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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 161017

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



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15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-EN-AP-115		0	North Slope Expedited Response Action Field Sampling Plan	3Q	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)	(H)	(J) Name (K) Signature (L) Date (M) MSIN				(J) Name (K) Signature (L) Date (M) MSIN				(G)	(H)		
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1	1	Cog.Eng. J. G. Lucas		<i>J. G. Lucas</i>	12-3-92	H6-04	J. A. Bultena				N3-06	3	
1	1	Cog.Mgr. R. C. Roos		<i>R. C. Roos</i>	12/3/92	H6-04	F. W. Gustafson				H6-04	3	
1	1	QA R. L. Hand		<i>R. L. Hand</i>	12/2/92	H4-16	D. L. Harrold				N1-75	3	
3		Safety D. O. Hess				L6-57	G. C. Henckel				H6-04	3	
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3		Central Files (2)				L8-04	P. J. Valcich				H6-04	3	
3		EDMC (2)				H4-22 H6-04	J. Vaughn				N3-06	3	

18. J. G. Lucas <i>J. G. Lucas</i> Signature of EDT Originator Date: 12-3-92	19. _____ Authorized Representative Date for Receiving Organization	20. R. C. Roos <i>R. C. Roos</i> Cognizant/Project Engineer's Manager Date: 12/3/92	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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SUPPORTING DOCUMENT

1. Total Pages 15

2. Title

North Slope Expedited Response Action Field Sampling Plan

3. Number

WHC-SD-EN-AP-115

4. Rev No.

0

5. Key Words

North Slope, Nike, military, Expedited Response Action, Sample, homestead

6. Author

Name: J.G. Lucas

J.G. Lucas 11-30-92
Signature

Organization/Charge Code 81353/PD42A

APPROVED FOR PUBLIC RELEASE

12/4/92 N. Dole

7. Abstract

This plan describes the tasks associated with characterization of military and homestead sites located on Hanford's North Slope. The intent of this sampling effort is to determine if significant quantities of hazardous substances were disposed at these sites. This information will be used to determine if remedial actions are required at these sites.

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1.0 SCOPE OF WORK

This document provides details for characterization sampling of North (Wahluke) Slope waste sites (excluding military landfills) documented by Roos (1990). These waste sites are included in the current expedited response action (ERA), which entails accelerated characterization/cleanup activities at waste sites located on the Hanford Site North slope.

Sampling efforts are necessary to determine the possibility of environmental contamination at each of the sites. This sampling plan will serve as a field guide for those performing the work. This plan should be used in conjunction with environmental investigation instructions (EII) (WHC 1988a).

This sampling effort is part of the characterization phase of the North Slope ERA and entails the sampling of waste sites excluding the military landfills. Sampling of the military landfills is described by WHC (1992). Additional sampling efforts may be conducted based on the results of the initial sampling effort. A separate sampling plan will be prepared for all additional sampling efforts.

1.1 SITE DESCRIPTION

The North Slope area was used for military defense of the Hanford Site. Defense positions originally consisted of seven anti-aircraft gun emplacements that were eventually replaced with three Nike missile positions. There has been no permanent military installations in the area since approximately 1960. Prior to military occupation, the North Slope area was homesteaded as evident by water cisterns.

A brief description of the waste sites/structures being investigated (Figure 1) is provided in the following paragraphs.

H-81-R--Military site that possibly had radar equipment on it. Of interest at this site is a metal drum buried flush to ground surface. This drum has a lid with several holes in it and may have been used as a drywell. Depth from top of drum to soil surface inside is approximately 2-ft 6-in. and is located near the northwest end of site.

H-83-C--Radar site for Nike missile launch site H-83-L. Two drywells in association with spare parts building site are to be investigated. The dimensions per construction as-built drawings are 7-ft x 7-ft x 6-ft and 4-ft-diameter x 4-ft. Both drywells are presently covered with soil. Positions will be approximated per construction as-built drawings.

H-90--Anti-aircraft artillery site. Used motor oil contaminated soil below a concrete grease rack will be investigated.

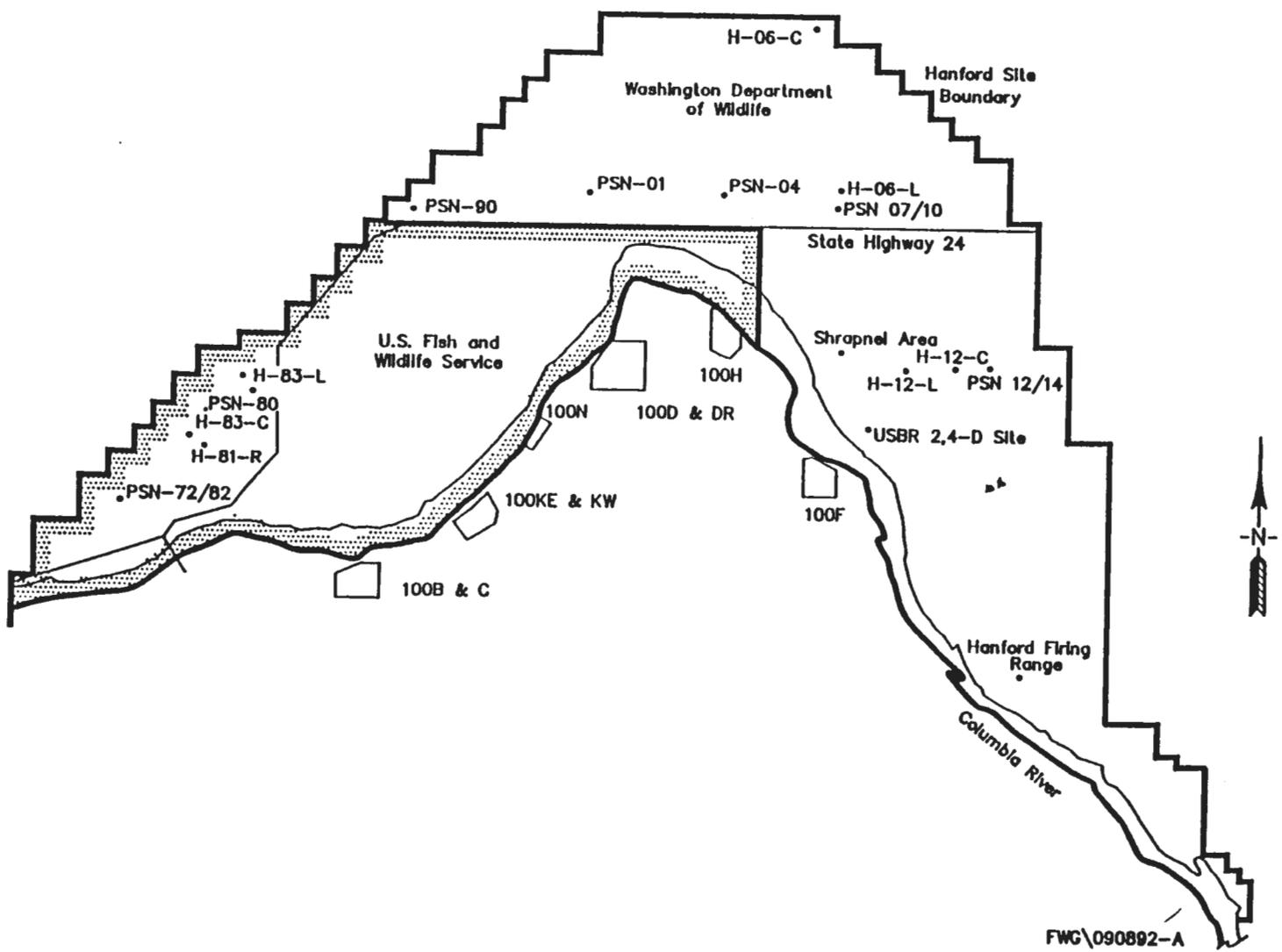


Figure 1. Location of North Slope Sites being Investigated.

H-06-L--Nike missile launch site. The following structures are to be investigated:

- Drywell for catch basin system used to route rainwater from missile storage area. A 6-in. drain pipe routed liquids to drywell (12-ft x 10-ft x 15-ft rock filled pit). Drywell is currently covered with soil. Position will be approximated per construction as-built drawings.
- One metal drum drywell buried on west perimeter of site. Depth from top of drum to soil/debris surface inside varies from 1-ft 3-in. to 1-ft 10-in. An 8-in-diameter hole is cut into side of drum at the 4 1/2-in. depth. No apparent pipe is connected to this hole.
- One acid neutralization pit that was used to contain and further neutralize soda solution. This solution was run through hoses that contained red fuming nitric acid. Pit is currently filled with soil.

H-07-H--Headquarters for Nike missile launch site H-06-L. Two metal drums welded one on top of the other are buried with top almost flush to the ground. A 5-in-diameter pipe entering the side of upper drum at the 2-ft 6-in. depth comes from a wash rack located by the vehicle repair shop site. Depth from top of drums to soil/debris surface inside is approximately 3-ft 10-in. Drums may have been used as a drywell.

Underground Wooden Rooms--Three rooms (12-ft x 12-ft floor surface), 8-ft high) located just southeast of anti-aircraft site H-04. Rooms were possibly used for personnel shelter and storage of anti-aircraft artillery ammunition and Nike missile operations equipment. One of the three rooms has been destroyed.

2,4-D Burial Site--Burial site for 2,4-Dichlorophenoxyacetic acid-herbicide (2,4-D) contaminated soil and ten crushed/empty tanks that contained 2,4-D. Site is approximately 60-ft x 400-ft. The soil and drums were buried respectively in 1966 and 1967.

Homestead Cisterns--Prior to land acquisition by the U.S. Government, numerous cisterns were constructed for storage of water by homesteaders. Cisterns are basically a concrete lined circular pit. Some of the cisterns may pose a physical hazard (open pit) and/or potentially an environmental hazard (due to presence of empty pesticide cans, etc., in some of the cisterns).

2.0 GENERAL REQUIREMENTS

2.1 APPLICABLE PROCEDURES

All personnel working to this description will perform work in accordance with the following:

- WHC-EP-0383, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan* (WHC 1990)
- WHC-CM-4-10, *Radiation Protection* (WHC 1988b)
- WHC-CM-4-11, *ALARA Program Manual* (WHC 1988c)
- WHC-CM-4-3, *Industrial Safety Manual*, Vol. 1 through 3, (WHC 1987)
- WHC-CM-7-5, *Environmental Compliance Manual* (WHC 1988d)
- WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual* (WHC 1988a)
- Site-specific Hazardous Waste Operations Plan or job safety analysis.

The associated field activities will also conform to the requirements of an existing safety assessment for soil sampling prior to initiation of the field activities. The requirements of this assessment may potentially impact specific sampling protocol. All changes resulting from this assessment will be documented utilizing an ERA Sampling Project Change Form (Attachment 1).

2.2 PREREQUISITES

A readiness review for the sampling efforts will be completed by the cognizant engineer before sampling is attempted. The readiness review will be completed per EII 1.13, Environmental Engineering and Geotechnology Readiness Review (WHC 1988a). The Sampling Checklist (Attachment 2) will be initialed by the cognizant engineer or field team leader and dated as each step of the task is completed.

2.3 DATA QUALITY OBJECTIVES

The data obtained from this sampling effort will be used to determine if hazardous substances are present in the sites at levels that warrant remedial efforts. Field screening/analysis samples will be collected to determine if contamination is present or not. If field screening/analysis samples indicate contamination, a second sample from the same location will be sent for confirmatory analysis using EPA level III or IV analytical methods. A minimum of one sample per facility will be collected for Level III analysis. A minimum of 10% of samples sent offsite for analysis, to a maximum of 10 samples, will be analyzed using EPA Level IV analysis.

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Field screening/analysis will be performed using organic vapor analyzer/gas chromatograph (OVA/GC), X-ray fluorescence (XRF), and various field test kits.

3.0 SAMPLING AND FIELD ACTIVITIES

3.1 SAMPLE LOCATIONS

Drywells--These sites (H-81-R, H-83-C, H-06-L, and H-07-H) will be investigated using a hollow stem auger, with the borehole drilled within the drywell. The drywells constructed of metal drums will be assumed to have a drum height of approximately 4 ft. Cuttings from the auger will be screened for organic vapors using an Organic Vapor Monitor (OVM). If contamination is noted by the OVM, a sample will be taken for field screening/analysis purposes at the approximate level where contamination was noted. If no contamination is identified during augering, a field screening/analysis sample and laboratory sample will be collected from 2-ft below the bottom of the drywell using a split spoon sampler. A minimum of two out of the six laboratory samples from the drywells will be CLP protocol.

Sampling will proceed to a maximum depth of 2 ft below bottom of drywell.

H-90--Concrete grease rack used by military for servicing vehicles. Rack has been used periodically since time of site deactivation for changing of motor oil by nearby residents. As a result there is "used oil" contaminated soil near west end of rack. Photographs of soil and rack were taken prior to rack being demolished. The rack was demolished in August 1992 to prevent unauthorized use and further soil contamination.

Contaminated soil will be collected into drum(s) and sampled for waste designation. An OVM will be used in conjunction with the soil collection process. After soil has been collected, soil below area of contamination will be analyzed for petroleum compounds using field screening/analysis methods. Two confirmatory soil samples (1-CLP, 1-SW-846) will be collected from the excavation pit surface (0 to 6 in), and two soil samples (both SW-846) from drum(s) will be analyzed for total petroleum hydrocarbons (TPH) and inductively coupled plasma/atomic adsorption (ICP/AA) metals (Section 4.0).

H-06-L--Acid Neutralization Pit. Soil will be collected from three locations at bottom surface of pit (if it has a bottom), or from 0 to 6 in. below bottom of pit sidewall and each analyzed using field analysis (XRF and pH). Laboratory analysis for ICP/AA metals and anions (Section 4.0) will be done on two (1-CLP, 1-SW-846) out of the three sample locations. Because the pit is rectangular in shape the samples will be collected at the 1/4, 1/2, and 3/4 marks down centerline of pit; at locations cited previously.

Underground Wooden Rooms--Soil from three random locations below wood plank floor surface (0- to 6-in. interval) in one of the rooms will be collected and composited into one laboratory sample (CLP protocol) and analyzed per Section 4.0, excluding volatile organic analysis (VOA), if field analysis is negative for this.

2,4-D Burial Site--Soil will be collected from surface (0- to 6-in. interval) of potentially contaminated soil at eight locations and analyzed for 2,4-D using field analysis. The burial site (approx. 60-ft x 400-ft) will be divided into eight quadrants for sampling of approx. center of each quadrant. Two composite soil samples (1-CLP, 1-SW-846) will be collected (1 per 4 quadrants) for analysis of 2,4-D dichlorophenol and 2,4-D. Records indicate 2,4-D contaminated soil was buried in shallow pit. Depth of fill material on top of this soil is unknown.

2,4-D biologically degrades to 2,4-Dichlorophenol after approx. thirty days. The degradation product degrades even more rapidly.

Homestead Cisterns--Soil samples will be taken from the "Clay Pit", "Cow Camp", and "Homestead" cisterns. Samples will be taken from bottom surface (0- to 6-in. interval) and analyzed by field screening/analysis methods. One sample will be collected from each of the three cisterns for laboratory analysis (see Section 4.0). VOA analysis will be excluded from the laboratory analysis if field analysis is negative for this. A minimum of one out the three laboratory samples will be CLP protocol. These three representative cisterns were selected due to presence of debris (empty pesticide cans, etc.) that may pose environmental hazards.

If the field screening/analysis does not indicate environmental hazards, the three cisterns will be backfilled with soil. The remaining cisterns will also be backfilled, unless the field team leader determines a potential for environmental hazards. A field screening/analysis sample will be taken if required by the field team leader.

If field screening/analysis identifies environmental hazards, one soil sample will be collected (laboratory analysis same as above) from the cistern in question and the perimeter of the cistern will be fenced off. The cistern will not be backfilled until analytical data can be studied and a determination is made if remediation is needed at the cistern.

3.2 SAMPLE COLLECTION

Soil samples shall be collected per EII 5.2, Soil and Sediment Sampling, using a split tube sampler and hand methods. A field logbook will be used to document activities associated with the sample collection. The logbook will be used and maintained per EII 1.5, Field Logbooks (WHC 1988a).

The following is a summary of the estimated number of samples to be collected.

- 16 samples from sites for offsite laboratory analysis
- 1 equipment blank, silica sand (offsite laboratory analysis-CLP)
- 1 duplicate sample (offsite laboratory analysis-CLP)
- 1 split sample (offsite laboratory analysis-CLP)

3.3 SAMPLE LABELING

The Hanford Environmental Information System (HEIS) is used to track the sample and laboratory data obtained during environmental investigations conducted under this description of work. Each sample will be identified and labeled with a unique HEIS sample number. HEIS numbers will be assigned in the field per the HEIS user's manual (WHC 1988a). The sample location and corresponding HEIS numbers will be documented in the field logbook.

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4.0 SAMPLE ANALYSIS

Samples sent for offsite analysis will be analyzed for the contaminants identified in Table 1. Specific field screening analysis performed on each sample will depend on field conditions. Typical field analyses will include pH, heavy metals, volatile organic compounds, petroleum hydrocarbons, and polychlorinated biphenyl.

A total activity analysis will also be performed on samples requiring offsite shipment (no radiological contamination is expected). Sample custody will follow EII 5.1, Chain of Custody (WHC 1988a). Total activity analysis will be performed in accordance with standard operating procedures developed for the 222-S Laboratory.

Table 1. Laboratory Sample Analyses Requirements.

Parameter/analysis	Analytical method		Holding time
	Level IV	Level III	
VOA ^a	CLP ^b	SW-846/8240	10 Days
Semi-VOA	CLP	SW-846/8270	7 Days ¹
PCB ^c /Pests	CLP	SW-846/8080	7 Days ¹
Phosphorus Pests	SW-846/8141	SW-846/8141	7 Days ¹
Herbicides	SW-846/8150	SW-846/8150	7 Days ¹
ICP ^d Metals	CLP	SW-846/6010	6 Months
AA ^e Metals arsenic lead selenium thallium	CLP	SW-846/7060 SW-846/7420 SW-846/7740 SW-846/7840	6 Months 6 Months 6 Months 6 Months
mercury	CLP	SW-846/7471	28 Days
Anions F, Cl, PO ₄ , SO ₄	EPA 300.0	EPA 300.0	28 Days
NO ₂ - NO ₃	EPA 353.2	EPA 353.2	28 Days
Chromium VI	EPA 218.4	EPA 218.4	24 Hours ²
Total Petroleum Hydrocarbons	EPA 418.1	EPA 418.1	28 Days
Total Activity	LA-548-111 LA-508-121	LA-548-111 LA-508-121	as soon as possible

^a Volatile organic analysis.

^b Contract laboratory program.

^c Polychlorinated biphenyl.

^d Inductively coupled plasma.

^e Atomic adsorption.

¹ 7 days for extraction, 40 days analysis.

² Analysis is for information only, WHC understands holding times will be missed.

5.0 QA/QC REQUIREMENTS

Internal QA/QC samples shall be collected as specified by DOE-RL (1991) Appendix A, and documented in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988a). Quality assurance samples will include one equipment blank sample, one duplicate sample and one split sample for every 20 soil samples collected. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand.

6.0 SCHEDULE

Sampling activities are targeted to begin during the third week of December 1992. This date assumes approval of this sampling plan by the regulatory agencies and the availability of the hollow stem auger drilling rig.

7.0 CHANGES TO DESCRIPTION OF WORK

Unforeseeable major changes to this sampling plan, such as analyzing for additional parameters or using different analytical methods, will be submitted on the Project Change Form (Attachment 2). The change will require, at least, the verbal approval of the field team leader and operable unit coordinator. The change will be filed as an Engineering Change Notice and a copy will be inserted into the project file.

Copies will be submitted to the regulatory agencies and the appropriate field personnel within 10 working days of the change. Foreseeable changes will be submitted to the regulators for approval or review prior to deviating from the sampling plan.

8.0 REFERENCES

- EPA, 1986, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, Washington, D.C.
- Roos, R. C., 1990, *North Slope Investigation Report*, WHC-EP-0359, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1987, *Industrial Safety Manual*, WHC-CM-4-3, Vol. 1 through 3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988a, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington,

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- WHC, 1988b, *Radiation Protection*, WHC-CM-4-10, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988c, *ALARA Program Manual*, WHC-CM-4-11, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988d, *Environmental Compliance Manual*, WHC-CM-7-5, 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, 1992, *North Slope Expedited Response Action Field Sampling Plan*, WHC-SD-EN-AP-099, Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

NORTH SLOPE EXPEDITED RESPONSE ACTION PROJECT CHANGE FORM

Date: _____

Person Initiating Change: _____

Change: _____

Reason For Change: _____

APPROVAL:

Field Team Leader: _____

Cognizant Engineer: _____

Environmental QA Representative:

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ATTACHMENT 2

NORTH SLOPE
EXPEDITED RESPONSE ACTION
SAMPLING CHECKLIST

Activity Performed

Signature/Date

PRE-JOB SAFETY MEETING COMPLETED

SAMPLES COLLECTED AND LABELED

LAB SAMPLES SURVEYED BY HPT

LAB SAMPLES PACKAGED IN SHIPPING CONTAINER

TOTAL ACTIVITY SCAN OF LAB SAMPLES COMPLETED

CHAIN OF CUSTODY FORM COMPLETED

SAMPLES SHIPPED TO LABORATORY

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Title North Slope Expedited Response Action Field Sampling Plan	Unclassified Category UC-	Impact Level 3Q
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New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).	Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)
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Other Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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