

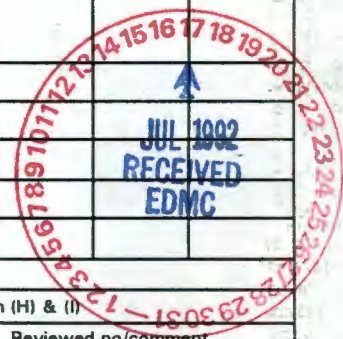
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6. Author

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7. Abstract

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

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1.0 SCOPE OF WORK

This document details the field activities associated with nonintrusive source sampling in 100-FR-1 Operable Unit of the Hanford Site and will serve as a field guide for those performing the work (DOE/RL 1991, Task 2). It should be used in conjunction with *Remedial Investigation/Feasibility Study Work Plan for the 100-FR-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 describes specific limited field investigation (LFI) activities and sampling locations in accordance with discussions at the June 27, 1991, 100 Area work plan rescoping meeting.

This description of work also addresses sampling of the 132-F-1 Chronic Feeding Barn.

2.0 GENERAL REQUIREMENTS

2.1 HEALTH AND SAFETY

All personnel working to this description will perform all 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.

2.2 PREREQUISITES

A readiness review will be completed by the cognizant engineer before each sampling task is initiated. The readiness review will be completed per EII 1.13, Environmental Engineering and Geotechnology Readiness Review, (WHC 1988a). The Source 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.

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3.0 SAMPLING AND FIELD ACTIVITIES

3.1 FACILITY BACKGROUND

The 132-F-1 Chronic Feeding Barn (141-F Sheep Barn or 141 Biological Laboratory) was one of several facilities used by Pacific Northwest Laboratories (PNL) for animal research operations. The facility was abandoned when PNL moved their biological studies to the 300 Area. The components, equipment, and portions of the building were radiologically contaminated with Ra-226 and Pu-239/240. In 1977 PNL issued a work order to J. A. Jones (JAJ) Construction to clean and decontaminate the building before turning the facility over to the Surplus Facilities Program. The laboratory hoods and all exhaust ducts were filled with foam and cut in sections, packaged, and buried at the 200 West Area burial ground. All contaminated tile, sections of roof, side walls, and concrete floors were removed, packaged, and disposed in the 200 West Area burial grounds. The building was surveyed, unconditionally released, and demolished in FY 1978 (WHC 1991). All noncontaminated debris was buried in the 182-F reservoir.

3.2 LOCATION

The 132-F-1 Building was located in the northeast area of 100-FR-1 Operable Unit approximately 650 ft from the Columbia River. The building was a large structure approximately 105 ft long, 45 ft wide, and 15 ft high (AEC-RL 1962). The NAD-83 coordinates are approximately N 147,900 and E 580,900 (DOE/RL 1991). The current surface grade is from 412 to 414 ft above sea level. Figure 1 shows the location of the facility in relation to other building in the 100-FR-1 Operable Unit.

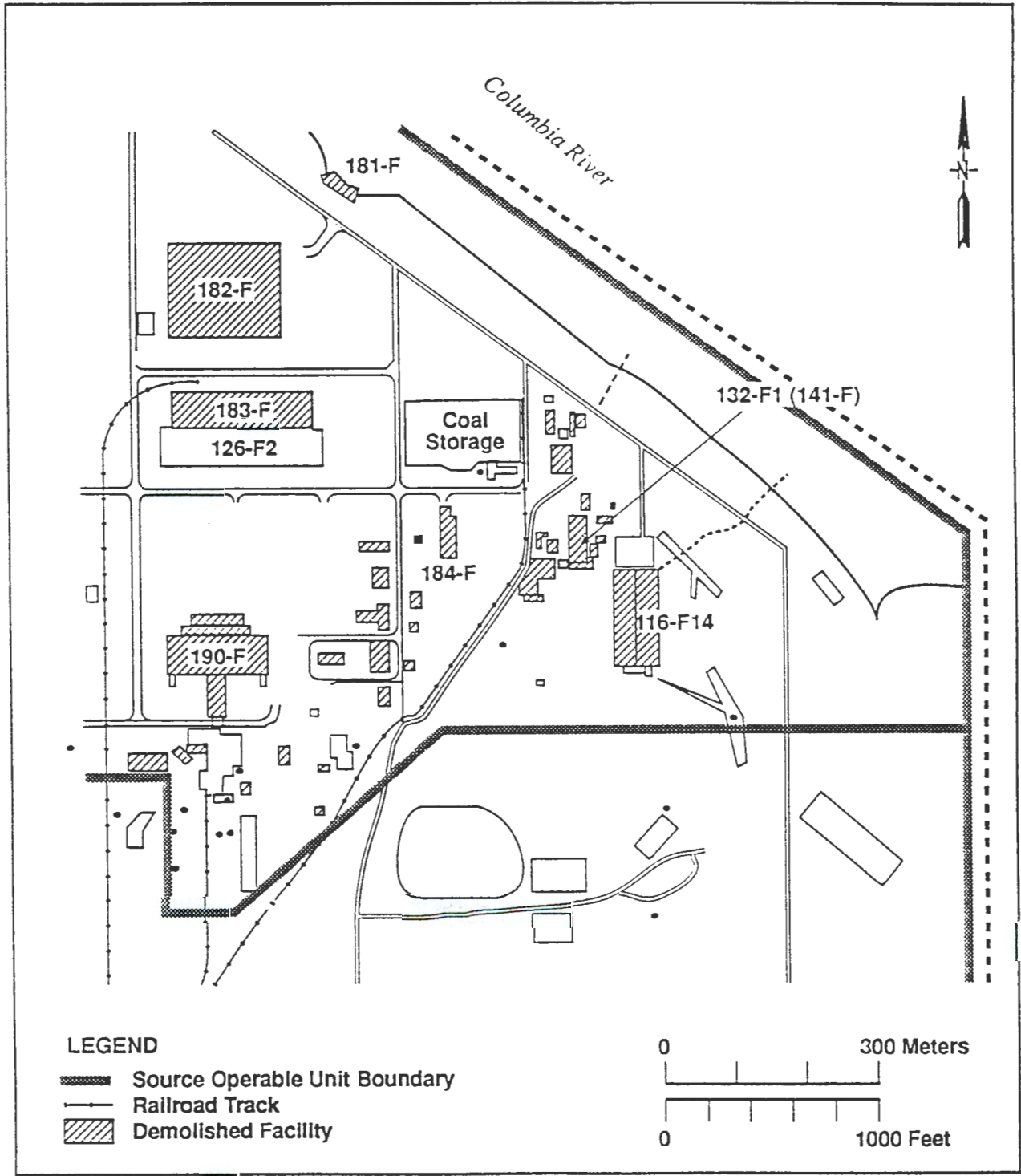
Information from ground-penetrating radar (GPR) will be used to determine the sampling sites. Since there are no visible signs of 132-F-1, the location of the barn will be identified and the test pit staked using data from the GPR and a 1962 100-F Area Map (AEC-RL 1962).

3.3 SAMPLE ANALYSIS

3.3.1 Contaminants of Concern

The contaminants of concern for the 132-F-1 Building are ^{226}Ra and $^{239/240}\text{Pu}$ (WHC 1991). Because of the uncertainty of other contaminants, the soil samples will be analyzed for the radionuclides identified in the work plan, all CERCLA target analyte list (TAL) and target compound list (TCL) constituents, and specific anions (DOE/RL 1991, Table QAPjP-1).

9 2 1 2 6 1 4 0 3 0 0



H9205020.1

Figure 1. 132-F-1 Chronic Feeding Barn.

3.3.2 Field Screening

The field screening discussed in this section is not for health and safety determination. Health and safety issues are covered in the Radiation Work Permit (RWP) or the Job Safety Analysis (JSA). Field screening covered in this section is for the purpose of selecting samples for laboratory analysis.

Samples will be field screened for radioactivity. If the Field Team Leader (FTL) finds radioactive contamination two times background a sample will be taken per Section 3.5. Background will be determined before excavation is started. The FTL will determine the ambient radiation background 3 ft over the sampling site. The background will be determined per EII 3.4, Field Screening, Appendix A. The radiation background will be recorded in the field logbook. Radiation field screening will be performed using a Geiger-Mueller instrument with a P-11 probe.

3.3.3 Laboratory Analysis

All samples will be analyzed per Section 5.0. The list of analytes is consistent with the work plan (DOE/RL 1991). If full sample volume requirements cannot be met, the field sampler will record the volume obtained in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988c) and the analyses will occur in the following order:

- TCL volatiles
- TCL semivolatiles/PCB/pesticides
- TAL metals and cyanide
- Anions
- Radioisotopes
- Total activity.

3.4 TEST PIT CONSTRUCTION

The test pit will be constructed in an area staked out as part of Section 3.2. The test pit will extend area 5 ft beyond the dimensions of building. The test pit will form a cross over the site. The east-west arm of the test pit will start at the west boundary, 50 ft from the north edge. The test pit will be dug due east until the east edge of the site boundary is reached. The width of the pit will be approximately 3 ft (one bucket width). The north-south arm of the pit will start on the north edge and go south. The starting point will be 20 ft from the west edge. The width of the test pit will be 3 ft. Figure 2 shows the site location and the test pit perimeter. The depth of the pit will be determined using GPR data. If the results of the GPR are inconclusive the test pit will be 4 ft deep.

9 2 1 2 5 1 0 3 9 1

9 2 1 2 6 4 4 0 3 0 2

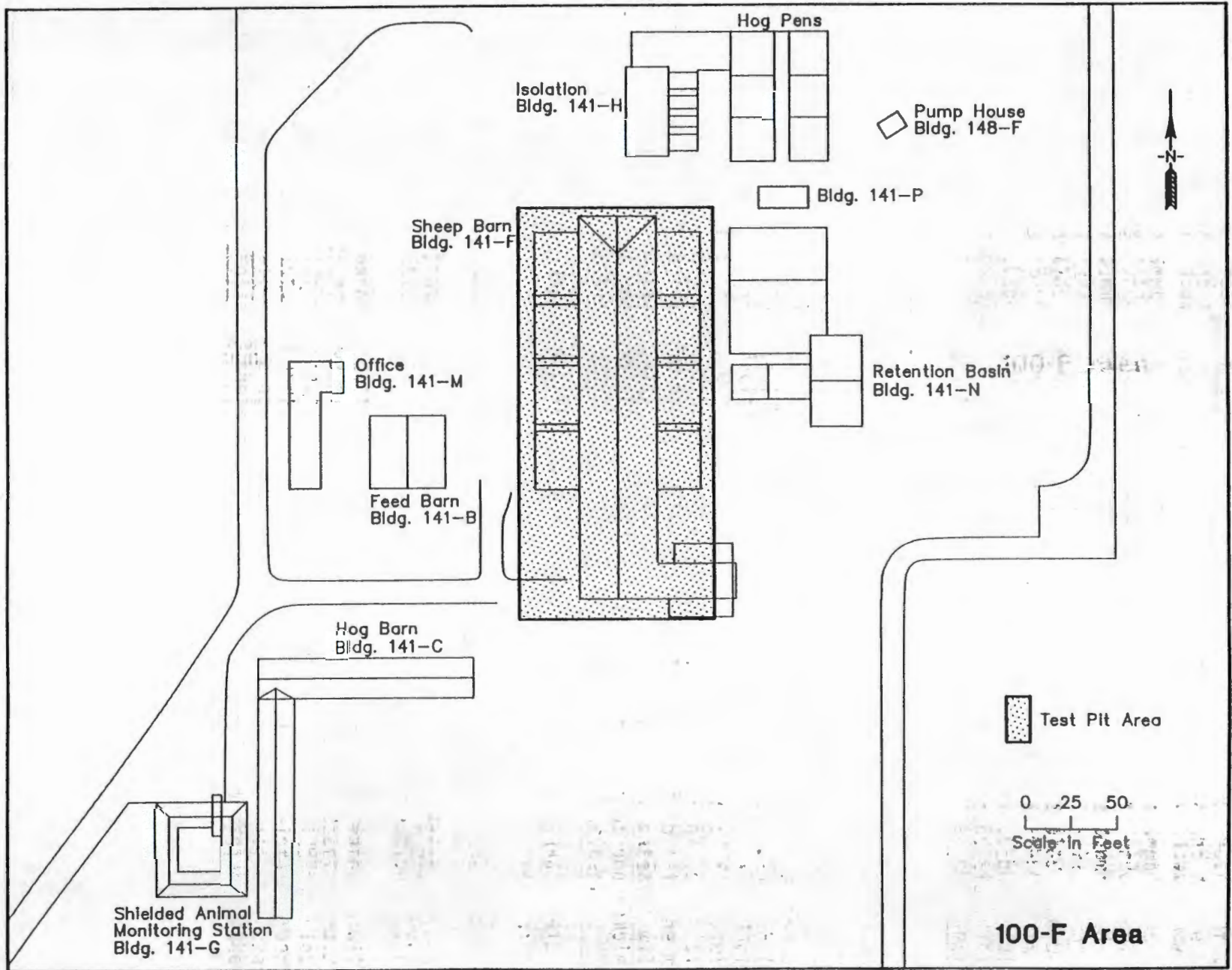


Figure 2. 132-F-1 Chronic Feeding Barn Test Pit.

The test pit will be constructed per the safety constraints required in the JSA. At the direction of the FTL plastic or other covering may be placed on the ground adjacent to the excavation for the temporary stockpiling of excavated material. Excavated material will be continuously screened per the criteria stated in Section 3.3.2 from the surface to the final depth. If the whole body exposure or contamination exceeds the RWP limit, the sampling activities will be terminated and the task will be reassessed.

After all samples have been collected at the pit site, the excavation will be backfilled in approximately the reverse order, so the first bucketful excavated is the last bucketful backfilled. The test pit site will returned to it's original condition. All waste generated will be handled per EII 4.3, Control of CERCLA and Other Past-Practice Investigation Derived Waste (WHC 1988a).

3.5 SAMPLE COLLECTION

Analytical samples will be collected directly from the backhoe bucket using hand tools and standard soil sampling techniques per EII 5.2, Soil and Sediment Sampling, Appendix F (WHC 1988a). The bucket of the backhoe will be decontaminated or cleaned of visible dirt before sampling and between sample locations. A bucket of soil will be removed from the desired sampling intervals and brought to the side of the test pit for sampling. Samples shall be collected from soil in the middle of the bucket, away from the bucket sides. All sample material will be collected in the order shown in Section 3.3.3. A minimum of one sample or a maximum of two samples will be collected per the following criteria:

- Collect one sample the first time the material does not pass the radiation screening criteria
- Collect the second sample 6 ft after first sample
- If no contamination is encountered collect the first sample at the intersection of the two arms of the test pit.

All test pit material will be field screened for radioactive contamination per Section 3.3.2. 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). All samples collected will be packaged and sent to an offsite laboratory for analysis. The packaging of the samples is done per EII 5.11, Sample Packaging and Shipping (WHC 1988a). A chain of custody is initiated and maintained after the sample is collected. The chain of custody is done per EII 5.1 Chain of Custody (WHC 1988a).

9 2 1 2 6 . 4 0 3 0 3

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 EII 1.11, Technical Data Management (WHC 1988a). Field sampling data will be collected and recorded in the field logbook (WHC-N-429-1).

5.0 ANALYSES

Samples collected for chemical analysis will be analyzed for the full suite of CERCLA CLP TCL and TAL constituents, specific anions, and specified radionuclides. Estimated quantity of material needed for analyses are shown in Table 1. The laboratory will use existing Level III and Level IV methods for CLP TCL and TAL constituents and Level V for radionuclides. The specific anions will be analyzed using EPA methods (EPA 1986). Sample custody will follow the procedures as specified in the 100-FR-1 Operable Unit work plan (DOE/RL 1991, Appendix A, Section 5.1) and EII 5.1 Chain of Custody (WHC 1988a).

Table 1. 132-F-1 Soil Analyte List.

Analyte	Method	Holding time	Container/volume
AA metals mercury cyanide	CLP	6 mo 28 d 14 d	Glass/500 mL
Volatile organic	CLP	14 d	Glass (septum)/125 mL
Semivolatile organic PCB/pesticides	CLP CLP	7 d ^a	Amber glass/1,000 mL
Anions: F ⁻ , NO ₃ ⁼ , & SO ₄ ⁼	EPA 300 & 353.2	28 d	Amber glass/250 mL
Carbon-14 Strontium-90 Gross alpha Gross beta Gamma spec	Lab SOP	6 mo	Glass/1,000 mL
Alpha spec	Lab SOP		
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.

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Internal quality control (QC) samples shall be collected as specified in the work plan Appendix A, Quality Assurance (QA) Project Plan.

The following QA sample will be collected for the 132-F-1 Building.

<u>QA Sample</u>	<u>QC</u>	<u>Medium</u>
Trip blank (one per trip container)	A pedigree of matrix will be included in project file.	Silica sand
Field duplicate (one sample)		First soil sample taken
Split (one sample)		First soil sample taken

The FTL will document in the field logbook the QA sample's HEIS number, sample location, sample medium, and any relationship to other samples.

7.0 SCHEDULE

The following schedule is for nonintrusive source sampling in the 100-FR-1 Operable Unit. This schedule is subject to change and the operable unit coordinator should be contacted for current status. An agreement activity notification form will be issued at least 5 d before start of field work.

<u>Sample task</u>	<u>Sampling date</u>
132-F-1 Chronic Feeding Barn Decontamination Station	Last 2 wk of June

8.0 CHANGES TO DESCRIPTION OF WORK

Major changes to this description of work, such as analyzing different parameters, using different analytical methods, or changing the sampling intervals will be submitted on the attached form (Attachment 2) and kept on file with the operable unit coordinator. The two digit change control tracking number will be supplied by the operable unit coordinator. The change will require, as a minimum, the verbal approval of FTL and operable unit coordinator. The change will be filed as an Engineering Change Notice (ECN) and a copy will be inserted into the 100-F Area project file. Copies will be submitted to the lead regulatory agency and appropriate field personnel.

9 2 1 2 0 1 1 0 3 0 5

9.0 REFERENCES

- AEC-RL, 1962, *Area Map 100-F*, Drawing No. H-1-13850, Sheet 2 of 3, U.S. Atomic Energy Commission, Richland, Washington.
- DOE/RL, 1991, *Remedial Investigation/Feasibility Study Work Plan for the 100-FR-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-90-33, 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.
- Taylor, W. E., 1991, *100 Area Low Hazard Characterization Activities Safety Assessment*, WHC-SD-EN-SAD-002, Rev 0, Westinghouse Hanford Company, Richland, Washington.
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- 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.
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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, *Summary of the Hanford Site Decontamination, Decommissioning, and Cleanup FY 1974 through FY 1990*, WHC-EP-0478, Westinghouse Hanford Company, Richland, Washington.

9 2 1 2 3 4 5 6

ATTACHMENT 1

100-F AREA NONINTRUSIVE
SOURCE SAMPLING STATUS CHECKLIST

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

9
2
1
2
6
4
4
0
3
0
7

ATTACHMENT 2
**100-FR-1 AREA NONINTRUSIVE SOURCE SAMPLING
PROJECT CHANGE FORM**

Date: _____

Tracking Number: _____

Person Initiating Change: _____

Change: _____

Reason for Change: _____

APPROVAL:

Field Team Leader: _____

Operable Unit Coordinator: _____

Environmental QA Representative: _____

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