

START

0021157 19

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 168776

Proj.
ECN

2. ECN Category (mark one) Cancel/Void ☐		Supplemental ☐	Change ECN ☐	Supersedure ☐
		Direct Revision ☒	Temporary ☐	Discovery ☐
3. Originator's Name, Organization, MSIN, and Telephone No. M. T. Stankovich, 100 RI/ERE/RR, H4-55, 6.2493				4. Date April 16, 1992
5. Project Title/No./Work Order No. 100-BC-1		6. Bldg./Sys./Fac. No. 100-B 100-C, 116-C-5		7. Impact Level 3
8. Document Number Affected (include rev. and sheet no.) WHC-SD-EN-AP-080, Rev. A EDT 158320 19987		9. Related ECN No(s). NA		10. Related PO No. NA
11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. NA	11c. Complete Installation Work NA _____ Cog. Engineer Signature & Date		11d. Complete Restoration (Temp. ECN only) NA _____ Cog. Engineer Signature & Date
12. Description of Change Revise document based on regulators comments				
				
13a. Justification (mark one) Design Error/Omission ☐		Criteria Change ☐	Environmental ☒	Facilitate Const. ☐
		Design Improvement ☐	As-Found ☐	Const. Error/Omission ☐
13b. Justification Details Revise document based on regulators comments.				
14. Distribution (include name, MSIN, and no. of copies) See attached.				RELEASE STAMP OFFICIAL RELEASE BY WHC DATE MAY 22 1992 Sta. 21

ENGINEERING CHANGE NOTICE

Page 2 of 2

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

168776

15. Design Verification Required

[] Yes
[X] No

16. Cost Impact

ENGINEERING

Additional [] \$
Savings [] \$

CONSTRUCTION

Additional [] \$
Savings [] \$

17. Schedule Impact (days)

Improvement []
Delay []

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

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer M. T. Stankovich <i>M. T. Stankovich</i>	<i>4/14/92</i>	PE	
Cog./Project Engr. Mgr. R. P. Henckel <i>R. P. Henckel</i>	<i>4/16/92</i>	QA	
QA G. S. Corrigan <i>Gary Corrigan</i>	<i>4-16-92</i>	Safety	
Safety		Design	
Security		Other	
Proj. Prog./Dept. Mgr.			
Def. React. Div.			
Chem. Proc. Div.			
Def. Wst. Mgmt. Div.			
Adv. React. Dev. Div.		DEPARTMENT OF ENERGY	
Proj. Dept.			
Environ. Div.		ADDITIONAL	
IRM Dept.			
Facility Rep. (Ops.)			
Other			

SUPPORTING DOCUMENT

1. Total Pages **215**

2. Title

Source Investigation Field Activities for the
100-BC-1 Operable Unit Description of Work

3. Number

WHC-SD-EN-AP-080

4. Rev No.

1

5. Key Words

Nonintrusive sampling
100-B/C Area
116-C-5

**APPROVED FOR
PUBLIC RELEASE**

5/7/92 W. Solis

6. Author

Name: M. T. Stankovich

M T Stankovich 4/16/92
Signature

Organization/Charge Code 81221/PH1AA

7. Abstract

This activity plan details the field activities associated with the nonintrusive source sampling in the 100 Area of the Hanford Site and will serve as a field guide for those performing the work.

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10.

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9. Impact Level 3

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RECORD OF REVISION

(1) Document Number

WHC-SD-EN-AP-080

Page 1

(2) Title

Source Investigation Field Activities for the 100-BC-1 Operable Unit Description of Work

CHANGE CONTROL RECORD

(3) Revision

(4) Description of Change - Replace, Add, and Delete Pages

Authorized for Release

(5) Cog. Engr.

(6) Cog. Mgr. Date

0

(7) EDT 158320

1 RS

ECN WHC-SD-EN-AP-080, Rev. 1 - Revised document based on regulators comments

[Signature]

[Signature] 4/16/92

Inc. ECN-168776

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1.0 SCOPE OF WORK

This document details the source investigation field activities of the 100-BC-1 Operable Unit and will serve as a field guide for those performing the work. It should be used in conjunction with *Remedial Investigation/Feasibility Study Work Plan for 100-BC-1 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1991) for general investigation strategy and with *Environmental Investigations and Site Characterization Manual* (WHC 1988a) for specific procedures. This description of work (DOW) describes specific limited field investigation (LFI) activities and sampling locations in accordance with discussions initiated at the June 27, 1991, 100 Area work plan rescoping meeting and the January/February 1992, comment resolutions meetings.

This DOW addresses sampling of the 116-C-5 Retention Basin. The 100-B/C Electrical Facilities sampling was addressed in a previous DOW (Stankovich 1991). The 116-B-2 Fuel Storage Basin trench sampling activity has been removed as a source investigation activity and moved into the vadose drilling by comment resolution to the work plan (DOE-RL 1991).

The data quality objectives for the operable unit are defined in the work plan (DOE-RL 1991, Section 4.1). The data will also be used to support analogous sites within the 100 Area.

2.0 GENERAL REQUIREMENTS

2.1 HEALTH AND SAFETY

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-SD-EN-SAD-002, *100 Area Low Hazard Characterization Activities Safety Assessment*, Rev. 0 (Taylor 1991)
- Site-specific Job Safety Analysis or Hazardous Waste Operations Permit.

2.2 PREREQUISITES

A readiness review (RR) will be completed by the cognizant engineer before the sampling task is attempted. The RR will be completed per Environmental Investigation Instruction (EII) 1.13, Environmental Engineering and Geotechnology Readiness Review (WHC 1988a). The Sampling Status Checklist (Attachment 1) 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 DOW addresses the sampling of the residual sludge in the bottom of the 116-C-5 Retention Basins. The site is described in the 100-BC-1 Operable Unit work plan (DOE-RL 1991, Section 2.1.4.1.1 & 3.1.1.1.2). The 116-C-5 Retention Basins are being sampled to determine the nature of the contamination in the sludge. The work plan (DOE-RL 1991, Figure 2-1) shows the location of the basins in relation to other landmarks in 100-B/C Area. Figure 1 shows the 116-C-5 Retention Basins location and immediate landmarks in 100-BC-1 Operable Unit.

Each basin shall contain three sampling locations. Two of the sample sites are biased to be near the retention basin inlet and outlet. The third site was picked to be neutral from influences of the basin inlet and outlet.

3.2 SAMPLE ANALYSIS

3.2.1 Contaminants of Concern

The contaminants of concern for the 116-C-5 Retention Basins are low level fission and activation products from the discharge cooling water from regular reactor operation. Water treatment chemicals are also a possible contaminant of concern (DOE-RL 1991, Sections 2.1.4.1.1 and 3.1.1.1.2).

3.2.2 Laboratory Analysis

All samples will be analyzed per Section 5.0. The list of analytes is consistent with the work plan (DOE-RL 1991, Appendix A, Table QAPjP-1) with hexavalent chromium being added for informational purposes only. The field sampler will collect the sample in the following order and will record the event in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988c):

1. Target Compound List (TCL) Volatiles
2. Radioisotopes
3. TCL Semivolatiles/PCB/Pesticides
4. Target Analyte List (TAL)
5. Anions: Fluoride, Nitrate, Sulfate
6. Hexavalent chromium
7. Total Activity.

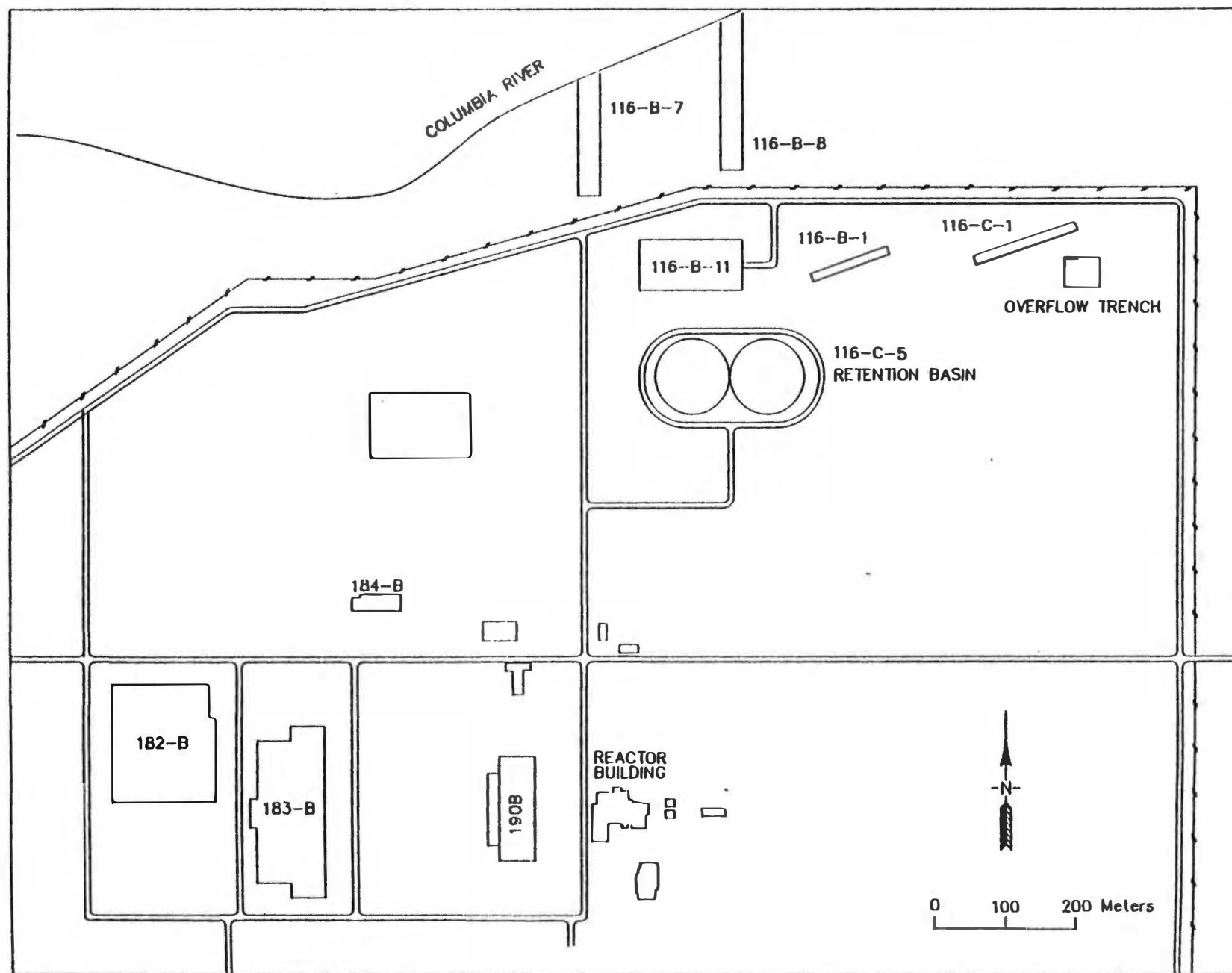


Figure 1. 100-C Retention Basin.

WHC-SD-EN-AP-080, Rev. 1

3.3 TEST PIT CONSTRUCTION

Three test pits will be constructed in each retention basin. A controlled entrance will be constructed for ingress/egress to each basin. All material entering or removed from the basin will be controlled and handled per EII 4.4, Control and Storage of Radioactive Material and Equipment (WHC 1988a). Approximate locations for these test pits are as shown in Figure 2. Each test pit will be of a size to allow for the appropriate material volume to be collected. Approximately 3 ft of overfill and 1/4 to 1/2 in. of residual sludge material are expected within the retention basins. Excavated overfill will be surveyed by the Health Physics Technician per the Radiation Work Permit. The excavated overfill will be temporarily placed on a sheet of plastic or silver-backed paper near the test pit. The residual sludge material will be collected per Section 3.4. The excavated overfill will be replaced in the test pit per EII 5.2, Soil and Sediment Sampling, Appendix F, (WHC 1988a) after collection of the material. The soil will be returned to the hole in the reverse order of excavation. Clean fill shall be placed over the disturbed area should site conditions require it. The area will be returned to its original condition.

3.4 SAMPLE COLLECTION

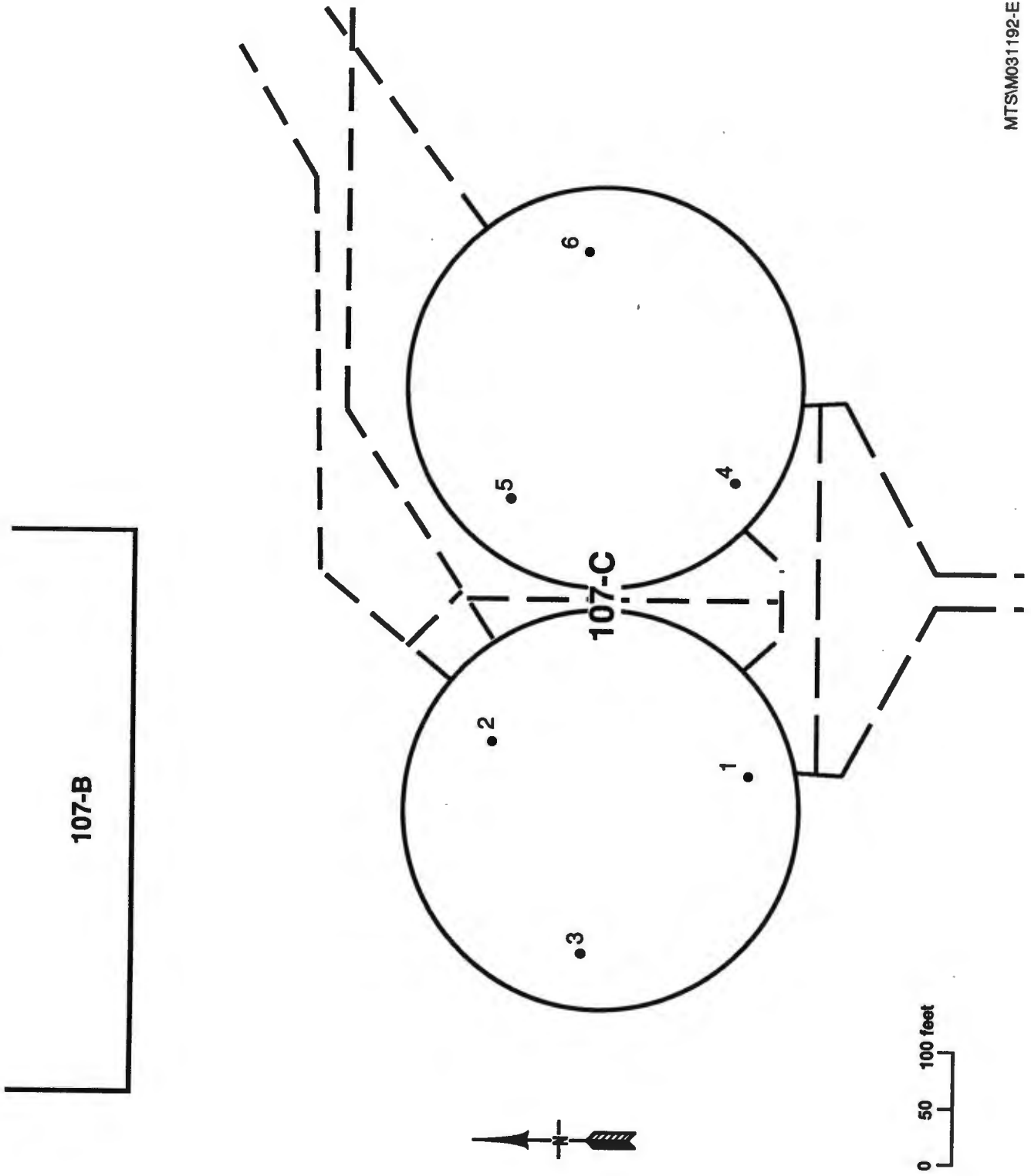
Sample collection shall be biased to collect only the residual sludge material. The material shall be collected per EII 5.2, Soil and Sediment Sampling, Appendix F (WHC 1988a) from the bucket of the excavator.

The material collected from the west retention basin shall be composited for sample analysis. Prior to compositing, a volatile organic sample shall be collected from each test pit to ensure the integrity of the sample. The composite sample shall consist of equal amounts of material from each of the three test pits. The composite shall be homogenous mixture of material.

The material collected from the east retention basin shall not be composited. Each test pit shall have one sample collected for analysis.

The samples will be collected in the order shown in Section 3.2.2. All material will be packaged and shipped per EII 5.11, Sample Packaging and Shipping (WHC 1988a). A field logbook (WHC-N-429-1) 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).

Figure 2. Typical Retention Basin Layout.



MTSM031192-E

A total of 10 samples will be collected including quality assurance/quality control (QA/QC). The trip blank and field blank have been deleted per EPA\540\G-87\003 (EPA 1987). The equipment blank media shall be silica sand. The following is a summary of the samples to be collected:

- TCL volatile sample (west retention basin test pit #1)
- TCL volatile sample (west retention basin test pit #2)
- TCL volatile sample (west retention basin test pit #3)
- Composite sample (west retention basin)
- QA duplicate sample (west retention basin)
- QA duplicate sample (east retention basin)
- QA equipment blank (silica sand)
- Sample (east retention basin test pit #4)
- Sample (east retention basin test pit #5)
- Sample (east retention basin test pit #6).

4.0 HEIS SAMPLE LABELING

The Hanford Environmental Information System (HEIS) is used to track the sample and laboratory data obtained during environmental investigations conducted under this DOW. Each sample will be identified and labeled with a unique HEIS sample number. HEIS numbers will be assigned in the field per EII 1.11, Technical Data Management (WHC 1988a). The sample location and corresponding HEIS numbers will be documented in the field logbook (WHC-N-429-1).

5.0 ANALYSES

Samples collected for chemical analysis will be analyzed for the full suite of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Contract Laboratory Program (CLP) TCL and TAL constituents, specific anions, radionuclides, and for hexavalent chromium. Hexavalent chromium shall be analyzed for informational purposes only and is not a requirement of the work plan (DOE-RL 1991). Estimated quantity of material needed for analyses are shown in Tables 1 and 2. The laboratory will use existing Level III and Level IV methods for the CLP TCL and TAL constituents, Level V methods for radionuclides, and Level III methods for hexavalent chromium. The specific anions will be analyzed using the EPA methods (1986) listed in Tables 1 and 2. Sample custody will follow the procedures as specified in the 100-BC-1 Operable Unit work plan (DOE-RL 1991, Appendix A, Section 5.1) and EII 5.1, Chain of Custody (WHC 1988a).

Table 1. West Retention Basin Analyte List.

Analyte	Method	Holding Time	Container/Volume
ICP/AA metals	CLP	6 mo	Glass/250 mL
Mercury	CLP	28 d	
Cyanide	CLP	14 d	
Volatile organic	CLP	14 d	Glass/125 mL
Semivolatile organic	CLP	7 d ^a	Amber glass/1,000 mL
PCB/pesticides			
Anions:		28 d	
fluorides	EPA 300		
sulfates	EPA 300		
nitrates	EPA 353.2		
Hexavalent chromium	SW-846 7196	24 h ^b	Glass/250 mL
Carbon-14	Lab SOP	6 mo	Glass or plastic/1,000 mL
Strontium-90			
Gross alpha			
Gross beta			
Gamma spec			
Alpha spec ^c			
Total Activity (222-S Lab)		6 mo	Plastic or glass vial (at least 1 g)

^a7 d for extraction, 40 d after extraction for analysis.

^bHexavalent chromium is for informational purposes only; 24-h holding time may be missed.

^cIsotopes of concern are ^{235,238}U, ^{239/240}Pu, and ²⁴¹Am.

Table 2. East Retention Basin Analyte List.

Analyte	Method	Holding Time	Container/Volume
Volatile organic	8240	14 d	Glass/125 mL
Semivolatile organic	8270	7 d ^a	Amber glass/500 mL
PCB/pesticides	8080		
Anions:			
fluorides	EPA 300	28 d	
sulfates	EPA 300		
nitrates	EPA 353.2		
ICP/AA metals	6010	6 mo	Glass/500 mL
Mercury	7471	28 d	
Cyanide	9011	14 d	
Hexavalent chromium	7196	24 h ^b	Glass/250 mL
Carbon-14	Lab SOP	6 mo	Plastic/1,000 mL
Strontium-90			
Gross alpha			
Gross beta			
Gamma spec			
Alpha spec ^c			
Total activity	Lab SOP	6 mo	Plastic or glass vial (at least 1 g)

^a7 d for extraction, 40 d after extraction for analysis.

^bHexavalent chromium is for informational purposes only; 24-h holding time may be missed.

^cIsotopes of concern are ^{235,238}U, ^{239/240}Pu, and ²⁴¹Am.

6.0 QA/QC REQUIREMENTS

Internal QA/QC samples shall be collected as specified in Appendix A, Quality Assurance Project Plan (DOE-RL 1991) and documented in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988a). The trip blank and field blank have been deleted per EPA\540\G-87\003 (EPA 1987). The equipment blank media shall be silica sand.

<u>QA Sample</u>	<u>QC</u>	<u>Medium</u>
Equipment Blank 1 sample	A pedigree of the matrix will be included in the project file.	Silica Sand
Duplicate Sample 2 sample		West and East Retention Basin residual sludge material

7.0 SCHEDULE

The 116-C-5 sampling activity is scheduled to be initiated during the last part of April, 1992, with a 3- to 5-d duration. The activity is scheduled to be completed by the end of April, 1992. This schedule is subject to change and the U.S. Department of Energy, Richland Field Office (RL) operable unit manager should be contacted for current status. 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

Major changes to this DOW, such as analyzing different 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 field team leader and the operable unit coordinator. The change will be filed as an Engineering Change Notice (ECN) and a copy will be inserted into the 100-BC-1 project file. Copies will be submitted to the regulatory agencies and the appropriate field personnel within 10 working days of the change.

9.0 REFERENCES

- DOE-RL, 1991, *Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-90-07, Draft B, U.S. Department of Energy, Richland Field Office, Richland, 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\G-87\003, U.S. Environmental Protection Agency, Washington, D.C.
- Stankovich, M. T., 1991, *100-H & 100-B Area Electrical Facilities Source Sampling*, WHC-SD-EN-AP-064, Rev 0, Westinghouse Hanford Company, Richland, Washington.
- Taylor, W. E., 1991, *100 Area Low Hazard Characterization Activities Safety Assessment*, WHC-SD-EN-SAD-002, Rev 0, 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.
- 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, 1990a, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

100-AREA NONINTRUSIVE
SOURCE SAMPLING STATUS CHECKLIST

Sampling Task: _____

Signature/Date

LANDLORD CONTACTED FOR ENTRANCE

100 AREA ENVIRONMENTAL PROTECTION NOTIFIED

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

921225792243

ATTACHMENT 2
100-BC-1 NONINTRUSIVE SOURCE SAMPLING PROJECT CHANGE FORM

Date: _____

Person Initiating Change: _____

Change: _____

Reason for Change: _____

APPROVAL:

Field Team Leader: _____

Operable Unit Coordinator: _____

Environmental QA Representative: _____

g.s.

Date Received: 4/16/92 <i>VB</i>		INFORMATION RELEASE REQUEST		Reference: WHC-CM-3-4	
Complete for all Types of Release					
Purpose ☐ Speech or Presentation ☐ Full Paper (Check only one suffix) ☐ Summary ☐ Abstract ☐ Visual Aid ☐ 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-080, Rev. 1			List attachments.		
Date Release Required					
Title Source Investigation Field Activities for the 100-BC-1 Operable Unit Description of Work			Unclassified Category UC- N/A		Impact Level 4
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)		
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Complete for Speech or Presentation					
Title of Conference or Meeting N/A			Group or Society Sponsoring N/A		
Date(s) of Conference or Meeting N/A	City/State N/A	Will proceedings be published? ☐ Yes ☒ No Will material be handed out? ☐ Yes ☒ No			
Title of Journal N/A					
CHECKLIST FOR SIGNATORIES					
Review Required per WHC-CM-3-4		Yes	No	Reviewer - Signature Indicates Approval	
				Name (printed)	Signature Date
Classification/Uncontrolled		☐	☒	S. W. BERGLIN	<i>[Signature]</i>
Nuclear Information		☐	☒		
Patent - General Counsel		☒	☐		
Legal - General Counsel		☒	☐		
Applied Technology/Export Controlled Information or International Program		☐	☒		
WHC Program/Project		☐	☒		
Communications		☐	☒		
RL Program/Project		☐	☒		
Publication Services		☒	☐	L. Hermann for D.E. Smith	5/1/92
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) Date M. T. Stankovich <i>[Signature]</i> 4/16/92		INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP Stamp is required before release. Release is contingent upon resolution of mandatory comments. 			
Intended Audience ☐ Internal ☐ Sponsor ☒ External Responsible Manager (Printed/Signature) Date R. P. Henckel <i>[Signature]</i> 4/16/92		Date Cancelled Date Disapproved			

DISTRIBUTION SHEET

To:
R. P. HenckelFrom:
M. T. StankovichDate:
April 16, 1992

Project Title/Work Order:

Source Investigation Field Activities for the 100-BC-1 Operable Unit Description of Work

EDT No.:

ECN No.: WHC-SD-EN-AP-080, Rev. 1 ^{ECN-}168776

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
D. R. Baker	H7-02	X		
G. S. Corrigan	H4-16	X		
R. E. Day	H4-55	X		
K. A. Gano	X0-21	X		
E. D. Goller	A5-19	X		
J. D. Goodenough	A5-19	X		
C. E. Heiden	H4-55	X		
D. O. Hess	L6-57	X		
J. E. Hodgson	X7-02	X		
W. L. Johnson	H4-55	X		
A. D. Krug	H4-55	X		
R. Mabry	X7-02	X		
J. F. Renken	X7-02	X		
M. T. Stankovich	H4-55	X		
J. Vaughn	N3-06	X		
EDMC (2)	H4-22	X		
Central Files	L8-04	X		
IRM Clearance	H4-17	X		