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1.0 INTRODUCTION

The objective of this preoperational study plan is to characterize the proposed pipeline route for the Cross-Site Transfer System (W-058). The purpose of this study is to meet the requirements set forth in U.S. Department of Energy (DOE) Order 5400.1, Chapter IV, (DOE 1990). The W-058 pipeline is intended to replace the existing Cross-Site Transfer System (H-2-43056). The proposed route for the W-058 project will be reviewed to provide information on documented waste sites and potentially to identify any undocumented hazards that may currently exist along the proposed route. Historical records will be researched for pertinent information. Health Physics personnel will perform a "walk-down" radiological survey of the proposed path. A sampling plan will be generated and will consist of actual drilling of boreholes to allow field screening for radionuclides and/or chemical contamination and the collection of samples at selected sites for laboratory analyses. The information generated from this combined effort will establish existing/potential contamination levels, aid in developing personnel safety requirements, assist in determining the need for any changes in the proposed route prior to installation/construction of the new pipeline, and satisfy the requirements of a preoperational baseline for the project.

2.0 PHYSICAL DESCRIPTION

The existing Cross-Site Transfer System (H-2-43056) consists of six pipes enclosed in a 6-in. concrete encasement. These transfer pipes are type 347 stainless steel (schedule 10's), and are each 3-in. nominal size. The pipeline is buried at depth below grade, depending on location, varying from 5 to 15 ft between the 241-ER-151 Diversion Box located in 200 East Area and the 241-UX-154 Diversion Box located in 200 West Area (Figure 1).

The 241-ER-151 Diversion Box (200 East Area) is reinforced concrete with overall dimensions of about 43 ft long, 10 ft wide, and 17 ft from top to bottom, and drains to the 241-ER-311 Catch Tank. The 241-ER-311 Catch Tank has a capacity of 17,684 gal. The 241-UX-154 Diversion Box (200 West Area) is reinforced concrete with overall dimensions of about 48 ft long, 10 ft wide, 17 ft top to bottom, and drains to the 241-UX-302-B Catch Tank. The 241-UX-302-B Catch Tank has a capacity of 17,684 gal.

The 241-EW-151 Vent Station is in the 600 Area, located approximately midway between the East and West diversion boxes and constructed of reinforced concrete with overall dimensions of about 17 ft long, 10 ft wide, and 17 ft deep. The 241-EW-151 Vent Station is equipped with an 800-gal catch tank. Each of the encased pipes of the waste transfer system has a 1-in. schedule 40 stainless steel vent line connecting to the 800 gal catch tank. A manually operated valve in each vent line allows for air bleeding preliminary to pressure checking and to breaking the syphon on line drain back. The pipeline elevation at the vent station is 752 ft above mean sea level, approximately 50 ft higher than either of the other two diversion boxes. There are 58 test

Figure 1. Existing Cross-Site Transfer System Pipeline.

risers spaced along the encasement that are used to check for leaks from the pipeline into the void space of the encasement. The risers extend from inside the encasement up to grade level and are sealed with a removable cap. Surveys of the transfer line would include swab readings from inside the risers. The risers are spaced in pairs 50 ft apart along the transfer line with approximately 700 ft between pairs. The distance between the 241-ER-151 and 241-UX-154 is approximately 3.5 mi.

The encasement is a steel reinforced concrete box section with outside dimensions of 4 ft 11 in. wide by 2 ft 3/4 in. high and an internal void space of 3 ft 11 in. wide by 6 in. high in which the six pipelines rest (Figure 2). The liquid containment capability of the encasement is reduced because of postulated cracks at the encasement joints or micro-fissures in the encasement itself. The encasement slopes downward in both directions from the vent station (at a minimum slope of 0.4%) and drains to the "pipe chase" of each diversion box and respective catch tanks (Entrop 1977).

The Cross-Site Transfer System continues to other destinations in both 200 East and West Areas. A smaller, 3-line encasement, similar to the H-2-43056 pipeline encasement, travels east from the 241-ER-151 Diversion Box to the 241-C Tank Farm and the 244-AR Vault in the 200 East Area (Figure 3). This transfer line is labeled H-2-43043 Encasement. In the 200 West Area, a similar 3-line encasement travels from the 241-UX-154 Diversion Box to the 241-SX Tank Farms and is labeled H-2-35860 Encasement (Figure 4).

3.0 OPERATIONAL HISTORY

The Cross-Site Transfer System began operating in 1952. The system was initially constructed to support the metal recovery program. The purpose of the metal recovery program was to "mine" the waste created from the fuel separations process and recover the remaining uranium metal. During the early stages of waste processing, approximately 20% of the uranium metal was recovered. The remaining waste from the separations process was stored in the 200 East Area tank farms. This waste was sluiced from the holding tanks and transferred to the 200 West Area using the Cross-Site Transfer System. The primary destination, farther into the 200 West Area, was U Plant, where the uranium metal was recovered. Once the metal recovery program's task was completed, the waste transfer system was adapted to support other types of waste transfer activities. The Cross-Site Transfer System provides a means of transporting radioactive waste solutions between the 200 East and 200 West Areas for concentration and storage. Because of this change in work scope, the transfer line has remained operational since its inception.

In the past, waste solutions were concentrated through Evaporators 242-A and 242-S, located in the 200 Areas. The subsequent concentration of waste was then transferred to 200 East Area Tank Farms double-shell storage tanks. In November 1980 the 200 West Area 242-S Evaporator was shut down, thus eliminating the ability to concentrate waste in the 200 West Area. This change in waste processing made it necessary to store unconcentrated wastes in the 200 West Area SY Tank Farms. The waste generated in the 200 West Area was collected in the 102-SY and 103-SY Tanks. This waste would eventually be

Figure 2. Waste Line Encasement Type 6-59.

MAX. BURIAL 15'-0"

Figure 3. Cross-Site Transfer System, 200 East Area.

Figure 4. Cross-Site Transfer System, 200 West Area.

transferred to the 200 East Area, where it would be concentrated and placed in double-shell tanks.

4.0 WASTE STREAMS

Over the 40 years of operation, the Cross-Site Transfer System has been utilized to transfer waste from many different process points. Locations of waste transferred to be processed or stored included B-Plant, PUREX, and Tank Farms in the 200 East Area and T-Plant, U-Plant, 222-S Laboratory, PFP, REDOX, and Tank Farms in the 200 West Area. All of these operational facilities at one time or another contributed in some degree to the contamination incidents reported for the waste transfer system and that currently exist in the 200 and 600 Areas. The potential contaminants are of radiological and chemical constituents (Kurath et al. 1984).

Feed materials processed in the 242-S and 242-A Evaporator-Crystallizer are primarily highly alkaline solutions of sodium salts that contain radionuclides. The primary chemical compounds found in the feed solutions are sodium hydroxide, sodium nitrate, sodium aluminate, sodium carbonate, and sodium sulfate. The radionuclides found in the 242-S and 242-A process solutions are primarily ^{137}Cs and ^{90}Sr with minor concentrations of ^{239}Pu , ^{60}Co , $^{144}\text{CePr}$, $^{106}\text{Ru-Rh}$, ^{159}Eu , and ^{125}Sb occurring in some feed solutions.

5.0 GENERAL REQUIREMENTS

Work associated with this activity conducted by Westinghouse Hanford Company (WHC) personnel will be performed in accordance with the following manuals and guidelines:

- Environmental Investigations and Site Characterization Manual, WHC-CM-7-7, (WHC 1989)
- Environmental Compliance Manual, WHC-CM-7-5, (WHC 1988a)
- Radiation Protection, WHC-CM-4-10, (WHC 1988c)
- Industrial Safety Manual, WHC-CM-4-3, (WHC 1987).

5.1 HEALTH AND SAFETY REQUIREMENTS

Job and site-specific activities will be delineated in a Hazardous Waste Operations Permit (HWOP) and Radiation Work Permit (RWP). The HWOP and RWP will provide guidance for appropriate personnel protection equipment (PPE), site monitoring, chemical/radiological hazards, and potential safety hazards associated with the field/site environment.

As the primary means of protecting the health and safety of field personnel, all individuals who enter controlled zones will have received the

appropriate training to be qualified as a "Hazardous Waste Worker" as outlined in Environmental Investigation Instructions (EII) 1.1, "Hazardous Waste Site Entry Requirements" (WHC 1989) and be current with radiation worker requirements.

All safety-related documents and sampling plans will be reviewed by field personnel prior to work commencement. A pre-job safety meeting and regular field-safety "tailgate" meetings will be held to review all safety considerations and identify any potential hazards not previously addressed.

The site-specific information obtained from the field monitoring and soil samples will provide radiological and chemical data for the development of a hazardous waste operation plan prior to the installation of the new Cross-Site Transfer System W-058.

5.2 PREREQUISITES

The following permits and reviews will be required prior to initiation of any sampling work:

- Radiation Work Permit
- Excavation Permit
- Hazardous Waste Operations Permit
- Cultural Resource Review
- Hanford Environmental Compliance Environmental Assessment of Categorical Exclusion.

6.0 CONTAMINATION HISTORY

The Cross-Site Transfer System (H-2-43056), is described as running between 241-ER-151 Diversion Box and 241-UX-154 Diversion Box with the 241-EW-151 Vent Station positioned approximately in the middle. At the point of construction beyond these diversion boxes, the Cross-Site Transfer System designation changes, dependent upon its destination. For this reason, the contamination incidents have been divided into three different groups.

- **600 AREA**--Unplanned Release Site UN-216-E-41 is the only designated name for the Cross-Site Transfer System (H-2-43056). The release document dated January 12, 1989 states that, "Site begins on the west side of 241-ER-151 and terminates on the north side of U-Plant." This Unplanned Release Site document does not include the 241-ER-151 Diversion Box, the 241-UX-154 Diversion Box, or any of the supporting Cross-Site Transfer System that continues on into 200 East or 200 West Areas. Radiation surveys of the 241-EW-151 Vent Station (600 Area), dating back to 1981, clearly suggest that a surface contamination problem was evident

prior to declaring this an Unplanned Release Site. Continued routine and special radiation surveys, over the years, have defined a rather large and recurring surface contamination area directly over the existing Cross-Site Transfer System (Appendix A).

- **200 WEST AREA**--The proposed route for the new Cross-Site transfer System (W-058) enters into 200 West Area taking a different and more direct path to the 241 SY Tank Farms than the existing Cross-Site Transfer System (Figure 5). There are numerous inner-plant transfer systems and utility lines that will need to be identified utilizing ground penetrating radar (GPR) prior to initiating any sampling activities. The proposed path (W-058) passes in close proximity to known cribs and trenches associated with past-practice operations. They are 216-U-17, 216-U-8, 216-U-12, 216-S-9, and 216-S-23. These cribs are all listed in the Waste Information Data System (WIDS) (WHC 1990b) and are included in the *Hanford Federal Facility Agreement and Consent Order* Tri-Party Agreement Action Plan (Ecology et al. 1989). For information on disposal materials and volumes, see Appendix B.
- **200 EAST AREA**--The proposed route for the new waste transfer system (W-058) enters into 200 East Area traveling in close proximity to the existing waste transfer system (Figure 6). There are several locations where the new waste transfer system (W-058) actually crosses the old transfer line, inner-plant transfer lines, and numerous underground utilities. All of these areas of encroachment will also be identified utilizing the same GPR protocol consistent with other areas of this W-058 project prior to implementing any sampling activities. Careful consideration to personal safety should be taken when crossing any of the underground waste transfer systems and traveling in close proximity to any existing diversion boxes, catch tanks, or trenches. The 241-ER-151 Diversion Box, 241-ER-311 Catch Tank, 241-ER-152 Diversion Box, and 216-A-40 Trench are all identified in WIDS (WHC 1990b) and are all included in the Tri-Party Agreement (Ecology et al. 1989). For detailed information, see Appendix C.

7.0 ENVIRONMENTAL AND RADIOLOGICAL RANKING SYSTEM

The criteria presented in *Hanford Site Surface Soil Radioactive Contamination Control Plan for Fiscal Year 1993* (Winship and Hughes 1992) establishes the relative ranking of contaminated ground surface sites requiring decontamination or stabilization. This ranking is one of the key elements in prioritizing stabilization or decontamination efforts. In addition to the ranking, there are other important factors in establishing priority. The availability and efficient use of resources (personnel, equipment, and budget) also influences priority. Because of the large number of sites requiring corrective action, a ranking list must be completed to

Figure 5. Proposed Route for New Waste Transfer System, 200 West Area.

guarantee that the most serious sites are addressed first. The W-058 proposed route travels in close proximity to six sites that are identified in the Environmental and Radiological Ranking System. The existing Cross-Site Transfer System is placed at the top of this list.

8.0 SAMPLING AND FIELD ACTIVITIES

Characterization of the proposed route will consist of available historical information, ground-surface surveys, soil borings, and selected media sampling. The route corridors will be surveyed and staked. An on-site field observation of the proposed route in the 200 and 600 Areas will be completed. The observers will also be looking for indicators of potential contamination, such as surface depressions, stained or discolored soils, unusual vegetation growth, etc. Areas that fall within these criteria will be marked and designated on site maps for further investigation or consideration. A radiological survey of the proposed route will aid in establishing the current conditions and identifying potential subsurface field screening or sample collection locations.

Additionally, some areas documented by routine radiological surveys over the years or previous contamination incidents where surface or near-surface contamination from unknown sources have been reported may require more intensive investigation. Following the surface survey of the proposed route, it is anticipated that approximately 100 sites will be designated for surface and subsurface investigations. These sites will be chosen based on detection of surface or near-surface contamination, underground lines and encasements identified by GPR, and areas proximal to diversion boxes, catch tanks, cribs, trenches, and ditches. It is anticipated that approximately 25% of the sites will require sampling and laboratory analysis. Field instrument readings used during the field screening process will be used for information purposes at the other borehole locations.

Field conditions will dictate the precise locations of each investigation site. These locations will be identified using standard measuring equipment such as a fiberglass tape or distance-measuring wheel. Precise locations will be recorded in the field logbook, marked with a numbered surveyor's stake, and surveyed at a later date.

All site work will be conducted in accordance with the HWOP and RWP. Soil intrusion will be initiated after approval by the Health and Safety Officer (HSO), Health Physics Technician (HPT), and the Field Team Leader (FTL). It is anticipated that a hollow-stem auger will be utilized for the soil sampling and field screening activity. The operation of this equipment will be conducted in accordance with existing Standard Operating Procedures (SOP).

All materials brought to the surface will be monitored on a regular basis as described in the HWOP using radiation detection and organic vapor monitoring instruments. When radioactive or chemical contamination is encountered that exceeds allowable limits as set forth by the HWOP or RWP, all excavation will be stopped. The HSO and HPT will provide guidance as to whether these contaminated materials can be collected for sampling purposes.

As excavated soils are brought to the surface and are monitored, they will also be observed for staining, discoloration, or other anomalies.

Sample collection from selected sites will generally occur when both chemical and radiological contamination is encountered at a single site or where either of these contamination sources appear to represent a "worst-case" condition. Since the depth of excavation may be from 5 to 15 ft, the depth at which a sample may be collected, if any, is at the direction of the FTL with input from the HSO and HPT. Random samples will also be submitted as verification of instrument reliability.

All samples will be collected in accordance with EII 5.2, "Soil and Sediment Sampling" (WHC 1989). The disposition of these samples for laboratory analysis is detailed in Section 8.4, "Sample Analysis."

Note: All excavated work should cease immediately if any underground piping or other structures are encountered.

8.1 FIELD SCREENING

Wherever conditions permit, field instruments will be utilized to identify areas of existing surface and subsurface contamination for sample collection. Field instruments such as organic vapor monitors (OVM), Geiger-Muller counters (GM), and alpha detectors will be used for this purpose as described in EII 3.4, "Field Screening" (WHC 1989).

8.2 SITE CLEANUP

If contamination is encountered during the soil boring sampling activity, that material will be placed in a low level waste (LLW) drum as per procedure DD-026-02, "Package and Transport of Hazardous Waste." The excavated soil boring should then be abandoned, consistent with standard operating practices.

8.3 DECONTAMINATION

All hand-held equipment that is used for the direct collection of samples will have been previously cleaned in accordance with EII 5.5, "Decontamination of Equipment for RCRA/CERCLA Sampling" (WHC 1989). A situation requiring cleaning the auger equipment in the field will follow the requirements outlined in EII 5.4, "Field Decontamination of Drilling, Well Equipment, and Sampling Equipment." All associated activities will be recorded in the field logbook.

8.4 SAMPLE ANALYSIS

EII 5.2 contains general guidance that identifies container and preservation requirements. The contractor laboratory may request modifications to these recommendations as long as the data quality is not compromised. Sample containers are purchased pre-cleaned from a supplier providing certification of internal laboratory procedures.

Samples collected for radionuclide analysis will be transported to the 222-S Laboratory for processing. These samples will have a total isotopic analysis conducted as well as total plutonium and total uranium where alpha contamination is suspected. Total activity will also be conducted for off-site sample release.

The remaining samples will be transported to an off-site contractor laboratory for analysis of hazardous constituents to include the Target Compound List (TCL) and Target Analyte List (TAL). Based on the data objectives, these samples will be analyzed using Level III protocols (EPA 1986).

8.5 SHIPPING

All shipping requirements will conform with EII 5.11, "Sample Packaging and Shipping" (WHC 1989). Additional requirements for field preparation of samples are summarized in Section 9.0, "Quality Assurance and Quality Control."

9.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance (QA) and quality control (QC) of sample analysis and results will be ensured by concomitant field and laboratory procedures. Procurement of laboratory services will be the responsibility of Hanford Analytical Sample Management (HASM), which will ensure that contractor labs will meet minimum QA/QC requirements. HASM is also responsible for the review of all laboratory QA/QC programs and records and providing "validated" data to the Project Engineer.

To help ensure that all environmental characterization data collected are of sufficient quality to support decisions, all work on the Hanford Site is subject to the requirements of DOE Order 5700.6c, *Quality Assurance* (DOE 1991), which establishes broadly applicable QA program requirements. Quality Assurance program requirements so defined apply to all types of project activities conducted on the Hanford Site.

To ensure that the objectives of the past practice activities are met in a manner consistent with DOE Order 5700.6c (DOE 1991), all work will be performed in compliance with WHC's existing QA manual, WHC-CM-4-2, (WHC 1988b) and with procedures outlined in the QA program plan. *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, (WHC 1990a) is specific to CERCLA RI/FS activities. This QA program plan describes the various plans, procedures, and instructions that will be used by WHC to implement the requirements of DOE 5700.6c.

9.1 FIELD QUALITY ASSURANCE/QUALITY CONTROL

In order to ensure QA/QC measuring that provides consistent guidance in field work, a set of procedures, or EIIs, has been developed (WHC 1989). A list of EIIs that may be utilized in this effort follows:

Task	Environmental Investigation Instruction
Sampling procedures	5.2
Sample handling	5.2, 5.11
Field documentation	1.5, 5.1, 5.10
Equipment decontamination	5.4, 5.5
Field screening	3.4
Site entry requirements	1.1
Deviation from procedures (EII)	1.4
Personnel requirements	1.1
Health and safety requirements	1.1, 1.7, 3.2

Additional procedures are contained in the EII manual (WHC 1989), which may be applicable to specific field situations. Brief summaries of the primary activities involved in field work for this task are contained in the following sections.

9.2 SAMPLE COLLECTION

When samples have been collected, they will be controlled according to the requirements outlined in EII 5.2, "Soil and Sediment Sampling." All samples will be labeled, sealed, and placed in a container for preservation on ice or other appropriate cooling medium.

9.3 FIELD LOGBOOKS

All field activities will be recorded in a field logbook according to the protocols outlined in EII 1.5, "Field Logbooks." All entries will be made in ink, signed, and dated. Photographs should be taken of each sampling location and at any unusual circumstances encountered during the investigation.

9.4 CHAIN-OF-CUSTODY RECORDS

Chain-of-custody records will be kept to meet the requirements of EII 5.1, "Chain-of-Custody." The chain-of-custody form will establish the documentation necessary to ensure the traceability of the sample from time of collection until disposal.

9.5 SAMPLE ANALYSIS REQUEST

An approved laboratory will be selected to conduct all analyses. The request for appropriate analyses will be included on the WHC Sample Analysis Request (SAR) form as provided in EII 5.2, "Soil and Sediment Sampling." Laboratory-specific forms may be utilized in lieu of the WHC form and will be made available by HASM.

9.6 SAMPLE PLAN MODIFICATIONS

Under field conditions, the optimal aspects of preliminary sample design often are not achievable. Factors influencing these efforts can be equipment malfunction or breakdown, weather conditions, improper equipment, soil conditions, physical barriers to sampling equipment, and overly optimistic evaluation of capabilities. Because of unforeseen field conditions, modifications to the planned activity may be necessary as decided by the FTL. When conditions are encountered that require modifications in the field, the steps below will be followed.

1. Where routine field decisions are made by the FTL, necessary actions will be recorded in the field logbook along with circumstances requiring the action.
2. Where modifications require deviation from the *Environmental Investigations and Site Characterization Manual* (WHC 1989), EII 1.4, "Deviation from Environmental Investigations and Instructions," will be followed.
3. Circumstances may be encountered or objectives changed so that the basic sampling plan requires major modification. The FTL will submit the following information to the project file stating that deviation from the sampling plan is approved by WHC:
 - Sampling plan title
 - Section or subsection to be modified (chapter title, page number and quote section as given in sampling plan)
 - Modifications or deviations (quote modified, deleted or added statement)
 - Technical summary of change
 - Impacts of change (cost, schedule)
 - Approvals (FTL, field coordinator, ERA coordinator, Level 4 manager).

These procedures will provide an accurate record of modifications and WHC approval while allowing sampling to proceed safely and maintaining efficient human resource and equipment usage.

10.0 REFERENCES

- DOE, 1990, *General Environmental Protection Program*, DOE Order 5400.1, U. S. Department of Energy, Washington, D. C.
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- Entrop, G. E., 1977, *Operational Safety Analysis Report Cross-Country Waste Transfer System*, RHO-CD-85, Rockwell Hanford Operations, Richland, Washington.
- EPA, 1986, *Test Methods for Evaluating Solid Waste*, (SW-846), 3rd Edition, EPA/Office of Solid Waste and Emergency Response, U. S. Environmental Protection Agency, Washington, D. C.
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- WHC, 1987, *Industrial Safety Manual*, WHC-CM-4-3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988a, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988b, *Quality Assurance Manual*, WHC-CM-4-2, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988c, *Radiation Protection Manual*, WHC-CM-4-10, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1989, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, 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.
- WHC, 1990b, *WIDS Database Field Descriptions and Data*, WHC-MR-0056, Westinghouse Hanford Company, Richland, Washington.
- Winship, R. A, and M. C. Hughes, *Hanford Site Surface Soil Radioactive Contamination Control Plan for Fiscal Year 1993*, WHC-EP-0489-1, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

RADIATION SURVEY SUMMARY

RADIATION SURVEY SUMMARY

241-EW-151 VENT STATION

1981 - 1992

- 1981- Survey No. T81-0308 Monthly routine; Survey of outside perimeter of Vent Station. Soil <400 cpm
- Survey No. T81-0958 Monthly routine; Follow up survey of perimeter fence around Vent Station. Spots in soil N.E. corner. <50,000 cpm, 10 mrads/hr
- 1982- Survey No. T82-1354 Monthly routine; Smearable contamination 1000 cpm to 100,000 cpm outside perimeter fence North, East, and South sides of Vent Station. Max. detectable 30 mrad/hr.
- Survey No. T82-1358 Misc. Survey/Sampling; Mice found nesting in Vent Station caisson. Readings on mice 3000 to 5000 cpm, 15 mr/hr. Nesting material 12 mr/hr at contact. Readings on feces 15 mr/hr at contact. Soil samples collected ranged from 65 mr/hr inside Vent station fence to 38 mr/hr outside perimeter fence.
- 1983- Survey No. T83-1879 Monthly routine; Survey perimeter of Vent Station. Max. reading 8000 cpm in soil.
- Survey No. T83-1428 Quarterly routine; Hot spots in soil inside Vent Station fence. Range from 1500 cpm to 65,000 cpm in soil.
- 1984- Survey No. T84-0435 Quarterly routine; Survey Vent Station perimeter. Laundry hamper at gate 1000 cpm, Surface contamination area around Vent Station <200 cpm.
- Survey No. T84-1975 Quarterly routine; Vent Station perimeter soil and vegetation <100 cpm, Laundry hamper at gate 1000 cpm.
- 1985- Survey No. T850083 and C8501255 routine surveys, no new contamination discovered. Ground readings <200 cpm, laundry hamper 1000 cpm fixed.
- 1986- Survey No. E3600723 Routine survey of Vent Station; Max. detectable 6 mr/hr at contact fixed.
- 1987- Survey No. 87EN-01361 Semi-Annual routine; Vent Station perimeter surveyed, non-detectable. Laundry hamper 3000 cpm.
- 1988- Survey No. 12087 Semi-Annual routine; Survey inside Vent Station perimeter, soil non-detectable. Outside fence contaminated ant residue surveyed >100,000 cpm, 9 mrad/hr.
- 1989- Survey No. 02721 and 05246 Routine survey Vent Station; No new contamination detected.
- 1990- Survey No. 904846 Routine survey Vent Station; No new contamination detected.

1991- Survey No. 92431 Survey Vent Station buffer zone; Max. surface contamination inside buffer zone 6 mrad/hr. Max. outside zone 20 mrad/hr. Smears laundry enclosure 5000 cpm, 2 mrad/hr.

Survey No. 72674 Survey Vent Station; Contamination was discovered outside perimeter fence and in pit on the N.E. side of Vent Station. Four 5 gallon drums were discovered in this pit. Max. readings 90,000 cpm, 4 mrad/hr.

1992- Survey No. 72873 and 71123 Routine Survey Vent Station; Contamination found outside perimeter fence. Forty plus specs found in Soil and decomposed weed fragments ranging from 500 cpm to 20 mrad/hr.

Survey No. 141999 Routine survey Vent Station; Outside perimeter North and East side of fence thirty-eight specs were discovered ranging from 1000 cpm to 16 mrad/hr.

RADIATION SURVEY SUMMARY
CROSS-COUNTRY WASTE TRANSFER LINE

1988 - 1992

- 3/2/88-Survey No. 87E-05290 Surface contamination discovered starting approximately 100 yards east of 241-EW-151 Vent Station. An area approximately 10 feet wide by 90 feet long with contamination levels from 500 cpm to >100,000 cpm. Maximum levels 700 mrad/hr.
- 3/3/88-Survey No. 87E-05308 Follow up survey of E/W Transfer line. Surface contamination was discovered further east along Transfer Line with levels detected up to 96,000 cpm. A survey from the 241-EW-151 Vent Station to the West Area fence also revealed surface contamination in soil and vegetation. Maximum levels 5 mrad/hr.
- 3/5/88-Survey No. 87E-05327 RPT coverage for removal of contaminated soil along Transfer Line. Maximum levels 50mrad/hr.
- 3/7/88-Survey No. 87E-05345 Continued cleanup of contaminated soil. Maximum levels 700 mrad/hr.
- 3/9/88-Survey No. 87E-05370 Removed more contaminated soil from surface areas already identified. Approximately 6 inches of soil was removed and back filled with clean soil. Maximum contamination levels 40,000 cpm.
- 3/10/88-Survey No. 87EN-02014 Survey of E/W Transfer Line from 200 West Area fence towards 241-EW-151 Vent Station. Between swab risers #TR49 and #TR36 ten spots of contamination were discovered. Maximum levels Beta 100mrad/hr, Gamma 10mr/hr.
- 3/11/88-Survey No. 87EN-02017 Survey continued from swab risers #TR36 to #TR30. Thirty-seven hot spots were observed. Maximum levels 28 mrad/hr.
- 3/14/88-Survey No. 87EN-02025 Survey of E/W Transfer Line starting outside the East Area fence. Twenty-three hot spots were observed between swab risers #TR8 and #TR28. Maximum levels 50,000 cpm.
- 3/15/88-Survey No. 87EN-20237 Miscellaneous survey of Transfer line. Seven hot spots detected near swab riser #TR5 inside 200 East Area fence. Maximum levels 50,000 cpm.
- 3/21/88-Survey No. 87EN-02062 Survey of E/W Transfer Line inside 200 West Area between perimeter fence line and Beloit Avenue. Five specs located. Maximum levels 42mrad/hr.
- 3/21/88-Survey No. 87EN-02063 Re-survey of E/W Transfer line from West Area fence line to 241-EW-151 Vent Station. Twenty-seven hot spots observed between swab risers #TR50 to #TR30. Maximum levels 28 mrad/hr.

- 4/9/88-Survey No. 87E-05741 Picked up miscellaneous hot spots along cross-site transfer line. Contamination levels ranging from 500 cpm to >100,000 cpm.
- 4/14/88-Survey No. 87EN-02195 Re-survey of E/W Transfer Line. Discovered twenty-two hot spots ranging from 300 cpm to >100,000 cpm.
- 4/15/88-Survey No. 87EN-02199 Re-survey of E/W Transfer Line from swab risers #TR36 to #TR57. Approximately thirteen hotspots were observed. Maximum levels 25,000 cpm.
- 8/5/88-Survey No. 87EN-02779 Quarterly routine survey of E/W Transfer line. An area of soil 6 feet by 15 feet was discovered. Maximum levels 50,000 cpm.
- 8/9/88-Survey No. 87EN-02810 Routine survey of E/W Transfer Line. Fifteen hot spots found between swab risers #TR30 and #TR49. Contamination levels ranging from 250 to 35,000 cpm.
- 8/10/88-Survey No. 87EN-02809 Routine survey of E/W Transfer line. Contaminated ant hill found near 241-EW-151 Vent Station. Maximum levels >100,000 cpm.
- 8/11/88-Survey No. 87EN-02819 Routine survey of E/W Transfer Line. Three hot spots located between swab risers #TR23 and #TR13. Contamination levels ranging from 500 to 2500 cpm.
- 8/22/88-Survey No. 87EN-02892 Survey of E/W Transfer line, in East Area, between Akron Avenue and the 241-ER-151 Diversion Box. Four areas of contaminated vegetation discovered. Contamination levels ranging from 200 to 3500 cpm.
- 8/24/88-Survey No. 87EN-02910 Survey of E/W Transfer Line, between 241-EW-151 Vent Station and Route 4-N. Contamination discovered in soil and vegetation ranging from 500 to 12,500 cpm.
- 8/24/88-Survey No. 87EN-02911 Survey of E/W Transfer line in 200 West Area from Beloit Avenue to perimeter fence. Contamination discovered in approximately 80% of tumble weeds and milk weeds. Maximum levels 2000 cpm.
- 11/21/88-Survey No. 12300 Quarterly routine survey of E/W Transfer Line. Two contaminated areas identified, one outside the 241-EW-151 Vent station perimeter fence and the other area was inside the 200 East Area perimeter fence. Contamination levels ranging from 6500 cpm to >100,000 cpm.
- 1/17/90-Survey No. 45890 Survey of E/W Transfer Line inside 200 West Area. Numerous hot spots located between perimeter fence and Benoit Avenue. Maximum levels 19mrad/hr.
- 1/19/90-Survey No. 45898 Survey of E/W Transfer Line from swab risers #TR47 to #TR50. Contaminated soil located at #TR48. Maximum level 1200 cpm.

- 1/20/90-Survey No. 45899 Survey of E/W Transfer Line from swab risers #TR27 to #TR28. Numerous areas of contaminated soil, sage brush and ant hill. Contamination ranging from 200 to 25,000 cpm.
- 1/22/90-Survey No. 45904 Survey of E/W Transfer Line from swab risers #TR29 to #TR50. Contamination levels from 150 to 70,000 cpm.
- 1/24/90-Survey No. 45911 Survey of E/W Transfer Line from outside 200 East Area fence to B Plant. Contaminated areas observed ranging from 1000 to 40,000 cpm.
- 10/26/90-Survey No. 72067 Survey of E/W Transfer Line from #TR17 to #TR26. Contamination levels in soil and sage brush ranging from 200 to 95,000 cpm.
- 12/4/90-Survey No. 72183 Survey of E/W Transfer Line between swab risers #TR33 and #TR34. Maximum levels 75,000 cpm.
- 12/18/90-Survey No. 72218 Survey of E/W Transfer Line from 241- ER-151 Diversion Box fence towards the railroad tracks. This area was approximately 200 yards by 50 feet wide. Contamination discovered in soil and dead vegetation. Maximum levels 1500 cpm.
- 8/30/91-Survey No. 006648 Survey of E/W Transfer Line. Approximately twenty-two areas identified with contamination found in soil, animal feces and vegetation ranging from 200 to 90,000 cpm.
- 9/30/91-Survey No. 006648 Survey, East area section of the Transfer Line. From 241-ER-151 Diversion Box to perimeter fence line. Numerous areas of contaminated soil, vegetation and animal feces ranging from 200 to 6500 cpm.
- 10/17/91-Survey No. 006648 Survey, West area section of the Transfer Line. Contamination found in animal burrows, feces, insect mounds and vegetation with levels exceeding 100,000 cpm.
- 2/19/92-Survey No. 72773 Survey of E/W Transfer Line from swab risers #TR1 to #TR9. Spotty contamination, maximum levels 2500 cpm.
- 3/10/92-Survey No. 72820 Survey of E/W Transfer Line from swab risers #TR10 to the 241-EW-151 Diversion Box. Numerous areas of contamination, maximum levels 40,000 cpm.
- 4/30/92-Survey No. 72921 Survey of E/W Transfer Line from 200 West Area to 241-EW-151 Vent Station. Contaminated sage brush and tumble weeds ranging from 15,000 cpm to 25mrad/hr.
- 5/14/92-Survey No. 72934 HPT coverage for collecting contaminated soil and vegetation west of the 241-EW-151 Vent Station. Maximum levels detected >100,000 cpm 35mrad/hr.
- 10/26/92-Survey No. 142003 Survey of E/W Transfer Line inside West Area between Beloit Avenue and Albany Avenue. Maximum levels observed >100,000 cpm, 100mrad/hr and 10mrem/hr.

FOLLOW-UP AND MSCM
SURVEY RESULTS

FIGURE 1

APPENDIX B

**DISPOSAL MATERIALS AND VOLUMES
200 WEST AREA**

Waste Information Data System
General Summary Report
February 27, 1992

SITE NAME: 216-U-8 (309)

ALIASES:

216-WR-1,2,3 Cribs, 216-U-9 (309)

SITE TYPE: Crib (309)
WASTE CATEGORY: Mixed Waste (309)
WASTE TYPE: Liquid (309)

STATUS: Inactive (309) Pre-1980 (309)
START DATE: June 1952 (309)
END DATE: March 1960 (309)

OPERABLE UNIT: 200-UP-2 (329)
O.U. CATEGORY: CERCLA Past Practice (323)
DOE/RL PROGRAM: Radiation Areas Reduction (358)

This site is included in the Tri-Party Agreement Action Plan (329)

PNL Hazardous Ranking System Migration Score: 1.20 (309)

HANFORD AREA: 200 West, U Plant (309)
COORDINATES: N36860 W73100 (center of #2) (309)
LOCATION: 450 ft west of Beloit Avenue and 750 ft south of 16th Street (58)

WASTE VOLUME RECEIVED: 379,000,000.00 liters (612)
CONTAMINATED SOIL VOLUME: 3,900.00 cubic meters (253)
OVERBURDEN SOIL VOLUME: 10,000.00 cubic meters (253)

GROUND ELEVATION: 692.00 feet above MSL (309)
WATER TABLE DEPTH: 227.00 feet below grade (309)

SITE DIMENSIONS (Bottom) (309): Length: 160.00 feet (309)
Width: 50.00 feet (309)
Depth: 31.00 feet (309)

SITE DESCRIPTION: The unit consists of wooden structures, three in series, each structure 16 by 16 by 10 ft. The site is backfilled with 1/2-in. crushed stone to the tops of the wooden structures. There is ~73,000 cu ft of gravel fill (309).

ASSOCIATED STRUCTURES:

Six 4-in. risers, 2 per structure, capped below grade, ~18 ft long;
Three 8-in. SCH 40 steel test wells, 50 ft deep, one per structure,
capped, 2 ft above grade;
A 6-in. V.C.P. waste line with acid-proof joints at 12 ft below grade,
140 ft long (395).

SITE NAME: 216-U-8

WIDS
2/27/92
Page 2

WASTE TYPES AND AMOUNTS: The site received process condensate from 221-U (309) and 224-U (58) buildings and the 291-U Stack drainage. The waste is acidic (309).

COMMENTS: When ground settling occurred around the vent risers, the site was deactivated by blanking the pipeline north of the unit. ~75 cu yd of fill dirt were used to fill sink holes at this site. The effluents were rerouted to the 216-U-12 Crib (4). The ground surface has been stable since August 1975 (58).

SURVEILLANCE INFORMATION (678)

SURVEY DATE: 8/90

SURVEY SCHEDULE: Annual

SITE POSTING: Surface Contamination

CAVEIN POTENTIAL: Yes, only the perimeters were surveyed.

RESULTS/STATUS: No contamination was detected. No change since the 8/88 survey.

ACTION REQUIRED: Continue to monitor for change.

This unit is in compliance with the Environmental Compliance Manual.

WIDS Radionuclide Inventory
March 2, 1992
216-U-8

Isotope data [612]

Curies decayed through 12/31/89

¹³⁷Cs: 4.550e-002 Ci

¹⁰⁶Ru: 1.160e-008 Ci

⁹⁰Sr: 4.310e-002 Ci

Gross Data:

Plutonium: 3.700e+002 g [260]
Alpha: 2.270e+001 Ci [612]
Beta: 6.500e-001 Ci [612]
U-Gross: 8.010e+000 Ci [612]

3/02/92

Waste Information Data System
Hazardous Chemical Inventory
(In Kilograms)

Site Name: 216-U-8
Operable Unit: 200-UP-2
Bibliography: [315]

----- INORGANICS -----

Aluminum Nitrate:	Nitrite:	
Aluminum Fluoride/Nitrate:	Nitric Acid:	200000.00000
Ammonium Carbonate:	Oxalate:	
Ammonium Nitrate:	Phosphate:	
Beryllium:	Potassium:	
Calcium Nitrate:	Potassium Borate:	
Cadmium (II):	Silver (I):	
Chromium (VI):	Sodium:	
Copper (II):	Sodium Aluminate:	
Copper Sulfate:	Sodium Dichromate:	
Ferric Nitrate:	Sodium Hydroxide:	
Ferrocyanide:	Sodium Oxalate:	
Flouride:	Sodium Silicate:	
Lead (II):	Sodium Sulfamate:	
Magnesium Nitrate:	Sulfamic Acid:	
Mercury:	Sulfate:	
Nickel (II):	Sulfuric Acid:	
Nitrate:	Uranium	
	Zinc (II):	

----- ORGANICS -----

CCL4:	Normal Paraffin Hydrocarbons:
BP:	Tributyl Phosphate:
DBBP:	Tributyl Phosphonate:
MIBK:	Trichloroethylene:

Waste Information Data System
General Summary Report
February 27, 1992

SITE NAME: 216-U-17 (306)

SITE TYPE: Crib (306)
WASTE CATEGORY: Low-Level Waste (306)
WASTE TYPE: Liquid (306)

STATUS: Active (306)
START DATE: January 31, 1988 (306)

OPERABLE UNIT: 200-UP-2 (329)
O.U. CATEGORY: CERCLA Past Practice (323)

This site is included in the Tri-Party Agreement Action Plan (329)

HANFORD AREA: 200 West, U Plant (306)
COORDINATES: N37575, W72480 to N37575, W72250 (329)
LOCATION: ~940 ft south-east-east of U03 Plant and 1,000 ft northeast of the
216-U-12 Crib (306)

WASTE VOLUME RECEIVED: 2,110,000.00 liters (612)

SITE DESCRIPTION: The unit is 18 ft below the surface, covered with a 10-mil PVC membrane vapor barrier and backfill. Flow is even over the entire unit from a distribution line within a 6- by 10- by 150-ft aggregate field (391).

ASSOCIATED STRUCTURES:
Three liquid-level wells;
Two vent risers (391).

WASTE TYPES AND AMOUNTS: The unit receives U03 plant process condensate. A neutralization system was placed into operation before startup of this unit to preclude the discharge of process condensate outside the range of 2.0 to 12.5 pH (306).

COMMENTS: This unit is a replacement for the 216-U-12 Crib (306).

SITE NAME: 216-U-17

WIDS
2/27/92
Page 2

SURVEILLANCE INFORMATION (679)

SURVEY DATE: 9/90
SURVEY SCHEDULE: Quarterly
SITE POSTING: Underground Radioactive Material

RESULTS/STATUS: No contamination detected and no change in activity since from previous survey.

This unit is in compliance with the Environmental Compliance Manual.

WIDS Radionuclide Inventory
March 2, 1992
216-U-17

Isotope data [612]

Curies decayed through 12/31/89

^{241}Am : 5.300e-005 Ci

^3H : 6.970e+001 Ci

^{239}Pu : 2.960e-005

Gross Data:

Alpha: 1.950e-004 Ci [612]
U-Gross: 4.780e-004 Ci [612]

Waste Information Data System
General Summary Report
April 21, 1992

SITE NAME: 216-S-9 [309]

SITE TYPE: Crib [309]

WASTE CATEGORY: Mixed Waste [309]

WASTE TYPE: Liquid [309]

STATUS: Inactive [309] Pre-1980 [309]

START DATE: July 1965 [309]

END DATE: January 1969 [309]

OPERABLE UNIT: 200-RO-2 [329]

O.U. CATEGORY: Undefined [323]

SWMU: Yes [606]

TPA: Yes [329]

PNL Hazardous Ranking System Migration Score: 50.34 [309]

HANFORD AREA: 200 West, S Plant [58]

COORDINATES: N35920 W74455, N36290 W74550 (centerline) [309]

LOCATION: 250 ft north of 13th Street and 300 ft west of the railroad tracks [58]
inside the boundaries of unplanned release UN-200-W-114 [678]

WASTE VOLUME RECEIVED: 50,300,000.00 liters [309]

CONTAMINATED SOIL VOLUME: 1,800.00 cubic meters [253]

OVERBURDEN SOIL VOLUME: 14,000.00 cubic meters [253]

GROUND ELEVATION: 678.00 feet above MSL [309]

WATER TABLE DEPTH: 205.00 feet below grade [309]

SITE DIMENSIONS (Bottom) [309]: Length: 300.00 feet [309]

Width: 30.00 feet [309]

Depth: 30.00 feet [309]

SITE DESCRIPTION: The unit is a gravel structure with a side slope of 1:1.5. Waste flowed into the unit through the distribution system, which consists of 581 ft of 6-in. V.C.T. perforated pipe in a U shape, 15 ft by 295 ft, and connected by 24 ft of 3-in. SCH 10 pipe in a Y shape. The entire distribution system is 21 ft below grade [309].

ASSOCIATED STRUCTURES:

Two 8-in.-diameter, 28-ft-long V.C.T. gage wells, with the bottom 3 ft perforated;

Two 2-ft by 2-ft by 1-ft concrete pads for gage wells;

One 12-in.-diameter, 24-ft-long, V.C.T. vent with filter;

One 2-ft by 2-ft by 4-ft concrete pad for the vent;

-62,400 cu ft of gravel fill and 10,336 sq ft of plastic barrier;

448,000 cu ft of gravel backfill [451].

SITE NAME: 216-S-9

WIDS
4/21/92
Page 2

WASTE TYPES AND AMOUNTS: The site received process condensate from the D-2 Receiver Tank in the 202-S Building. The waste is acidic [309].

COMMENTS: The site was retired when it reached prescribed radionuclide limits. The waste was rerouted to the 216-S-13 Crib [309]. The site was deactivated by blanking the pipeline at the south end of the unit [58].

ENVIRONMENTAL MONITORING: Wells W22-26A and W22-27A were drilled to depths of 215 ft next to this unit in 1966 to determine the radionuclide distribution below this site. Well W22-26A was drilled on the east side of the unit and Well W22-27A on the west side. Only low-level Sr-90 ($\sim 1.0\text{E-}11$ Ci/g) was detected in a perched water zone at 140 ft in Well W22-26A, and no long-lived isotopes were detected in Well W22-27A [58]. Wells W22-25, -26, -34, and -35 presently monitor this unit. Data indicate breakthrough to groundwater could have occurred at this site [9].

SURVEILLANCE INFORMATION [678]

SURVEY DATE: 8/90
SURVEY SCHEDULE: Annual
SITE POSTING: Surface Contamination

RESULTS/STATUS: No contamination was detected. No change since the 8/88.

This unit is in compliance with the Environmental Compliance Manual.

HAZARDOUS CHEMICAL INVENTORY [309]

Nitric Acid: 3.00e+004 Kg

RADIONUCLIDE INVENTORY

Isotope data [612]

Curies decayed through 12/31/89

^{137}Cs : 2.900e+002 Ci

^{106}Ru : 2.870e-004 Ci

^{90}Sr : 9.630e+001 Ci

Gross Data:

Plutonium: 6.500e+001 g [260]

Alpha: 3.990e+000 Ci [612]

Beta: 7.530e+002 Ci [612]

U-Gross: 1.130e-002 Ci [612]

Waste Information Data System
General Summary Report
October 15, 1992

SITE NAME: 216-U-12 (58)
ALIASES:
216-U-12 Crib (315)

SITE TYPE: Crib (315)
WASTE CATEGORY: Mixed Waste (315)
WASTE TYPE: Liquid (315)
STATUS: Inactive (349) Post-1980 (306)
START DATE: April 1960 (58)
END DATE: January 31, 1988 (306)
OPERABLE UNIT: 200-UP-2 (329)
O.U. CATEGORY: TSD (323)
TSD NUMBER: D-2-8 (323)
SWMU: Yes (606)
TPA: Yes (329)

The following have been submitted for this site: Part A Permit (308)

HANFORD AREA: 200 West, U Plant (315)
COORDINATES: N36350 W73100 (58)
LOCATION: 2,130 ft south of the 221-U Building and 460 ft north of Beloit Avenue (58)

WASTE VOLUME RECEIVED: 150,000,000.00 liters (612)
CONTAMINATED SOIL VOLUME: 2,200.00 cubic meters (253)
OVERBURDEN SOIL VOLUME: 2,700.00 cubic meters (253)

GROUND ELEVATION: 688.00 feet above MSL (58)
WATER TABLE DEPTH: 223.00 feet below grade (NR)

SITE DIMENSIONS (Bottom) (58): Length: 100.00 feet (58)
Width: 10.00 feet (58)
Depth: 13.00 feet (39)

SITE DESCRIPTION: The bottom is filled with gravel (~9,320 cu ft). A perforated 12-in. V.C.P. pipe is placed horizontally the length of the unit, 10 ft below grade (39).

ASSOCIATED STRUCTURES:

A 6-in.-diameter V.C.P. waste line to the unit;
A 12-in.-diameter V.C.P. riser at the south end, rising from 10 ft below grade to 3 ft above, 13 ft long;
An 8-in.-diameter liquid level gage well, 17 ft long;
An 18-in.-diameter liquid level gage well, 17 ft long (39).

SITE NAME: 216-U-12

WIDS
10/15/92
Page 2

WASTE TYPES AND AMOUNTS: From 4/60 to 5/67, the site received waste from the 291-U-1 Stack drainage (4), 244-WR Vault waste (134), and 224-U process condensate via C-5 Tank (4). Disposal of contaminated water from 244-WR Vault was accomplished in October 1965 and included 3.14 kg thorium (134). From 5/67 to 9/72, the site received the above wastes excluding the 244-WR Vault waste and occasional waste via the C-7 Tank in the 244-U Building (4). From 9/72 to 11/81, the site was taken out of service (386). Since 11/81, the site has been receiving process condensate (corrosive: typical pH less than 1) from the 224-U Building (254). In the past, this facility also received miscellaneous storm drain wastes from 224-U Building (386).

COMMENTS: This unit replaced the 216-U-8 disposal site because the 216-U-8 site showed signs of potential cave-in (105). This unit was replaced by 216-U-17. It was isolated and will not be used again (306). The Part A Permit Application will be withdrawn (308).

ENVIRONMENTAL MONITORING: Radiological surveys of the surface are performed quarterly (349).

SURVEILLANCE INFORMATION (679)

SURVEY DATE: 9/90
SURVEY SCHEDULE: Semiannual
SITE POSTING: Surface Contamination

RESULTS/STATUS: No contamination detected and no change since the 9/89 survey.

ACTION REQUIRED: Check into posting status change.

This unit is in compliance with the Environmental Compliance Manual.

RADIONUCLIDE INVENTORY

Isotope data (612)

Curies decayed through 12/31/89

²⁴¹ Am: 6.450e-003 Ci	³ H: 1.880e-003 Ci	¹⁰⁶ Ru: 2.180e-006 Ci
¹³⁷ Cs: 5.660e-002 Ci	²³⁹ Pu: 1.230e-002	⁹⁰ Sr: 5.590e+001 Ci

Gross Data:

Plutonium:	1.000e+000 g	(260)
Alpha:	1.050e-001 Ci	(612)
Beta:	1.120e+002 Ci	(612)
U-Gross:	6.770e-001 Ci	(612)

Waste Information Data System
General Summary Report
February 26, 1992

SITE NAME: 216-S-23 [309]

SITE TYPE: Crib [309]
WASTE CATEGORY: Mixed Waste [309]
WASTE TYPE: Liquid [309]

STATUS: Inactive [309] Pre-1980 [309]
START DATE: January 1969 [309]
END DATE: July 1972 [309]

OPERABLE UNIT: 200-RO-2 [329]
O.U. CATEGORY: Undefined [323]
DOE/RL PROGRAM: Radiation Areas Reduction [358]

This site is included in the Tri-Party Agreement Action Plan [329]

PNL Hazardous Ranking System Migration Score: 1.04 [309]

HANFORD AREA: 200 West, S Plant [58]
COORDINATES: N36669 W74709, N37020 W74790 (centerline) [309]
LOCATION: ~2,400 ft north-northeast of the 202-S Building and slightly west and
north of the 216-S-9 Crib [58]

WASTE VOLUME RECEIVED: 34,100,000.00 liters [612]
CONTAMINATED SOIL VOLUME: 310.00 cubic meters [253]
OVERBURDEN SOIL VOLUME: 12,000.00 cubic meters [253]

GROUND ELEVATION: 683.00 feet above MSL [309]
WATER TABLE DEPTH: 202.00 feet below grade [309]

SITE DIMENSIONS (Bottom) [309]: Length: 360.00 feet [309]
Width: 10.00 feet [309]
Depth: 27.00 feet [309]

SITE DESCRIPTION: A gravel fill of ~4,320 cu feet is 2 ft above the bottom. A 6-in. I.D. perforated pipe runs the length of the unit, 1 ft above the bottom. The side slope is 1:1 [309].

SITE NAME: 216-S-23

ASSOCIATED STRUCTURES:

One gage well made of 8-in. V.C.P. with vent and filter extending from the crib bottom to ~3 ft above grade. The filter is on a pipe branching off at a right angle;
32 ft of 8-in. pipe;
~10 ft of 4-in. V.C.P.;
A 2-ft by 2-ft by 1-ft concrete pad for the gage well;
A 6-in. I.D. pipe, ~366 ft long (449).

WASTE TYPES AND AMOUNTS: The site received REDOX process condensate from D-2 Receiver Tank in the 202-S Building. The waste is low salt and neutral/basic (309).

ENVIRONMENTAL MONITORING: Wells W19-5, W19-6, W19-7, W22-37, and W22-38 monitor this unit. Data indicate breakthrough to groundwater has not occurred at this site (91).

SURVEILLANCE INFORMATION (678)

SURVEY DATE: 8/90
SURVEY SCHEDULE: Annual
SITE POSTING: Surface Contamination

RESULTS/STATUS: No contamination was detected. This is a decrease from the 8/89 survey.

ACTION REQUIRED: Continue to monitor for change.

This unit is in compliance with the Environmental Compliance Manual.

WIDS Radionuclide Inventory
March 2, 1992
216-S-23

Isotope data [612]

Curies decayed through 12/31/89

 ^{137}Cs : 3.470e+000 Ci ^{106}Ru : 3.490e-005 Ci ^{90}Sr : 1.140e+000 Ci

Gross Data:

Plutonium: 9.940e-001 g [260]

Alpha: 6.110e-002 Ci [612]

Beta: 9.070e+000 Ci [612]

U-Gross: 1.290e-004 Ci [612]

3/02/92

Waste Information Data System
Hazardous Chemical Inventory
(In Kilograms)Site Name: 216-S-23
Operable Unit: 200-RO-2
Bibliography: [309]

----- INORGANICS -----

Aluminum Nitrate:	Nitrite:	
Aluminum Fluoride/Nitrate:	Nitric Acid:	300.00000
Ammonium Carbonate:	Oxalate:	
Ammonium Nitrate:	Phosphate:	
Beryllium:	Potassium:	
Calcium Nitrate:	Potassium Borate:	
Cadmium (II):	Silver (I):	
Chromium (VI):	Sodium:	
Copper (II):	Sodium Aluminate:	
Copper Sulfate:	Sodium Dichromate:	
Ferric Nitrate:	Sodium Hydroxide:	
Ferrocyanide:	Sodium Oxalate:	
Flouride:	Sodium Silicate:	
Lead (II):	Sodium Sulfamate:	
Magnesium Nitrate:	Sulfamic Acid:	
Mercury:	Sulfate:	
Nickel (II):	Sulfuric Acid:	
Nitrate:	Uranium	
	Zinc (II):	

----- ORGANICS -----

CCL4:	Normal Paraffin Hydrocarbons:
BP:	Tributyl Phosphate:
DBBP:	Tributyl Phosphonate:
MIBK:	Trichloroethylene:

APPENDIX C

**DISPOSAL MATERIALS AND VOLUMES
200 EAST AREA**

Waste Information Data System
General Summary Report
January 30, 1993

SITE NAME: 241-ER-151 (359)
ALIASES:
241-ER-151 Diversion Box (315)

SITE TYPE: Diversion Box (315)

WASTE CATEGORY: Mixed Waste (315)
WASTE TYPE: Liquid (315)

STATUS: Active (315)
START DATE: 1945 (315)

OPERABLE UNIT: 200-BP-9 (329)
O.U. CATEGORY: Undefined (323)
SWMU: Yes (606)
TPA: Yes (329)

HANFORD AREA: 200 East Area (315)
COORDINATES: N41985 W54724 (370)
LOCATION: ~900 ft southwest of the 221-B Building (NR)

GROUND ELEVATION: 708.00 feet above MSL (NR)
WATER TABLE DEPTH: 305.00 feet below grade (NR)

SITE DESCRIPTION: This unit is a reinforced concrete structure that has a main section and an attached enclosure for pipe housing. The main section is 43 ft long by 10 ft wide by 16.67 ft deep. It houses 23 nozzles of the 3-in. Hanford style and one nozzle that is electrical (U8). The adjacent pipe housing structure is attached to the main section flush on the west side. Its dimensions are 31.5 ft along the north side by 10 ft by 16.67 ft deep (NR).

ASSOCIATED STRUCTURES:

Associated with 241-ER-311 Catch Tank. Not associated with any particular tank farm (315).

WASTE TYPES AND AMOUNTS: The unit transports waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operation (315).

COMMENTS: This unit receives cross-site waste from Diversion Box 154-UX via the 241-EW-151 Vent Station. Waste is also received from the B, BX, and BY Tank Farms via 244-BX DCRT. Wastes are routed to Diversion Boxes 241-ER-151 and 241-ER-152 [NR (old Ref. 294)].

ENVIRONMENTAL MONITORING: Leak detection and air monitoring are performed continuously within the tank farm in which this unit is located (315).

RELEASE POTENTIAL: Diversion boxes and receiving vaults drain to catch tanks. They are designed to contain leaks from transfers and drainage from operations within the unit (315).

Waste Information Data System
General Summary Report
January 30, 1993

SITE NAME: 241-ER-311 (359)

ALIASES:

241-ER-311 Catch Tank (315)

SITE TYPE: Catch Tank (627)

WASTE CATEGORY: Mixed Waste (315)

WASTE TYPE: Liquid (315)

STATUS: Active (627)

START DATE: 1945 (315)

OPERABLE UNIT: 200-BP-9 (329)

O.U. CATEGORY: Undefined (323)

SWMU: Yes (606)

TPA: Yes (329)

HANFORD AREA: 200 East Area (627)

COORDINATES: N41937 W54702 (370)

LOCATION: -800 ft southwest of the 221-B Building (241-ER-151) (534)

ASSOCIATED STRUCTURES:

Associated with 241-ER-151 and -152 Diversion Boxes and B-Plant. The unit is monitored by the CASS and FIC (814).

WASTE TYPES AND AMOUNTS: This unit is used for transfer of waste solutions from processing and decontamination operations. Volumes are variable according to specific plant operation (315). It contains 1,765 gal of waste (814).

KNOWN RELEASES: UPR-200-E-84 [58, under UN-216-E-12].

ENVIRONMENTAL MONITORING: Leak detection and air monitoring are performed continuously within the tank farm in which this unit is located (315).

CLEANUP ACTIONS: The unit was pumped out on June 29, 1991 (814).

Waste Information Data System
General Summary Report
January 30, 1993

SITE NAME: 241-ER-152 (359)
ALIASES:
241-ER-152 Diversion Box (315)

SITE TYPE: Diversion Box (315)

WASTE CATEGORY: Mixed Waste (315)
WASTE TYPE: Liquid (315)

STATUS: Active (315)
START DATE: 1945 (315)

OPERABLE UNIT: 200-BP-6 (329)
O.U. CATEGORY: Undefined (323)
SWMU: Yes (606)
TPA: Yes (329)

HANFORD AREA: 200 East Area (315)
COORDINATES: N42081 W54238 (370)
LOCATION: ~300 ft south of the 224-B Building (NR)

GROUND ELEVATION: 707.00 feet above MSL (461)
WATER TABLE DEPTH: 304.00 feet below grade (NR)

SITE DESCRIPTION: The unit consists of 1-ft-thick walls of reinforced concrete, ~15 ft deep. Nozzles 1 through 4 are 3-in. PUREX style, and Nozzle 5 is 4-in. PUREX style (315).

ASSOCIATED STRUCTURES:
Associated with 241-ER-311 Catch Tank (315).

WASTE TYPES AND AMOUNTS: The unit transports radioactive waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operation (315).

ENVIRONMENTAL MONITORING: Leak detection and air monitoring are performed continuously within the tank farms in which these units are located (315).

RELEASE POTENTIAL: Diversion boxes and receiving vaults drain to catch tanks (315).

**Waste Information Data System
General Summary Report
February 25, 1992**

SITE NAME: 216-A-40 [309]**ALIASES:**

216-A-39 Crib, 216-A-39 Trench, 216-A-40 Ditch, 216-A-39 Ditch [309]

SITE TYPE: Trench [309]
WASTE CATEGORY: Mixed Waste [309]
WASTE TYPE: Liquid [309]

STATUS: Inactive [309] Pre-1980 [309]
START DATE: January 1968 [309]
END DATE: May 1979 [309]

OPERABLE UNIT: 200-PO-1 [329]
O.U. CATEGORY: Undefined [323]
DOE/RL PROGRAM: Radiation Areas Reduction [358]

This site is included in the Tri-Party Agreement Action Plan [329]

PNL Hazardous Ranking System Migration Score: 32.72 [309]

HANFORD AREA: 200 East, A Plant [58]
COORDINATES: N41519 W48209, N41868 W48404 (centerline) [309]
LOCATION: ~500 ft west of the 241-AX Tank Farm and ~500 ft south of 7th Avenue [58].

WASTE VOLUME RECEIVED: 946,000.00 liters [309]

GROUND ELEVATION: 683.00 feet above MSL [309]
WATER TABLE DEPTH: 284.00 feet below grade [309]

SITE DIMENSIONS (Bottom) [309]:

Length:	400.00 feet [309]
Width:	20.00 feet [309]
Depth:	16.00 feet [309]

SITE DESCRIPTION: The unit is open, lined and compartmented into 3 sections. A 12-in. SCH 40 pipe runs horizontally, 74 ft through the south end of the unit, 12 ft below grade. A 5-ft pipe section is connected perpendicularly to the 12-in. pipe, forming a T. The side slope is 1:1.5 [309].

SITE NAME: 216-A-40

WIDS
2/25/92
Page 2**ASSOCIATED STRUCTURES:**

Seven cover floats per section running the width of the unit, each 18 ft long;

Six cover floats per section running the length of the unit, placed end to end along the centerline (length varies);

A 9-in.-radius half-pipe section, 11 ft long, placed along one side slope (60 sq ft);

A cover, 20,000 sq ft, placed over the surface area of the unit 5 ft above the bottom. Liner, 20,000 sq ft, placed along the sides and bottom from 5 ft above the bottom;

Liner material, 180 sq ft, placed over the liner along one side from 5 ft above the bottom;

A sump structure, 1.66-ft by 2.33-ft, placed below the bottom (NR).

WASTE TYPES AND AMOUNTS: The site received the diverted cooling water and steam condensate from the 244-AR Vault (309).

KNOWN RELEASES: UPR-200-E-59 (309)

COMMENTS: This site is a rubber bag type diverter for the recovery of radioactive cooling water that might become contaminated from equipment failures (58). The site was taken out of service due to a leak in the bag liner (309).

ENVIRONMENTAL MONITORING: Well E27-3 is the nearest well to this site, but since it is nearly 140 ft north and 100 ft west of the northwestern end of the unit, it is not reasonable to expect radiocontaminant input for this site to be detectable in this well (93).

SURVEILLANCE INFORMATION (674)

SURVEY DATE: 4/90
SURVEY SCHEDULE: Annual
SITE POSTING: Surface Contamination

RESULTS/STATUS: Gross contamination up to 3.5 mrem/hr. This is an increase in activity since the 1989 survey.

ACTION REQUIRED: Poor housekeeping, an RPR was issued.

This unit is out of compliance with the Environmental Compliance Manual.

3/02/92

Waste Information Data System
Hazardous Chemical Inventory
(In Kilograms)

Site Name: 216-A-40
Operable Unit: 200-PO-1
Bibliography: [315]

----- INORGANICS -----

Aluminum Nitrate:	Nitrite:
Aluminum Fluoride/Nitrate:	Nitric Acid:
Ammonium Carbonate:	Oxalate:
Ammonium Nitrate:	Phosphate:
Beryllium:	Potassium:
Calcium Nitrate:	Potassium Borate:
Cadmium (II):	Silver (I):
Chromium (VI):	Sodium:
Copper (II):	Sodium Aluminate:
Copper Sulfate:	Sodium Dichromate:
Ferric Nitrate:	Sodium Hydroxide:
Ferrocyanide:	Sodium Oxalate:
Flouride:	Sodium Silicate:
Lead (II):	Sodium Sulfamate:
Magnesium Nitrate:	Sulfamic Acid:
Mercury:	Sulfate:
Nickel (II):	Sulfuric Acid:
Nitrate:	Uranium
	Zinc (II):

1.00000

----- ORGANICS -----

CCL4:	Normal Paraffin Hydrocarbons:
BP:	Tributyl Phosphate:
DBBP:	Tributyl Phosphonate:
MIBK:	Trichloroethylene:

**DATE
FILMED**

11 / 22 / 93

END