

START

ENGINEERING CHANGE NOTICE

0027000

1. ECN 166791

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Proj.
ECN

2. ECN Category (mark one)		Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>
Cancel/Void <input type="checkbox"/>	Direct Revision <input checked="" type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>	
3. Originator's Name, Organization, MSIN, and Telephone No. F. W. Gustafson, Env. Rest. Eng, H4-55, 376-1736			4. Date 12/18/92	
5. Project Title/No./Work Order No. Description of Work for 100 Area Columbia River Sediment Sampling		6. Bldg./Sys./Fac. No. n/a		7. Impact Level 3Q
8. Document Number Affected (include rev. and sheet no.) WHC-SD-EN-AP-097, Rev. 13 2 of 2		9. Related ECN No(s). n/a		10. Related PO No. n/a
11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. n/a	11c. Complete Installation Work n/a _____ Cog. Engineer Signature & Date		11d. Complete Restoration (Temp. ECN only) n/a _____ Cog. Engineer Signature & Date
12. Description of Change Incorporated additional EPA and Ecology comments. More specific details concerning sampling loactions were added.				
				
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>	Environmental <input checked="" type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>	Design Improvement <input type="checkbox"/>	As-Found <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	
13b. Justification Details Changes are a result of supplemental document reviews by EPA and Ecology				
14. Distribution (include name, MSIN, and no. of copies) See attached			RELEASE STAMP OFFICIAL RELEASE (11) BY WHC DATE JAN 06 1993 <i>Station # 12</i>	

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1. ECN (use no. from pg. 1)

166791

15. Design Verification Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	16. Cost Impact <table style="width: 100%;"> <tr> <th style="width: 50%;">ENGINEERING</th> <th style="width: 50%;">CONSTRUCTION</th> </tr> <tr> <td>Additional <input type="checkbox"/> \$</td> <td>Additional <input type="checkbox"/> \$</td> </tr> <tr> <td>Savings <input type="checkbox"/> \$</td> <td>Savings <input type="checkbox"/> \$</td> </tr> </table>	ENGINEERING	CONSTRUCTION	Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	17. Schedule Impact (days) Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
ENGINEERING	CONSTRUCTION							
Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$							
Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$							

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]		[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
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20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer F.W. Gustafson	1/4/93	PE	
Cog./Project Engr. Mgr. G. C. Henckel	1/4/93	QA	
QA G. S. Corrigan	1-6-93	Safety	
Safety		Design	
Security		Other	
Proj. Prog./Dept. Mgr.			
Def. React. Div.			
Chem. Proc. Div.			
Def. Wst. Mgmt. Div.			
Adv. React. Dev. Div.			
Proj. Dept.			
Environ. Div.			
IRM Dept.			
Facility Rep. (Ops.)			
Other S. G. Weiss	8/22/88		

93 | 2733 | 460

SUPPORTING DOCUMENT

1. Total Pages 13

2. Title

Description of Work for 100 Area Columbia River Sediment Sampling

3. Number

WHC-SD-EN-AP-097

4. Rev No.

3

5. Key Words

contaminants, spring, HEIS, risk assessment

6. Author

Name: F.W. Gustafson

Signature

Organization/Charge Code 81351/81253

APPROVED FOR PUBLIC RELEASE

1-6-93 N. Adair

7. Abstract

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10.

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9. Impact Level 30

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1.0 SCOPE OF WORK

This document details Columbia River sediment investigation field activities associated with 100 Area Operable Units remedial investigations. This work is driven by the Columbia River Impact Evaluation Plan (DOE-RL 1992a). This plan indicates data gaps to be filled before a complete risk assessment can be completed for the Comprehensive Environmental Response Compensation and Liability Act remedial investigation and feasibility studies at the Hanford Site 100 Areas.

The scope of this effort is to complete a preliminary survey to determine if a notable level (elevated contaminant levels when compared with reference samples) of chemical and radiological contaminants are present in Columbia River sediments and obtain a preliminary data on the extent of contamination if present.

Sampling locations will be chosen based on areas of obvious sediment deposition downriver from outfall pipes and spillways and within backwater river channels. Sampling these locations will provide a strong indication of whether contaminated sediment beds exist in the 100 Area reach of the Columbia River. If contaminant levels are not higher in the depositional areas than in the reference area, then it is unlikely (but not impossible) that they exist in non-depositional areas.

This description of work will serve as a field guide for those performing the work. It should be used in conjunction with the remedial investigation/feasibility study work plan for 100 Area Operable Units for general investigation strategy and with *Environmental Investigations and Site Characterization Manual* (WHC 1988a) for specific procedures.

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*, Vols. 1 through 3, (WHC 1987)
- WHC-CM-7-5, *Environmental Compliance Manual* (WHC 1988d)
- Site-specific job safety analysis.

The associated field activities will also conform to the requirements of a site-specific safety assessment to be completed 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 a Columbia River Sediment Sampling Project Change Form (Attachment 1).

2.2 PREREQUISITES

A readiness review 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 Status Checklist (Attachment 2) will be initialed by the cognizant engineer or field team leader and dated as each step of the task is completed.

3.0 SAMPLING AND FIELD ACTIVITIES

3.1 LOCATION

This description of work addresses the sampling of Columbia River sediments located around outfall structures, within backwater sloughs, and on the downriver side of islands. The extent of the sampling efforts will be limited to river sediments located between B Reactor and the Hanford Town Site. Reference samples will be taken from depositional zones up river from the Hanford Site.

Exact sampling locations will be chosen during a reconnaissance effort to be conducted prior to initiating the sampling activities. This reconnaissance effort will survey areas where contaminants were likely to settle out (i.e., areas of low velocity). Sample material will consist of silts and sands. Cobble material will be avoided. A representative from each of the regulatory agencies will be invited to participate in the reconnaissance effort. If space on the boat is limited the regulatory agencies will be asked to choose a single representative. Sample locations will be selected by the field team leader with input from the regulatory agencies.

Figure 1 identifies areas to be investigated during the field reconnaissance activities. These areas include backwater areas as well as the outfall structures. Locating sediments in the vicinity of the outfall structures is doubtful however, as the outfall structures were typically placed near areas of high river velocity. From these areas, approximately 25 locations will be identified. Two additional sample locations will be selected in backwater depositional areas up river from the Hanford Site.

A minimum of three of the sample locations will be taken in the same vicinity of spring sediment sampling locations from the fall of 1991. This information will allow for comparison of data obtained during the earlier sampling effort.

9 8 1 2 7 3 1 4 6 5

Additional samples may be taken at the discretion of the field team leader. Sample numbers may be reduced if the field reconnaissance efforts indicate a lack of adequate sediments. A sediment sample will be taken from surface material (0 to 6 in.) and from a composite of sediments below the 1-ft level at the same location if an adequate sediment bed exists. It is assumed (for planning purposes) that two samples, one surface and one subsurface, will be collected from each location.

The brief description of each sampling point will be recorded in the field logbook. United States Geological Survey topographic maps will be used to document the approximate sampling location. A global positioning system survey instrument will be used to obtain the approximate latitude/longitude for each location. The information obtained from the global positioning system will be for information only, as the reliability of the system is still being determined.

3.2 SAMPLE COLLECTION

The river sediment samples will be collected in accordance with the requirements of EII 5.2, Soil and Sediment Sampling (WHC 1988a). Samples will be collected using standard industry sampling equipment. Specific sampling equipment used will depend on specific site conditions. Sampling equipment that may be used includes gravity corers, trowels, short handled spades, shovels, and clamshell type grab samplers. Sampling should be conducted during periods of low flow (typically late fall to early spring). Radiological screening of the sample locations will be performed per EII 3.4, Field Screening, to bias the sampling towards areas with higher level of radioactivity.

Clean sample equipment will be used to obtain each sample. Every possible effort will be made to ensure that the fine fraction of sediment is not lost during sampling. This is necessary based on the assumption that the fine fraction retains most of the contamination. Specific details on how this is accomplished depends on field conditions.

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).

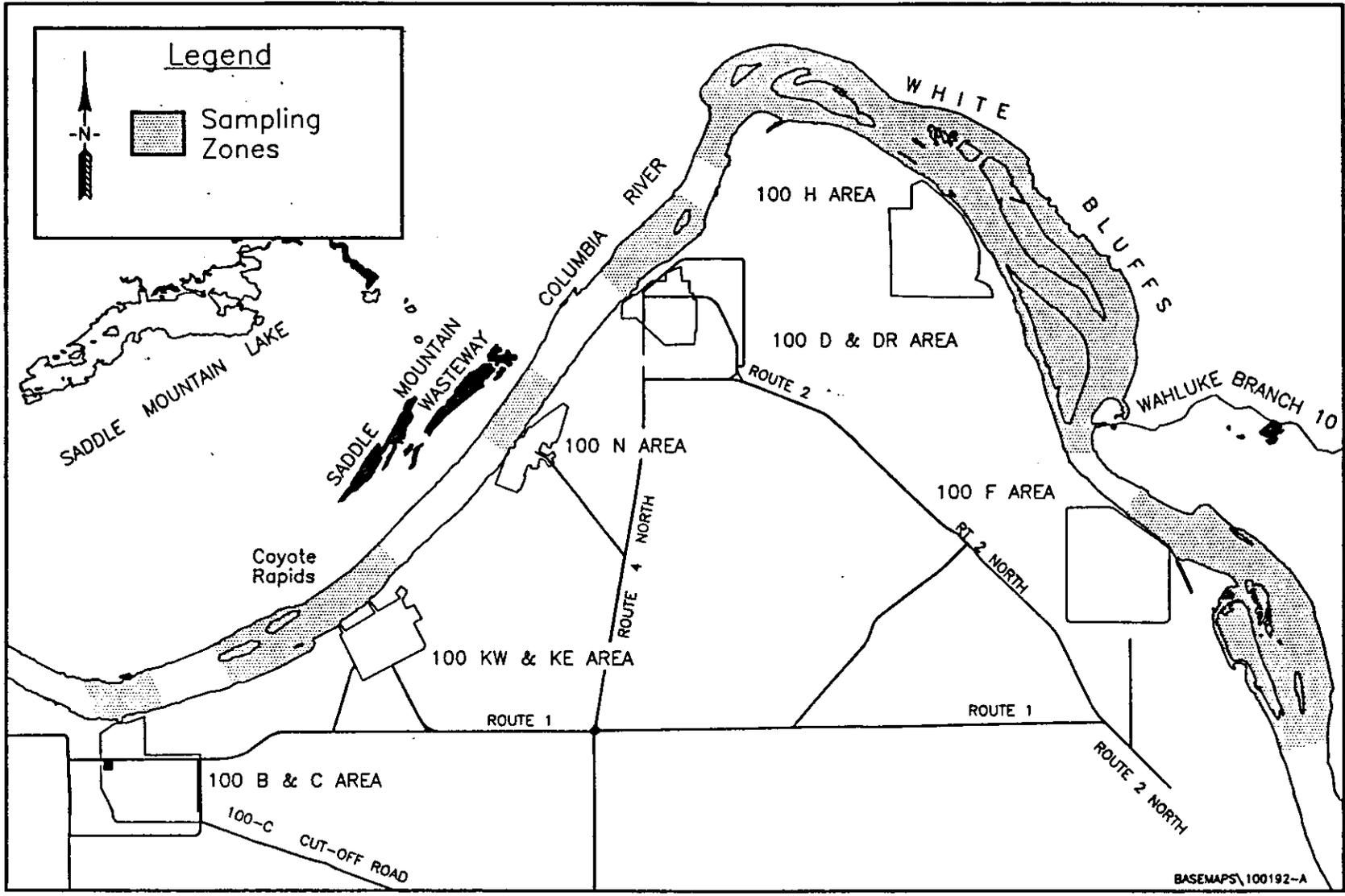
An estimated total of 63 samples will be collected, including quality assurance/quality control (QA/QC) samples. Sample numbers may be increased or decreased at the discretion of the field team leader. During the reconnaissance effort, the regulatory representative(s) will have input on the exact number of samples to be taken. The trip blank and field blank have been deleted per OSWER Directive EPA/540/G-87/004 Appendix C, Section C.6 (p. 13). The equipment blank media shall be silica sand.

Exact sampling locations will be determined during field reconnaissance efforts. The following is a summary of the samples to be collected (Note: The sample numbers below assume two samples will be taken from each location).

- 50 samples from within the Hanford reach of the river between B Reactor and the Hanford Town site

9 3 1 2 7 3 3 1 4 6 6

Figure 1. Columbia River Sediment Sampling Locations.



- 4 reference samples from locations up river of the Hanford Site
- 3 equipment blank samples
- 3 duplicate samples
- 3 split samples.

4.0 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 *Hanford Environmental Information System (HEIS) Operator's Manual* (WHC 1991). The sample location and corresponding HEIS numbers will be documented in the field logbook. Analytical results obtained from this investigation will be loaded into the HEIS.

5.0 SAMPLE ANALYSES

The contaminants of concern for the Columbia River sediments are based on those identified for the spring sampling effort conducted in the fall of 1991. Samples will be analyzed for inductively coupled plasma metals, lead, mercury, standard gamma scan radionuclides, gross beta, ⁹⁰Sr, and total activity. These contaminants are known to exist in groundwater plumes located near the river as well as contaminants present in the effluent from the reactor river discharge lines.

The laboratory will use existing Contract Laboratory Level IV methods for the chemical/metal constituents and Level V methods as approved under contract for radionuclides. Sample custody will follow EII 5.1, Chain of Custody (WHC 1988a).

A total activity analysis (required for nonradioactive offsite sample shipment and analysis) will also be performed for determining offsite shipping requirements. If total activity levels are above radiological release limits (200 pci/gm beta/gamma, 60 alpha) a physical sample will be sieved into two size fractions (>60 mesh and <60 mesh) and a total activity analysis performed on each size fraction. If total activity limits are below release limits, a particle size distribution analysis will be performed on sediments from each sampling location. This data can be compared with the analytical results to determine the sediment type most likely to retain contaminants.

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

All samples including Internal QA/QC samples shall be collected as specified in DOE-RL (1992b) Appendix A, Quality Assurance Project Plan and documented in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988a). Quality assurance samples will include three equipment blank samples, three duplicate samples, and three split samples. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B, "Data Quality Objectives for Remedial Response Activities Example Scenario: Remedial Investigation/ Feasibility Study Activities at a Site with Contaminated Soil and Groundwater, Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand.

Table 1. Sediment Sample Analysis Requirements.

Analyte	Method (main laboratory)	Method (split laboratory)	Holding time
Total Activity (222-S Laboratory)	LA-548-111 LA-508-121	LA-548-111 LA-508-121	ASAP ^a
ICP ^b /AA metals and mercury	CLP ^c	CLP	6 mo, 28 d
Strontium-90	RC-306, RC-303, RC-309, RC-304	RL-2314	6 mo
Gross beta	EP-10	RL-2302	6 mo
Gamma spec	RC-30	RL-4303 RL-4304	6 mo
Alpha spec (plutonium-239, plutonium-240, americium-241, uranium-235, uranium-238)	RC-102, RC-103, RC-501, EP-80, EP-90, EP-91, EP-92, EP-93, EP-5, EP-71, EP-70	RL-2325 RL-2326 RL-2323	6 mo

^aas soon as possible.

^binductively coupled plasma.

^ccontract laboratory program.

^dnot applicable.

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7.0 SCHEDULE

A field implementation date has not yet been established for the Columbia River sediment sampling activities. The activities should be planned for periods of low flow, typically fall to early spring. Approximately 3 to 4 wk will be needed to collect all of the samples identified. The exact schedule will be developed once the necessary resources are obtained. An Agreement Activity Notification form will be issued at least 5 d prior to the start of field work.

8.0 CHANGES TO DESCRIPTION OF WORK

Unforeseeable major changes to this description of work, such as analyzing different parameters or using different analytical methods, will be submitted on the Project Change Form (Attachment 2). As a minimum, the change will require the verbal approval of the field team leader and the 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 major changes will be submitted to the regulators for review or approval prior to deviating from the description of work.

9.0 REFERENCES

- DOE-RL, 1992a, *Columbia River Impact Evaluation Plan*, DOE/RL-92-28, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- DOE-RL, 1992b, *Remedial Investigation/Feasibility Study Work Plan for the 100-HR-3 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-88-36, U.S. Department of Energy, Richland Field Office, 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.
- 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.

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

WHC, 1991, *Hanford Environmental Information System (HEIS) Operator's Manual*, WHC-SP-0660, Westinghouse Hanford Company, Richland, Washington.

9 3 1 2 7 5 3 1 4 7 1

ATTACHMENT 1

COLUMBIA RIVER SEDIMENT
SAMPLING CHECKLIST

Activity Performed

Signature/Date

PREJOB SAFETY MEETING COMPLETED

SAMPLES COLLECTED AND LABELED

SAMPLES SURVEYED BY HPT

SAMPLE PACKAGED IN SHIPPING CONTAINER

TOTAL ACTIVITY SCAN OF SAMPLES COMPLETED

CHAIN OF CUSTODY FORM COMPLETED

SAMPLES SHIPPED TO LABORATORY

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**ATTACHMENT 2
COLUMBIA RIVER SEDIMENT SAMPLING PROJECT CHANGE FORM**

Date: _____

Person Initiating Change: _____

Change: _____

Reason for Change: _____

APPROVAL:

Field Team Leader: _____

Operable Unit Coordinator: _____

Environmental QA Representative: _____

9 3 1 2 7 5 3 1 4 7 3

27C

Date Received: 11/25/92UB		INFORMATION RELEASE REQUEST		Reference: WHC-CM-3-4	
Complete for all Types of Release					
Purpose			ID Number (include revision, volume, etc.) WHC-SD-EN-AP-097, Rev 3		
<input type="checkbox"/> Speech or Presentation <input type="checkbox"/> Full Paper (Check only one suffix) <input type="checkbox"/> Summary <input type="checkbox"/> Abstract <input type="checkbox"/> Visual Aid <input type="checkbox"/> Speakers Bureau <input type="checkbox"/> Poster Session <input type="checkbox"/> Videotape			<input type="checkbox"/> Reference <input type="checkbox"/> Technical Report <input type="checkbox"/> Thesis or Dissertation <input type="checkbox"/> Manual <input type="checkbox"/> Brochure/Flier <input type="checkbox"/> Software/Database <input type="checkbox"/> Controlled Document <input checked="" type="checkbox"/> Other		
			List attachments. None		
			Date Release Required 10/28/92		
Title Description of Work for 100 Area Columbia River Sediment Sampling			Unclassified Category UC-	Impact Level 30	
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 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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Title of Journal					
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				Name (printed)	Signature
Classification/Uncontrolled		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Nuclear Information		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Patent - General Counsel		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	} SW BERGLIN	[Signature]
Legal - General Counsel		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Applied Technology/Export Controlled Information or International Program		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
WHC Program/Project		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Communications		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
RL Program/Project		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	E. Goller	[Signature] 12/2/92
Publication Services		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L. Hermann	[Signature] 11/4/93
Other Program/Project		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Information conforms to all applicable requirements. The above information is certified to be correct.					
References Available to Intended Audience		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP Stamp is required before release. Release is contingent upon resolution of mandatory comments. 	
Transmit to DOE-HQ/Office of Scientific and Technical Information		<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Author/Requestor (Printed/Signature)		Date			
F. W. Gustafson [Signature]		11/24/92			
Intended Audience		<input type="checkbox"/> Internal <input type="checkbox"/> Sponsor <input checked="" type="checkbox"/> External			
Responsible Manager (Printed/Signature)		Date			
R. P. Henckel [Signature]		11/24/92		Date Cancelled	
				Date Disapproved	

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