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WASTE SITE RECLASSIFICATION FORM

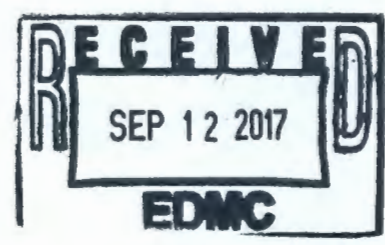
Operable Unit: 300-FF-2 Control No.: 2017-021

Waste Site Code(s)/Subsite Code(s): 600-63, Buried Waste Test Facility, 300-N Lysimeter Area, Waste Site

Reclassification Category: Interim [] Final [x]
Reclassification Status: Closed Out [x] No Action [] Rejected []
RCRA Postclosure [] Consolidated [] None []
Approvals Needed: DOE [x] Ecology [] EPA [x]

Description of current waste site condition:
(What is the current physical state of the site? What activities have been performed?)
Remedial action at the 600-63, Buried Waste Test Facility, 300-N Lysimeter Area, waste site has been performed in accordance with remedial action objectives and goals established by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy, Richland Operations Office (DOE-RL), in concurrence with the Washington State Department of Ecology. The 600-63 waste site, part of the 300-FF-2 Operable Unit, is located in the 600 Area of the Hanford Site, near the 618-10 Burial Ground and 316-4 waste site, approximately 4 miles northwest of the 300 Area, west of Route 4 South. The selected remedial action involved (1) excavating the site to the extent required to meet specified soil cleanup levels, (2) disposing of contaminated excavation materials at the Environmental Restoration Disposal Facility (ERDF) in the 200 Area of the Hanford Site, and (3) backfilling the site with clean soil and revegetating the surface soil. Excavation and disposal activities have been completed for the 600-63 waste Site. Remediation of the 600-63 waste site began on July 12, 2017, and was completed on July 24, 2017. Remediation resulted in 7,100 cubic meters (250,600 cubic feet) of material being disposed at the ERDF.

Basis for reclassification:
(How does the site meet the reclassification status?)
The basis for reclassification is described in detail in the attached "Supporting Information for Reclassification of the 600-63, Buried Waste Test Facility, 300-N Lysimeter Area, Waste Site." Remediation was performed in accordance with the "Remedial Design Report/Remedial Action Work Plan for 300-FF-2 Soils," DOE/RL 2014 13-ADD1, 2016, U.S. Department of Energy, Richland Operations Office, Richland, Washington, to meet the cleanup levels specified in the "Hanford Site 300 Area Record of Decision for the 300-FF-2 and 300-FF-5, and Record of Decision Amendment for 300-FF-1," U.S. Environmental Protection Agency, Region 10, Seattle, Washington (300 Area ROD) (EPA 2013). Verification sampling conducted on July 25, 2017, determined that the 600-63 waste site has been remediated to meet the cleanup levels specified in the 300 Area ROD (EPA 2013).



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Operable Unit: 300-FF-2

Control No.: 2017-021

Waste Site Code(s)/Subsite Code(s):

600-63, Buried Waste Test Facility, 300-N Lysimeter Area, Waste Site

Project Manager comments:

Waste Site Controls:

Engineered Controls: Yes No Institutional Controls: Yes No O&M Requirements: Yes No

If any of the Waste Site Controls are checked Yes, specify control requirements including reference to the Record of Decision, TSD Closure Letter, or other relevant documents:

Residual soil at the 600-63 waste site has been sampled, analyzed, and compared to cleanup levels. Results indicate the site has met the unlimited use and unrestricted exposure cleanup levels. Consequently, the 600-63 waste site is verified to be remediated in accordance with the 300 Area ROD (EPA 2013) and may be backfilled.

M. French

DOE Federal Project Director (printed)

M. French
Signature

8/30/17
Date

N/A

Ben Simes
Ecology Project Manager (printed)

Ben Simes
Signature

8/30/17
Date

B. Simes

EPA Project Manager (printed)

Signature

Date

**SUPPORTING INFORMATION FOR RECLASSIFICATION OF THE 600-63, BURIED
WASTE TEST FACILITY, 300-N LYSIMETER AREA, WASTE SITE**

Attachment to Waste Site Reclassification Form 2017-021

August 2017

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1.0 Introduction and Purpose

This attachment to the Waste Site Reclassification Form for the 600-63, Buried Waste Test Facility, 300-N Lysimeter Area, waste site provides the supporting information necessary to demonstrate that the objectives established for remediation in the approved record of decision have been achieved through implementation of the selected remedy. In accordance with EPA 2013, *Hanford Site 300 Area Record of Decision for 300-FF-2 and 300-FF-5, and Record of Decision Amendment for 300-FF-1* (hereinafter referred to as the 300 Area Record of Decision [ROD]) the 600-63 waste site may be reclassified as "Final Closed Out." Excavation operations and associated waste disposal activities are complete. Comparison of sample results to cleanup levels (CULs) for the 600-63 Buried Waste Facility indicate that residual soil concentrations are protective of groundwater and the Columbia River while supporting future land uses that can be represented (or bounded) by the residential land-use scenario. Consequently, the 600-63 waste site may be closed out in accordance with TPA-MP-14, *Maintenance of the Waste Information Data System (WIDS)*. Site backfill and revegetation are required to complete the selected remedy prescribed by the 300 Area ROD (EPA 2013).

2.0 600-63 Waste Site Background and Process Information

The 600-63 waste site, part of the 300-FF-2 Operable Unit, is located in the 600 Area of the Hanford Site, near the 618-10 Burial Ground and 316-4 waste site, approximately 4 miles northwest of the 300 Area, west of Route 4 South (Figures 1 and 2). It was constructed in 1978 to investigate moisture recharge and radionuclide migration at the Hanford Site and was identified as a waste site requiring remediation in the 300 Area Final ROD (EPA 2013). Tracers consisting of cobalt-60 and tritium were placed in lysimeters, measured amounts of water were added, and migration of the contaminants was monitored. The original excavated depth of the site was 9.1 m (30 ft). Six drainage lysimeters 7.6 m (25 ft) deep and two weighing lysimeters 1.5 m (5 ft) deep were installed. The site contained three large caissons of galvanized corrugated metal 2.7 m (9 ft) in diameter, four smaller galvanized corrugated metal pipes (culverts) 0.6 m (2 ft) in diameter, and two 1.5 m (5 ft) by 1.5 m (5 ft) square weighing lysimeters. In addition, there were seven 5.08 cm (2 in.) diameter metal pipe lysimeters, plus concrete foundations and pads for the various lysimeters.

The plan view of the site in Figure 3 shows the layout of the lysimeters. The north and south 2.7 m (9 ft) caissons were backfilled with soil to function as lysimeters, and the center caisson functioned as an instrument caisson. The four smaller corrugated pipe lysimeters were also backfilled with soil that was spiked with cobalt-60 and tritium. Details of radioactive tracer experiments with cobalt-60 and tritium in water are discussed in RA-0420, *Verification Sampling Instruction for the 600-63 Waste Site*. Results of the experiments indicated that tritium passed through the soil in the lysimeters while the cobalt-60 was strongly adsorbed by the soil but has been largely dissipated by radioactive decay because the half-life of cobalt-60 is only 5.27 years.

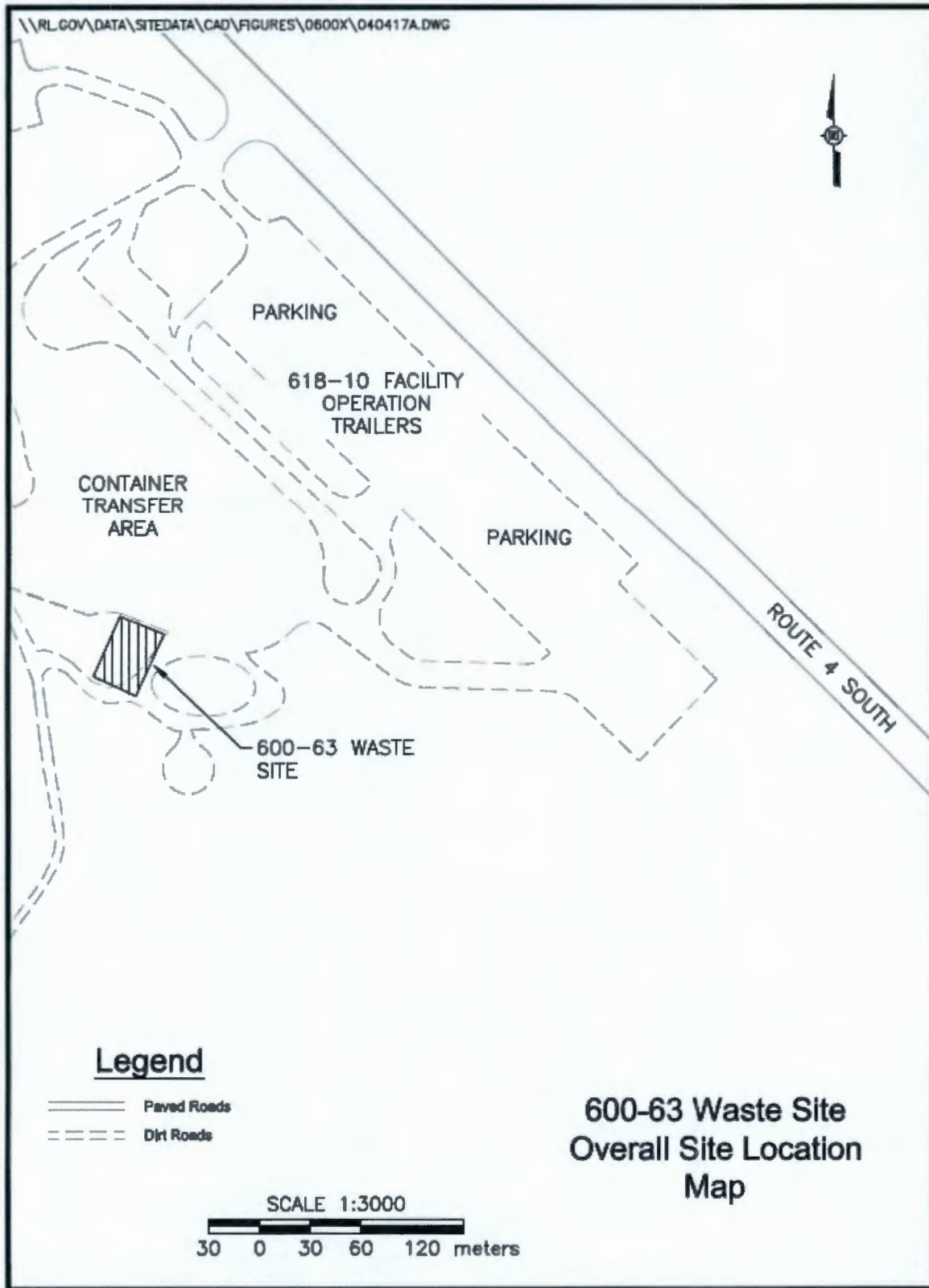


Figure 1. 600-63 Waste Site Location Map



Figure 2. Aerial Photograph of the 600-63 Waste Site

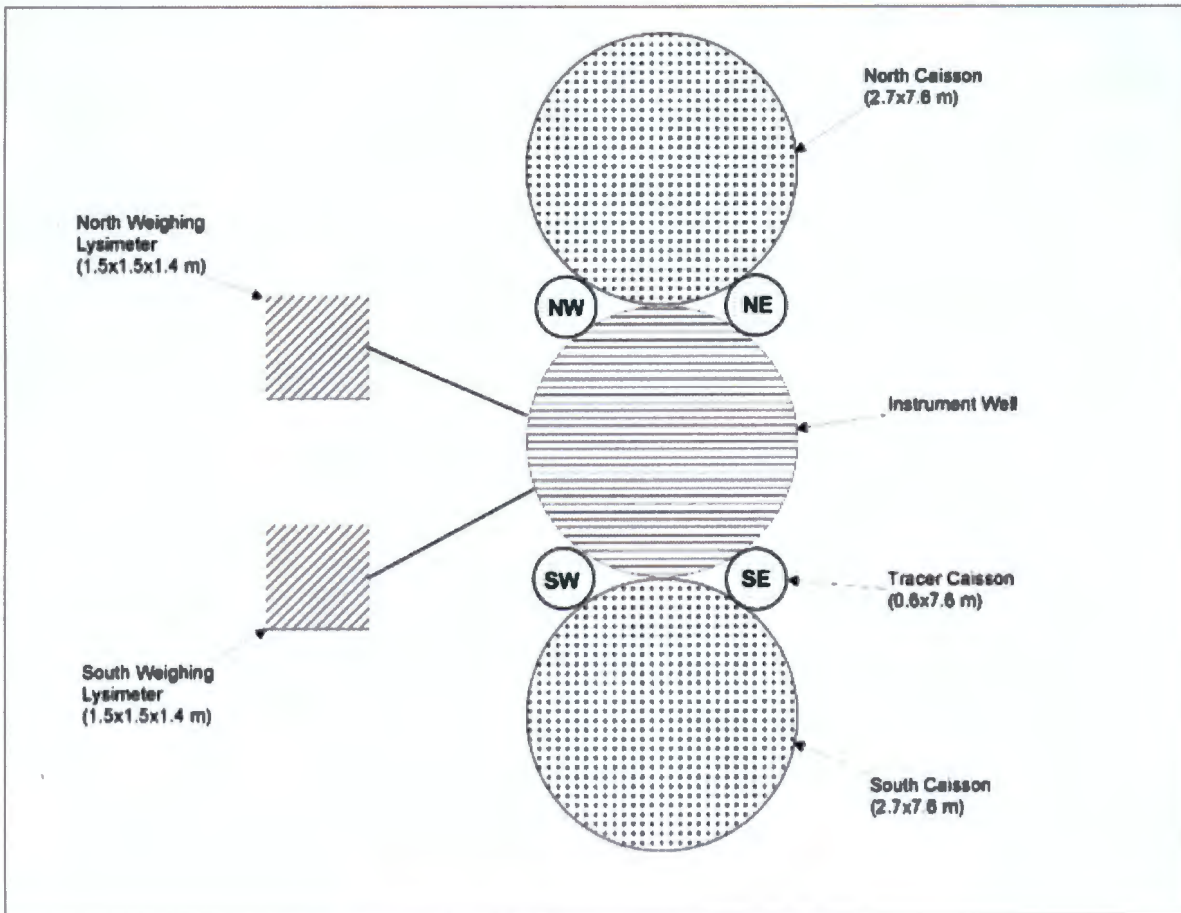


Figure 3. Original 600-63 Waste Site Plan View

3.0 Contaminants of Concern

Because contamination was assumed to be the result of spiking the lysimeters with cobalt-60 and tritium, cobalt-60 and tritium were the contaminants of concern for the 600-63 waste site. Because cobalt-60 migration was not found to be significant, it is highly unlikely that any contamination would be present to a depth equivalent to the length of the caissons. The shallow zone (<4.6 m [<15 ft]) was surveyed using Global Positioning Environmental Radiological Surveyor (GPERS) only because it was within the length of the tracer caissons. Cobalt-60 was not expected to be present in the deep zone of the 600-63 excavation. However, verification samples were analyzed using gamma energy analysis and liquid scintillation, as indicated in Table 1, and cobalt-60 was evaluated with the other verification sampling data.

Table 1. Total List of Contaminants of Concern

Contaminants of Concern	Analytical Method
Tritium	LSC Method
Cobalt-60	GEA Method

GEA = gamma energy analysis

LSC = liquid scintillation

4.0 Remediation Action Summary

Remediation of the 600-63 waste site began on July 12, 2017, and was completed on July 24, 2017. The 600-63 waste site was excavated to a depth of 8 m (27 ft) below ground surface (bgs) to remove the galvanized corrugated metal pipes and caissons, miscellaneous piping, and concrete foundations. The three large caissons of galvanized corrugated metal and four smaller galvanized corrugated metal pipes (culverts) were broken apart during excavation and removed in pieces with the excavated soil. Seven 5.08 cm (2 in.) diameter metal pipe lysimeters within the western portion of the excavation boundary were pulled from the ground and crushed by the excavators. Sidewalls were sloped back from the excavation at 1.5:1 (1.5 ft horizontal to 1 ft vertical). An approximate 1.5 m (5 ft) wide safety bench was excavated at a depth of 4.6 m (15 ft) bgs. An access ramp was dug on the south side of the excavation to allow material more than 4.6 m (15 ft) bgs to be excavated. Remediation resulted in 7,100 m³ (250,600 ft³) of material being disposed at the Environmental Restoration Disposal Facility. A photograph of the pit for 600-63 after remediation and cleanup verification sampling was complete is shown in Figure 4.

Radiological monitoring was conducted in accordance with the Environmental Radiological Survey Task Instruction (ERSTI-11-0003, *300/600 Area – Screening, Overburden/Layback & Excavation Surveys by Field Rad Measurements Group*) during the duration of the 600-63 waste site excavation, and a GPERS survey was performed within the open excavation when the site had been remediated to design depth (Figures 5 and 6). A post-excavation civil survey (shown in Figure 7) was completed following remediation activities and prior to backfilling the excavation.



Figure 4. 600-63 Pit Post-Excavation (Looking South)

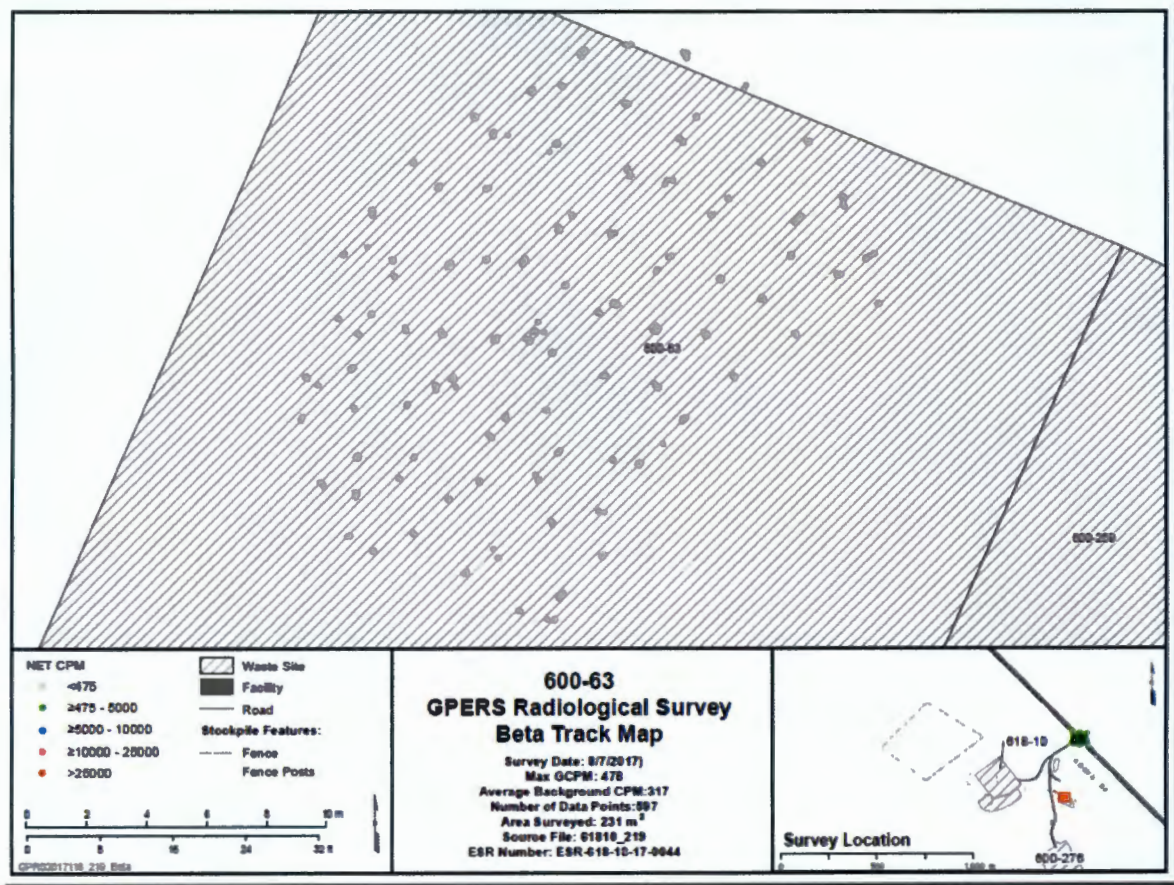


Figure 5. 600-63 GPERS Radiological Survey Beta Track Map

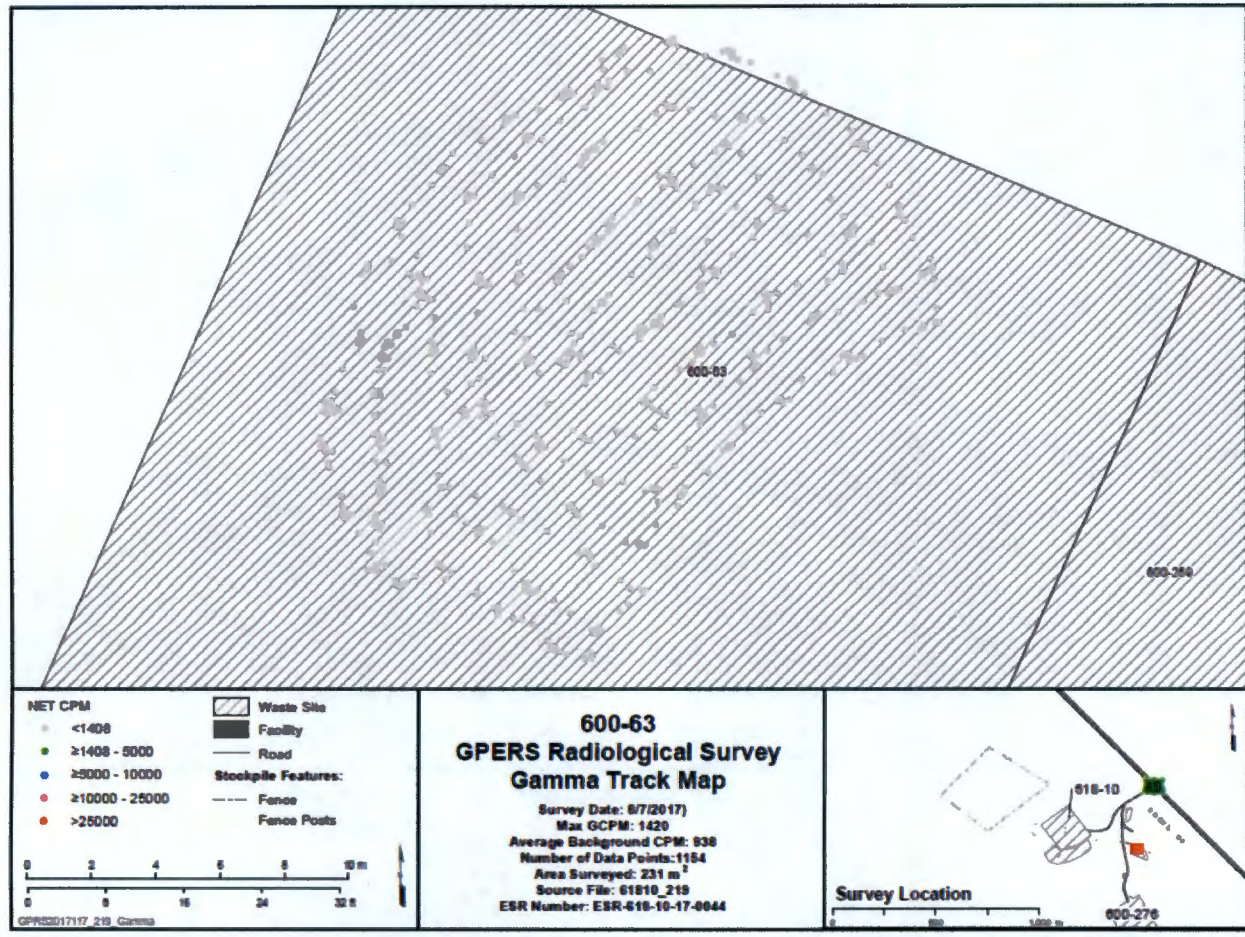


Figure 6. 600-63 GPERS Radiological Survey Gamma Track Map

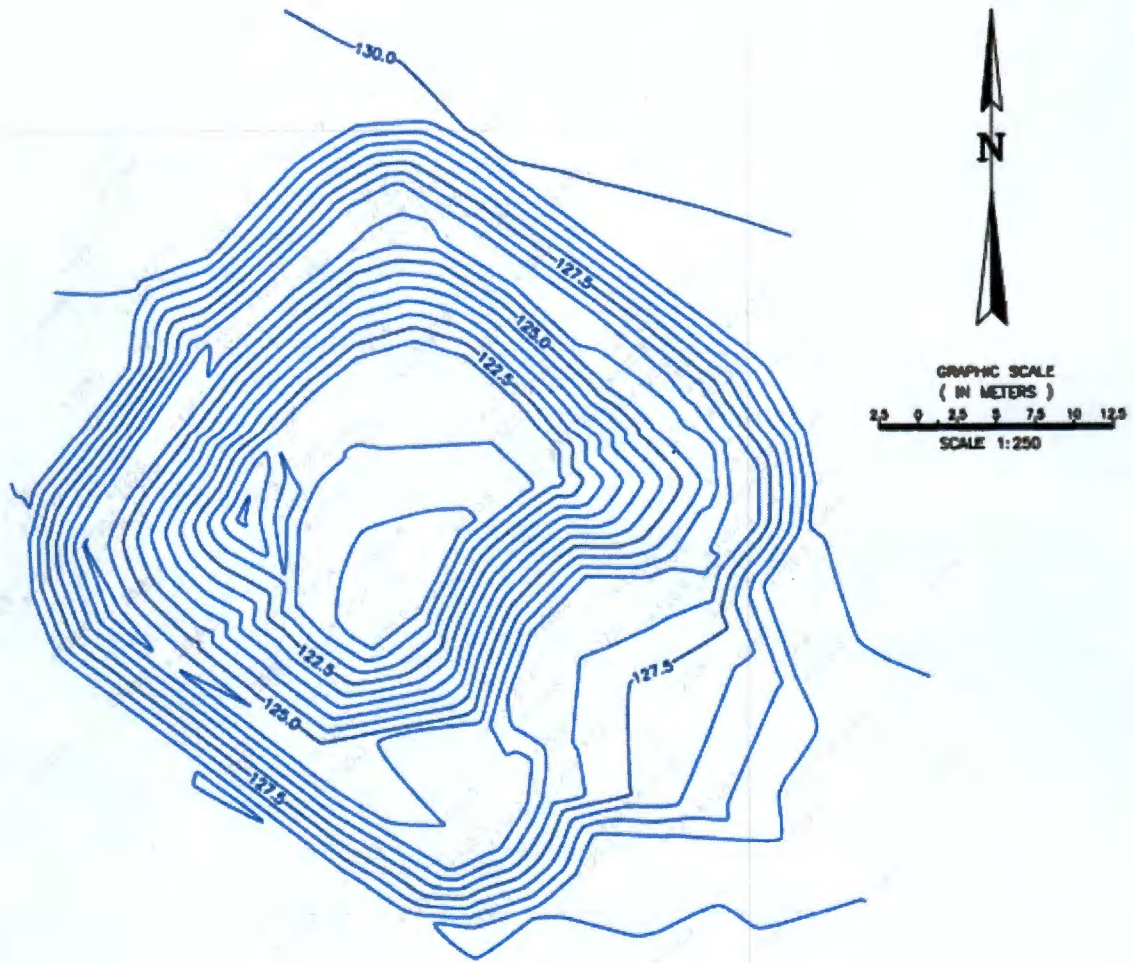


Figure 7. 600-63 Waste Site Post-Excavation Civil Survey Map

5.0 Cleanup Verification Sampling and Analysis

Site-specific sampling was conducted on July 25, 2017, the day after excavation was completed. Because the depth of the excavation was greater than 4.6 m (15 ft) bgs, the bottom of the excavation was sampled as one deep zone decision unit. There was no shallow zone (above 4.6 m [15 ft] bgs) to evaluate for direct exposure to contamination.

Due to the relatively small area of the excavation base (approximately 130 m² [1,400 ft²]), four focused verification samples were collected. The soil sampling locations were global positional surveyed and staked prior to sample collection using the coordinate pairs provided in Table 2 and shown in Figure 8. The concrete foundation below the lysimeters would have prevented the tritium and/or cobalt-60 from migrating into the soil and was not included in the sampling area at the base of the excavation. Three discrete samples were collected (0 to 0.15 m [0 to 6 in.] bgs) from around the footprint of the removed concrete foundation, and one was collected from the toe of the ramp into the excavation. All samples were analyzed using the methods identified in Table 1.

Table 2. Sample Summary Table for the 600-63 Waste Site

Sample Location	HEIS Sample Number	Washington State Plane Coordinate Locations (m)		Sample Analysis ^a
		Northing	Easting	
FS-1	B3B XK2	591174.4	121623.1	Tritium – LSC Cobalt-60 – GEA
FS-2	B3B XK3	591181.5	121623.1	
FS-3	B3B XK4	591177.9	121629.2	
FS-4	B3B XK5	591178.9	121625.1	
Duplicate ^b	B3B XK6	591178.9	121625.1	
Split ^b	B3B XK7	591178.9	121625.1	
Equipment blank ^c	NA	NA	NA	Cobalt-60 – GEA

a. Grab samples were collected at each location and sample analysis was performed using the methods specified in Table 1, consistent with DOE/RL-2001-48, 2014, *300 Area Remedial Action Sampling and Analysis Plan*, requirements.

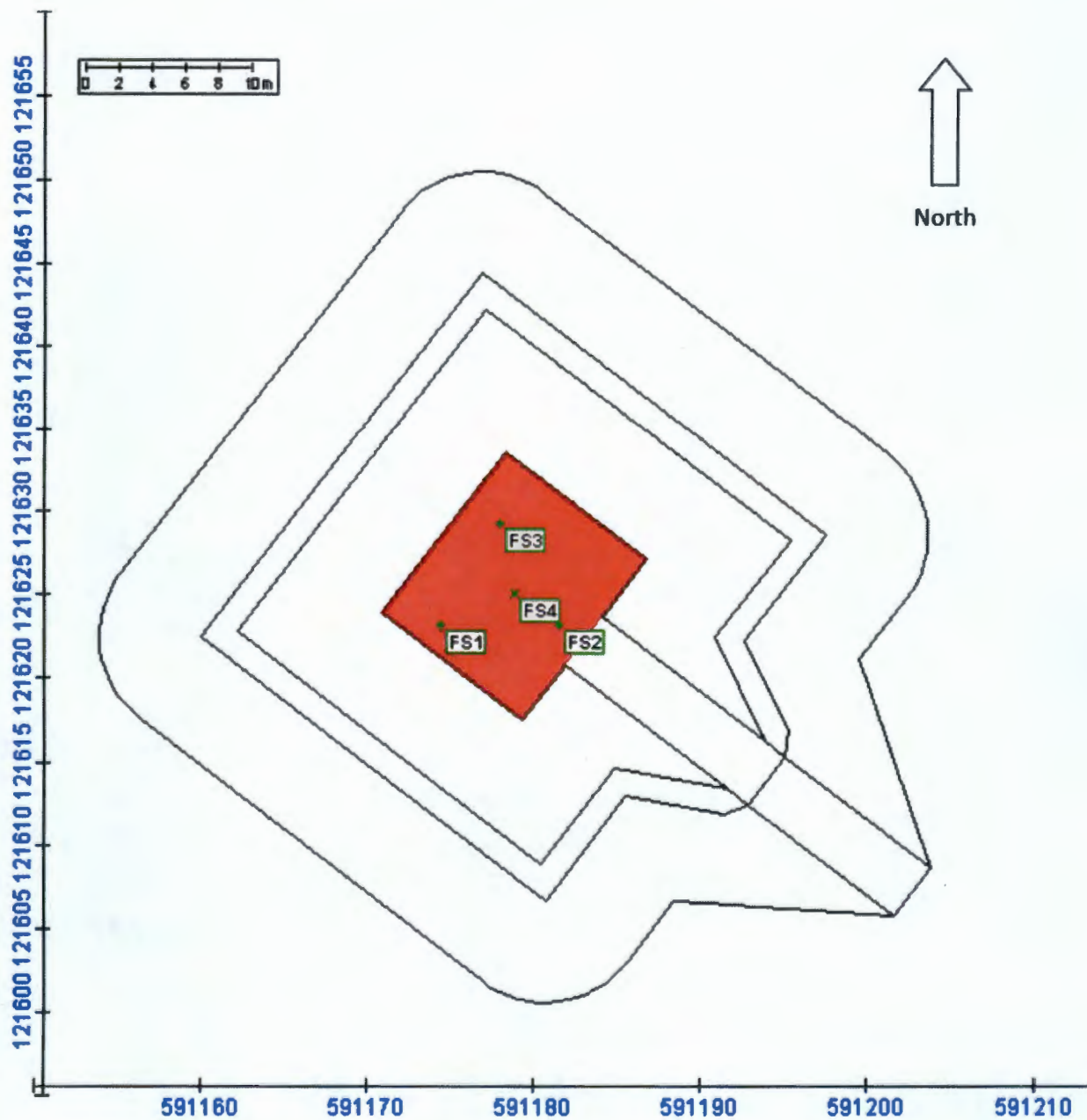
b. The duplicate/split soil samples were collected from the excavation at a location selected at the sampler's discretion.

c. If samples are collected with disposable tools (e.g. plastic sampling scoops and bags), an equipment blank was not required, per DOE/RL-2001-48, 2014, *300 Area Remedial Action Sampling and Analysis Plan*.

GEA = gamma energy analysis

HEIS = Hanford Environmental Information System

LSC = liquid scintillation



Note: Sketch does not represent actual excavation shape.

Figure 8. Verification Sample Locations for the 600-63 Waste Site Excavation

5.1 Data Quality Evaluation

Data validation compared the verification sampling approach and resulting analytical data with the sampling and data quality requirements specified by the project objectives and performance specifications. Validation indicated that the data are of the right type, quality, and quantity to support site verification decisions and are acceptable for decision-making purposes. The analytical data are stored in a

CH2M Plateau Remediation Company project-specific database prior to archiving in the Hanford Environmental Information System (HEIS) and are presented in Appendix A.

6.0 Verification Sample Data Evaluation

Concentrations of the contaminants of concern shown in Tables 4 and 5 are below the soil CULs for protection of groundwater and the Columbia River in the four focused cleanup verification soil samples. Cobalt-60 is strongly adsorbed by soil, was not predicted to migrate to groundwater, and has no CUL for protection of groundwater and the river (DOE/RL-2014-13-ADD1, *Remedial Design Report/Remedial Action Work Plan for 300-FF-2 Soils*). Therefore, only tritium was evaluated against available CULs for protection of groundwater and the Columbia River. In particular, the maximum verification sample concentration of tritium is 10.1 pCi/g versus the soil CUL of 9,180 pCi/g for protection of groundwater and the Columbia River (DOE/RL-2014-13-ADD1). Results of the comparisons of maximum verification sample results to CULs are presented in Table 3. Individual sample cleanup verification results are presented in Table 4. Complete analytical results are available in Appendix A.

Table 3. Maximum Verification Sample Results Compared to Action Levels

Contaminants of Concern	Maximum Verification Sample Analysis (pCi/g)	Soil Cleanup Level Protective of Groundwater and the River (pCi/g)
Cobalt-60	0.0184	Has no groundwater or river protection cleanup level
Tritium (H-3)	10.1	9,180

Table 4. All Cleanup Verification Sample Results

Verification Sample HEIS Number	Contaminants of Concern			
	Cobalt-60 (pCi/g)	Laboratory Qualifier	Tritium (H-3) (pCi/g)	Laboratory Qualifier
B3BXX2	0.0184	U	2.37	U
B3BXX3	-0.00369	U	10.1	U
B3BXX4	0.00887	U	0.193	U
B3BXX5	0.00296	U	0.172	U
B3BXX6 – DUP	-0.0284	U	6.87	U
B3BXX7 - Split	0.00513	U	-0.053	U
Cleanup Level	No cleanup level for groundwater/river protection	--	9,180	--

HEIS = Hanford Environmental Information System

U = Analyzed for but not detected above limiting criteria. Includes method detection limit, minimum detectable activity, practical quantitation limit, zero, counting error, and total analytical error.

7.0 References

- DOE/RL-2001-48, 2014, *300 Area Remedial Action Sampling and Analysis Plan*, Rev. 4, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0083067H>.
- DOE/RL-2014-13-ADD1, 2016, Remedial Design Report/Remedial Action Work Plan for 300-FF-2 Soils, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0076809H>.
- EPA, 2013, *Hanford Site 300 Area Record of Decision for 300-FF-2 and 300-FF-5, and Record of Decision Amendment for 300-FF-1*, U.S. Environmental Protection Agency and U.S. Department of Energy, Richland, Washington, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0087180>.
- ERSTI-11-0003, 2015, *300/600 Area – Screening, Overburden/Layback & Excavation Surveys by Field Rad Measurements Group*, Rev. 1, WCH Radiological Control Record, Environmental Radiological Task Instruction, Washington Closure Hanford, Richland, Washington.
- RA-00420, 2017, *Verification Sampling Instruction for the 600-63 Waste Site*, CH2M Plateau Remediation Company, Richland, Washington.
- TPA-MP-14, 2011, *Maintenance of the Waste Information Data System (WIDS)*, Rev. 2, U.S. Department of Energy, Richland Operations Office, U.S. Department of Energy, Office of River Protection, U.S. Environmental Protection Agency, and Washington State Department of Ecology, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/pdf.cfm?accession=1109271360>.

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Appendix A

Summary of Sampling and Analytical Results

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Table A-1. 600-63 Verification Sample Results (Cobalt-60 and Tritium)

HEIS Number	Sample Date	Cobalt-60			Tritium (H-3)		
		Analysis (pCi/g)	Q	MDC	Analysis (pCi/g)	Q	MDC
B3B XK2	7/25/17	0.0184	U	0.0842	2.37	U	22.3
B3B XK3	7/25/17	-0.00369	U	0.0522	10.1	U	22.2
B3B XK4	7/25/17	0.00887	U	0.0488	0.193	U	22.2
B3B XK5	7/25/17	0.00296	U	0.0740	0.172	U	22.4
B3B XK6 DUP	7/25/17	-0.0284	U	0.0862	6.87	U	27.2
B3B XK7 Split	7/25/17	0.00513	U	0.0363	-0.0533	U	0.655
Equipment Blank	NA	NA	NA	NA	NA	NA	NA
Cleanup Levels		No CUL for GW/River Protection			9,180 pCi/g for GW/River Protection		

CUL = cleanup level

GW = groundwater

HEIS = Hanford Environmental Information System

MDC = minimum detectable concentration

NA = not applicable

Q = qualifier

U = Analyzed for but not detected above limiting criteria. Includes method detection limit, minimum detectable activity, practical quantitation limit, zero, counting error, and total analytical error.

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