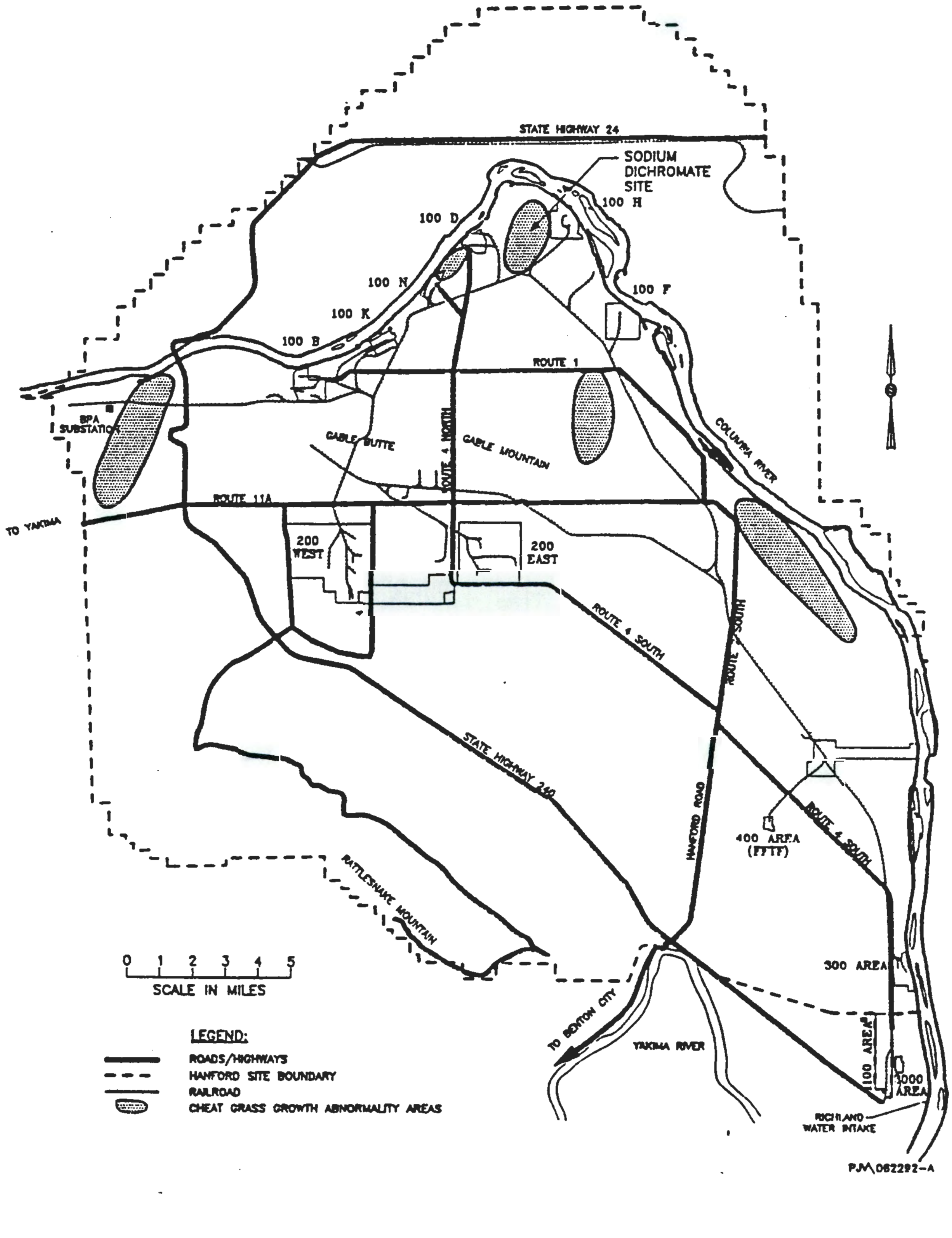


Figure 3. Cheat Grass Growth Abnormality Locations.

1.3 ORGANIZATION

The Sodium Dichromate Barrel Landfill ERA is classified as non-time critical. A planning period of at least 6 months exists before initiating ERA field activities.

This plan uses historical site data obtained from reference files (WIDS 1991) and initial characterization activities. Section 2.0 presents the sites physical and environmental characteristics. Section 3.0 provides a preliminary remedial action evaluation. Section 4.0 describes the site evaluation data goals and tasks supporting the ERA proposal. Section 5.0 presents a brief description of the ERA proposal contents and the associated review and approval process. Section 6.0 provides a brief implementation process description. Section 7.0 presents the project schedule. Section 8.0 contains all references used.

Attachments include support plans necessary to manage, conduct, and control the project.

- Attachment 1: Sampling and Analysis Plan
- Attachment 2: Quality Assurance Project Plan
- Attachment 3: Health and Safety Plan
- Attachment 4: Project Management Plan
- Attachment 5: Data Management Plan
- Attachment 6: Community Relations Plan.

2.0 SITE CHARACTERIZATION

The ERA characterization objective is to determine if any environmental hazards exist, their nature, and extent. Representative and specific locations will be investigated at the site.

Site characterization activities will consist of surface debris collection, nonintrusive ground-penetrating radar (GPR) and electromagnetic induction (EMI) surveys, and sampling.

2.1 SURFACE DEBRIS COLLECTION

Surface debris collection will be in accordance with the June 8, 1992, ERA Interface Meeting agreement. Debris locations and descriptions are in Table 1 and Figure 2. This surface debris influenced the initial GPR and EMI surveys (Figures 4 through 7).

2.2 GEOPHYSICAL SURVEYS

The GPR and EMI surveys define the extent of subsurface disturbance.

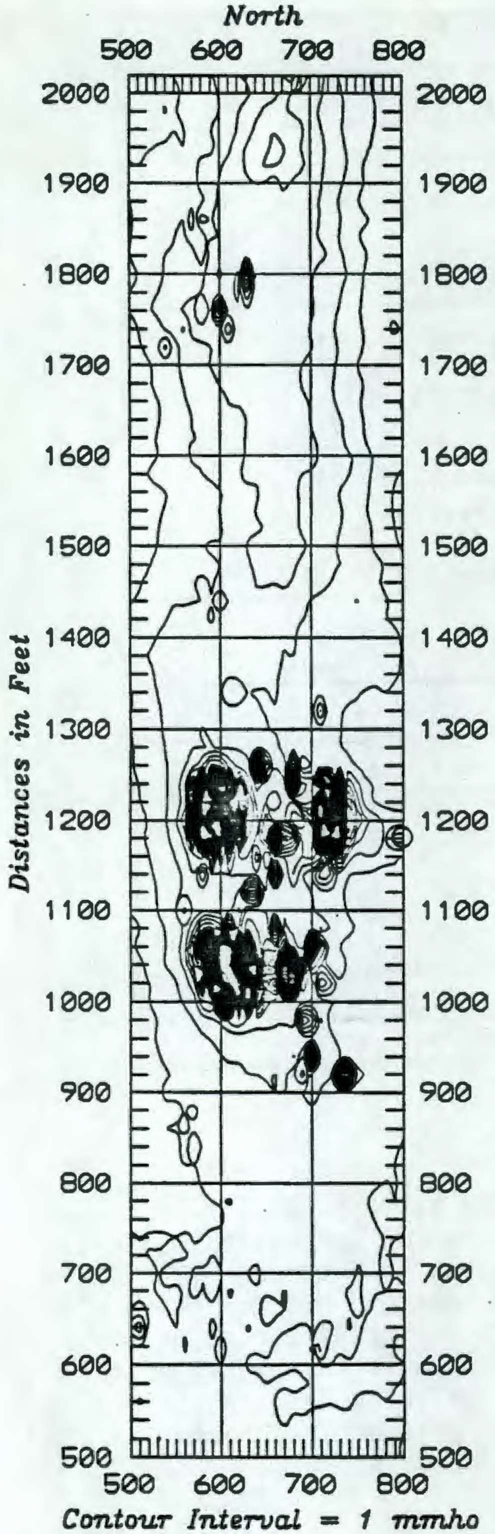
Table 1. Surface Debris Location Table (sheet 1 of 2).

Site	Location	Debris type
A	26 ft NNW of N540 E680 & 16 ft SSW of N580 E680	Homestead (wire, stove pipe)
B	8 ft WNW of N820 E760	Barrel\wire
C	22 ft W of N860 E800	Wire
D	23 ft & 34 ft NNE of N900 E720 / 25 ft & 36 ft SSW of N940 E780 23 ft - 30 ft W of Barrels 32 ft N of Barrels	Barrels (2) Screen wire Wire
E	17 ft E of N940 E860	Barrel (along roadway)
F	40 ft E of N1060 E800	Wire in roadway
G	31 ft WNW of N1060 E800 & 13 ft WSW of N1060 E760	Wire
H	28 ft NNE of N1020 E740	Homestead
I	N980 E700 10 ft E of N980 E729	Barrels (2) wire
J	N1020 E690 ~ 23 ft radius around coordinate point	Homestead (scattered)
K	N1060 E700 ~ 12 ft radius around coordinate point	Barrel\homestead
L	N1060 E670 24 ft NNW of N1060 E670	Barrel Barrel
M	11 ft S of N1060 E630	Homestead
N	10 ft NNE of N1100 E760	Homestead
O	N1140 E680 (All within a rectangular area 14 ft N of pts. N1140 E690 & N1140 E660	Barrels (5) distances referenced to N1140 E680: 4 ft N, (2)14 ft NNE, 6 ft WNW, and 14 ft WNW

Table 1. Surface Debris Location Table (sheet 2 of 2).

Site	Location	Debris type
P	17 ft N of N1140 E640	Barrels (2)
Q	Along N1180 line starting at E650 to E670 28 ft NNE of N1180 E670	Barrels (4) Barrel
R	12 ft S of N1220 E630	Barrel\homestead
S	12 ft and 22 ft S of N1260 E690	Barrels (2)
T	9 ft N of N1260 E650 On N1260 line Between E650 and E640 6 ft N of N1260 E640	Barrel Barrel Barrel
U	10 ft S of N1300 E680 (Between E670 & E680)	Wire
V	18 ft SSE of N1300 E540	Wire\homestead
W	20 ft NNW of N1300 E720	Barrel\homestead
X	On N1740 line, 15 ft W of E580 On N1740 line, 12 ft W of E540 14 ft N of N1740 E600	Barrel Wire Wire
Y	On N1820 line 18 ft E of E500	Barrel lid (?) Homestead\wire

The initial reconnaissance level GPR and EMI surveys had line spacing of 20 to 40 ft. In these surveys, metallic surface debris correlates well with the many GPR and EMI anomalies (Table 1, and Figures 2, 4 through 7). The surveys found several anomalous subsurface areas that did not correlate with the observed surface features. These areas could represent buried waste sites. After surface debris removal, the locations will be resurveyed to better define each location. Detailed surveys over these four specific anomalies will provide these definitions. Sample pits or trenches will further define the buried waste descriptions.



Electromagnetic Induction Contour Map

The EMI component displayed on this contour map is the subsurface electrical conductivity expressed in millimhos. The regional conductivity of the area is in the range of 5–10 millimhos per meter. These values are a function of the natural environment; primarily the sediment type and moisture type. Several anomalous zones outside the 5–10 millimho conductivity range are found between N980 and N1260. In many cases, these zones do not coincide with surface metal debris.

The anomalous zones are complicated and do not reveal a simple geometry. The tight contour lines signal an abrupt change in sub-surface conductivity. The depth of these conductivity anomalies is unknown. The anomalies may be due to buried metallic debris.

Some non-regional anomalies coincide with surface metal debris, but there are four large anomalies with no marked surface debris.

note: Grid strikes 10NNE

Figure 4. Initial Electromagnetic Induction Survey.

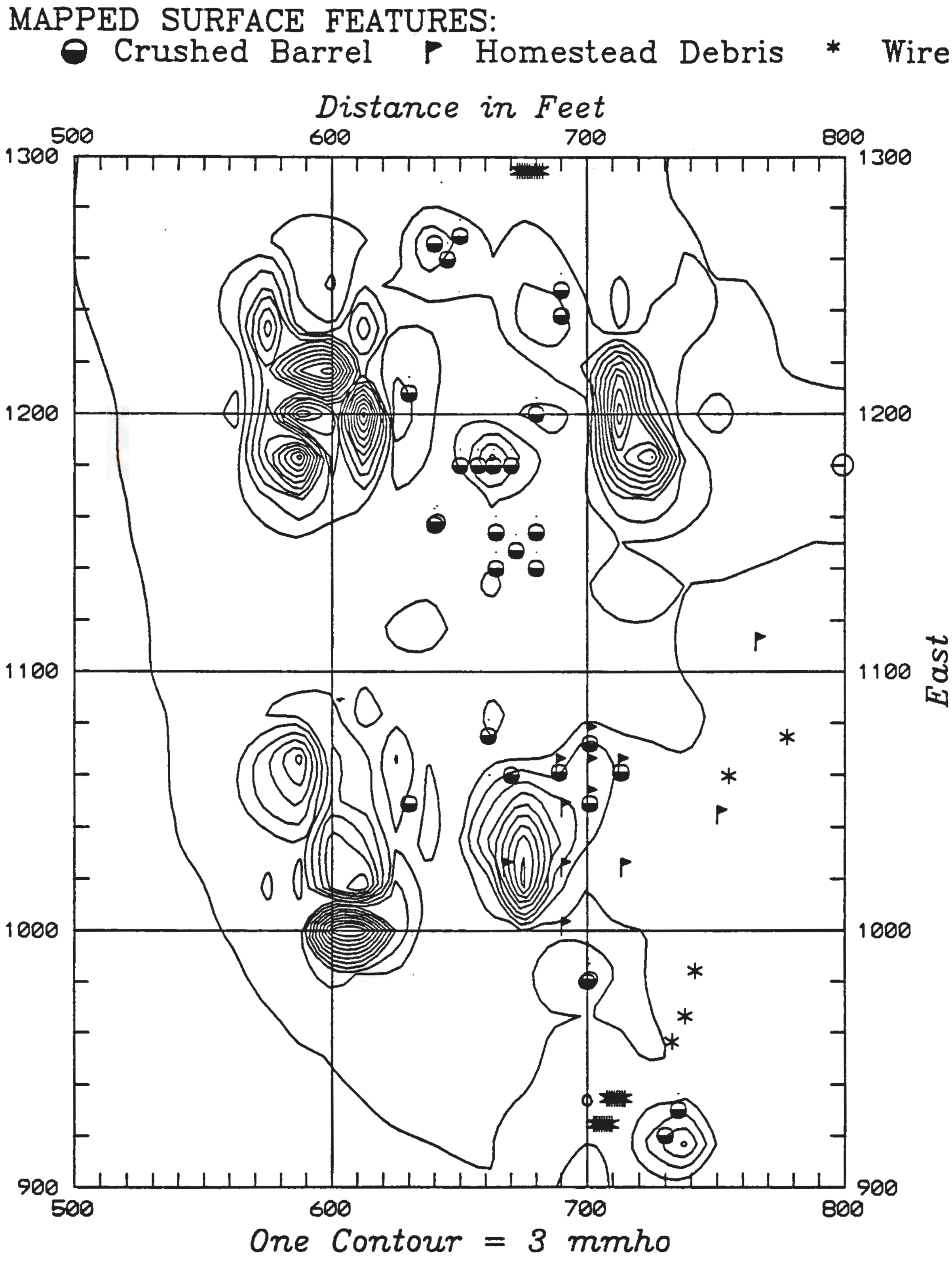
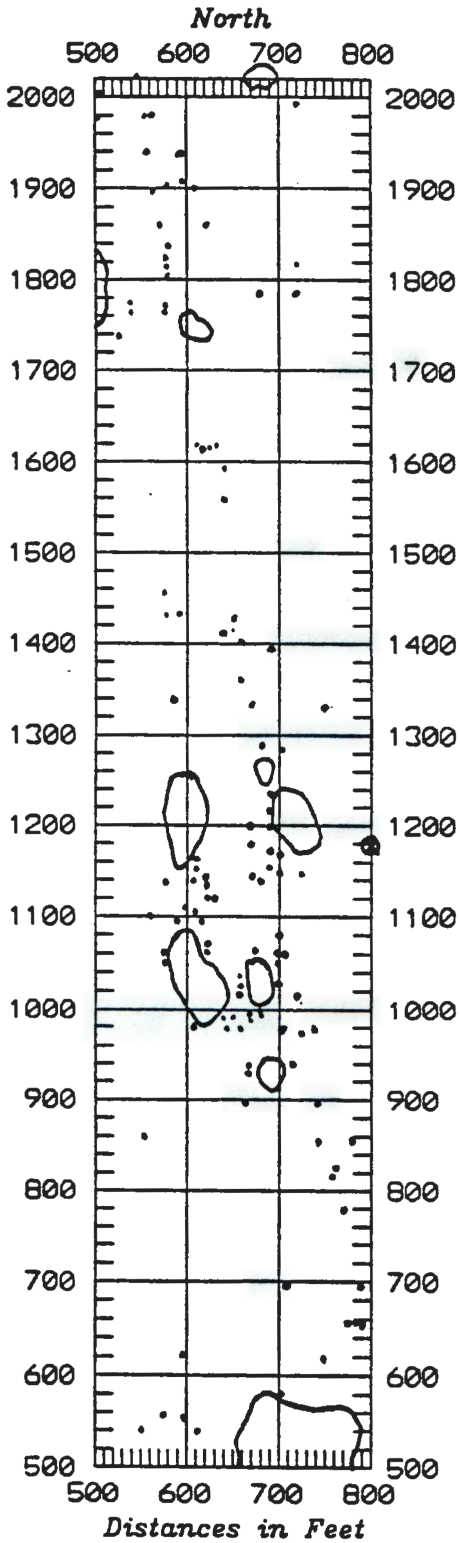


Figure 5. Blowup Showing Surface Debris Interference with Electromagnetic Induction Survey.



Ground Penetrating Radar Interpretation

The Ground Penetrating Radar (GPR) system used for this work utilized a 300 MegaHertz (MHz) antenna to transmit electromagnetic (EM) energy into the ground. This energy is subsequently reflected by electrically conductive material in the ground. Reflective material ranges from naturally occuring stratigraphic horizons to metal debris. Zones of highly conductive material essentially reflect all of the EM energy. Moderately conductive material both reflects, and propagates the energy. Consequently, GPR investigations below the zones of metallic debris is inhibited. The average depth of penetration was 12 feet. The grid strikes 10NNW, and the a

The grid strikes 10NNW, and the areas of conductive reflectors coincide with the anomalous zones on the EMI contour map. The major anomalous EMI zones coincident with reflective surfaces found with GPR lie between N980 and N1280, and are not coincident with surface metal debris.

Figure 6. Initial Ground-Penetrating Radar Survey.

9 2 1 2 5 1 1 2 3 8

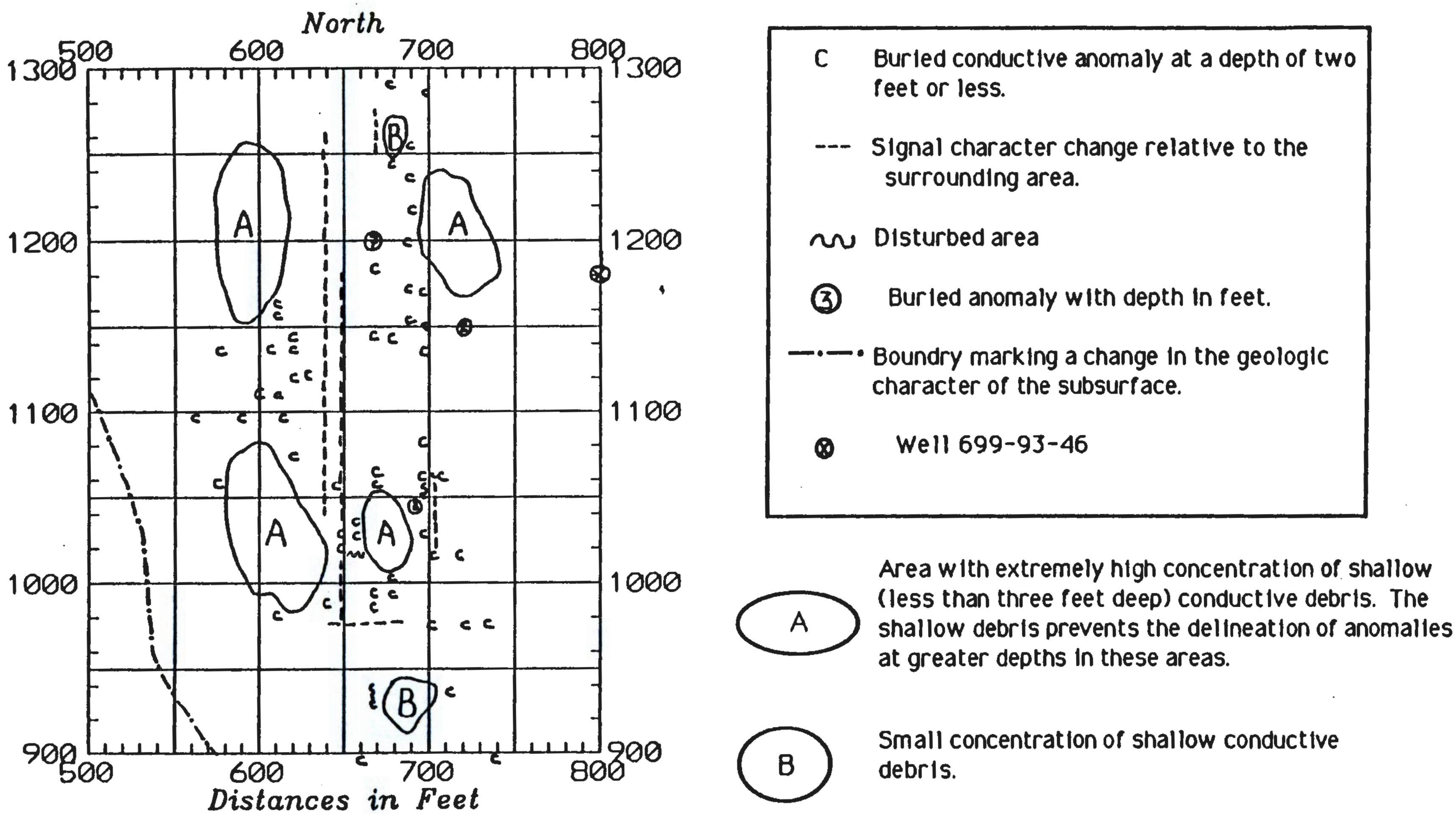


Figure 7. Blowup Showing Surface Debris Interference with Ground-Penetrating Radar Survey.

2.3 SAMPLING

Sampling consists of field screen samples (field screening) and qualified laboratory verification and validation.

Field screening locations conform to the June 8, 1992, ERA Interface Meeting agreement. The homestead debris locations will not be field screened.

Sampling will initially consist of field screening surface debris locations. Test pits or trench(s) sampling will follow completion of detailed geophysical surveys. Any sampling level equal to or greater than 5 parts per million (ppm) (Washington State Dangerous Waste Designation Limit) will have a split sample taken for qualified laboratory analysis per Attachment 1, Sampling and Analysis Plan.

Screening levels below 5 ppm will allow the surface debris to be sent to the central solid waste landfill. Levels above 5 ppm will require the debris be stored at the sodium dichromate barrel landfill monitoring well (699-93-46) pad per an agreement signed June 8, 1992 (WHC 1992b).

Although the site is considered nonradioactive, radioactivity analysis shall occur for offsite samples as a precaution. Offsite Total Chrome and Gamma Spectrum analysis will validate any positive field screening samples.

The Hanford Environmental Information System (HEIS) shall record all sample results.

The sampling and analysis plan is provided as Attachment 1.

2.3.1 Nonintrusive Surface Sampling

Nonintrusive sampling shall consist of collecting soil samples to a 1 ft or less depth.

2.3.2 Sample Pits/Trenches

The initial EMI and GPR surveys show four major buried waste sites. These sites will be sampled using sample pits or trenches. A backhoe will dig the pits/trenches. Depth shall not exceed 20 ft or first signs of reaching the water table. The field team leader shall direct the pit/trench construction and sampling activities. Each location will start as a pit and may expand to a trench depending on initial sampling results and field observations. All activities will be recorded in the field logbook.

3.0 PRELIMINARY SCREENING OF ALTERNATIVES

This section provides preliminary identification and screening of remedial action alternatives based on the waste site preliminary model. Screening results focus on the site evaluation tasks to analyze the alternatives.

The preliminary screening does not replace the formal ERA proposal engineering evaluation and cost analysis (EE/CA) screening process. Alternatives not retained here may be reevaluated in the comprehensive EE/CA screening.

3.1 PRELIMINARY ASSUMPTION

The crushed sodium dichromate barrels dumping occurred at the site in loose piles. A dozer buried most barrels with about 5 ft of local fill. Some barrels remained scattered about the site surface.

3.2 SCREENING EVALUATION

Characterization activities provide the database used to evaluate the initial response action alternatives and to generate additional feasible alternatives.

The initial response action alternatives are:

- No action
- Bury exposed surface debris at the site
- Remove exposed surface debris to Central Landfill and leave the remaining buried debris buried
- Excavate buried waste, "decontaminate" site, and waste disposal.

Screening uses timeliness, feasibility, environmental protection, and cost as selection criteria. Alternatives that pass the screening will be further evaluated in the EE\CA.

4.0 SITE EVALUATION TASKS

Site evaluation tasks will collect data for one or more of the following purposes:

- Identify health and safety concerns
- Verify and refine the preliminary assumptions
- Support EE/CA alternative development and evaluation.

Results will be reported in the ERA proposal.

4.1 DATA OBJECTIVES

The primary site evaluation objective is to use field screening methods to generate data. The data will support the site evaluation tasks.

The EPA devised an analytical level classification system (EPA 1987), which provides increased data quality as the scale increases. Level I consists of field screening methods. Level II entails more advanced onsite analytical techniques. Level III concerns standard laboratory program procedures. Level IV consists of EPA contract laboratory program procedures. Level V addresses specially developed procedures where standard methods are not available or requires a high degree of analytical sensitivity.

A Westinghouse Hanford Company (Westinghouse Hanford) developed site-specific analytical classification fulfills the EPA data quality goals. It consists of two data quality levels: (1) field or laboratory screening and (2) validated laboratory analyses (WHC 1990). Field screening or laboratory confirmation is equal to EPA Levels I, II, and III. Validated laboratory analyses are equal to EPA Levels IV and V.

4.2 FIELD INVESTIGATION TASKS

Initial site investigation tasks are geophysical surveys, and soil sample field screening. Since the exact field conditions (contamination levels and types) are unknown, evaluation task changes may occur during the investigation. Task changes will be documented.

Due to field conditions, the sample plan may require changes. Minor changes will require, at least, the verbal approval of the field team leader and the cognizant project engineer. In this situation, the field team leader will submit changes on the Sampling Project Change Form (Figure 1-1). An Engineering Change Notice (ECN) will be released per EP-2.2, Engineering Document Change Control, by the project engineer. The project file will maintain a copy. Major changes to the plan will require lead regulatory agency concurrence on an approved Document Change Request Form.

4.3 DATA EVALUATION

The site evaluation results will be used to define the extent of efforts necessary to remediate the site. The effort may support a no further action alternative and a subsequent "record of decision".

5.0 ERA PROPOSAL AND ACTION MEMORANDUM

The ERA proposal provides the EPA, Ecology, and the public with information that (1) defines the origin, nature, and extent of site contamination, (2) evaluates viable remedial technologies, and (3) recommends a preferred remedial action.

The ERA requires an evaluation of remedial technologies through preparation of an EE/CA. A non-time critical ERA requires the EE/CA to use specific screening factors and selection criteria to assess the feasibility, appropriateness, and costs to reduce and/or eliminate the environmental hazards present. The proposal will undergo an in-house Westinghouse Hanford review before a concurrent DOE-RL, EPA, and Ecology 30-day review and comment period. Reviewer comments will be dispositioned and the revised proposal will then have a 30-day public review. The EPA and Ecology will then be requested to approve the document after disposition of the public comments.

6.0 ERA IMPLEMENTATION

Following the Action Memorandum, the preferred alternative can be implemented. The necessary permits, equipment and other resources will be obtained and scheduled as necessary to support the ERA.

7.0 PROJECT SCHEDULE

The Sodium Dichromate Barrel Disposal Site project schedule is shown in Figure 8.

8.0 REFERENCES

Ecology, 1990, *Community Relations Plan for the Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1991, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Ecology, 1992, *Expedited Response Action Planning Proposals*, Washington State Department of Ecology, Olympia, Washington.

EPA, 1986, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1987, *Data Quality Objectives for Remedial Response Activities: Development Process*, EPA/540/6-87/003, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, U.S. Environmental Protection Agency, Washington, D.C.

McCain, R. G., W. L. Johnson, 1990, *A Proposed Data Quality Strategy for Hanford Site Characterization*, WHC-SD-EN-AP-023, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988a, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988b, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988c, *Radiation Protection*, WHC-CM-4-10, Rev. 14, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988d, *Standard Engineering Practices*, WHC-CM-6-1, Westinghouse Hanford Company, Richland, Washington.

WHC, 1989, *Westinghouse Hanford Company Quality Assurance Manual*, WHC-CM-4-2, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992a, *Data Validation Procedures for Radiological Analysis*, WHC-SD-EN-SPP-002, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992b, *Expedited Response Action Interface Meeting Minutes*, Westinghouse Hanford Company, Richland, Washington.

WIDS, 1991, *Waste Information Data System*, Westinghouse Hanford Company, Richland, Washington.

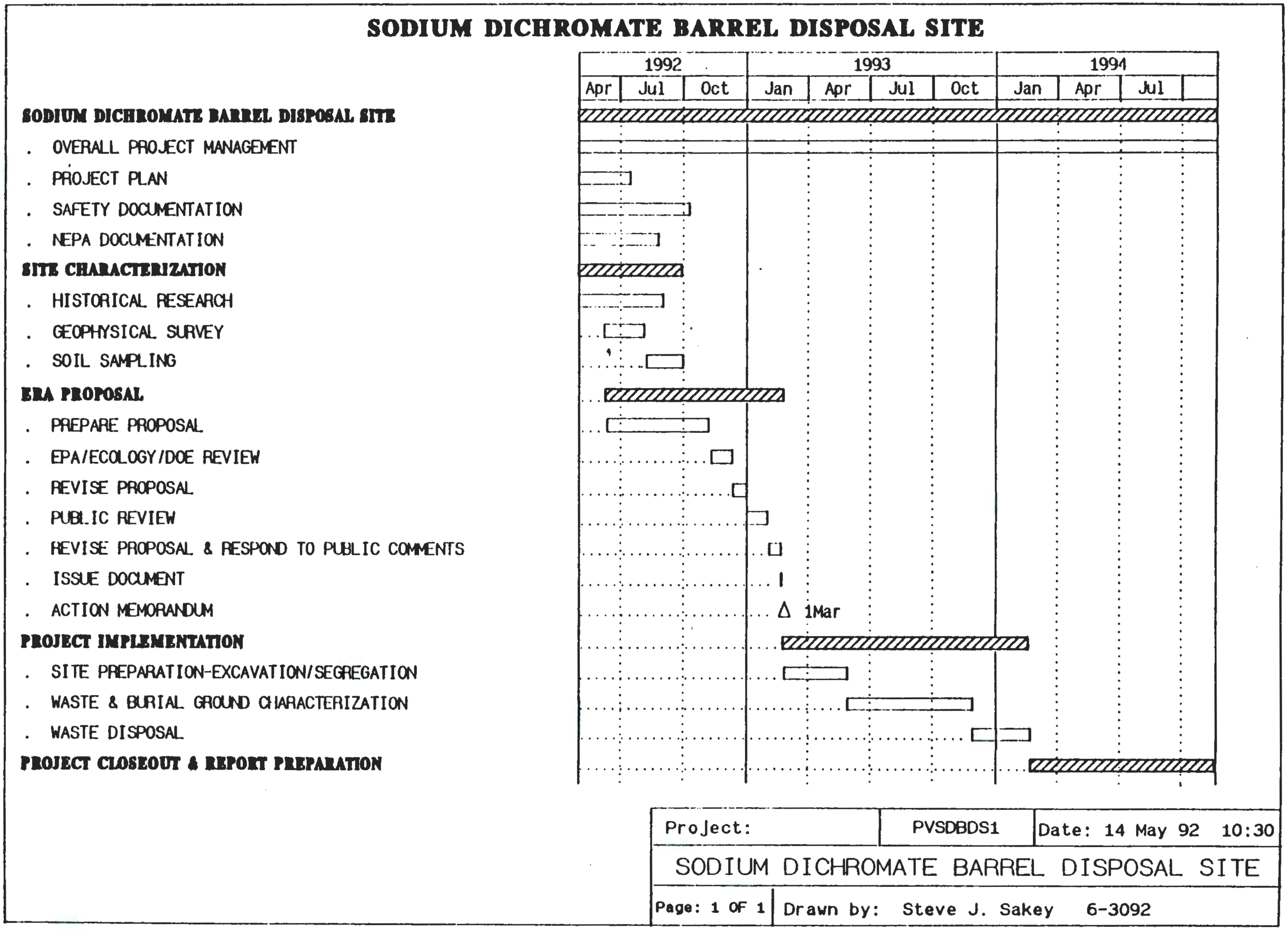


Figure 8. Project Schedule.

THIS PAGE INTENTIONALLY
LEFT BLANK

ATTACHMENT 1

SAMPLING AND ANALYSIS PLAN

THIS PAGE INTENTIONALLY LEFT BLANK

9 2 1 2 6 5 4 1 2 9 6

CONTENTS

1.0 SCOPE OF WORK 1-1

2.0 HEALTH AND SAFETY 1-1

3.0 SAMPLING AND FIELD ACTIVITIES 1-1
3.1 LOCATION 1-1
3.2 CONTAMINANTS OF CONCERN 1-1
3.3 FIELD SCREENING 1-1
3.4 SAMPLE COLLECTION 1-2
3.4.1 Nonintrusive Surface Sampling 1-2
3.4.2 Test Pits or Trench(s) 1-3

4.0 ANALYSES 1-3

5.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS 1-4

6.0 MODIFICATIONS TO THE SAMPLING PLAN 1-4

FIGURE

1-1 Sodium Dichromate Barrel Landfill Expedited Response Action Project Sampling Plan Change Form 1-5

TABLE

1-1 Laboratory Sample and Analysis 1-4

THIS PAGE INTENTIONALLY
LEFT BLANK

1.0 SCOPE OF WORK

The sampling and analysis plan supports the Sodium Dichromate Barrel Landfill Expedited Response Action (ERA) characterization activities. It provides guidance for field personnel. The sampling plan scope describes the collection of soil samples for site characterization to determine the nature and extent of contamination.

2.0 HEALTH AND SAFETY

A site-specific characterization Job Safety Analysis will be prepared as a work controlling document. All safety-related documents will be reviewed by field personnel and addressed in a field daily safety meeting (before starting work).

3.0 SAMPLING AND FIELD ACTIVITIES

3.1 LOCATION

The plan addresses soil sampling within the identified boundaries of the sodium dichromate barrel disposal landfill. The area of immediate concern is approximately 1,540 ft by 300 ft. The site description is in the project plan Sections 1.2 and 2.0.

3.2 CONTAMINANTS OF CONCERN

The primary hazardous constituent of concern is chrome and chrome+6. The assumption is that the disposed drums contained 1% by volume residual sodium dichromate.

Currently, the site is considered nonradioactive based on survey results. Due to the uncertainty of the drums origin and contents, total gamma energy analysis will be performed to verify the material as nonradioactive.

Samples analysis will be per Section 4.0.

3.3 FIELD SCREENING

Samples will be field screened for evidence of chrome+6 and radiation. Field screening will support the sample(s) selection for qualified laboratory analysis and determination of debris disposal method.

As part of the preliminary investigations, surface debris locations will be recorded before removal. At the time of barrel debris removal, soils directly below the debris will be field screened for hexavalent chromium.

A chromium (hexavalent) soil test kit usage will follow the test kit manufacture's recommendations for chromate screening with detection capability below 5 parts per million (ppm) (Washington State Dangerous Waste Designation Limit) chrome.

Samples with field screening levels equal to or greater than 5 ppm will have a split sample sent to a qualified laboratory analysis.

Screening levels below 5 ppm will allow the surface debris to be sent to the central solid waste landfill. Levels above 5 ppm will require the debris be stored at the adjacent monitoring well (699-93-46) pad.

As previously stated in Section 3.2, the site is considered nonradioactive. Radiation background levels will be monitored during activities (WHC 1988c). Any detections above background level shall cause all activities to stop. Health Physics Technicians (HPT) will be contacted for assistance.

3.4 SAMPLE COLLECTION

Soil sample collection will include nonintrusive surface sampling, test pits and trench(s). Ground-penetrating radar (GPR) and electromagnetic induction (EMI) surveys, and a visual inspection for surface debris will be completed before intrusive sampling.

The field team leader will record all field findings, sampling activities, and locations in accordance with EII 1.5, Field Logbook (WHC 1988b) in the field logbook (WHC-EFL-1027).

3.4.1 Nonintrusive Surface Sampling

Nonintrusive surface sampling depth limits for collecting soil samples is 1 ft or less. The following conditions may warrant sample analysis by a qualified laboratory:

- Surface debris removal and ensuing positive field screening (per Section 3.3) results
- Findings of GPR and EMI surveys
- Field team leader discretion.

Sample collection will use separate decontaminated hand tools (i.e., spoons, trowels) from each sample point shall be accomplished per EII 5.2, Surface Sampling Method (WHC 1988b). Analytical laboratory specified sample containers with full quality assurance certification will be used.

Following collection, samples will be labeled, packaged, and sent to a qualified laboratory for analysis. All samples sent for qualified laboratory analysis will be labeled and tracked using Hanford Environmental Information System (HEIS) identification numbers be accomplished per EII 5.10, Obtaining Sample Identification Numbers and Accessing HEIS Data (WHC 1988b). Sample packaging is done per EII 5.11, Sample Packaging and Shipping (WHC 1988b).

A chain of custody starts and is maintained after the sample is collected. The chain of custody is done per EII 5.1 Chain of Custody (WHC 1988b).

3.4.2 Test Pits or Trench(s)

Test pits or trench(s) will allow access for soil sampling and characterization at depths greater than 1 ft. GPR and EMI survey results will determine the test pits or trench location(s). A backhoe will construct the test pits or trenches. Test pits or trench(s) may be up to 20 ft deep and with enough lateral extent to safely achieve the required depth. The test pits or trench(s) will be constructed and backfilled in compliance with EII 5.2, Soil and Sediment Sampling, Appendix F, (WHC 1988b).

Due to the degree of unknown conditions prior to conducting excavation activities, the identified test pits or trench(s) sampling parameters are guidelines. As excavation progresses, excavation activity findings may require changes. Soil at the last debris layer base encountered will be field screened for hexavalent chromium and radiation. As a minimum, one sample will be collected at the test pit or trench base. Additional sample collections will depend on the following criteria:

- Results of field monitoring and screening for hexavalent chromium and radiation
- Soil adjacent to suspect containers (i.e., barrels)
- Discolored soil
- Field team leader discretion.

Sample collection will be from approximately the center of the backhoe bucket load before placing the material on the ground. Sample collection and subsequent handling will follow Section 3.4.1.

4.0 ANALYSES

Qualified laboratory sample (collected during nonintrusive surface and test pit activities) analysis shall be according to EPA protocols (EPA 1986). Laboratory sample analysis (Table 1-1), excluding radiological parameters, shall satisfy Level IV or V requirements for verification and validation. Chrome+6 is being requested for information only.

Table 1-1. Laboratory Sample and Analysis.

Parameters of Interest	Analytical Method (TMA/Weston)	Target Detection Limit	Precision	Accuracy
Chrome+6	SW-846-7196/SW-846-7197	0.1 ppm	±20%	±35%
Total chrome	Contract Laboratory Procedure	1.0 ppm	±20%	±25%
Gamma spec	RC-30/Pro-042-5	0.5 pCi	±35%	±35%

5.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

It is anticipated that approximately 10 samples will be collected for laboratory verification and validation. For this group of samples, the following QA/QC samples shall be collected: (1) one duplicate sample, (2) one split sample, and (3) one equipment blank sample shall be provided to verify the lot. The blank sample matrix will be silica sand to reflect soil.

Additional sampling may require additional QA/QC sample collections. The QA/QC sample quantity will be at the discretion of the field team leader.

6.0 MODIFICATIONS TO THE SAMPLING PLAN

Due to field conditions, the sample plan may require changes. Minor changes will require, at least, the verbal approval of the field team leader and the cognizant project engineer. In this situation, the field team leader will submit changes on the Sampling Project Change Form (Figure 1-1). An Engineering Change Notice (ECN) will be released per EP-2.2, Engineering Document Change Control, by the project engineer. The project file will maintain a copy. Major changes to the plan will require lead regulatory agency concurrence on an approved Document Change Request Form.

Date: ____________________

Person Initiating Change: ____

Change: ____

____

____

____

____

____

____

Reason For Change: ____

____

____

____

____

____

____

APPROVAL:

Field Team Leader: ____

Cognizant Engineer: ____

Environmental QA Representative: ________________________________

Figure 1-1. Sodium Dichromate Barrel Expedited Response Action Project Sampling Plan Change Form.

9212654I304

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT 2

QUALITY ASSURANCE PROJECT PLAN

9212654130 6

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

1.0 INTRODUCTION 2-1

2.0 PROJECT DESCRIPTION 2-1

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES 2-1

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT 2-2

5.0 SAMPLING PROCEDURES 2-3

6.0 SAMPLE CUSTODY 2-3

7.0 CALIBRATION PROCEDURES 2-4

8.0 ANALYTICAL PROCEDURES 2-4

9.0 DATA REDUCTION, VALIDATION, AND REPORTING 2-4
9.1 DATA REDUCTION AND DATA PACKAGE PREPARATION 2-4
9.2 VALIDATION 2-5
9.3 FINAL REVIEW AND RECORDS MANAGEMENT CONSIDERATIONS 2-5

10.0 INTERNAL QUALITY CONTROL 2-6

11.0 PERFORMANCE AND SYSTEMS AUDITS 2-6

12.0 PREVENTIVE MAINTENANCE 2-7

13.0 DATA QUALITY INDICATORS 2-7
13.1 DATA ASSESSMENTS BY ANALYTICAL FACILITY 2-7
13.2 PROJECT LEVEL ASSESSMENTS 2-8

14.0 CORRECTIVE ACTIONS 2-9

15.0 QUALITY ASSURANCE PROJECT REPORTS 2-9

9 2 1 2 7 . 4 1 3 7 7

THIS PAGE INTENTIONALLY
LEFT BLANK

9212654130 8

1.0 INTRODUCTION

The Quality Assurance Project Plan (QAPP) describes the quality assurance requirements that support the Sodium Dichromate Barrel Landfill Expedited Response Action (ERA) characterization activities. This QAPP presents the objectives, organizations, functional activities, procedures, specific quality assurance (QA), and quality control (QC) protocols associated with these activities.

2.0 PROJECT DESCRIPTION

The ERA characterization objective is to determine if any environmental hazards exist, their nature, and extent. Representative and specific locations will be investigated at the site.

Project plan Section 1.2 contains the site's description.

See project plan Sections 3.0 (Preliminary Identification and Screening of Alternatives) and 4.0 (Site Evaluation Tasks) for project objectives.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The Project plan's Attachment 4 describes the overall management plan. QAPP responsibilities of key personnel and organizations are:

- Field Team Leader (Environmental Restoration Engineering). Responsible for onsite direction of the sampling team in compliance with the requirements of this QAPP, the sampling plan, and all implementing Environmental Investigation Instructions (EII).

- Cognizant Quality Assurance Engineer (Environmental Quality Assurance). The QA person is responsible for performing formal audits/surveillances to ensure compliance with QAPP requirements (WHC 1990).

- Office of Sample Management (OSM). OSM is responsible for coordinating qualified and approved laboratory support for all project analyses concerns, assisting in sample shipment tracking, resolving chain-of-custody issues, and when requested validating all related data.

- Qualified Analytical Laboratories. Soil samples shall be sent to a Westinghouse Hanford approved contractor, participant subcontractor, or subcontractor laboratory. They shall be responsible for performing the analyses identified in this plan in compliance with work order, contractual requirements, and Westinghouse Hanford approved procedures (see Section 5.0). Each laboratory shall have and comply with a written approved laboratory QA plan. All analytical laboratory work shall be subject to the surveillance controls invoked by QI 7.3, Source Surveillance and Inspection. This plan will meet the appropriate requirements of the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1991). OSM will retain prime responsibility for ensuring acceptability of offsite laboratory activities.

- Other Support Contractors. The project engineer may assign project responsibilities to other support contractors project responsibilities. Such services shall be in compliance with standard Westinghouse Hanford procurement procedures as discussed in Section 5.0. All work shall comply with Westinghouse Hanford approved QA plans and/or procedures.

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT

The QAPP's principal objective is to maintain the quality of field activities, sample handling, laboratory analysis, and to document each processing level.

The EPA devised an analytical level classification system (WHC 1987) which provides increased data quality as the scale increases. Level I consists of field screening methods. Level II entails more advanced onsite analytical techniques. Level III concerns standard laboratory program procedures. Level IV consists of EPA contract laboratory program procedures. Level V addresses specially developed procedures where standard methods are not available or requires a high degree of analytical sensitivity.

A Westinghouse Hanford developed site-specific analytical classification that fulfills the EPA data quality goals. It consists of two data quality levels: field or laboratory screening and validated laboratory analyses (McCain and Johnson, 1990). Field or laboratory screening is equal to EPA Levels I, II, and III. Validated laboratory analyses are equal to EPA Levels IV and V.

The following is a list of the analysis of concern:

- Chrome-VI
- Total Chrome - Per EPA Method 300.0 utilizing CLP's Special Analytical Services (SAS)
- Gamma Spectrum (SAS).

5.0 SAMPLING PROCEDURES

All sampling activities shall be consistent with the current applicable WHC (1988b) procedures and the Sodium Dichromate ERA Sampling Plan. These procedures are identified in the project field sampling plan. They include:

- EII 1.4, Instruction Change Authorizations
- EII 1.5, Field Logbooks
- EII 1.6, QA Records Processing
- EII 1.7, Indoctrination, Training, and Qualification
- EII 3.4, Field Screening
- EII 5.1, Chain of Custody
- EII 5.2, Soil and Sediment Sampling
- EII 5.5, 1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment
- EII 5.11, Sample Packaging and Shipping.

As noted in Section 3.0, procured participant contractor and/or subcontractor services shall be subject to the following (WHC 1989):

- QI 4.0, Procurement Document Control
- QI 4.1, Procurement Document Control
- QI 4.2, External Services Control
- QI 7.0, Control of Purchased Items and Services
- QI 7.1, Procurement Planning and Control
- QI 7.2, Supplier Evaluation
- QI 7.3, Source Surveillance and Inspection
- QI 17.0, Quality Assurance Records
- QI 17.1, Quality Assurance Records Control
- EII 1.6, QA Records Processing (WHC 1988b).

The procurement document shall specify that the contractor submit for Westinghouse Hanford review and approval prior to use all analytical procedures and their QA/QC program. All participant contractor or subcontractor procedures, plans, and/or manuals shall be retained as project quality records.

6.0 SAMPLE CUSTODY

Project samples shall be controlled per EII 5.1, Chain of Custody from the point of origin to the analytical laboratory. Laboratory chain of custody procedures shall be reviewed and approved as required by Westinghouse Hanford procurement control procedures as noted in Section 5.0. The contractor shall ensure the maintenance of sample integrity and identification throughout the analytical process. Offsite sample tracking will be performed by OSM procedure Sample Tracking.

Results of analyses shall be traceable to original samples through a unique code or identifier. Westinghouse Hanford will assign the samples Hanford Environmental Information System (HEIS) sample numbers. All results of analyses shall be controlled as permanent project quality records.

7.0 CALIBRATION PROCEDURES

Calibration of all critical Westinghouse Hanford measuring and test equipment, whether in existing inventory or newly purchased, shall be controlled as required by:

- QR 12.0, Control of Measuring and Test Equipment
- QI 12.1, Acquisition and Calibration of Portable Measuring and Test Equipment
- QI 12.2, Measuring and Test Equipment Calibration by User
- EII 3.1, User Calibration of Health and Safety Measuring and Test Equipment.

Routine field equipment operational checks shall be per applicable EIIs or procedures. Similar information shall be provided in Westinghouse Hanford approved participant contractor or subcontractor procedures.

Participant contractor, or subcontractor laboratory analytical equipment calibrations shall be per applicable standard analytical methods. These shall be subject to Westinghouse Hanford review and approval.

8.0 ANALYTICAL PROCEDURES

Procedures based on the referenced methods shall be selected or developed, and approved before use in compliance with appropriate Westinghouse Hanford procedure and/or procurement control requirements as noted in Section 5.0.

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

9.1 DATA REDUCTION AND DATA PACKAGE PREPARATION

All analytical laboratories shall be responsible for preparing a report summarizing the analysis results and a detailed data package. This includes all information necessary to perform data validation to the extent indicated by the minimum requirements of Section 9.2. Data shall be reported on a dry-weight basis. The data summary report format and data package content shall be defined in procurement documentation subject to Westinghouse Hanford review and approval as noted in Section 5.0. As a minimum, laboratory data packages shall include the following:

- Sample receipt and tracking documentation, including identification of the organization and individuals performing the analysis, the names and signatures of the responsible analysts, sample holding time requirements, references to applicable chain of custody procedures, and the dates of sample receipt, extraction, and analysis

- Instrument calibration documentation, including equipment type, model, initial and continuing calibration data, method of detection limits, and calibration procedure used
- Additional quality control data, as appropriate for the methods used including matrix spikes, duplicates, recovery percentages, precision data, laboratory blank data, and identification of any nonconformance that may have affected the laboratory's measurement system during the analysis time period
- The analytical results or data deliverables, including reduce data, reduction formulas or algorithms, unique laboratory identifiers, and description of deficiencies
- Other supporting information, such as reconstructed ion chromatographs, spectrograms, traffic reports, and raw data.

All sample data shall be retained by the analytical laboratory and made available for systems or program audit purposes upon request by Westinghouse Hanford, DOE-RL, or regulatory agency representatives (see Section 11.0). Such data shall be retained by the analytical laboratory through the duration of their contractual statement of work, at which point it shall be turned over to Westinghouse Hanford for archiving.

9.2 VALIDATION

The completed data package shall be reviewed and approved by the analytical laboratory's QA Manager before submittal to Westinghouse Hanford for validation. Validation of the completed data package shall be performed by qualified Westinghouse Hanford OSM or other contract personnel. Validation requirements will be defined within the approved procurement document or Westinghouse Hanford OSM data validation procedures (WHC 1992b).

For analyses performed by qualified laboratories, validation reports shall be prepared. The results of these analyses will be substantiated with checks as applicable per the analytical procedure.

9.3 FINAL REVIEW AND RECORDS MANAGEMENT CONSIDERATIONS

All validation reports and supporting analytical data packages shall be subjected to a final technical review by qualified reviewers at the direction of the Westinghouse Hanford Project Engineer. This will be done before data submittal to regulatory agencies or inclusion in reports or technical memoranda. All validation reports, data packages, and review comments shall be retained as permanent project quality records in compliance with EII 1.6, Records Management (WHC 1988b), and QA 17.0, Quality Assurance Records (WHC 1989). The Project Engineer will have the primary responsibility for dispositioning project related records and data.

10.0 INTERNAL QUALITY CONTROL

Sampling plan activities may be evaluated as part of the project's QC effort. All analytical samples shall be subject to in-process QC measures from the field to the laboratory and during laboratory processing. Laboratory analyses performance audits are implemented through the use of QA/QC samples sent to multiple laboratories. The data quality generated in this project will be operationally defined by the following internal QC sampling.

- Split samples shall be collected and submitted to separate laboratories for a measurement precision assessment
- Duplicate samples shall be collected and submitted to measure intralab precision
- Equipment blanks (matrix-silica sand) shall be prepared and submitted to assess sampling equipment cleanliness
- Laboratory internal quality control checks performed per applicable protocol for the analysis. For chemical analysis, this must include data demonstrating achieved accuracy, precision, system calibration, and performance. Reportables will include:
  - Preparation and calibration blanks
  - Calibration verification standards
  - Matrix spikes
  - Duplicates
  - Control samples
  - Other supporting documentation.

The minimum requirements of this section shall be invoked in procurement documents or work orders, compliant with standard Westinghouse Hanford procedures as noted in Section 5.0.

11.0 PERFORMANCE AND SYSTEMS AUDITS

Program activities are subject to oversight by Westinghouse Hanford QA personnel. Audits may address quality-affecting activities that include, but are not limited to, measurement system accuracy, intramural and extramural analytical laboratory services, field activities, and data collection, processing, validation, reporting, and management. Westinghouse Hanford QA audits will be performed under the Standard Operating Procedure requirements of WHC (1989).

System audit requirements are implemented in accordance with Standard Operating Procedure QI 10.4, Surveillance. All quality-affecting activities are subject to surveillance. The Project Engineer will interface with both the Environmental Field Services Quality Coordinator and the QA Officer. The QA Officer is responsible for providing independent formal audits/surveillances to ensure compliance with planned activities, and identify conditions adverse to or enhancing overall performance quality.

12.0 PREVENTATIVE MAINTENANCE

All measurement and testing equipment used in the field and laboratory that directly affect analytical data quality shall be subject to preventive maintenance measures that ensure minimization of measurement system downtime. Field equipment maintenance instructions shall be as defined by the approved procedures governing their use. Laboratories shall be responsible for performing or managing the maintenance of their analytical equipment; maintenance requirements, spare parts lists, and instructions shall be included in individual methods or in laboratory QA plans, subject to Westinghouse Hanford review and approval. When samples are analyzed using EPA reference methods, the preventive maintenance requirements for laboratory analytical equipment are as defined in the procured laboratory's QA plan(s).

13.0 DATA QUALITY INDICATORS

13.1 DATA ASSESSMENTS BY ANALYTICAL FACILITY

Adherence to approved procedures will be sufficient for the majority of data reports. To the extent possible, performance-based standards will be the preferred method of assessment for precision and accuracy measurements. A familiar example is the use of control charts. Values exceeding a 3-sigma limit on well-established and appropriate control chart should be flagged when reported. Samples in the analytical batch should be rerun if possible, and those results also reported.

When appropriate performance-based standards are not available and referenced procedures do not specify, the following two rules may be used.

- Precision--The difference between laboratory duplicates will be subject to a control limit of 150% of the requested limit whenever both sample values exceed the estimated method detection limit (MDL). If the estimated MDL exceeds the requested limit, the higher value may be used to calculate the control limit. When either or both duplicates are below the estimated method detection limit, laboratory precision may be assessed by comparing identically spiked samples. Samples exceeding five times the control limit can be subject to a 20% relative percent difference limit, where:

  $$\text{Relative Percent Difference} = \frac{(S - D) \times 100}{((S+D)/2)}$$

  S = Sample concentration
  D = Duplicate sample concentration
  Failure to meet a precision limit will require evaluation and corrective action as appropriate.

- Accuracy will be defined by percent recovery data where

$$\% \text{ Recovery} = \frac{\text{(Spiked Sample Result - Sample Result)}}{\text{Spike Added}} \times 100$$

When the sample result (SR) is less than the MDL, use SR=0 for the purpose of calculating the percent recovery. Spiked samples having concentrations two to five times greater of the requested detection limit or MDL will have recovery control limits of 50% to 150%. Spiked samples exceeding five times the estimated MDL will have recovery control limits of 75% to 125%. Failure to meet the control limit will require evaluation and corrective action as appropriate. Applicable samples not meeting the limit should be rerun using a postdigestion spike if possible. Postdigestion spikes should be made at two times the indigenous level or lower reporting limit, whichever is greater.

13.2 PROJECT LEVEL ASSESSMENTS

All data requested through OSM will be subject to validation procedures as previously described (Section 9.2). Completeness of requested analyses will be assessed and reported to the Project Engineer by Westinghouse Hanford OSM or subcontractor. The EPA guidance suggests 80% to 85% is a reasonable expectation (EPA 1987).

Summary statistics for measurement precision and accuracy shall be prepared in conjunction with the data analysis.

Precision evaluation at the project level will address interlaboratory precision. Precision of environmental measurement systems is often a function of concentration. This relationship should be considered before selecting the most appropriate form of summary statistic. Simplistically, this relationship can usually be classified as falling into one of the following three categories.

- Standard deviation (or range) is constant
- Coefficient of variation (or relative range) is constant
- Both standard deviation (or range) <u>and</u> coefficient of variation (or relative range) vary with concentration.

The pooled standard deviation or pooled coefficient of variation can be used to summarize data in bullets 1 and 2, respectively. Bullet 3 will require either graphical summary of the data or specialized regression techniques.

Data quality assessments are generally made at concentrations typical of the observed range in routine analyses. In some situations the typical value measurement will be below an estimated practical method, or instrument detection limit (i.e., an engineering zero). If a standard exists (or is to be set) at some positive finite value, quality assessment summaries may be desired at that level rather than the most representative concentration.

14.0 CORRECTIVE ACTIONS

Corrective action requests required as a result of surveillance reports, nonconformance reports, or audit activity shall be documented and dispositioned as required by QR 16.0, Corrective Action: QI 16.1, Trending/Trend Analysis; and QI 16.2, Corrective Action Reporting (WHC 1989). Primary responsibilities for corrective action resolution are assigned to the Project Engineer and the QA Officer. Other measurement systems, procedures, or plan corrections that may be required as a result of routine review processes shall be resolved as required by governing procedures or shall be referred to the Project Engineer for resolution. Copies of all surveillance, nonconformance, audit, and corrective action documentation shall be routed to the project QA records upon completion or closure.

15.0 QUALITY ASSURANCE PROJECT REPORTS

Special QA reports are not planned for this project. Project records will be maintained in conformance with standard operating procedure requirements of WHC (1988d). Project records will be maintained according to EII 1.6, QA Records Processing, and technical data will be dispositioned according to EII 1.11, Technical Data Management. Surveillance, nonconformance, audit, and corrective action documentation shall be routed to the project quality records upon completion or closure of the activity. The final report shall include an assessment of the overall adequacy of the total measurement system with regard to the data quality objectives of the investigation.

9 2 1 2 6 5 4 1 3 1 8

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT 3

HEALTH AND SAFETY PLAN

9212654132O

THIS PAGE INTENTIONALLY
LEFT BLANK

The Sodium Dichromate Barrel ERA Project will use "Site Specific Safety Documents" required by the Environmental Investigations and Site Characterization Manual (WHC 1988b). This will ensure all project activities are done safely. Environmental Field Services generates these required documents for the different project activities.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT 4

PROJECT MANAGEMENT PLAN

9212654 1324

THIS PAGE INTENTIONALLY LEFT BLANK

Overall project organization is the responsibility of the Westinghouse Hanford's Environmental Division, Environmental Remedial Action Group, 100/300 Remediation Section. Westinghouse Hanford management has assigned the project engineer and field team leader.

The field team leader will interface with Environmental Field Services, OSM, Traffic and Shipping, Operations Support Services, and other Westinghouse Hanford organizations as necessary to perform field activities as directed by the project engineer.

The OSM shall be responsible for arranging laboratory support. All field activities are to be consistent with this project plan and applicable sections of WHC (1988a) and WHC (1988b).

Project team members shall include the project engineer, field team leader, sample and analytical personnel, operational support services personnel, health and safety officer, and QA personnel. All field personnel shall be familiar with the Site-Specific Safety documents before starting field activities. The field team leader will be responsible to have a copy the Site-Specific Safety Documents and applicable procedures available for field reference.

THIS PAGE INTENTIONALLY LEFT BLANK

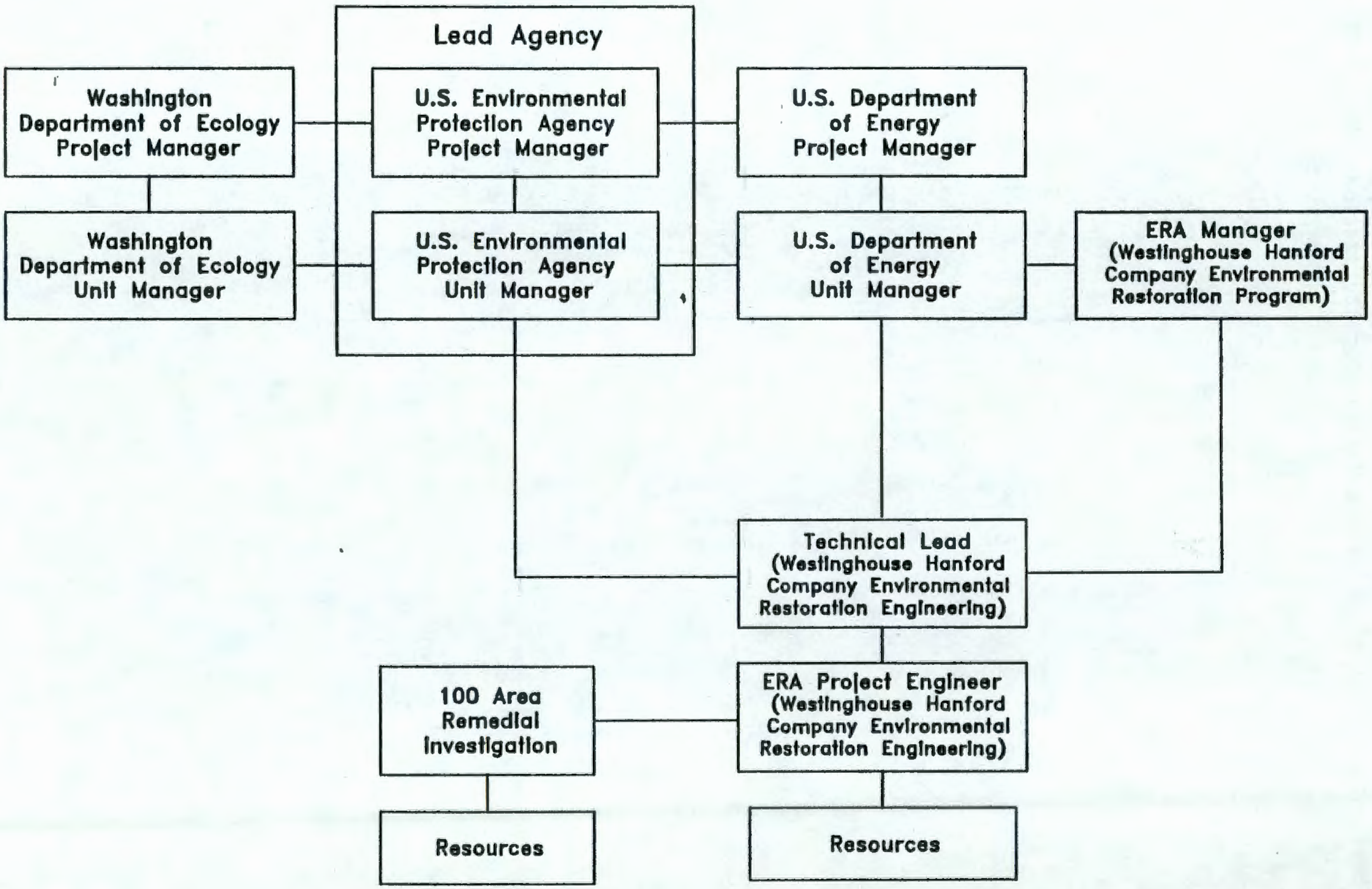
ATTACHMENT 5

DATA MANAGEMENT PLAN

9212654 1328

THIS PAGE INTENTIONALLY
LEFT BLANK

The Data Management Plan will follow the Analytical Laboratory Data Management Section (EII 14.1, Rev. 0) of the Westinghouse Hanford's *Environmental Investigations and Site Characterization Manual* (WHC 1988b).


Lead Agency
Washington Department of Ecology Project Manager
U.S. Environmental Protection Agency Project Manager
U.S. Department of Energy Project Manager
Washington Department of Ecology Unit Manager
U.S. Environmental Protection Agency Unit Manager
U.S. Department of Energy Unit Manager
ERA Manager (Westinghouse Hanford Company Environmental Restoration Program)
Technical Lead (Westinghouse Hanford Company Environmental Restoration Engineering)
100 Area Remedial Investigation
ERA Project Engineer (Westinghouse Hanford Company Environmental Restoration Engineering)
Resources
Resources

PJV\070892-A

ATTACHMENT 6

COMMUNITY RELATIONS PLAN

THIS PAGE INTENTIONALLY LEFT BLANK

A Community Relations Plan (CRP) exists for the Hanford Site Environmental Restoration Program Activities (Ecology 1990). It applies to the Sodium Dichromate Barrel Waste Site Expedited Response Action (ERA). The CRP provides continuity and general coordination of all the Environmental Restoration Program activities concerning community involvement. The program wide CRP discusses Hanford Site background information, and community involvement and concerns. The CRP was prepared and implemented by DOE-RL, EPA, and Ecology.

The public will have a 30-day period to review and comment on the formal Sodium Dichromate ERA proposal. In addition, the public is informed on ERA progress through quarterly public meetings, project fact sheets, and official ERA project administrative record file accessibility.

THIS PAGE INTENTIONALLY
LEFT BLANK