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100/300 AREA UNIT MANAGER MEETING
ATTENDANCE AND DISTRIBUTION

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100/300 AREA UNIT MANAGERS MEETING
APPROVAL OF MEETING MINUTES

February 14, 2013

APPROVAL: _____ Date 3/14/3
Mark French, DOE/RL (A3-04)
River Corridor Project Manager

APPROVAL: _____ Date 3/14/2013
Briant Charboneau, DOE/RL (A6-33)
Groundwater Project Manager

APPROVAL: _____ Date 3/14/13
Nina Menard, Ecology (H0-57)
Environmental Restoration Project
Manager

APPROVAL: _____ Date 3/14/13
Laura Buelow, Rod Lobos, or Christopher
Guzzetti, EPA (B1-46)
100 Area Project Manager

APPROVAL: _____ Date 3-14-13
Larry Gadbois, EPA
(B1-46)
300 Area Project Manager

100 & 300 AREA UNIT MANAGER MEETING MINUTES

Groundwater and Source Operable Units; Facility Deactivation, Decontamination, Decommission, and Demolition (D4); Interim Safe Storage (ISS); Field Remediation (FR); Mission Completion; and 100-K Sludge Treatment Project and 100-K Facility Demolition and Soil Remediation projects

February 14, 2013

ADMINISTRATIVE

- Next Unit Manager Meeting (UMM) –The next meeting will be held March 14, 2013, at the Washington Closure Hanford (WCH) Office Building, 2620 Fermi Avenue, Room C209.
- Attendees/Delegations – Attachment A is the list of attendees. Representatives from each agency were present to conduct the business of the UMM.
- Approval of Minutes – The January 10, 2013, meeting minutes were approved by the U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and U.S. Department of Energy, Richland Operations Office (RL).
- Action Item Status – The status of action items was reviewed and updates were provided (see Attachment B).
- Agenda – Attachment C is the meeting agenda.

EXECUTIVE SESSION (Tri-Parties Only)

An Executive Session was not held by RL, EPA, and Ecology prior to the February 14, 2013, UMM.

100-K AREA (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 3 provides a schedule for Field Remediation at the 100-K Area. Attachment 4 provides a status of the 100-K Sludge Treatment Project and the 100-K Facility Demolition and Soil Remediation projects. No issues were identified and no action items were documented.

Agreement 1: Attachment 5 provides DOE's and EPA's approvals in a Memorandum to File regarding the "Deferral of Moving the Cold Vacuum Drying Facility from Operational Status to Deactivation, Decontamination, Decommissioning, and Demolition."

Agreement 2: Attachment 6 provides DOE's and EPA's approvals to change the location for an ambient air monitoring station at 100-K (i.e., move N-578 from the east of 105-KW facility about 200 feet to the northwest so that it can be plugged into line power).

Agreement 3: Attachment 7 provides TPA Change Notice TPA-CN-565, revising DOE/RL-2005-26, Removal Action Work Plan for 105-KE/105-KW Reactor Facilities and Ancillary Facilities, Rev. 1, to move facilities scheduled to have D4 activities completed between Phase 2 and Phase 3. This change notice moves seven facilities from Phase 3 into Phase 2 and seven from Phase 2 into Phase 3.

Agreement 4: Attachment 8 provides DOE's and EPA's approvals to leave the 100-K Container Transfer Area in cold standby for potential work in the future.

Agreement 5: Attachment 9 provides DOE's and EPA's approvals to perform sampling at 100-K-57, 100-K-64, 100-K-83, and 100-K-111 without radiological air monitoring.

Agreement 6: Attachment 10 provides an agreement between DOE and EPA regarding completion of interim actions at Trench N at the 118-K-1 Burial Ground.

100-F & 100-IU-2/100-IU-6 AREAS (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 11 provides the Field Remediation Schedule for IU-2/6. No issues were identified and no action items were documented.

Agreement 1: Attachment 12 provides EPA's approval to conduct revegetation activities at 118-K-1 and 100-IU-2/6 through the end of March 2013.

Agreement 2: Attachment 13 provides EPA's approval to set up a temporary queue so support remediation of some 100-IU-2 waste sites.

100-D & 100-H AREAS (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 14 provides the Field Remediation Schedule for 100-D. Attachment 15 provides the Field Remediation Schedule for 100-H. Attachment 16 provides status and information for D4/ISS activities at 100-N, 100-D and 100-B. No issues were identified and no action items were documented.

Agreement 1: Attachment 17 provides Ecology's agreement with allowing revegetation at 100-D and 100-H to proceed through March 2013 for 100-H-37, 100-D-14, 100-D-50:4, 100-D-50:8, 100-D-56, 100-D-65, 100-D-66, 116-D-5, 116-DR-5, and 118-D-6.Each of these sites are to be included in the annual monitoring the first year following this planting.

Agreement 2: Attachment 18 provides DOE's and Ecology's approval of the "Air Monitoring Plan for the 100-D/DR Area Remaining Sites and Burial Grounds Remedial Action (PLN-0016, Revision 0)."

100-N AREA (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 16 provides status and information for D4/ISS activities at 100-N, 100-D and 100-B. Attachment 19 provides the 100-N Area FR Schedule. No issues were identified and no action items were documented.

Agreement 1: Attachment 20 provides a 100-N Ancillary Facilities Removal Action Sampling Determination Form for 105-NA and 1722-N.

Agreement 2: Attachment 21 provides a 100-N Ancillary Facilities Removal Action Sampling Determination Form for 1904-NB and 1904-NC.

Agreement 3: Attachment 22 provides Ecology's approval of a revised plume chase request for additional remediation and resampling at the 100-N-63:2 waste site.

Agreement 4: Attachment 23 provides Ecology's approval to remediate the 100-N-79 spillway only to the ordinary high water mark to minimize potential negative impacts on the Columbia River.

Agreement 5: Attachment 24 provides Ecology's approval to send to the Environmental Restoration and Disposal Facility (ERDF) three and a half single-lined cans containing small amounts of asbestos.

Agreement 6: Attachment 25 provides Ecology's approval to dump to ERDF the three and a half single-lined cans containing small amounts of asbestos.

Agreement 7: Attachment 26 provides Ecology's approval to reclassify the southwestern pond at 130-N-1 as no action.

Agreement 8: Attachment 27 provides Ecology's approval of the 100-N-84:5 pipeline request for no action proposal.

100-B/C AREA (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 16 provides status and information for D4/ISS activities at 100-N, 100-D and 100-B. Attachment 28 provides a schedule for Field Remediation at 100-B/C Area. No issues were identified and no action items were documented.

Agreement 1: Attachment 29 provides EPA's approval to conduct revegetation activities at 100-C-7 into March 2013.

Agreement 2: Attachment 30 provides EPA's approval to remove the staging pile designation for stockpile area 24A.

Agreement 3: Attachment 31 provides EPA's approval to move the sample location for sample WSW-6 due west about 14 meters.

Agreement 4: Attachment 32 provides EPA's approval to remove backfill material from 100-C-7:1 excavation for disposal at ERDF.

300 AREA – 618-10/11 (GROUNDWATER, SOILS)

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. No issues were identified and no agreements or action items were documented.

300 AREA - GENERAL (GROUNDWATER, SOILS, D4/ISS)

Attachment 1 provides status and information for groundwater. Attachment 33 provides status of the 300 Area Closure Project activities. No issues were identified and no agreements or action items were documented.

MISSION COMPLETION PROJECT

Attachment 34 provides status and information regarding the Long-Term Stewardship, the 100-K Shoreline Characterization Sample Design, and a Document Review Look-Ahead. No issues were identified and no agreements or action items were documented.

5-YEAR RECORD OF DECISION ACTION ITEM UPDATE

No changes were reported to the status of the CERCLA Five-Year Review action Items. No issues were identified and no agreements or action items were documented.

Attachment A

100/300 AREA UNIT MANAGER MEETING

ATTENDANCE AND DISTRIBUTION

February 14, 2013

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Attachment B

100/300 Area UMM
Action List
February 14, 2013

Open (O)/ Closed (X)	Action No.	Co.	Actionee	Project	Action Description	Status
O	100-196	RL	J. Neath	100-D	DOE will determine if the ISRM Pond had been incorporated into the WIDS database, and if not, to finalize a discovery site checklist and get the site into WIDS via the MP-14 process. (Closure is pending completion of a TPA Change Notice.)	Open: 7/12/12; Action:
O	100-197	RL	M. Thompson	100-N	DOE will begin reporting 100-N apatite barrier performance in the UMM updates in terms of % reduction (as described in the test plans) and in terms of groundwater Sr-90 concentration exiting the barrier and entering the Columbia River. (Concentrations entering the Columbia River are pertinent, as the remedial action goal in the IROD Amendment is the 8 pCi/L Drinking Water Standard. The IROD amendment authorized the full length of the barrier.)	Open: 11/8/12; Action:

Attachment C

100/300 Area Unit Manager Meeting
February 14, 2013
Washington Closure Hanford Building
2620 Fermi Avenue, Richland, WA 99354
Room C209; 2:00p.m.

Administrative:

- Approval and signing of previous meeting minutes (January 10, 2013)
- Update to Action Items List
- Next UMM (3/14/2013, Room C209)

Open Session: Project Area Updates - Groundwater, Field Remediation, D4/ISS:

- 100-K Area (Jim Hanson, Jamie Zeisloft, Tom Teynor)
- 100-F & 100-IU-2/6 Areas (Greg Sinton,Tom Post, Jamie Zeisloft)
- 100-D & 100-H Areas (Jim Hanson,Tom Post, Elwood Glossbrenner)
- 100-N Area (Joanne Chance, Rudy Guercia, Mike Thompson)
- 100-B/C Area (Greg Sinton, Tom Post)
- 300 Area - 618-10/11 exclusively (Jamie Zeisloft)
- 300 Area (Mike Thompson/Rudy Guercia)
- Mission Completion Project (Jamie Zeisloft)

Special Topics/Other

- 5-Year Record of Decision Action Item Update (Jim Hanson)

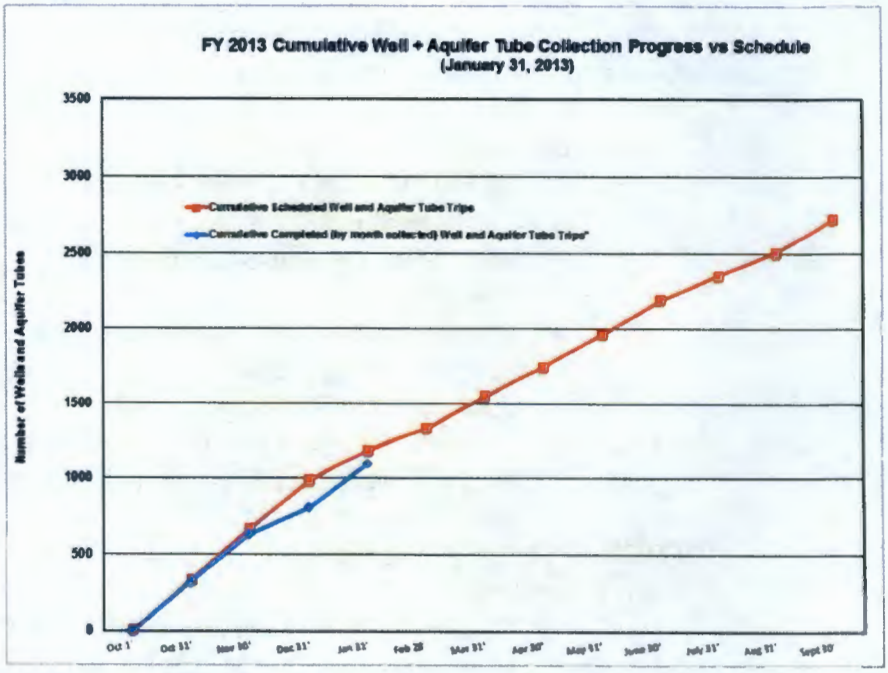
Adjourn

Attachment 1

100/300 Areas Unit Managers Meeting
February 14, 2013

General information on Groundwater Sampling

Sampling commenced for FY 2013 in October and progress against the plan/schedule is shown in the graphic to the right. Decembers performance was below plan due to a curtailment in the work schedule for the last week of the month. Sampling in early January almost completely recovered December's negative variance. The wells sampled successfully for December are presented in Table 1 below and the results are accessible from the Environmental Dashboard (http://environet.hanford.gov/eda/).



Hexavalent Chromium Groundwater Plumes in 100 Area – David Dooley / Lorna Dittmer

(M-016-110-T01, DOE shall take actions necessary to contain or remediate hexavalent chromium groundwater plumes in each of the 100 Area NPL operable units such that ambient water quality standards for hexavalent chromium are achieved in the hyporheic zone and river water column.)
Schedule Status – Complete.

- The TPA target was met on September 30, 2012; the technical basis and plume maps were transmitted in a White paper on November 5, 2012 to RL (CHPRC-1204316).

100-FR-3 Groundwater Operable Unit – Phil Burke / Mary Hartman

(M-015-64-T01, 12/17/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units for groundwater and soil.)
Schedule Status – Completed on December 20, 2012.

- CERCLA Process Implementation:
  - RI/FS & PP: The Draft A documents were transmitted on December 20, 2012.
  - The documents are currently under regulatory review and EPA has indicated they expect to provide comments by March 4, 2013
- Monitoring and Reporting:
  - Nothing new to report. Annual sampling of wells and aquifer tubes was previously completed and data reported. Three wells are scheduled for semiannual sampling (next in April).

100/300 Areas Unit Managers Meeting
February 14, 2013

100-HR-3 Groundwater Operable Unit – Bert Day / Kris Ivarson

(M-15-70-T01, 11/24/2011, Submit feasibility study report and proposed plan for the 100-HR-1, 100-HR-2, 100-HR-3, 100-DR-1 and 100-DR-2 operable units for groundwater and soil.)
Schedule Status – Completed on December 13, 2012

- Project Management
    - 183-H DQO: Revisions were made to the DQO document. The January meeting was postponed due to schedule conflicts, but is being planned for early March to discuss the regulatory requirements.
  - WCH Integration:
    - 199-D5-145 (C8725): Drilling initiated on January 14, 2013. Borehole total depth is 115.25 ft bgs; depth to water is 79; depth to RUM is 107. Well development completed on February 6, 2013.
    - 199-D5-148 (C8728): Drilling initiated on January 14, 2013. Borehole total depth is 118.9 ft bgs; depth to water is 83.5; total depth is 109. Well construction began on February 6, 2013.
- CERCLA Process Implementation:
  - RI/FS & PP
    - Submitted Draft A on December 13, 2012
    - Comments now due March 14, 2013, according to letter 13-NWP-010
  - Interim Action RD/RAWP & Monitoring Plan
    - Initiate both documents
- Remedial Actions:
  - Operations continue at DX and HX pump-and treat system. January 2013 performance:
    - The systems treated 54 million gallons
    - The system removed 27 kg of hexavalent chromium
- Well Realignment:
  - Discussed the proposed new and/or realignment of existing wells; agreed upon associated priorities on January 30, 2013; technical memo being finalized to document agreements.

100-NR-2 Groundwater Operable Unit – Marty Doornbos / Virginia Rohay

(M-015-62-T01, 9/17/2012, Submit a Feasibility Study [FS] Report and Proposed Plan [PP] for the 100-NR-1 and 100-NR-2 Operable Units including groundwater and soil.)
Schedule Status –Tentative agreement has been reached to change the TPA milestone to June 30, 2013 for delivery of the 100-NR-2 OU Draft A RI/FS Report and Proposed Plan to Ecology.

- CERCLA Process Implementation
  - The decisional draft RI/FS report and proposed plan are on schedule to begin RL review on February 28, 2013. Draft A versions of these documents are on schedule to be provided to Ecology for their review on June 28, 2013.

- Apatite PRB Performance Monitoring
  - The low river stage (fall) sampling event was conducted on September 26 and 27 and on October 1, 2012. Samples were collected from 12 performance monitoring wells: 4 wells monitoring the upstream segment (199-N-96A, 199-N-347, 199-N-348, 199-N-349) (Figure 100NR2-1); 4 wells monitoring the central (original) segment (199-N-123, 199-N-146, 199-N-122, 199-N-147) (Figure 100NR2-2); and 4 wells monitoring the downstream segment (199-N-350, 199-N-351, 199-N-352, 199-N-353) (Figure 100NR2-3). The fall 2012 concentrations, and the percent reduction in strontium-90 concentration based on

comparison of the Fall 2012 concentrations to the maximum baseline concentrations, are provided in Table 100NR2-1. Good reduction in strontium-90 concentrations was observed in both the upstream and downstream segments following apatite injection. For the original barrier, a slight increase in the strontium-90 concentrations was observed in well 199-N-122. Monitoring of this well will continue in FY13 to determine whether the elevated strontium-90 concentrations continue or decline to previous levels. Evaluation of the performance of the apatite permeable reactive barrier is continuing.

- A meeting was held with Ecology on January 16, 2013 to discuss the results of the PRB performance monitoring

- RCRA Monitoring – 116-N-1 (1301-N), 120-N-1 (1324-N), 116-N-3 (1325-N)
  - The next sampling events at RCRA sites 116-N-1, 120-N-1, and 116-N-3 are scheduled for March 2013.

- 100-N aquifer tubes
  - The December sampling event is complete. All but five of the 53 aquifer tubes were sampled, and of these aquifer tubes, C6135 broke off and requires repair when the river stage is lower; Array-8.5A, 12A, -13A, and -14A did not yield water. The four aquifer tubes that did not yield water are on a quarterly sampling schedule and will be attempted again in March.
  - Four tubes are sampled monthly. The January sampling event occurred the last week of the month.

Table 100NR2-1. Performance Monitoring at the Apatite Permeable Reactive Barrier, 100-NR-2 OU

Well Name	Sr-90 Concentration (pCi/L)					Percent Reduction in Sr-90 Concentration (Baseline to 2012) (%)
	Baseline (maximum)	Fall 2011			Fall 2012	
Upstream Apatite PRB						
	04/06/10	09/16/11[b]	09/28/11[b]	10/13/11[b]	09/27/12	
199-N-96A	37.9[c]	50.0	16.45	6.8	4.6[d]	88
199-N-347	7.0[b]	170.0	20.85	7.2, 9.5	10.0	-43
199-N-348	1800.0	180.0	85.5	59.5	88.0	95
199-N-349	230.0	495.0	176.0	118.0	50.0	78
Central (Original) Apatite PRB						
		11/10/2011			09/26/12 09/27/12	
199-N-122	4630.0[a]	275.0			900.0	81
199-N-123	1180.0[a]	212.0			230.0	81
199-N-146	985.0[a]	143.0			330.0	66
199-N-147	1842.0[a]	199.0, 203.0			300.0	84
Downstream Apatite PRB						
	07/28/10 07/29/10	09/27/11[b]	10/12/11[b]	10/27/11[b]	09/27/12 10/01/12	
199-N-350	240.0	210.0	145.0	148.0	26.0	89
199-N-351	350.0	465.0	185.0	127.5, 124.5	29.0	92
199-N-352	580.0	447.5	190.0	171.0	29.0	95

199-N-353	83.0	92.0	26.5	30.75	3.4 U	100

a. From Table 3.1 in PNNL-20252
b. Based on gross beta measurement divided by two to approximate Sr-90 concentration
c. 12/06/1995
d. 08/27/2012

Figure 100NR2-1: Strontium-90 concentrations at performance monitoring wells at the upstream apatite PRB segment.

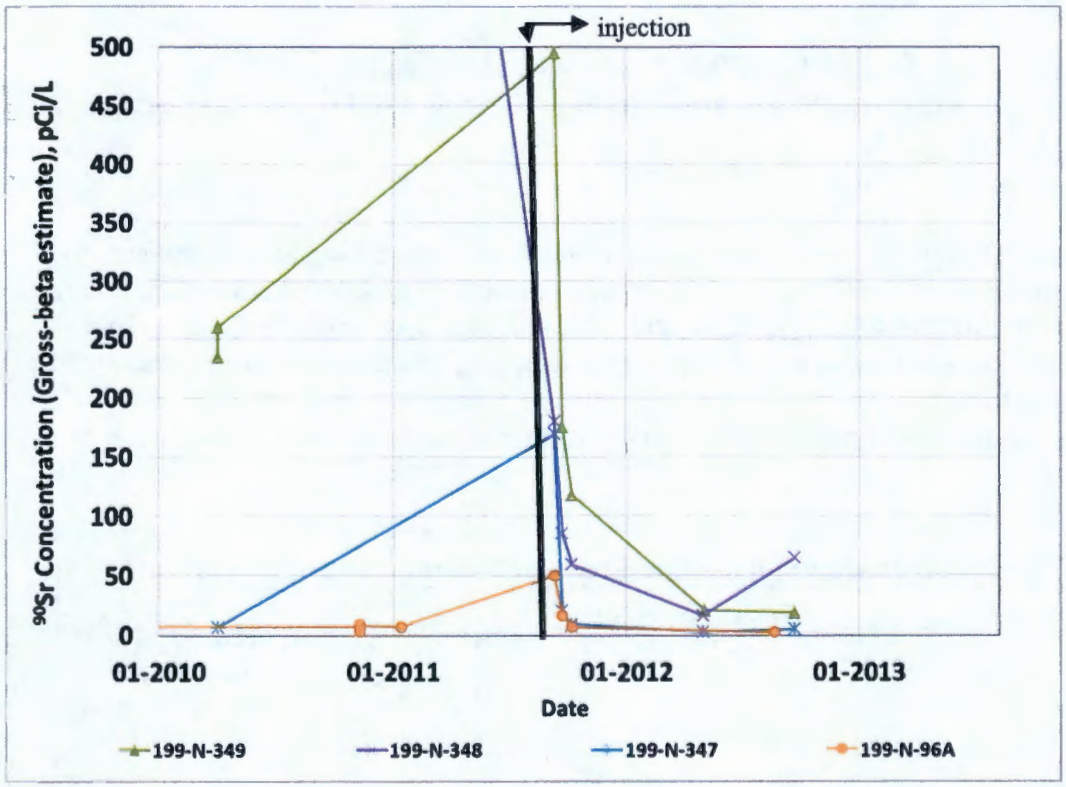


Figure 100NR2-2: Strontium-90 concentrations at performance monitoring wells at the central (original) apatite PRB segment.

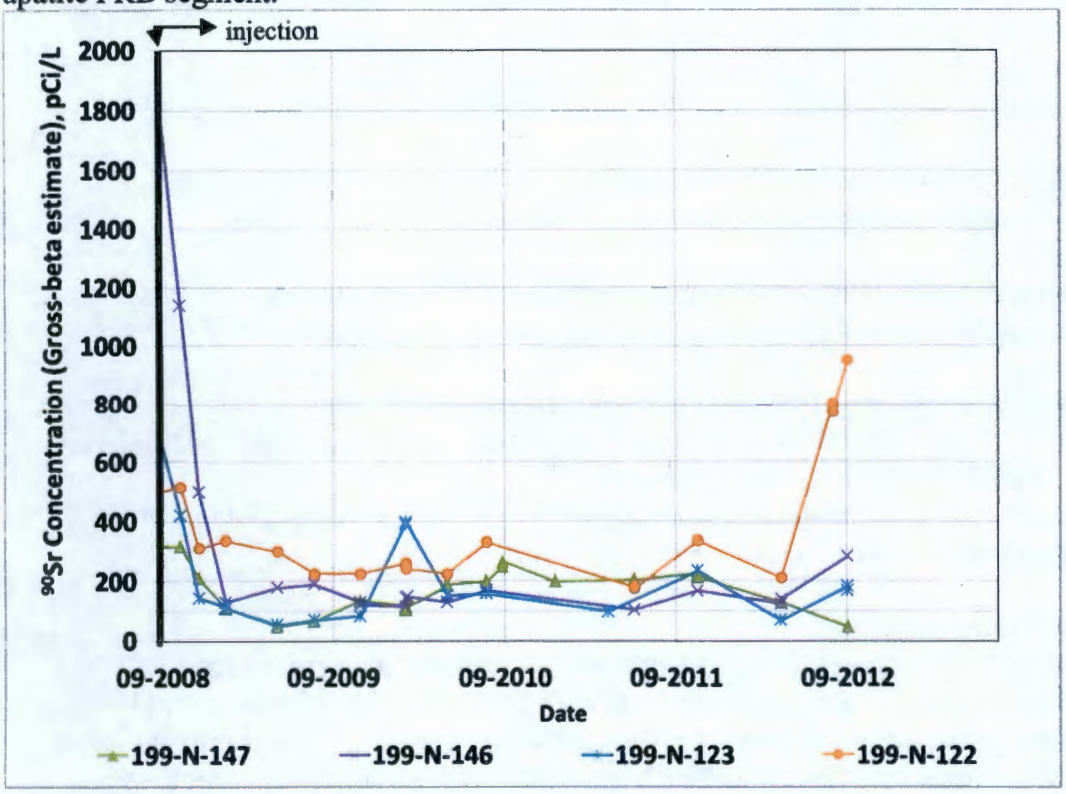
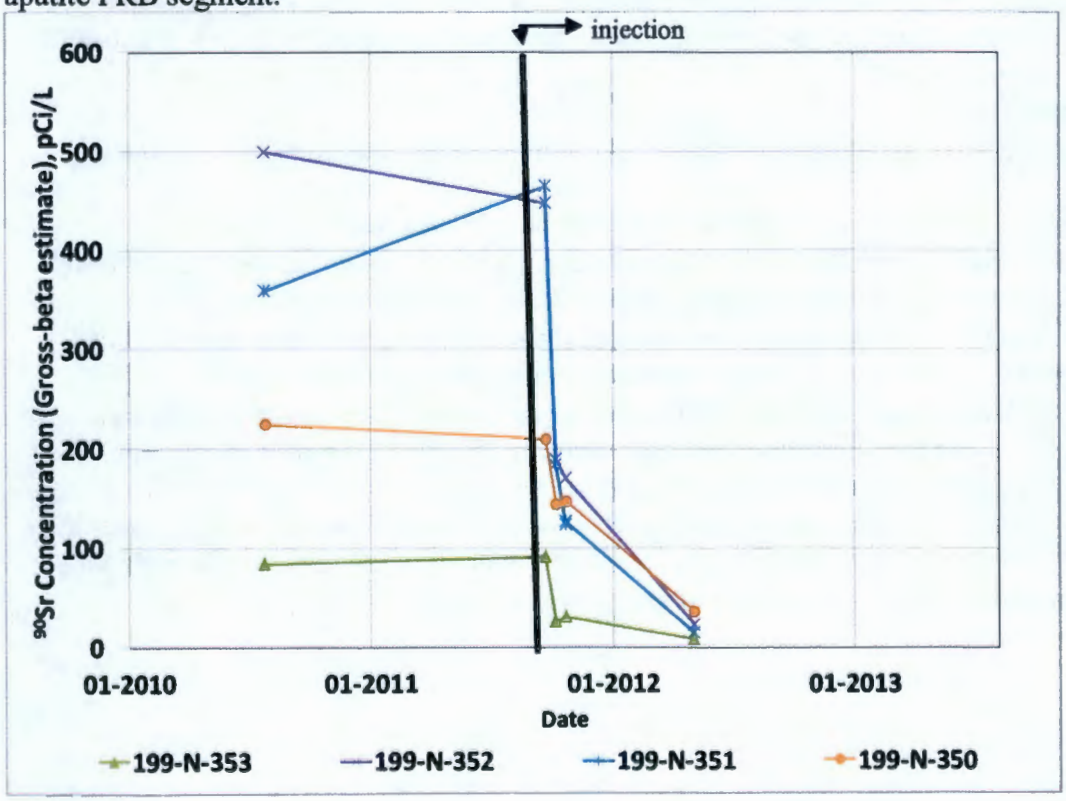


Figure 100NR2-3: Strontium-90 concentrations at performance monitoring wells at the downstream apatite PRB segment.



100/300 Areas Unit Managers Meeting
February 14, 2013

100-KR-4 Groundwater Operable Unit – Bert Day / Chuck Miller

- CERCLA Process Implementation:
  - RI/FS and Proposed Plan: Production of both documents is on hold until path forward is agreed to by RL and EPA.
- Remedial Actions:
  - Operations continue at KX, KR4, and KW pump-and-treat systems. January 2013 performance:
    - The systems treated 50.6 million gallons.
    - The system removed 5 kg of hexavalent chromium
- Well Realignment
  - Discussed the proposed new and/or realignment of existing wells; agreed upon associated priorities on 1/28; technical memo being finalized to document agreements.

100-BC-5 Groundwater Operable Unit – Phil Burke/ Mary Hartman

(M-015-68-T01, 11/30/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-BC-1, 100-BC-2 and 100-BC-5 Operable Units for groundwater and soil.)
Schedule Status – Missed. The planned delivery date for the 100-BC Draft A RI/FS Report to the regulators is under discussion between the Tri-Parties (see below).

- CERCLA Process Implementation:
  - Work Plan and SAP Updates: Draft appendices to these documents (in the form of TPA change notices) were presented and discussed with DOE and EPA in December. The final versions were submitted for regulatory review on January 28, 2013. The documents are currently under regulatory review and EPA has requested a 45 day review timeframe.
  - Locations for planned new monitoring wells have been staked; EPA gave concurrence to the locations. Mobilization activities are underway and consist of cultural clearance, permits, preparation of the drilling RFP and solicitation of bids, laboratory acquisition for specialized isotopic analysis, equipment procurement, and manpower scheduling activities.

- Monitoring & Reporting
  - The comprehensive, annual groundwater well sampling event was completed in January 2013.
  - Most of the aquifer tubes were sampled in December; the last three in January.
  - Data from the recent sampling events are partially available. Chromium and tritium trends indicate continued movement of shallow groundwater (Hanford formation; top of aquifer) from the former 118-B-1 burial ground and the 100-C-7:1 waste site in southern 100-BC toward the east and northeast, as discussed below. Concentrations in wells screened in Ringold Formation unit E are more stable, indicating slower groundwater movement.
  - Near 100-C-7:1 January chromium concentrations in 199-B4-14 (Hanford formation) and 199-B5-6 (lower Ringold E) remained similar to December results (Figure BC-1). Chromium concentrations in the shallow well show an inverse relationship with water level in the well. Specific conductance is steady, indicating no dilution, and it is likely that the variations reflect changing directions of groundwater flow.

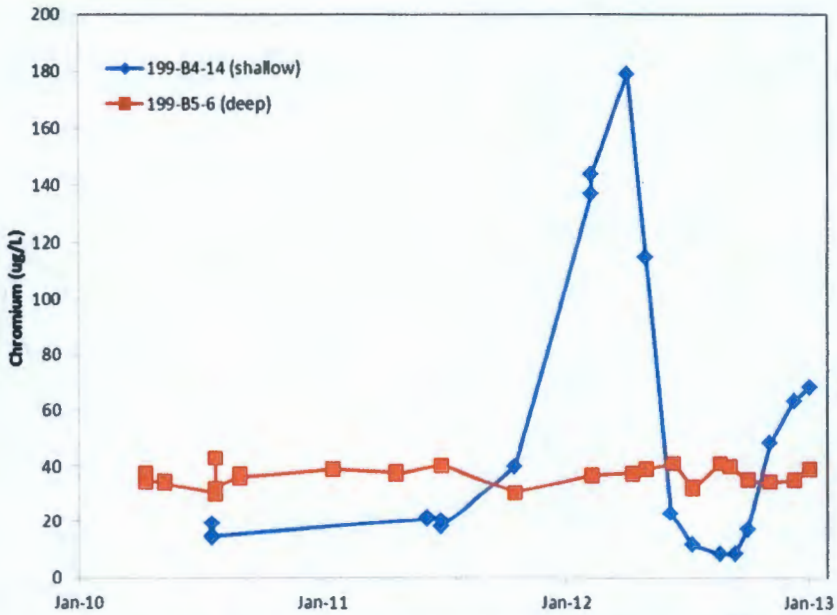


Figure BC-1 -Dissolved Chromium in Wells Near 100-C-7:1

- East of the 100-C-7 site hexavalent chromium concentrations did not change significantly between October 2012 and January 2013 (25 µg/L). Concentrations in this well, which is screened in the Hanford formation, have spiked during the previous two summers as a result of seasonal changes in flow direction.
- East of 100-C Reactor, tritium concentrations have increased in wells 199-B9-2 and 199-B9-3, screened in the Hanford formation (Figure BC-2). The trends in these and other wells suggest continued movement of the southern tritium plume from the 118-B-1 burial ground toward the east and northeast. Chromium concentrations have remained stable in these two wells, but it is likely that concentrations will increase in the future as the 100-C-7:1 plume continues to migrate.

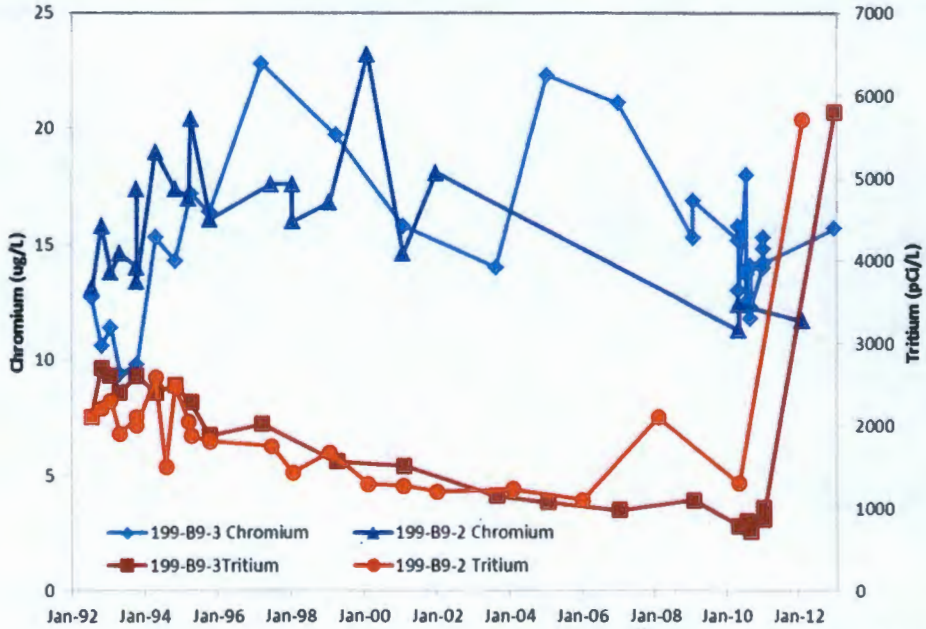


Figure BC-2 -Chromium and Tritium in Southeastern 100-BC. Wells are screened at the top of the aquifer in the Hanford formation.

- In central 100-BC, the hexavalent chromium concentration in 199-B4-7 (Hanford formation) increased from 49 µg/L in July 2012 to 54 µg/L in January 2013, part of a longer-term upward trend (Figure BC-3). Tritium previously increased at this well. We plan to install an adjacent well screened in the lower part of the aquifer (Ringold unit E) at this location.

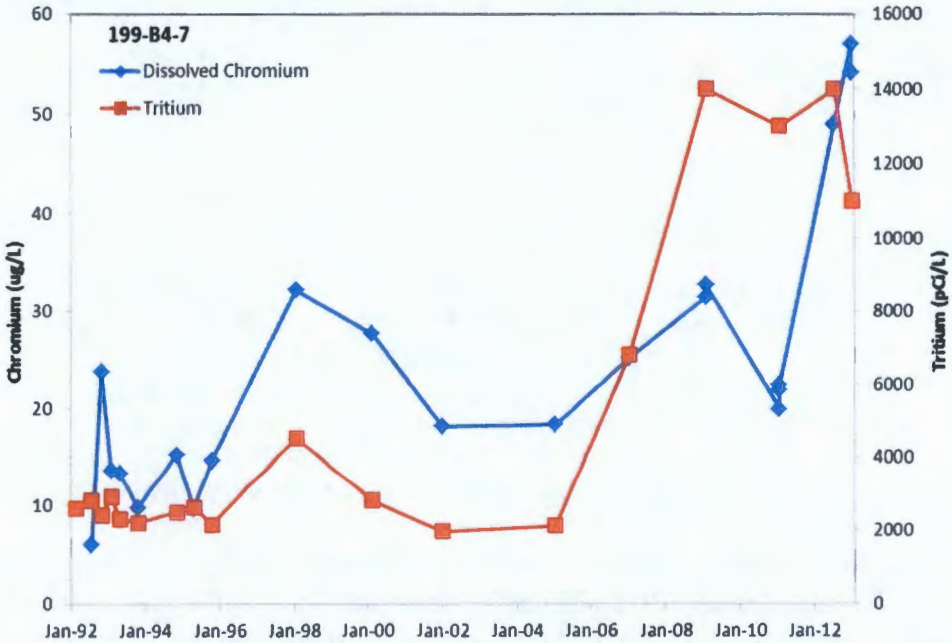


Figure BC-3. Chromium and Tritium in Central 100-BC. The well is screened at the top of the aquifer in the Hanford formation.

- Chromium and tritium concentrations increased in well 199-B3-50 (Hanford formation), located in northeastern 100-BC (Figure BC-4).

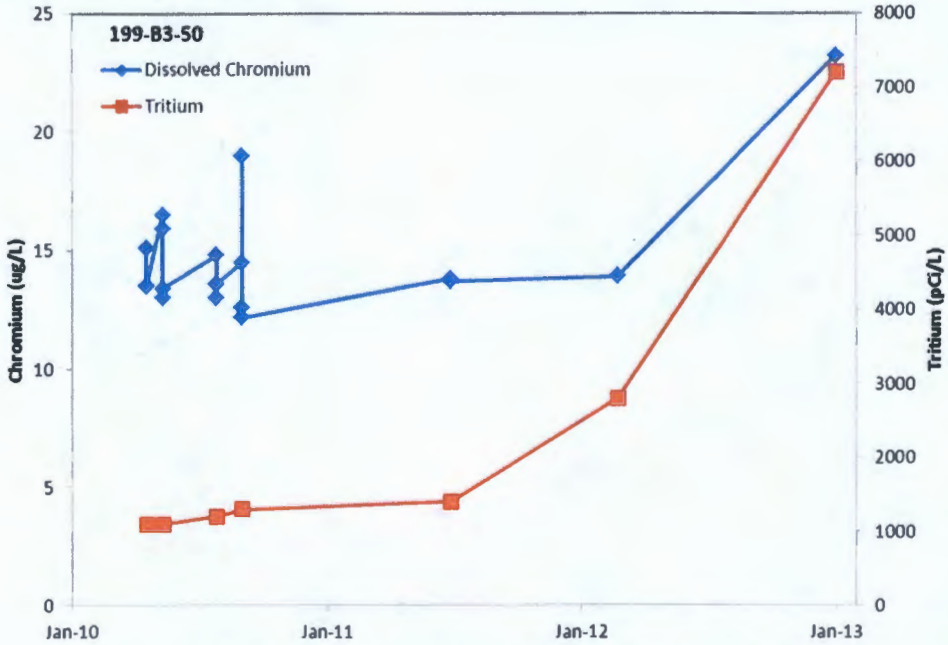


Figure BC-4. Chromium and Tritium in Northeastern 100-BC. The well is screened at the top of the aquifer in the Hanford formation.

- Chromium concentrations in wells farther north, where the top of the aquifer is in Ringold unit E, remained consistent with previous results. Concentrations ranged from 17 µg/L in 199-B3-46 to 53 µg/L in 199-B3-47. Concentrations in 199-B3-51, screened at the bottom of the aquifer remained low (2.8 µg/L).
- Tritium concentrations in northern 100-BC wells continued declining trends. January 2013 results received to date were less than the 20,000 pCi/L DWS.
- Chromium concentrations in western 100-BC (199-B2-13, 199-B8-6, 199-B5-1; all screened in the Hanford formation at the top of the aquifer) continued to be <10 µg/L. Tritium concentrations also continued to be low in these wells. These results are consistent with movement of clean groundwater into 100-BC from the west.
- Strontium-90 concentrations in January 2013 were comparable to 2012 results, indicating little change in the plume.
- Nitrate concentration increased to 53.6 mg/L in aquifer tube 06-M in December 2012, exceeding the DWS for the first time (Figure BC-5). All of the wells in 100-BC have had concentrations below the DWS for many years. The closest well, 199-B3-47, had a concentration of 29.4 mg/L in February 2012 (199-B3-47 was sampled again in January 2013 but not for anions). Other aquifer tubes that were sampled for nitrate had lower values.

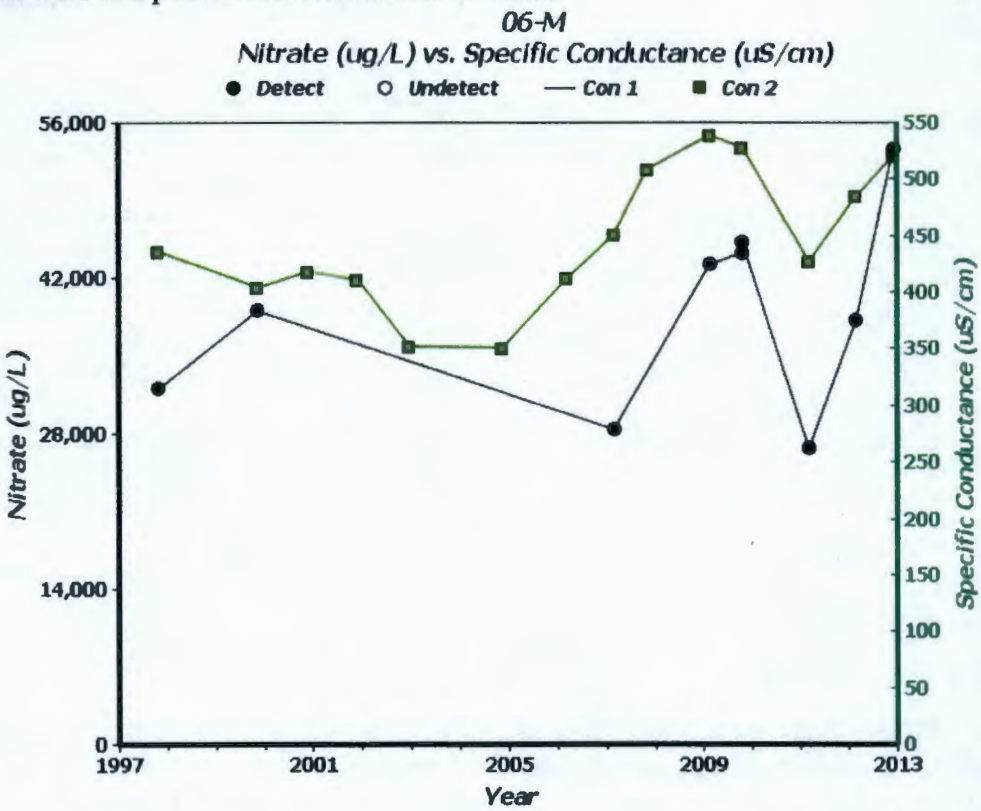


Figure BC-5. Nitrate and Specific Conductance in 100-BC Aquifer Tube 06-M.

300-FF-5 Groundwater Operable Unit – Marty Doornbos/Virginia Rohay

- RI/FS report (DOE/RL-2011-99) Draft A delivered to EPA and Ecology on December 27, 2011.
  - The draft Rev. 0 RI/FS report was provided to RL and EPA for final checking on November 8, 2012. The document is being finalized as Rev 0.
- Proposed Plan (DOE/RL-2011-47) Draft A delivered to EPA and Ecology on December 27, 2011.
  - The draft Rev. 0 Proposed Plan was provided to RL and EPA for final checking on November 8, 2012. Additional comments from EPA legal were received in January and February that will result in changes to the proposed plan.

- The public comment period has been tentatively identified for February 2013.

- The 300-FF-5 Groundwater OU includes the groundwater impacted by releases from waste sites associated with three geographic subregions: 300 Area Industrial Complex, 618-11 Burial Ground, and 618-10 Burial Ground/316-4 Cribs. Principal controlling documents are:
  - 300-FF-5 OU operations and maintenance plan (DOE-RL-95-73, Rev. 1, 2002)
  - 300-FF-5 OU sampling and analysis plan (DOE/RL-2002-11, Rev. 2, 2008)
  - 300 Area RI/FS work plan (DOE/RL-2009-30, Rev. 0, 2010)
  - 300 Area RI/FS sampling and analysis plan (DOE/RL-2009-45, Rev. 0, 2010).

300 Area Industrial Complex — On May 16, a water line was discovered to be leaking south of the 324 Building. Repairs were completed on May 18 after an estimated 20,000 gallons of water was released to the soil column. A plan to monitor the nearest downgradient wells for potential impacts was approved by DOE and EPA on May 17. Monthly sampling of well 399-4-15 was extended through December 2012 in response to the water line break that occurred to the west of the 324 building on August 30th. At the January 2013 UMM, EPA approved the reduction in the sampling frequency from monthly to quarterly for well 399-4-15. The results from the monthly monitoring are as follows:

Well	Date	Gross Alpha (pCi/L)	Uranium (µg/L)	Gross Beta (pCi/L)
399-4-15	5/30/12	23.0	77.5	20.0
399-4-15	6/29/12	24.0	81.5	20.0
399-4-15	7/25/12	28.0	71.5	18.0
399-4-15	8/15/12	56.0	111.0	26.0
399-4-15	9/7/12	31.0	88.3	40.0
399-4-15	10/11/12	27.0	52.6	32.0
399-4-15	11/15/12	16.0	46.6	20.0
399-4-15	12/20/12	14.0	39.5	29.0
399-3-20	5/15/12	20.0	47.1	21.0
399-3-20	8/15/12	Not Analyzed	131.0	Not Analyzed
399-3-20	11/19/12	36.0	92.2	26.0
399-4-9	5/22/12	15.0	32.0	13.0
399-4-9	8/15/12	39.0	70.5	16.0
399-4-14	5/21/12	29.0	84.3	33.0
399-4-14	8/22/12	36.0	98.8	22.0
399-4-14	12/07/12	28.0	76.1	35.0

The gross alpha and uranium concentrations in well 399-4-15 were higher in August, but declined to more typical levels in September through December. This temporary increase in concentration reflects the higher water table conditions associated with the Columbia River that mobilized uranium from the periodically rewetted zone. The gross beta results increased in September, but declined to more typical levels in November and December. Uranium concentrations in nearby wells 399-3-20, 399-4-9, and 399-4-14 were higher in August than in May; the increases appear to be seasonal.

- 618-11 Burial Ground — Tritium, nitrate, and gross beta results for the sample collected on October 18, 2012 at well 699-13-3A, next to the eastern fence line of the Burial Ground, are consistent with previous concentrations. The technetium-99 concentration was 170 pCi/L, consistent with concentrations that have increased over the past two years (Figure 300FF5-1). Well 699-13-3A was sampled on January 23, 2013; results are not yet available.

- 618-10 Burial Ground/316-4 Crib — Groundwater data from June 2012 at well 699-S6-E4L near the 618-10 Burial Ground showed increased concentrations of uranium and magnesium, followed by a decrease in uranium concentrations during July through October (Figure 300FF5-2). This temporary increase in uranium concentrations may have been associated with the excavation activities that began in March 2011 at some of the trenches in the burial ground. To investigate, the monitoring frequency for uranium was increased to monthly at well 699-S6-E4L, and the monitoring frequency for calcium and magnesium (common soil fixatives) was increased to quarterly at wells 699-S6-E4K and 699-S6-E4L. This increased sampling frequency was performed for a period of six months. At the January 2013 UMM, EPA approved the reduction in the sampling frequency from monthly to quarterly for well 699-S6-E4L and the continuation of the quarterly sampling for calcium and magnesium for an additional 6 months. Well 699-S6-E4K was sampled on December 19, 2012. Results for uranium, magnesium, and calcium were consistent with previous results. Well 699-S6-E4L was sampled on January 15, 2013; results are yet available.

- 300 Area Aquifer Tubes
  Twenty-eight 300-FF-5 aquifer tubes were scheduled for sampling in December. The December sampling was completed on January 3, 2013.

Figure 300FF5-1. Technetium-99 and Gross Beta Trends (through October 18, 2012) at Well 699-13-3A at the 618-11 Burial Ground.

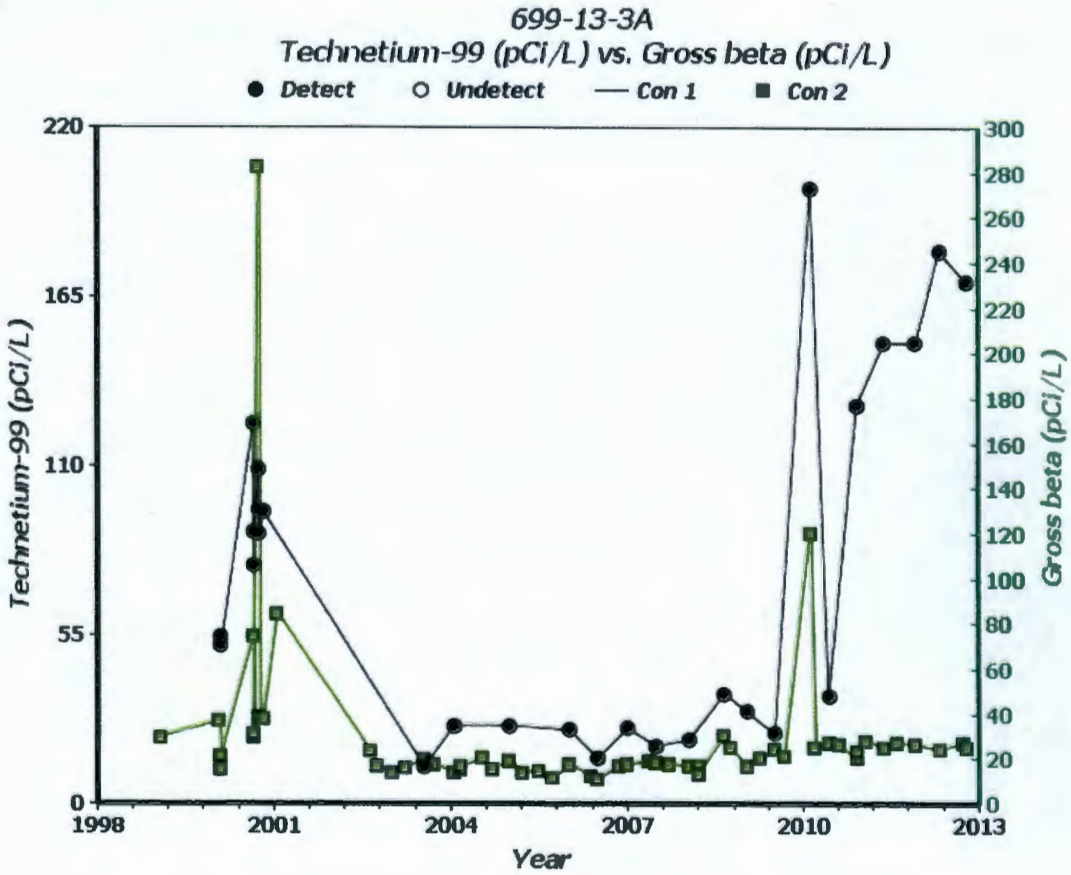


Figure 300FF5-2. Uranium (through October 11, 2012) and Magnesium (through September 13, 2012) Trends at Well 699-S6-E4L at the 618-10 Burial Ground.

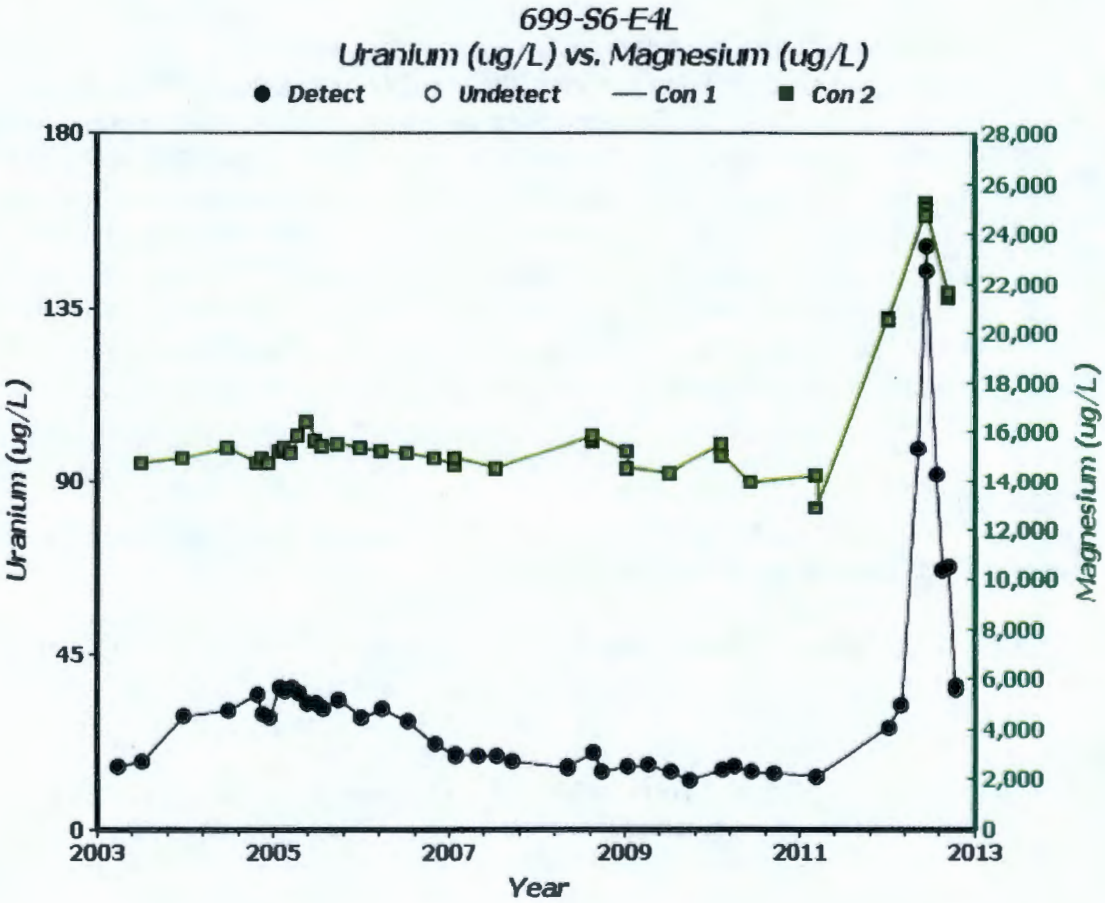


Table 1. Summary of Wells & Aquifer Tubes Sampled in the River Corridor Areas During January 2013						
Week	**100-BC**	**100-K**	**100-N**	**100-D/H**	**100-F**	**300 Area**
01-04 Jan 13	199-B2-14 199-B4-1 199-B3-51 199-B3-47 199-B3-50 199-B3-46 199-B2-12 199-B2-16 199-B4-7 199-B5-1 199-B5-6 199-B5-2 199-B5-5 199-B8-6 199-B8-9 199-B4-14 199-B9-3					AT-3-6-S C6347 AT-3-6-D C6350 C6351 AT-3-5-S C6348 AT-3-6-M 699-10-E12 699-S6-E4A AT-3-7-D 699-S6-E4E AT-3-7-M AT-3-7-S

Table 1. Summary of Wells & Aquifer Tubes Sampled in the River Corridor Areas During January 2013

Week	100-BC	100-K	100-N	100-D/H	100-F	300 Area
05-11 Jan 13	699-67-86 699-72-92 199-B3-1 699-71-77	199-K-185	C6323 C6324 N116mArray-15A C6325 N116mArray-11A N116mArray-10A N116mArray-6A C6352 NVP1-5 NVP1-4 NVP1-3 N116mArray-8A N116mArray-9A NVP1-2 NVP1-1 NVP2-116.0 NVP2-115.1 NVP2-115.7 NVP2-116.3 C7881 N116mArray-4A N116mArray-3A NVP2-115.4	199-D5-97 199-D5-14 199-D5-13 199-H4-3 199-H4-6 699-100-43B 699-101-45 199-D5-33 199-D5-93 199-D5-36 199-D4-22 199-D8-4		399-1-18B 399-1-18A 399-1-10A 399-1-10B
12-18 Jan 13	C6234 C6235 C6233	199-K-166 199-K-117A 199-K-18 199-K-20 199-K-173 199-K-34	N116mArray-0A N116mArray-1A C6321 C6320 C6329 C6331 C6330 199-K-150 N116mArray-2A	199-D8-101 199-D5-37 199-D4-86		699-S19-E14 399-1-16B 399-1-16A 399-1-17B 699-S6-E4L 399-1-17A 699-13-2D
19-25 Jan 13	699-68-105			199-D7-6 199-D5-127 199-D8-6 199-D4-98 199-D4-99 199-D4-97 199-D4-96 199-D4-95 199-D8-89 199-D5-32 199-D8-98 199-D5-131 199-D7-3 199-D5-130 199-D8-95 199-D8-91 199-D8-90 199-D8-97 199-D8-96 199-D5-101		699-13-3A 699-S6-E14A

Table 1. Summary of Wells & Aquifer Tubes Sampled in the River Corridor Areas During January 2013						
Week	**100-BC**	**100-K**	**100-N**	**100-D/H**	**100-F**	**300 Area**
26-31 Jan 13		199-K-182 199-K-168 199-K-141 199-K-194	C6318 C6317 C6319 C6322 N116mArray-3A N116mArray-4A N116mArray-6A NVP2-116.0	199-H4-12C 199-H1-37 199-H1-38 199-H1-40 199-H1-32 199-H1-33 199-H4-15A 199-H1-35 199-H4-4 199-D5-39 199-H3-4 199-D5-92 199-D4-39 199-D5-104 699-99-44 699-97-51A 699-98-46 699-99-41 699-97-41 699-98-49A 699-94-41 699-95-51 699-96-52B 699-95-45 699-94-43 699-93-48A 699-95-48		

Attachment 2

February 14, 2013 Unit Manager's Meeting
Field Remediation Status

100-B/C

- Excavation of 100-C-7:1 complete, continued backfill activities at 100-C-7:1 and load-out of remaining staged waste
- Backfill at 100-C-7 complete, preparing for revegetation activities

100-D

- Continued layback removal at 100-D-100 and removal of the 100-D-50:7 pipeline within the excavation footprint of 100-D-100
- Commenced backfill/contouring and revegetation activities at 100-D-65 and 100-D-66
- Completed remediation activities at 100-D-80:2 valve box site

100-H

- Began mobilization to 100-H
- Began excavation/remediation field activities at 100-H-46
- Continuing backfill/contouring and revegetation activities at 100-H-37

100-K

- Continued remediation of 100-K-84 and 100-K-87
- Completed remediation of all remaining 100-K waste sites and miscellaneous restoration waste sites with the exception of 100-K-84 and 100-K-87
- Continued backfill at 118-K-1

100-N

- Completed plume chase at 116-N-2 and UPR-100-N-19 and excavation and load-out activities at 100-N-61:4
- Initiated plume chase at 100-N-63:2
- Continued excavation and load-out at 118-N-1 and 130-N-1
- Continued system operations for in-situ bioremediation system for UPR-100-N-17, deep vadose zone remediation
- Continued preparation of closure documents and conducting verification sampling

618-10 Trench Remediation

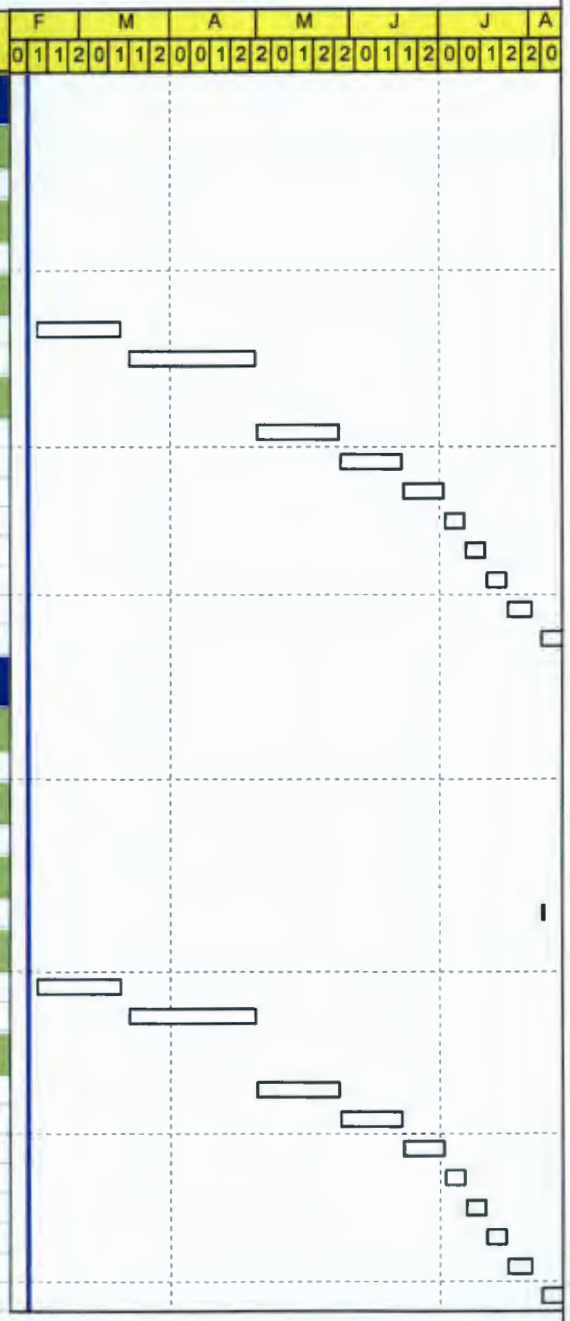
- Continued drum evaluations and other activities related to returning to hazardous waste operations. Stop work was called on 11/28/12.

100-IU-2/6

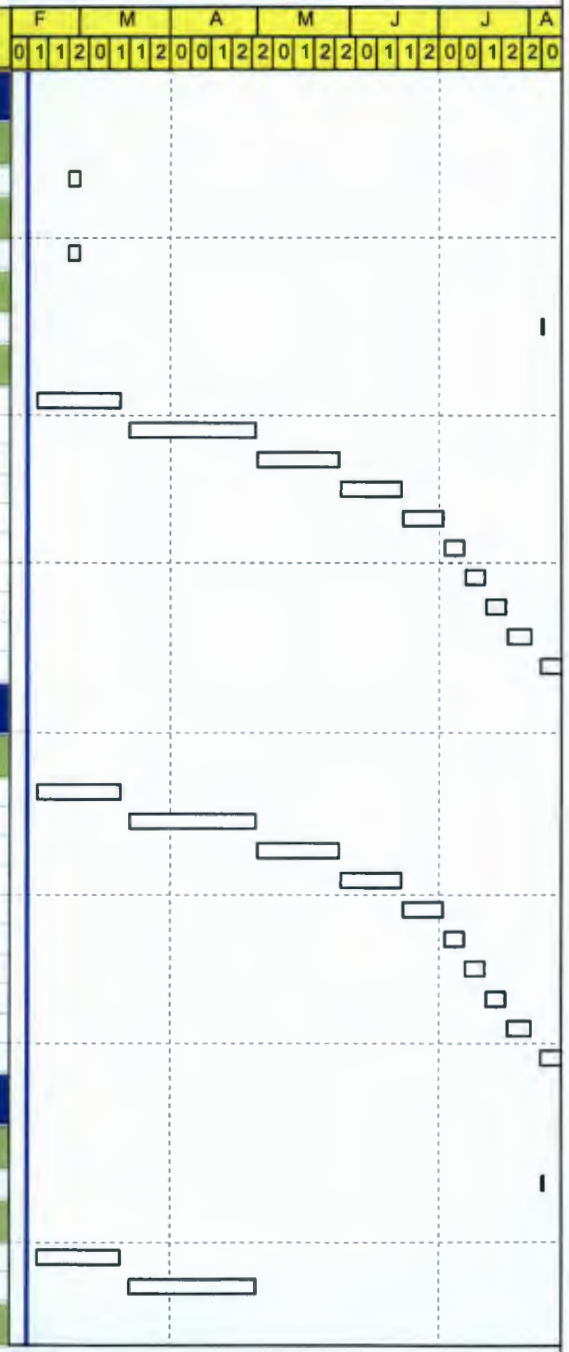
- Initiated and completed remediation of 600-298, 600-299, 600-300:11 and 600-320:9 pending favorable sample data
- Initiated remediation of 600-300:1, 600-303, 600-316, 600-318, 600-320:3, 600-321 and 600-328

Attachment 3

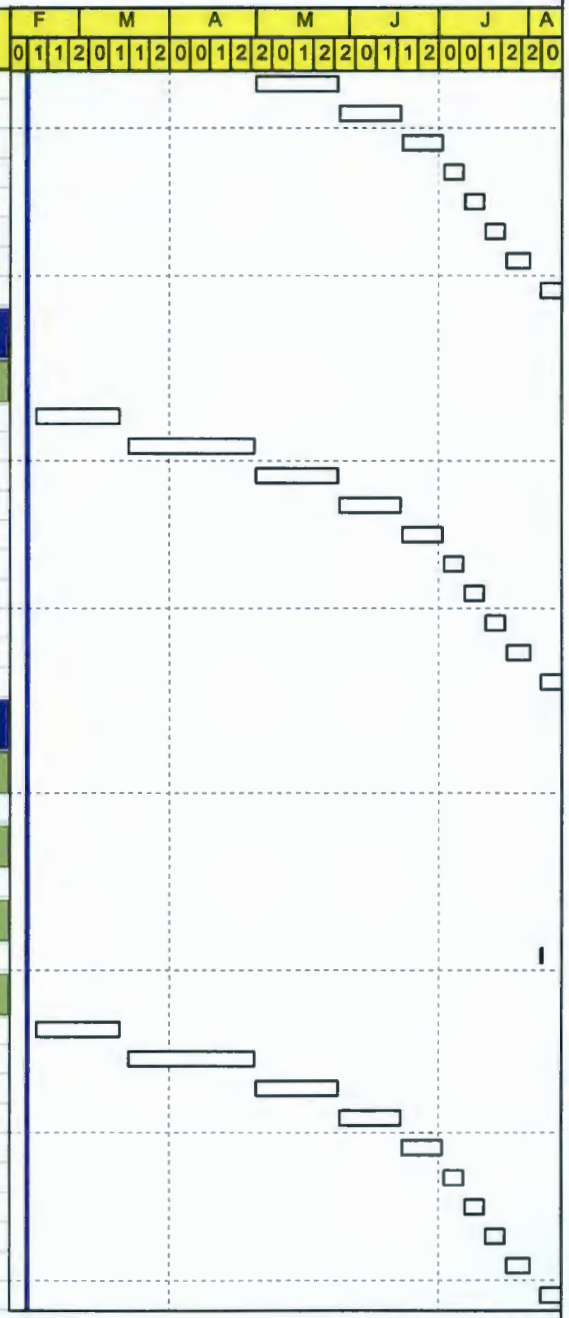
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
100-K-84 Red Soil Sw. of 118-K-1						
Excavation						
RK084A	Excavation - 100-K-84 (1,532 BCMs)	Y	100%	0	19-Nov-12 A	04-Feb-13 A
Loadout						
RK084B	Loadout -- 100-K-84 (3,371 USTs)	Y	100%	0	19-Nov-12 A	04-Feb-13 A
Closeout Sampling & Docs						
RK084D10	Verification Closeout Samples - 100-K-84	Y	0%	16	14-Feb-13	14-Mar-13
RK084D11	Lab Analysis 100-K-84	Y	0%	26	18-Mar-13	30-Apr-13
Final Project Closeout						
RK084D12	Data Validation - 100-K-84	Y	0%	15	01-May-13	28-May-13
RK084D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-84	Y	0%	12	29-May-13	18-Jun-13
RK084D14	Prepare Internal Closure Document - 100-K-84	Y	0%	8	19-Jun-13	02-Jul-13
RK084D15	Format/Tech Edit 100-K--100-K-84	Y	0%	3	03-Jul-13	09-Jul-13
RK084D16	Internal Review - 100-K-84	Y	0%	4	10-Jul-13	16-Jul-13
RK084D17	Incorporate Internal Review Comments - 100-K-84	Y	0%	4	17-Jul-13	23-Jul-13
RK084D18	Final Format/Tech Edit/Internal Sigs - 100-K-84	Y	0%	6	24-Jul-13	01-Aug-13
RK084D19	RL/Reg Review Draft A Closure Document for - 100-K-84	Y	0%	26	05-Aug-13	18-Sep-13
100-K-86 - Stained Areas						
Excavation						
RK086A	Excavation - 100-K-86 (140 BCMs)	Y	100%	0	12-Nov-12 A	04-Feb-13 A
Loadout						
RK086B	Loadout -- 100-K-86 (307 USTs)	Y	100%	0	12-Nov-12 A	04-Feb-13 A
Backfill						
RK086C	Backfill - 100-K-86 (134 BCMs)	Y	0%	1	05-Aug-13*	05-Aug-13
Closeout Sampling & Docs						
RK086D10	Verification Closeout Samples - 100-K-86	Y	0%	16	14-Feb-13	14-Mar-13
RK086D11	Lab Analysis 100-K-86	Y	0%	26	18-Mar-13	30-Apr-13
Final Project Closeout						
RK086D12	Data Validation - 100-K-86	Y	0%	15	01-May-13	28-May-13
RK086D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-86	Y	0%	12	29-May-13	18-Jun-13
RK086D14	Prepare Internal Closure Document - 100-K-86	Y	0%	8	19-Jun-13	02-Jul-13
RK086D15	Format/Tech Edit 100-K--100-K-86	Y	0%	3	03-Jul-13	09-Jul-13
RK086D16	Internal Review - 100-K-86	Y	0%	4	10-Jul-13	16-Jul-13
RK086D17	Incorporate Internal Review Comments - 100-K-86	Y	0%	4	17-Jul-13	23-Jul-13
RK086D18	Final Format/Tech Edit/Internal Sigs - 100-K-86	Y	0%	6	24-Jul-13	01-Aug-13
RK086D19	RL/Reg Review Draft A Closure Document for - 100-K-86	Y	0%	26	05-Aug-13	18-Sep-13



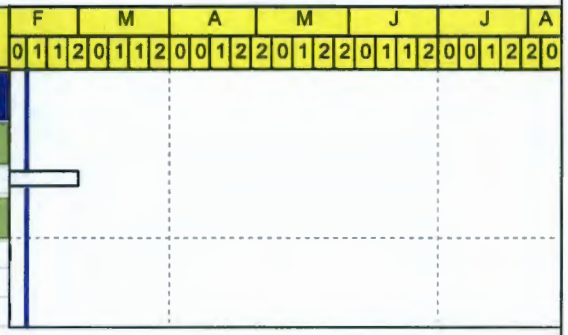
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
100-K-87 Asbestos						
Excavation						
RK087A	Excavation - 100-K-87 (0.5 BCMs)	Y	0%	4	25-Feb-13*	28-Feb-13
Loadout						
RK087B	Loadout -- 100-K-87 (1.1 USTs)	Y	0%	4	25-Feb-13*	28-Feb-13
Backfill						
RK087C	Backfill - 100-K-87 (0.48 BCMs)	Y	0%	1	05-Aug-13*	05-Aug-13
Final Project Closeout						
RK087D10	Verification Closeout Samples - 100-K-87	Y	0%	16	14-Feb-13	14-Mar-13
RK087D11	Lab Analysis 100-K-87	Y	0%	26	18-Mar-13	30-Apr-13
RK087D12	Data Validation - 100-K-87	Y	0%	15	01-May-13	28-May-13
RK087D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-87	Y	0%	12	29-May-13	18-Jun-13
RK087D14	Prepare Internal Closure Document - 100-K-87	Y	0%	8	19-Jun-13	02-Jul-13
RK087D15	Format/Tech Edit 100-K--100-K-87	Y	0%	3	03-Jul-13	09-Jul-13
RK087D16	Internal Review - 100-K-87	Y	0%	4	10-Jul-13	16-Jul-13
RK087D17	Incorporate Internal Review Comments - 100-K-87	Y	0%	4	17-Jul-13	23-Jul-13
RK087D18	Final Format/Tech Edit/Internal Sigs - 100-K-87	Y	0%	6	24-Jul-13	01-Aug-13
RK087D19	RL/Reg Review Draft A Closure Document for - 100-K-87	Y	0%	26	05-Aug-13	18-Sep-13
100-K-91 - Battery						
Final Project Closeout						
RK091D10	Verification Closeout Samples - 100-K-91	Y	0%	16	14-Feb-13	14-Mar-13
RK091D11	Lab Analysis 100-K-91	Y	0%	26	18-Mar-13	30-Apr-13
RK091D12	Data Validation - 100-K-91	Y	0%	15	01-May-13	28-May-13
RK091D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-91	Y	0%	12	29-May-13	18-Jun-13
RK091D14	Prepare Internal Closure Document - 100-K-91	Y	0%	8	19-Jun-13	02-Jul-13
RK091D15	Format/Tech Edit 100-K--100-K-91	Y	0%	3	03-Jul-13	09-Jul-13
RK091D16	Internal Review - 100-K-91	Y	0%	4	10-Jul-13	16-Jul-13
RK091D17	Incorporate Internal Review Comments - 100-K-91	Y	0%	4	17-Jul-13	23-Jul-13
RK091D18	Final Format/Tech Edit/Internal Sigs - 100-K-91	Y	0%	6	24-Jul-13	01-Aug-13
RK091D19	RL/Reg Review Draft A Closure Document for - 100-K-91	Y	0%	26	05-Aug-13	18-Sep-13
100-K-92 - Reddish Stained Gravels						
Backfill						
RK092C	Backfill - 100-K-92 (7 BCMs)	Y	0%	1	05-Aug-13*	05-Aug-13
Closeout Sampling & Docs						
RK092D10	Verification Closeout Samples - 100-K-92	Y	0%	16	14-Feb-13	14-Mar-13
RK092D11	Lab Analysis 100-K-92	Y	0%	26	18-Mar-13	30-Apr-13
Final Project Closeout						



Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
RK092D12	Data Validation - 100-K-92	Y	0%	15	01-May-13	28-May-13
RK092D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-92	Y	0%	12	29-May-13	18-Jun-13
RK092D14	Prepare Internal Closure Document - 100-K-92	Y	0%	8	19-Jun-13	02-Jul-13
RK092D15	Format/Tech Edit 100-K-92	Y	0%	3	03-Jul-13	09-Jul-13
RK092D16	Internal Review - 100-K-92	Y	0%	4	10-Jul-13	16-Jul-13
RK092D17	Incorporate Internal Review Comments - 100-K-92	Y	0%	4	17-Jul-13	23-Jul-13
RK092D18	Final Format/Tech Edit/Internal Sigs - 100-K-92	Y	0%	6	24-Jul-13	01-Aug-13
RK092D19	RL/Reg Review Draft A Closure Document for - 100-K-92	Y	0%	26	05-Aug-13	18-Sep-13
100-K-93 - Drum Remnant						
Final Project Closeout						
RK093D10	Verification Closeout Samples - 100-K-93	Y	0%	16	14-Feb-13	14-Mar-13
RK093D11	Lab Analysis 100-K-93	Y	0%	26	18-Mar-13	30-Apr-13
RK093D12	Data Validation - 100-K-93	Y	0%	15	01-May-13	28-May-13
RK093D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-93	Y	0%	12	29-May-13	18-Jun-13
RK093D14	Prepare Internal Closure Document - 100-K-93	Y	0%	8	19-Jun-13	02-Jul-13
RK093D15	Format/Tech Edit 100-K--100-K-93	Y	0%	3	03-Jul-13	09-Jul-13
RK093D16	Internal Review - 100-K-93	Y	0%	4	10-Jul-13	16-Jul-13
RK093D17	Incorporate Internal Review Comments - 100-K-93	Y	0%	4	17-Jul-13	23-Jul-13
RK093D18	Final Format/Tech Edit/Internal Sigs - 100-K-93	Y	0%	6	24-Jul-13	01-Aug-13
RK093D19	RL/Reg Review Draft A Closure Document for - 100-K-93	Y	0%	26	05-Aug-13	18-Sep-13
100-K-95 - Tar Dump						
Excavation						
RK095A	Excavation - 100-K-95 (124 BCMs)	Y	100%	0	09-Jan-13 A	04-Feb-13 A
Loadout						
RK095B	Loadout -- 100-K-95 (273 USTs)	Y	100%	0	09-Jan-13 A	04-Feb-13 A
Backfill						
RK095C	Backfill - 100-K-95 (118.6 BCMs)	Y	0%	1	05-Aug-13*	05-Aug-13
Final Project Closeout						
RK095D10	Verification Closeout Samples - 100-K-95	Y	0%	16	14-Feb-13	14-Mar-13
RK095D11	Lab Analysis 100-K-95	Y	0%	26	18-Mar-13	30-Apr-13
RK095D12	Data Validation - 100-K-95	Y	0%	15	01-May-13	28-May-13
RK095D13	Prepare Calcuations(UCL, DQA, HQ, act.) - 100-K-95	Y	0%	12	29-May-13	18-Jun-13
RK095D14	Prepare Internal Closure Document - 100-K-95	Y	0%	8	19-Jun-13	02-Jul-13
RK095D15	Format/Tech Edit 100-K--100-K-95	Y	0%	3	03-Jul-13	09-Jul-13
RK095D16	Internal Review - 100-K-95	Y	0%	4	10-Jul-13	16-Jul-13
RK095D17	Incorporate Internal Review Comments - 100-K-95	Y	0%	4	17-Jul-13	23-Jul-13
RK095D18	Final Format/Tech Edit/Internal Sigs - 100-K-95	Y	0%	6	24-Jul-13	01-Aug-13
RK095D19	RL/Reg Review Draft A Closure Document for - 100-K-95	Y	0%	26	05-Aug-13	18-Sep-13



Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
118-K-1 Burial Ground						
Backfill						
RK18K18035	Backfill 118-K-1 Trenches	Y	30%	13	28-Dec-12 A	28-Feb-13
Final Project Closeout						
RK18K12030	Prepare Closure Document 118-K-1	Y	100%	0	04-Dec-12 A	05-Feb-13 A
RK18K12062	RL/Reg Review Draft A Closure Document for - 118-K-1	Y	100%	0	04-Feb-13 A	04-Feb-13 A
RK18K12052	RL/Reg Sign Rev. 0 Closure Document for - 118-K-1	Y	100%	0	05-Feb-13 A	05-Feb-13 A



Attachment 4

100K Area Unit Managers Meeting Status
February 14, 2013

RL-0012 Sludge Treatment Project

TPA Milestone M-016-173, *K Basin Sludge Treatment and Packaging Technology Selection* (3/31/15)

- No change in status.

TPA Milestone M-016-174, *Complete Final Design of Sludge Retrieval and Transfer System* (9/30/13)

- The in-process review of the ECRTS Preliminary Documented Safety Analysis by DOE continues.
- The Critical Decision 2/3 ECRTS process design package will be submitted to DOE in April, 2013.

TPA Milestone M-016-175, *Begin Sludge Removal from 105-KW Fuel Storage Basin* (9/30/14)

- 105-KW Annex construction contractor initiated a stand-down on quality-affecting work on December 4, 2012 and submitted a formal Corrective Action Plan (CAP) approved by CHPRC. CHPRC released the contractor to restart quality affecting work in a phased approach as each section of the CAP was completed, with the last release occurring on January 30, 2013.
- Preparation continues for the Integrated Process Optimization Demonstration at MASF.

TPA Milestone M-016-176, *Complete Sludge Removal from 105-KW Fuel Storage Basin* (12/31/15)

- No change in status.

TPA Milestone M-016-178, *Initiate Deactivation of 105-KW* (12/31/15)

- No change in status.

RL-0041 K Facility Demolition and Soil Remediation

TPA Milestone M-016-143, *Complete the Interim Response Actions for 100 K Area Phase 2* (12/31/15)

- The 100-K-106 RSVP (DOE/RL-2012-50) was approved and the site was reclassified as Interim Closed Out via Waste Site Reclassification Form 2012-121.

TPA Milestone M-093-22, *Complete 105-KE reactor interim safe storage in accordance with the Removal Action Work Plan* (7/31/14).

- The public review period for the proposed TPA Change Package to delete this milestone and incorporate 105-KE interim safe storage into Milestone M-093-27 ended January 24, 2013.

TPA Milestone M-093-26, *Initiate 105-KW reactor interim safe storage* (12/31/15).

- The public review period for the proposed TPA Change Package to delete this milestone and establish a new milestone to develop a schedule for interim safe storage ended January 24, 2013.

TPA Milestone M-093-27, *Complete 105-KW reactor interim safe storage* (12/31/19).

- The public review period for the proposed TPA Change Package to revise this milestone to align the schedules for interim safe storage for both 105-K reactors ended January 24, 2013.

Other Information

- The Data Quality Objectives report for bore holes north of 105-KE has been issued and the Sampling Instruction has gone through EPA and DOE review and comment resolution. An additional contractor review is being conducted to ensure adequacy.
- No demolition activities were conducted in the 100K area during January.

Attachment 5

MEMORANDUM-TO-FILE

DEFERRAL OF MOVING THE COLD VACUUM DRYING FACILITY FROM OPERATIONAL STATUS TO DEACTIVATION, DECONTAMINATION, DECOMMISIONING, AND DEMOLITION (D4)

Background

The Cold Vacuum Drying Facility (CVDF) was constructed and operated to support the cleanup of 100-K Area as part of the Spent Nuclear Fuel (SNF) Project to address the safety and environmental concerns associated with deteriorating spent nuclear fuel previously stored under water in the K Basins.

As a part of the SNF Project, the mission of the Cold Vacuum Drying Facility was to

- Receive multi-canister overpacks (MCO) loaded with spent nuclear fuel from the 105-KW Basin
- Remove free water from the fuel by draining of bulk water from the multi-canister overpack and subsequent vacuum drying to remove remaining bulk water; evacuation and backfilling of the multi-canister overpack with an inert gas (helium); followed by sealing and leak testing of the multi-canister overpack
- Prepare for dry shipment of fuel from the Cold Vacuum Drying Facility to the Canister Storage Building.

Once MCO processing for SNF was completed, the CVDF remained in standby to process any remaining fuel and scrap MCOs. Most recently, the CVDF was used for the drying of found fuel from other 100 Area facilities and Knockout Pot (KOP) product material packaged in MCOs. With the completion of the processing of Knock-Out Pot product material on September 13, 2012, this mission of the CVDF is complete. However, continued use of the facility is needed to support other 100-K Area CERCLA response actions.

As described in EPA/ROD/R10-99/059, *Interim Remedial Action Record of Decision for the 100-KR-2 Operable Unit K Basins, Hanford Site, Benton County, Washington*, drying of SNF is not within the scope of the K Basins Interim Remedial Action, and the action to remove SNF from the K Basins was completed upon receipt at CVDF. The CVDF is within the scope of a CERCLA removal action described in the *Engineering Evaluation/Cost Analysis for the 105-KE and 105-KW Reactor Facilities and Ancillary Facilities*, DOE/RL-2005-86, Rev. 0.

Therefore, in accordance with provisions of Section 2.5 of the *Action Memorandum For The Non-Time Critical Removal Action For The 105-KE And 105-KW Reactor Facilities And Ancillary Facilities,* movement of the facility from operational status to the D4 process will be deferred until completion of these other 100-K Area CERCLA response actions. In this period the CVDF will be considered "on-site" with respect to these other 100-K Area CERCLA response actions. During this period the existing ventilation systems in the facility which include final stage high-efficiency particulate air filtration, will be utilized until the systems are shut down prior to removal in accordance with Section C.2.4.1 of the *Engineering Evaluation/Cost Analysis for the 105-KE and 105-KW Reactor Facilities and Ancillary Facilities*, DOE/RL-2005-86, Rev. 0.

CVDF Pre D4 Mission as a Maintenance Support Facility for 100-K Area CERCLA Activities

Since the last KOP MCOs have been processed, the systems supporting the drying SNF will be deactivated and permanently taken out of service. At the end of this process, CVDF will be available for use as a maintenance support facility for 100-K Area CERCLA response actions.

As a maintenance support facility, the type of activities expected to take place in CVDF include the following:

1. Cutting, grinding, and welding
2. Fabrication
3. Non-radioactive waste repackaging, treatment, and storage
4. Repair of equipment
5. Testing and calibration of equipment
6. Testing associated with qualification of STP processes and equipment
7. Carpentry work
8. Chemical storage
9. Maintenance support of the 189K Water Treatment Facility

Once its maintenance support mission for 100-K Area CERCLA response actions has been completed, the CVDF will undergo D4 under CERCLA removal action authority (see Action Memorandum for the Non-Time-Critical Removal Action for the 105-KE and 105-KW Reactor Facilities and Ancillary Facilities", dated January 2007).

DOE-RL Approval Jan 30, 2013

EPA Approval 1-30-2013

cc: Administrative Record 100-KR-2

Attachment 6

Request for Change in Location for Ambient Air Monitoring Station at 100K

Ambient air monitoring station N578 is currently located east of the 105KW facility. The monitor is powered by a diesel-fueled generator and DOE/RL would like to move the monitor about 200 feet to the northwest so it can be plugged into line power. EPA concurrence is hereby requested.

Background

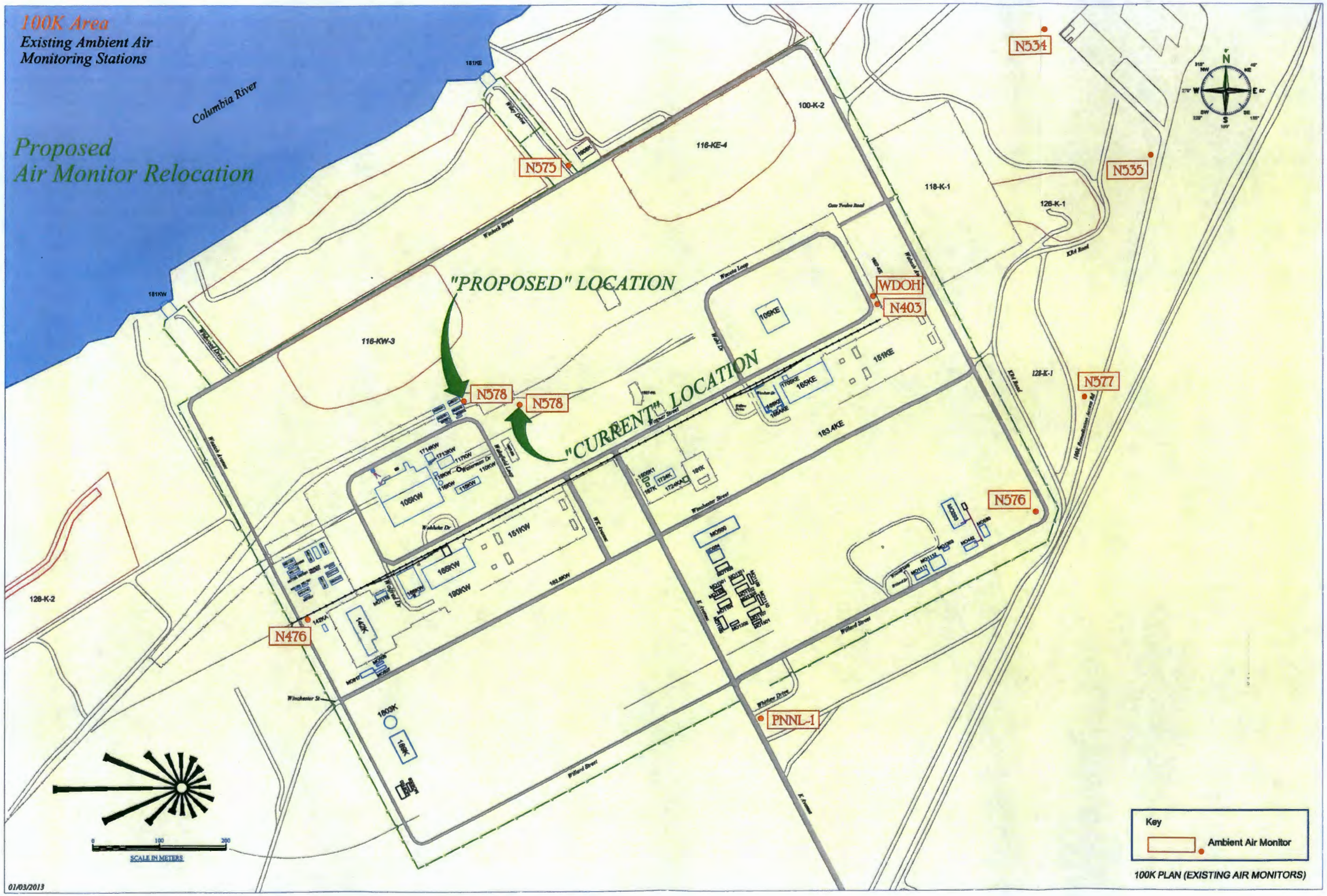
A network of ambient air monitoring stations has been established to monitor for fugitive/diffuse radionuclide emissions in the 100K Area. (See attached sketch.) Most of the stations are part of the Hanford Site Near-Facility Monitoring Program and are included in the Hanford Site FF-01 Radioactive Air Emissions License. As of February 1, 2013, those stations include N476, N534, N535, N575, N576, N577, N900 (PNNL-1). Station N578 is not part of the FF-01 license but is required for CERCLA work being conducted in the 100K Area:

- NOC DOE/RL-97-28 was submitted for modifications and changes to operations at the 105-KW Basin associated with removal of spent fuel, debris and water from the basin. The NOC calls for monitoring via the Near Facility Monitoring Program (with a minimum of 3 stations remaining in the system during completion of the KW Basin remedial action work). Additionally, one additional monitor was required to be provided east of the 105-KW Building.
- DOE/RL-2005-26 (RAWP for KE/KW Reactor and Ancillary Facilities) was modified by TPA-CN-318 to include the language similar to the NOC but states that the monitor would be added approximately midway between 105-KW and 105-KW Buildings.
- DOE/RL-2010-63 (RAWP for Removal of Sludge and KOP Contents) cites NOC 97-28, the controls and monitoring described in DOE/RL-99-89, sampling the exhaust of the basin roof vents and the Near Facility Monitoring Program.
- SGW-40896 (Air Monitoring Plan for the Waste Sites Near 105-KE Basin) was modified by TPA-CN-319 to include the language similar to the NOC but does not include the language of the additional monitor. It should be noted that the AMP requires at least two Near Facility Monitors to be operating during work operations with a potential for radioactive air emissions.

The change in location would not appear to require a modification to the CERCLA documents identified above. However, DOE/RL-2005-26 calls for the monitor to be approximately midway between 105-KW and 105-KE. The current monitor station is located west of the midway point and the proposed location would move it even further west. However, with most future actions being conducted at or near 105-KW, the proposed location seems to be appropriate.

Concurrence

Roger A Quintero / for Tom Teynor			2-14-2013
DOE/RL	Date	EPA	Date



100K PLAN (EXISTING AIR MONITORS)

Attachment 7

TRI-PARTY AGREEMENT

Change Notice Number TPA-CN- 565	TPA CHANGE NOTICE FORM	Date: February 6, 2013
Document Number, Title, and Revision: DOE/RL-2005-26, Rev 1, *Removal Action Work Plan for 105-KE/105-KW Reactor Facilities and Ancillary Facilities*		Date Document Last Issued: September 2009
Originator: Lorna Dittmer		Phone: 376-7017

Description of Change:
Moves facilities scheduled to have D4 activities completed between Phase 2 and Phase 3. This TPA change notice replaces TPA-CN-549 in its entirety.

Tom Teynor (**DOE**) and Rod Lobos (**Environmental Protection Agency**) agree that the proposed change modifies an approved work plan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records,* and not Chapter 12.0, *Changes to the Agreement.*

The following text will be added to Section 1.1, *Purpose and Objective of the removal Action Work Plan*, in conjunction with Table 1-3, *Tri-Party Agreement Milestones for the 100-K Area ISS and D4 Removal Action.* Modifications are denoted by using ~~strikeout~~ to indicate text deletions and <u>double underline</u> to indicate text additions.

A 100-K Area perimeter boundary has been identified to segregate waste sites and structures that require coordination and detailed integration with the Sludge Treatment Project to safely and effectively complete remediation. In many cases, these waste sites and structures are in proximity to the active KW Fuel Storage Basin or to facilities needed to keep the KW Basin operational. The perimeter boundary (with some exceptions on the east-side) generally coincides with the outer-most perimeter fences around the 100-K Area (encompassing the reactors and facilities) and the area between the northern perimeter fence and the Columbia River. The perimeter boundary was chosen to exclude the waste sites (118-K-2, 100-K-2, 100-K-78, 126-K-1, 128-K-2, and 600-29) that do not require integration with the Sludge Treatment Project for completion.

Remaining work at the 100-K Area is being performed in three phases and will be completed on the dates provided below:

Phase 1 M-16-053: December 31, 2012			
110KE	1706KE	183.2KW	183.5KE
110KW	1706KEL	183.3KW	183.6KE
115KE	1706KER	183.4KW	MO048
116KE	1713KE	183.5KW	MO060
117KE	1714KE	183.7KW	MO969
118KE	1717AKE	183.1KE	
119KE	181KE	183.3KE	
1605KE	183.1KW	183.4KE	

Phase 2 M-16-143: December 31, 2015			
118KW	182K	<u>183.2KE</u>	~~MO507~~
~~166AKE~~	183.5KW	<u>183.7KE</u>	MO907
~~166KE~~	183.6KW	<u>181KW</u>	~~MO917~~
~~1705KE~~	MO101	MO401	MO928
1713KER	MO102	MO402	<u>MO236</u>
1720K	MO214	~~MO442~~	<u>MO237</u>
1724KB	MO382	~~MO506~~	<u>MO323</u>
			<u>MO955</u>

Phase 3 M-016-00C: December 31, 2020			
105KE WT	165KE	1713KW	190KE
105KW WT	165KW	1714KW	190KW
142K	167K	~~183.2KE~~	MO054
142KA	1717K	~~183.7KE~~	~~MO236~~
1506K1	1724K	183KE	~~MO237~~
115KW	1724KA	185K	~~MO323~~
116KW	~~181KW~~	1908K	MO500
117KW	166KW	1908KE	~~MO955~~
119KW	166KE	MO506	MO507
1605KW	1705KE	MO442	MO917
166AKE			

Justification and Impacts of Change:

This change notice moves seven facilities at 100-K for which removal actions are complete from Phase 3 into Phase 2, and seven facilities for which removal actions require completion from Phase 2 into Phase 3. This will allow the project to focus on soil remediation of waste sites to complete Phase 2 as funding becomes available, as completion activities for Phase 2 facilities will all be complete. Milestone, M-016-143, *Complete the Interim Action at 100-K for Phase 2,* is due December 31, 2015.

The following facilities will move from Phase 3 into Phase 2:

- 181KW River Pump House
- 183.2KE Sedimentation Basin
- 183.7KE Pipe Tunnel
- MO 236
- MO237
- MO323
- MO955

The following facilities will move from Phase 2 into Phase 3:

- 166AKE Oil Storage Facility
- 166KE Oil Storage Vault
- 1705KE Effluent Water Treatment Pilot Plant
- MO442
- MO506
- MO507
- MO917

This change notice supersedes TPA-CN-549 in its entirety.

Approvals:

Roger A Jimenez /for Tom Teynor DOE Project Manager	2/14/13 Date	[✓] Approved [ ] Disapproved
EPA Project Manager	2-14-2013 Date	[✓] Approved [ ] Disapproved
N/A Ecology Project Manager	Date	[ ] Approved [ ] Disapproved

Attachment 8

169584

^WCH Document Control

From: Saueressig, Daniel G
Sent: Thursday, January 24, 2013 3:34 PM
To: ^WCH Document Control
Subject: FW: CTA at 100-K

Attachments: CTA at 100-K.htm

Please provide a chron number (and include the attachment). This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

CTA at 100-K.htm
(6 KB)

From: Zeisloft, Jamie [mailto:jamie.zeisloft@rl.doe.gov]
Sent: Thursday, January 03, 2013 1:13 PM
To: Strom, Dean N; Guzzetti.Christopher@epamail.epa.gov; Glossbrenner, Ellwood T
Cc: Saueressig, Daniel G; Dixson, Gregory E; Biebrich, Ernest J
Subject: RE: CTA at 100-K

That should work in the interim.

From: Strom, Dean N [mailto:dnstrom@wch-rcc.com]
Sent: Thursday, January 03, 2013 11:48 AM
To: Zeisloft, Jamie; Guzzetti.Christopher@epamail.epa.gov; Glossbrenner, Ellwood T
Cc: Saueressig, Daniel G; Dixson, Gregory E; Biebrich, Ernest J
Subject: RE: CTA at 100-K

We can keep it in cold standby. Un-plug it, but be able to re-establish it easily.

From: Zeisloft, Jamie [mailto:jamie.zeisloft@rl.doe.gov]
Sent: Thursday, January 03, 2013 11:42 AM
To: Strom, Dean N; Guzzetti.Christopher@epamail.epa.gov; Glossbrenner, Ellwood T
Cc: Saueressig, Daniel G
Subject: RE: CTA at 100-K

Dean – We were just thinking that we should have "go/no go" RTD decisions on all of our remaining 100-K waste sites by the end of FY13. At that point we'll know how much of a need there is for the CTA (if any). Seems like we can just wait and see for now. Correct?

From: Strom, Dean N [mailto:dnstrom@wch-rcc.com]
Sent: Wednesday, January 02, 2013 10:02 AM
To: Zeisloft, Jamie; Guzzetti.Christopher@epamail.epa.gov; Glossbrenner, Ellwood T
Cc: Saueressig, Daniel G

169584

Subject: CTA at 100-K

All,

We are making arrangements to remove the trailers and electrical hook-ups at 100-K, ETA = Feb.

My question, do we want to leave the Container Transfer Area (CTA) for potential work for 100-K-111, 100-K-64, and Trench N? The cost to re-establish a CTA is about $300K. However, If we do not remove it, who will?

Lets discuss at the next meeting.

Thanks

169584

From: Guzzetti.Christopher@epamail.epa.gov
Sent: Thursday, January 03, 2013 7:23 AM
To: Strom, Dean N
Cc: Saueressig, Daniel G; Glossbrenner, Ellwood T; Zeisloft, Jamie
Subject: Re: CTA at 100-K

I think it would be a good idea to leave it. Seems like trying to figure out who would remove it later is cheaper than paying to have it removed now, potentially 300K to re-establish, then who knows how much to remove it again.

Christopher J. Guzzetti
U.S. EPA Region 10
Hanford Project Office
Phone: (509) 376-9529
Fax: (509) 376-2396
Email: guzzetti.christopher@epa.gov

"Strom, Dean N" ---01/02/2013 09:59:58 AM---All, We are making arrangements to remove the trailers and electrical

From: "Strom, Dean N" <dnstrom@wch-rcc.com>
To: "Zeisloft, Jamie" <jamie.zeisloft@rl.doe.gov>, Christopher Guzzetti/R10/USEPA/US@EPA, "Glossbrenner, Ellwood T" <ellwood.glossbrenner@rl.doe.gov>
Cc: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
Date: 01/02/2013 09:59 AM
Subject: CTA at 100-K

All,

We are making arrangements to remove the trailers and electrical hook-ups at 100-K, ETA = Feb.

My question, do we want to leave the Container Transfer Area (CTA) for potential work for 100-K-111, 100-K-64, and Trench N? The cost to re-establish a CTA is about $300K. However, If we do not remove it, who will?

Lets discuss at the next meeting.

Thanks

Attachment 9

^WCH Document Control 169586

From: Saueressig, Daniel G
Sent: Thursday, January 24, 2013 4:03 PM
To: ^WCH Document Control
Subject: FW: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Please provide a chron number. This email documents a regulatory approval.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Glossbrenner, Ellwood T [mailto:ellwood.glossbrenner@rl.doe.gov]
Sent: Thursday, January 24, 2013 4:03 PM
To: 'Guzzetti.Christopher@epamail.epa.gov'; Saueressig, Daniel G
Subject: RE: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Dan,

I agree also, radiological surveys will be performed before sampling occurs.

Ellwood T. Glossbrenner
509-376-5828

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
Sent: Thursday, January 24, 2013 3:43 PM
To: Saueressig, Daniel G
Cc: Glossbrenner, Ellwood T
Subject: RE: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Sounds good. I don't think we need air sampling for this sample collection effort.

Christopher J. Guzzetti
U.S. EPA Region 10
Hanford Project Office
Phone: (509) 376-9529
Fax: (509) 376-2396
Email: guzzetti.christopher@epa.gov

"Saueressig, Daniel G" ---01/21/2013 07:08:51 AM---Chris, for the last couple air monitoring plan revisions I have done for other sites, we include gen

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>

169586

To: Christopher Guzzetti/R10/USEPA/US@EPA
Cc: "Glossbrenner, Ellwood T" <ellwood.glossbrenner@rl.doe.gov>
Date: 01/21/2013 07:08 AM
Subject: RE: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Chris, for the last couple air monitoring plan revisions I have done for other sites, we include generic language to the effect that says confirmatory sampling at radiologically contaminated sites is included in the scope of this plan since the emissions from these activities (e.g., surface sampling, potholing) will generate negligible emissions.

The 118-K-1 AMP is my oldest plan and doesn't contain this language, plus it's specific to K-1 (plus a couple other sites added via the UMM). However, it does state (last paragraph of Section 4.0, Monitoring) "Characterization (test pitting and trenching possibly with soil sampling) may be conducted prior to the start of remediation for the purpose of confirming interpretations of geophysical data. These characterization activities will be conducted in areas identified by geophysical methods as being outside the limits of buried debris. If near-facility air monitoring is not being conducted during the pre-remediation characterization, the routine radiological control surveys will be performed." This is similar to what we are proposing for this additional sampling/characterization effort at radiologically controlled sites.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
Sent: Thursday, January 17, 2013 11:50 AM
To: Saueressig, Daniel G
Cc: Glossbrenner, Ellwood T
Subject: Re: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Dan,

Have we ever had air monitoring for confirmatory sampling? I know we do it for actual remediation, just never heard of doing it for a sampling campaign.

Christopher J. Guzzetti
U.S. EPA Region 10
Hanford Project Office
Phone: (509) 376-9529
Fax: (509) 376-2396
Email: guzzetti.christopher@epa.gov

"Saueressig, Daniel G" ---01/16/2013 03:00:53 PM---Ellwood/Chris, WCH needs to perform some sampling at 100-K-57, 100-K-64, 100-K-83 and 100-K-111. Th

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: "Glossbrenner, Ellwood T" <ellwood.glossbrenner@rl.doe.gov>, Christopher Guzzetti/R10/USEPA/US@EPA
Date: 01/16/2013 03:00 PM
Subject: AIR MONITORING PLAN FOR CONFIRMATORY SAMPLING AT 100-K

Ellwood/Chris, WCH needs to perform some sampling at 100-K-57, 100-K-64, 100-K-83 and 100-K-111. There is no air monitoring plan coverage for this activity and 2 of the 100-K monitors for the 118-K-1 remediation have already removed (N403 and the tritium monitor), although they probably didn't provide sufficient coverage for these areas anyway.

I don't believe an air monitoring plan is necessary for this activity and would like your concurrence. Sampling will only be done on the surface or by hand-dug or hand-augured test pits. In addition, full radiological control coverage will be utilized when working in areas with radiological contamination.

Let me know if you concur.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

[attachment "winmail.dat" deleted by Christopher Guzzetti/R10/USEPA/US] [attachment "message_body.rtf" deleted by Christopher Guzzetti/R10/USEPA/US]

Attachment 10

169758

Agreement for Backfill of Trench N at the 118-K-1 Burial Ground Remediation

This documents an agreement between DOE-RL and EPA regarding completion of interim actions for Trench N at the 118-K-1 Burial Ground. Residual concentrations of all contaminants of potential concern for Trench N meet remedial action goals, with the exception of tritium. Tritium is present in the deep vadose zone of the trench above the interim soil cleanup values for protection of groundwater and the residual concentrations do not pass RESRAD modeling. EPA and DOE-RL have agreed to evaluate alternatives for Trench N in the 100-K Area feasibility study for the upcoming ROD to determine the most appropriate remedy, including alternatives that were not considered in the interim action decision. Trench N will be backfilled to minimize moisture infiltration and further mobilization of tritium in the vadose zone until a decision is reached. DOE-RL and EPA have previously agreed to backfill all other 118-K-1 remediation areas to grade.

DOE-RL Project Manager — 1/28/13 Date

EPA Remedial Project Manager — 1/29/13 Date

Supporting Materials

Attachment/ Reference	Description
A	Comparisons of Analytical Results to Remedial Action Goals for 118-K-1 Trench N Verification Samples
B	Tritium Activity Levels Beneath 118-K-1 Trench N
C	118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculation
D	118-K-1 Burial Ground Trench N Direct Contact Hazard Quotient and Carcinogenic Risk Calculations

Attachment A: Comparisons of Analytical Results to Remedial Action Goals for 118-K-1 Trench N Verification Samples

Table A-1. Comparison of Verification Sampling Results to Remedial Action Goals for the 118-K-1 Trench N Shallow Zone.*

COC/COPC	Statistical Result [a] (pCi/g)	Generic Site Lookup Values [b] (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value [c]	Groundwater Protection Lookup Value	River Protection Lookup Value		
Carbon-14	1.20	8.69	-- [d]	-- [d]	No	--
Cesium-137	0.226	6.2	1,465	2,930	No	
Uranium-233/234	0.629 (<BG)	1.1 [e]	1.1 [e]	1.1 [e]	No	
Uranium-238	0.647 (<BG)	1.1 [e]	1.1 [e]	1.1 [e]	No	
COC/COPC	**Statistical Result [a] (mg/kg)**	**Remedial Action Goals [b] (mg/kg)**			**Does the Statistical Data Set Exceed RAGs?**	**Does the Statistical Result Pass RESRAD Modeling?**
		Direct Exposure	**Soil Cleanup Level for Groundwater Protection**	**Soil Cleanup Level for River Protection**		
Antimony [f]	16.3	32	5 [g]	5 [g]	Yes	Yes [h]
Arsenic	3.34 (<BG)	20	20	20	No	--
Barium	71.6 (<BG)	5,600	200	400	No	--
Beryllium	0.349 (<BG)	10.4 [i]	1.51 [g]	1.51 [g]	No	--
Boron [j]	2.37	7,200	320	-- [k]	No	--
Chromium (total)	10.0(<BG)	80,000	18.5 [g]	18.5 [g]	No	--
Cobalt	9.61 (<BG)	24	15.7 [g]	-- [k]	No	--
Copper	21.9 (<BG)	2,960	59.2	22.0 [g]	No	--
Lead	9.78 (<BG)	353	10.2 [g]	10.2 [g]	No	--
Manganese	423 (<BG)	3,760	512 [g]	512 [g]	No	--
Mercury	0.099 (<BG)	24	0.33 [g]	0.33 [g]	No	--
Molybdenum [j]	0.65	400	8	-- [k]	No	--
Nickel	11.2 (<BG)	1,600	19.1 [g]	27.4	No	--
Vanadium	78.3 (<BG)	560	85.1 [g]	-- [k]	No	--
Zinc	72.2	24,000	480	67.8 [g]	Yes	Yes [h]
Di-n-butylphthalate	0.076	8,000	160	540	No	--

*Footnotes for all tables in Attachment A are provided following Table A-3.

Table A-2. Comparison of Verification Sampling Results to Remedial Action Goals for the 118-K-1 Trench N Deep Zone.*

COC/COPC	Statistical Result [a] (pCi/g)	Generic Site Lookup Values [b] (pCi/g)		Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Groundwater Protection Lookup Value	River Protection Lookup Value		
Americium-241	1.19	-- [d]	-- [d]	No	--
Carbon-14	1.20	-- [d]	-- [d]	No	--
Cesium-137	7.63	1,465	2,930	No	--
Nickel-63	2.94	83	166	No	--
Plutonium-239/240	1.07	-- [d]	-- [d]	No	--
Strontium-90	5.55	27.6	55.2	No	--
Tritium	5.44	12.6	25.2	No	--
Uranium-233/234	0.478 (<BG)	1.1 [e]	1.1 [e]	No	--
Uranium-238	0.667 (<BG)	1.1 [e]	1.1 [e]	No	--
COC/COPC	**Statistical Result [a] (mg/kg)**	**Remedial Action Goals [b] (mg/kg)**		**Does the Statistical Data Set Exceed RAGs?**	**Does the Statistical Result Pass RESRAD Modeling?**
		Soil Cleanup Level for Groundwater Protection	**Soil Cleanup Level for River Protection**		
Arsenic	1.77 (<BG)	20	20	No	--
Barium	52.9 (<BG)	200	400	No	--
Beryllium	0.243 (<BG)	1.51 [g]	1.51 [g]	No	--
Chromium (total)	7.69 (<BG)	18.5 [g]	18.5 [g]	No	--
Cobalt	10.0 (<BG)	15.7 [g]	-- [k]	No	--
Copper	16.9 (<BG)	59.2	22.0 [g]	No	--
Lead	3.16 (<BG)	10.2 [g]	10.2 [g]	No	--
Manganese	354 (<BG)	512 [g]	512 [g]	No	--
Mercury	0.018 (<BG)	0.33 [g]	0.33 [g]	No	--
Nickel	7.85 (<BG)	19.1 [g]	27.4	No	--
Vanadium	87.7	85.1 [g]	-- [k]	Yes	Yes [l]
Zinc	54.2 (<BG)	480	67.8 [g]	No	--

*Footnotes for all tables in Attachment A are provided following Table A-3.

Table A-3. Comparison of Verification Sampling Results to Remedial Action Goals for the 118-K-1 Trench N Focused Samples.*

COC/COPC	Statistical Result [a] (pCi/g)	Generic Site Lookup Values [b] (pCi/g)		Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.627	1,465	2,930	No	--
Tritium	11.7	12.6	25.2	No	--
Uranium-233/234	0.550 (<BG)	1.1 [e]	1.1 [e]	No	--
Uranium-238	0.818 (<BG)	1.1 [e]	1.1 [e]	No	--
COC/COPC	**Statistical Result [a] (mg/kg)**	**Remedial Action Goals [b] (mg/kg)**		**Does the Statistical Data Set Exceed RAGs?**	**Does the Statistical Result Pass RESRAD Modeling?**
		Soil Cleanup Level for Groundwater Protection	**Soil Cleanup Level for River Protection**		
Arsenic	3.74 (<BG)	20	20	No	--
Barium	86.2 (<BG)	200	400	No	--
Beryllium	0.302 (<BG)	1.51 [g]	1.51 [g]	No	--
Boron [j]	2.37	320	-- [k]	No	--
Chromium (total)	20.3 (<BG)	18.5 [g]	18.5 [g]	No	--
Cobalt	6.71 (<BG)	15.7 [g]	-- [k]	No	--
Copper	17.2 (<BG)	59.2	22.0 [g]	No	--
Lead	4.81 (<BG)	10.2 [g]	10.2 [g]	No	--
Manganese	315 (<BG)	512 [g]	512 [g]	No	--
Nickel	20.4	19.1 [g]	27.4	Yes	Yes [l]
Vanadium	43.9 (<BG)	85.1 [g]	-- [k]	Yes	--
Zinc	40.3 (<BG)	480	67.8 [g]	No	--

*Footnotes for all tables in Attachment A are provided on the following page.

Attachment A: Comparisons of Analytical Results to Remedial Action Goals for 118-K-1 Trench N Verification Samples

Footnotes for Tables A-1 through A-3.

[a] Maximum or 95% UCL result, depending on data censorship, as described in the *118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculation* (Attachment C).

[b] Lookup values and RAGs obtained from the *Remedial Design Report/Remedial Action Work Plan for the 100 Area.*

[c] Activity corresponding to a single-radionuclide 15 mrem/yr exposure as calculated using a generic RESRAD model.

[d] No value—RESRAD modeling predicts the contaminant will not reach groundwater within 1,000 years.

[e] The calculated lookup value is below the Hanford-specific statistical soil background activity. The value presented is the Hanford-specific statistical soil background activity.

[f] Hanford Site-specific background value is not available; not evaluated during background study. Value used is from *Natural Background Soil Metals Concentrations in Washington State.*

[g] Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-700[4][d]) (1996).

[h] Based on RESRAD modeling discussed in Appendix C of the 100 Area *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, the residual concentrations of antimony and zinc detected in the Trench N shallow zone are not expected to migrate more than 20 m (66 ft) vertically in 1,000 years based on the lowest contaminant K_d value. The vadose zone soil underlying the shallow zone is approximately 20 m (66 ft) thick. Therefore, the residual concentrations of antimony and zinc are predicted to be protective of groundwater and the Columbia River.

[i] Carcinogenic cleanup level calculated based on the inhalation exposure pathway per WAC 173-340-750[3], 1996 (Method B for air quality) and an airborne particulate mass loading rate of 0.0001 g/m^3.

[j] No Hanford Site-specific or Washington State background value available.

[k] No parameters (bioconcentration factors or AWQC values) are available from the Ecology Cleanup Levels and Risk Calculations database (Ecology 2012) or other databases to calculate cleanup levels (WAC 173-340-730(3)(a)(iii), 1996 [Method B for surface waters]).

[l] Based on RESRAD modeling discussed in Appendix C of the 100 Area *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, the residual concentrations of nickel and vanadium in Trench N are not expected to migrate vertically more than 1 m (3 ft) based on their respective K_d values. The vadose zone underlying the base of the Trench N remediation is at least 8 m (26 ft) thick. Therefore, the residual concentrations are predicted to be protective of groundwater.

--	= not applicable
AWQC	= ambient water quality criteria
BG	= background
COC	= contaminant of concern
COPC	= contaminant of potential concern
RAG	= remedial action goal
RESRAD	= RESidual RADioactivity (dose-assessment model)
WAC	= *Washington Administrative Code*

Attachment B: Tritium Activity Levels Beneath 118-K-1 Trench N

A characterization test pit was excavated at the base of Trench N remediation and samples were collected for tritium analysis at multiple intervals. All results are tabulated below.

Datum	**Elevation (AMSL)**	**Tritium Activity (pCi/g)**
Base of Trench N remediation	129 m	8,520 8,480 (field duplicate)
- 1 m	128 m	12,400
- 2 m	127 m	13,400
- 3 m	126 m	9,170
- 4 m	125 m	11,500
- 5 m	124 m	10,800
The reported groundwater elevation in the vicinity of Trench N is 121 m AMSL.		

Attachment C

118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculation

Acrobat 8.0

CALCULATION COVER SHEET

Project Title: 100-K Field Remediation **Job No. 14655**

Area: 100-K

Discipline: Environmental *Calculation No: 0100K-CA-V0088

Subject: 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculation

Computer Program: Excel Program No: Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒ Preliminary ☐ Superseded ☐ Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover = 1 Sheets = 9 Attm. 1 = 8 Total = 18	J. D. Skoglie	N. K. Schiffern	C. H. Dobie	D. F. Obenauer	1/16/13

SUMMARY OF REVISION

Summary

Purpose:
Calculate the 95% upper confidence limit (UCL) values to evaluate compliance with cleanup standards for the subject site. Also, perform the *Washington Administrative Code* (WAC) 173-340-740(7)(e) Model Toxics Control Act (MTCA) 3-part test for nonradionuclide analytes and calculate the relative percent difference (RPD) for primary-duplicate sample pairs for each contaminant of concern (COC) and contaminant of potential concern (COPC), as necessary.

Table of Contents:
Sheets 1 to 3 - Calculation Sheet Summary
Sheet 4 to 9 - Calculation Sheet Verification Data - Decision unit #7 (shallow and deep zones)
Attachment 1 - 118-K-1 (Trench N), Verification Sampling Results (8 sheets)

Given/References:
1) Sample Results (Attachment 1).
2) Background values and remedial action goals (RAGs) are taken from DOE-RL (2009b), DOE-RL (2001), and Ecology (1996).
3) DOE-RL, 2001, Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes, DOE/RL-92-24, Rev. 4, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
4) DOE-RL, 2009a, 100 Area Remedial Action Sampling and Analysis Plan (SAP), DOE/RL-96-22, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
5) DOE-RL, 2009b, Remedial Design Report/Remedial Action Work Plan for the 100 Area (RDR/RAWP), DOE/RL-96-17, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
6) Ecology, 1992, Statistical Guidance for Ecology Site Managers, Publication #92-54, Washington Department of Ecology, Olympia, Washington.
7) Ecology, 1993, Statistical Guidance for Ecology Site Managers, Supplement S-6, Analyzing Site or Background Data with Below-detection Limit or Below-PQL Values (Censored Data Sets), Publication #92-54, Washington Department of Ecology, Olympia, Washington.
8) Ecology, 1996, Model Toxic Control Act Cleanup Levels and Risk Calculations (CLARC II), Publication #94-145, Washington State Department of Ecology, Olympia, Washington.
9) Ecology, 2011, Cleanup Levels and Risk Calculations (CLARC) Database, Washington State Department of Ecology, Olympia, Washington, <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>.
10) EPA, 1989, Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual, Part A; Interim Final, EPA/540/1-89/002, U.S. Environmental Protection Agency, Washington, D.C.
11) WAC 173-340, 1996, "Model Toxic Control Act - Cleanup," Washington Administrative Code.

Solution:
Calculation methodology is described in Ecology Pub. #92-54 (Ecology 1992, 1993), below, and in the RDR/RAWP (DOE-RL 2009b). Use data from attached worksheets to perform the 95% UCL calculation for each analyte, the WAC 173-340-740(7)(e) 3-part test for nonradionuclides, and the RPD calculations for each COC/COPC. The hazard quotient and carcinogenic risk calculations are located in a separate calculation brief as an appendix to the Cleanup Verification Package (CVP).

Calculation Description:
The subject calculations were performed on statistical data from soil verification samples (Attachment 1) from Trench N within the 118-K-1 burial ground. The data were entered into an EXCEL 2003 spreadsheet and calculations performed by using the built-in spreadsheet functions and/or creating formulae within the cells. The statistical evaluation of data for use in accordance with the RDR/RAWP (DOE-RL 2009b) is documented by this calculation.

Methodology:
Trench N within the 118-K-1 burial ground underwent statistical and focused sampling and has 2 decision units for verification sampling, consisting of the shallow zone and deep zone for decision unit #7. Five focused samples were also collected.

Analytical results for all sampling locations are summarized in the tables provided on sheet 3. Further information of the sample data quality is presented in the data quality assessment section of the associated CVP.

Summary (continued)

Methodology, continued:

For nonradioactive analytes with ≤ 50% of the data below detection limits, the statistical value calculated to evaluate the effectiveness of cleanup is the 95% UCL. For nonradioactive analytes with >50% of the data below detection limits, as determined by direct inspection of the sample results (Attachment 1), the maximum detected value for the data set (which includes primary and duplicate samples) is used instead of the 95% UCL, and no further calculations are performed for those data sets. For convenience, these maximum detected values are included in the summary tables that follow. The 95% UCL was not calculated for data sets with no reported detections. Calculated cleanup levels are not available in Ecology (2011) under WAC 173-340-740(3) for calcium, magnesium, potassium, silicon, and sodium. The EPA's Risk Assessment Guidance for Superfund (EPA 1989) recommends that aluminum and iron not be considered in site risk evaluations. Therefore, aluminum, calcium, iron, magnesium, potassium, silicon, and sodium are not considered site COCs/COPCs and are also not included in these calculations. The 95% UCL values were not calculated for potassium-40, radium-226, radium-228, thorium-228, and thorium-232 based on natural occurence at the Hanford Site.

All nonradionuclide data reported as being undetected are set to ½ the detection limit value for calculation of the statistics (Ecology 1993). For the statistical evaluation of duplicate sample pairs, the samples are averaged before being included in the data set, after adjustments for censored data as described above. For radionuclide data, calculation of the statistics is done using the reported value. In cases where the laboratory does not report a value below the minimum detectable activity (MDA), half of the MDA is used in the calculation. For the statistical evaluation of duplicate sample pairs, the samples are averaged before being included in the data set, after adjustments for censored data as described above.

For nonradionuclides, the WAC 173-340 statistical guidance suggests that a test for distributional form be performed on the data and the 95% UCL calculated on the appropriate distribution using Ecology software. For nonradionuclide small data sets (n < 10), the calculations are performed assuming nonparametric distribution, so no tests for distribution are performed. For nonradionuclide data sets of ten or greater, as for the subject site, distributional testing is done using Ecology's MTCAStat software (Ecology 1993). Due to differences in addressing censored data between the RDR/RAWP (DOE-RL 2009b) and MTCAStat coding and due to a limitation in the MTCAStat coding (no direct capability to address variable quantitation limits within a data set), substitutions for censored data are performed before software input and the resulting data set treated as uncensored.

The WAC 173-340-740(7)(e) 3-part test is performed for nonradionuclide analytes only and determines if:
1) the 95% UCL exceeds the most stringent cleanup limit for each COPC/COC,
2) greater than 10% of the raw data exceed the most stringent cleanup limit for each COPC/COC,
3) the maximum value of the raw data set exceeds two times the most stringent cleanup limit for each COPC/COC.

Summary (continued)

Results:
The results presented in the tables that follow include the summary of the results of the 95% UCL calculations and maximums for the decision unit #7, 5 focused samples, the WAC 173-340-740(7)(e) 3-part test evaluation, the RPD calculations, and are for use in risk analysis and the CVP for this site.

Summary for 95% UCL and Maximum Results

Analyte	Decision Unit #7 - Shallow Zone		Decision Unit #7 - Deep Zone		Focused Sample	Units
	95% UCL Result	Maximum Result	95% UCL Result	Maximum Result	Maximum Result	
Americium-241 (AEA)	--	--	1.19	--	--	pCi/g
Carbon-14	1.20	--	1.20	--	--	pCi/g
Cesium-137	0.226	--	7.63	--	0.627	pCi/g
Nickel-63	--	--	2.94	--	--	pCi/g
Plutonium-239/240	--	--	1.07	--	--	pCi/g
Total beta radiostrontium	--	--	5.55	--	--	pCi/g
Tritium	--	--	5.44	--	11.7	pCi/g
Uranium-233/234 (AEA)	0.629	--	0.478	--	0.550	pCi/g
Uranium-238 (AEA)	0.647	--	0.667	--	0.818	pCi/g
Antimony	--	16.3	--	--	--	mg/kg
Arsenic	3.34	--	1.77	--	3.74	mg/kg
Barium	71.6	--	52.9	--	86.2	mg/kg
Beryllium	0.349	--	0.243	--	0.302	mg/kg
Boron	2.37	--	--	--	1.39	mg/kg
Chromium	10.0	--	7.69	--	20.3	mg/kg
Cobalt	9.61	--	10.0	--	6.71	mg/kg
Copper	21.9	--	16.9	--	17.2	mg/kg
Lead	9.78	--	3.16	--	4.81	mg/kg
Manganese	423	--	354	--	315	mg/kg
Mercury	0.0993	--	--	0.0175	--	mg/kg
Molybdenum	--	0.650	--	--	--	mg/kg
Nickel	11.2	--	7.85	--	20.4	mg/kg
Vanadium	78.3	--	87.7	--	43.9	mg/kg
Zinc	72.2	--	54.2	--	40.3	mg/kg
Di-n-butylphthalate	--	0.0761	--	--	--	mg/kg
3-Part Test Evaluation:						
95% UCL > Cleanup Limit?	YES		YES			
> 10% above Cleanup Limit?	YES		YES			
Any sample > 2x Cleanup Limit?	NO		NO			

-- = not applicable
B = blank contamination (inorganic constituents)
CVP = Cleanup Verification Package
DE = direct exposure
GW = groundwater
MDA = minimum dectection allowed
MTCA = *Model Toxics Control Act*
PQL = practical quantitation limit
Q = qualifier
QA/QC = quality assurance/quality control
RAG = remedial action goal
RDR/RAWP = remedial design report/remedial action work plan
RESRAD = RESidual RADioactivity (dose model)
RPD = relative percent difference
RSVP = remaining sites verification package
SAP = sampling and analysis plan
TDL = target detection limit
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford
Originator J. D. Skoglie
Project 100-K Field Remediation
Subject 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculations

Date 12/21/12
Job No. 14655

Calc. No. 0100K-CA-V0088
Checked N. K. Schiffern

Rev. No. 0
Date 12/21/12
Sheet No. 4 of 9

1 118-K-1 Statistical Calculations
2 Verification Data - Decision Unit #7 Shallow Zone (Trench N)

3				Carbon-14			Cesium-137			Uranium-233/234 (AEA)			Uranium-238 (AEA)		
4	Sample Area	Sample Number	Sample Date	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
5	S7-A1	J1R2D6	11/15/12	1.15		0.850	0.146		0.018	0.368		0.216	0.396		0.216
6	S7-A2	J1R2D7	11/15/12	1.16		0.856	0.064		0.031	0.348		0.296	0.387		0.296
7	S7-A3	J1R2D8	11/15/12	1.16		0.875	0.273		0.034	0.722		0.212	0.361		0.212
8	S7-A4	J1R2D9	11/15/12	0.863	U	0.890	0.134		0.052	0.510		0.260	0.782		0.260

9 Statistical Computation Input Data

10				Carbon-14			Cesium-137			Uranium-233/234 (AEA)			Uranium-238 (AEA)		
11	Sample Area	Sample Number	Sample Date	pCi/g			pCi/g			pCi/g			pCi/g		
12	S7-A1	J1R2D6	11/15/12	1.15			0.146			0.368			0.396		
13	S7-A2	J1R2D7	11/15/12	1.16			0.064			0.348			0.387		
14	S7-A3	J1R2D8	11/15/12	1.16			0.273			0.722			0.361		
15	S7-A4	J1R2D9	11/15/12	0.863			0.134			0.510			0.782		

16 Statistical Computations

17		Carbon-14			Cesium-137			Uranium-233/234 (AEA)			Uranium-238 (AEA)		
18	95% UCL based on	Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.		
19	N	4			4			4			4		
20	% < Detection limit	25%			0%			0%			0%		
21	Mean	1.08			0.154			0.487			0.482		
22	Standard deviation	0.147			0.087			0.172			0.201		
23	Z-statistic	1.64			1.64			1.64			1.64		
24	95% UCL on mean	1.20			0.226			0.629			0.647		
25	Maximum value	1.16			0.273			0.722			0.782		

CALCULATION SHEET

Washington Closure Hanford

Originator J. D. Skoglie
Project 100-K Field Remediation
Subject 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculations

Date 12/21/12
Job No. 14655

Calc. No. 0100K-CA-V0088
Checked N. K. Schilfem

Rev. No. 0
Date 12/21/12
Sheet No. 5 of 9

1 118-K-1 Statistical Calculations

2 Verification Data - Decision Unit #7 Shallow Zone (Trench N)

3	Sample	Sample	Sample	Arsenic			Barium			Beryllium			Boron			Chromium			Cobalt			Copper			Lead			Manganese		
4	Area	Number	Date	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
5	S7-A1	J1R2D6	11/15/12	2.90	B	2.93	67.4		1.46	0.374	B	0.585	1.69	B	5.85	9.91		0.585	9.57		5.85	19.7		2.93	5.17		1.46	391		14.6
6	S7-A2	J1R2D7	11/15/12	2.40	B	2.67	73.9		1.34	0.294	B	0.534	1.35	B	5.34	7.56		0.534	9.02		5.34	16.8		2.67	3.87		1.34	367		13.4
7	S7-A3	J1R2D8	11/15/12	3.67		3.02	66.1		1.51	0.312	B	0.603	1.84	B	6.03	10.3		0.603	9.17		6.03	22.5		3.02	12.3		1.51	446		15.1
8	S7-A4	J1R2D9	11/15/12	2.48	B	2.70	59.2		1.35	0.269	B	0.540	5.40	U	5.40	7.55		0.540	9.67		5.40	20.7		2.70	5.23		1.35	355		13.5

9 Statistical Computation Input Data

10	Sample	Sample	Sample	Arsenic	Barium	Beryllium	Boron	Chromium	Cobalt	Copper	Lead	Manganese
11	Area	Number	Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12	S7-A1	J1R2D6	11/15/12	2.90	67.4	0.374	1.69	9.91	9.57	19.7	5.17	391
13	S7-A2	J1R2D7	11/15/12	2.40	73.9	0.294	1.35	7.56	9.02	16.8	3.87	367
14	S7-A3	J1R2D8	11/15/12	3.67	66.1	0.312	1.84	10.3	9.17	22.5	12.3	446
15	S7-A4	J1R2D9	11/15/12	2.48	59.2	0.269	2.70	7.55	9.67	20.7	5.23	355

16 Statistical Computations

17		Arsenic	Barium	Beryllium	Boron	Chromium	Cobalt	Copper	Lead	Manganese
18	95% UCL based on	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.
19	N	4	4	4	4	4	4	4	4	4
20	% < Detection limit	0%	0%	0%	25%	0%	0%	0%	0%	0%
21	Mean	2.86	66.7	0.312	1.90	8.83	9.36	19.9	6.64	390
22	Standard deviation	0.581	6.03	0.045	0.574	1.48	0.312	2.38	3.82	40.4
23	95% UCL on mean	3.34	71.6	0.349	2.37	10.0	9.61	21.9	9.78	423
24	Maximum value	3.67	73.9	0.374	1.84	10.3	9.67	22.5	12.3	446
25	Most Stringent Cleanup Limit for nonradionuclide and RAG type (mg/kg)	20 DE, GW, & River Protection	200 GW Protection	1.51 GW & River Protection	320 GW Protection	18.5 GW & River Protection	15.7 GW Protection	22.0 River Protection	10.2 GW & River Protection	512 GW and River Protection
26	WAC 173-340 3-PART TEST									
27	95% UCL > Cleanup Limit?	NA	NA	NA	NO	NA	NA	NO	NO	NA
28	> 10% above Cleanup Limit?	NA	NA	NA	NO	NA	NA	YES	YES	NA
29	Any sample > 2X Cleanup Limit?	NA	NA	NA	NO	NA	NA	NO	NO	NA
30	WAC 173-340 Compliance?	Because all values are below background (6.5 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (132 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (1.51 mg/kg) the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent RAG.	Because all values are below background (18.5 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (15.7 mg/kg) the WAC 173-340 3-part test is not required.	A detailed assessment will be performed. The data set meets the 3-part test criteria when compared to the direct exposure RAG.	A detailed assessment will be performed. The data set meets the 3-part test criteria when compared to the direct exposure RAG.	Because all values are below background (512 mg/kg) the WAC 173-340 3-part test is not required.

31

CALCULATION SHEET

Washington Closure Hanford

Originator J. D. Skoglie
Project 100-K Field Remediation
Subject 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculations

Date 12/21/12
Job No. 14655

Calc. No. 0100K-CA-V0088
Checked N. K. Schiffern

Rev. No. 0
Date 12/21/12
Sheet No. 6 of 9

1 118-K-1 Statistical Calculations

2 Verification Data - Decision Unit #7 Shallow Zone (Trench N)

3 Sample Area	Sample Number	Sample Date	Mercury mg/kg	Q	PQL	Nickel mg/kg	Q	PQL	Vanadium mg/kg	Q	PQL	Zinc mg/kg	Q	PQL
5 S7-A1	J1R2D6	11/15/12	0.0268	U	0.0268	10.6	B	11.7	76.5		7.31	53.0		29.3
6 S7-A2	J1R2D7	11/15/12	0.0283	U	0.0283	7.75	B	10.7	67.9		6.68	50.4		26.7
7 S7-A3	J1R2D8	11/15/12	0.0619		0.0272	11.9	B	12.1	74.0		7.54	58.4		30.2
8 S7-A4	J1R2D9	11/15/12	0.129		0.0263	8.46	B	10.8	79.1		6.75	81.1		27.0

9 Statistical Computation Input Data

10 Sample Area	Sample Number	Sample Date	Mercury mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg		
12 S7-A1	J1R2D6	11/15/12	0.0134			10.6			76.5			53.0		
13 S7-A2	J1R2D7	11/15/12	0.0142			7.75			67.9			50.4		
14 S7-A3	J1R2D8	11/15/12	0.0619			11.9			74.0			58.4		
15 S7-A4	J1R2D9	11/15/12	0.129			8.46			79.1			81.1		

16 Statistical Computations

17	Mercury			Nickel			Vanadium			Zinc		
18 95% UCL based on	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.			Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.			Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.			Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.		
19 N	4			4			4			4		
20 % < Detection limit	50%			0%			0%			0%		
21 Mean	0.0546			9.68			74.4			60.7		
22 Standard deviation	0.0545			1.91			4.79			14.0		
23 95% UCL on mean	0.0993			11.2			78.3			72.2		
24 Maximum value	0.129			11.9			79.1			81.1		
25 Most Stringent Cleanup Limit for nonradionuclide and RAG type (mg/kg)	0.33	GW and River Protection		19.1	GW Protection		85.1	GW Protection		67.8	River Protection	
26 WAC 173-340 3-PART TEST												
27 95% UCL > Cleanup Limit?	NA			NA			NA			YES		
28 > 10% above Cleanup Limit?	NA			NA			NA			YES		
29 Any sample > 2X Cleanup Limit?	NA			NA			NA			NO		
30 WAC 173-340 Compliance?	Because all values are below background (0.33 mg/kg) the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg) the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg) the WAC 173-340 3-part test is not required.			A detailed assessment will be performed. The data set meets the 3-part test criteria when compared to the direct exposure RAG.		

31

CALCULATION SHEET

Washington Closure Hanford

Originator J. D. Skoglie
Project 100-K Field Remediation
Subject 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculations

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Sheet No. 7 of 9

1 118-K-1 Statistical Calculations

2 Verification Data - Decision Unit #7 Deep Zone (Trench N)

3	Sample	Sample	Sample	Americium-241 (AEA)			Americium-241 (GEA)			Carbon-14			Cesium-137			Nickel-63			Plutonium-239/240			Total beta radiostrontium			Tritium			Uranium-233/234			Uranium-238 (AEA)		
4	Area	Number	Date	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
5	D7-A1	J1R2F0	11/15/12	0.127	U	0.304	0.042	U	0.042	0.875		0.837	0.043		0.025	-0.249	U	3.26	0.068	U	0.259	0.055	U	0.280	-1.26	U	4.50	0.463		0.221	0.434		0.221
6	D7-A2	J1R2F1	9/26/12	-0.064	U	0.307	0.082	U	0.082	0.457	U	0.879	0.144		0.026	2.62	U	3.06	0	U	0.199	7.34		0.236	7.48		3.25	0.429		0.219	0.773		0.219
7	D7-A3	J1R2F2	11/15/12	-0.058	U	0.322	0.137	U	0.137	1.16		0.815	0.022	U	0.026	0	U	3.23	0.031	U	0.237	0.027	U	0.236	0.315	U	4.51	0.188	U	0.239	0.250		0.239
8	D7-A4	J1R2F3	11/15/12	1.79		0.280	1.12		0.187	1.18		0.876	11.5		0.039	3.37		3.23	1.60		0.260	3.36		0.254	2.70	U	4.39	0.417		0.213	0.500		0.213

9 Statistical Computation Input Data

10	Sample	Sample	Sample	Americium-241 (AEA)			Americium-241 (GEA)			Carbon-14			Cesium-137			Nickel-63			Plutonium-239/240			Total beta radiostrontium			Tritium			Uranium-233/234			Uranium-238 (AEA)		
11	Area	Number	Date	pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
12	D7-A1	J1R2F0	11/15/12	0.127			0.021			0.875			0.043			-0.249			0.068			0.055			-1.26			0.463			0.434		
13	D7-A2	J1R2F1	9/26/12	-0.064			0.041			0.457			0.144			2.62			0			7.34			7.48			0.429			0.773		
14	D7-A3	J1R2F2	11/15/12	-0.058			0.069			1.16			0.022			0			0.031			0.027			0.315			0.188			0.250		
15	D7-A4	J1R2F3	11/15/12	1.79			1.12			1.18			11.5			3.37			1.60			3.36			2.70			0.417			0.500		

16 Statistical Computations

17		Americium-241 (AEA)			Americium-241 (GEA)			Carbon-14			Cesium-137			Nickel-63			Plutonium-239/240			Total beta radiostrontium			Tritium			Uranium-233/234			Uranium-238 (AEA)		
18	95% UCL based on	Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.			Radionuclide data set. Use nonparametric z-statistic.		
19	N	4			4			4			4			4			4			4			4			4			4		
20	% < Detection limit	75%			75%			25%			25%			75%			75%			50%			75%			25%			0%		
21	Mean	0.449			0.313			0.918			2.93			1.44			0.425			2.70			2.31			0.374			0.489		
22	Standard deviation	0.899			0.539			0.337			5.72			1.83			0.784			3.47			3.81			0.126			0.217		
23	Z-statistic	1.64			1.64			1.64			1.64			1.64			1.64			1.64			1.64			1.64			1.64		
24	95% UCL on mean	1.19			0.756			1.20			7.63			2.94			1.07			5.55			5.44			0.478			0.667		
25	Maximum value	1.79			1.12			1.18			11.5			3.37			1.60			7.34			7.48			0.463			0.773		

CALCULATION SHEET

Washington Closure Hanford

Originator J. D. Skoglie
Project 100-K Field Remediation
Subject 118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculations

Date 12/21/12
Job No. 14655

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Rev. No. 0
Date 12/21/12
Sheet No. 8 of 9

1 118-K-1 Statistical Calculations
2 Verification Data - Decision Unit #7 Deep Zone (Trench N)

3 Sample	Sample	Sample	Arsenic			Barium			Beryllium			Chromium			Cobalt			Copper			Lead			Manganese			Nickel			Vanadium		
4 Area	Number	Date	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
5 D7-A1	J1R2F0	11/15/12	1.82	B	2.45	48.2		1.22	0.220	B	0.489	8.66		0.489	8.21		4.89	17.6		2.45	3.27		1.22	296		12.2	8.42	B	9.79	76.5		6.12
6 D7-A2	J1R2F1	9/26/12	1.73	B	2.89	54.0		1.45	0.251	B	0.578	6.57		0.578	8.66		5.78	14.8		2.89	2.92		1.45	319		14.5	6.85	B	11.6	67.5		7.23
7 D7-A3	J1R2F2	11/15/12	1.42	B	2.56	50.8		1.28	0.232	B	0.511	4.63		0.511	10.6		5.11	15.8		2.56	2.78		1.28	360		12.8	6.58	B	10.2	92.7		6.39
8 D7-A4	J1R2F3	11/15/12	1.23	B	2.91	50.6		1.46	0.220	B	0.582	3.80		0.582	9.25		5.82	15.5		2.91	2.20		1.46	347		14.6	6.76	B	11.6	80.0		7.28

9 Statistical Computation Input Data

10 Sample	Sample	Sample	Arsenic			Barium			Beryllium			Chromium			Cobalt			Copper			Lead			Manganese			Nickel			Vanadium		
11 Area	Number	Date	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
12 D7-A1	J1R2F0	11/15/12	1.82			48.2			0.220			8.66			8.21			17.6			3.27			296			8.42			76.5		
13 D7-A2	J1R2F1	9/26/12	1.73			54.0			0.251			6.57			8.66			14.8			2.92			319			6.85			67.5		
14 D7-A3	J1R2F2	11/15/12	1.42			50.8			0.232			4.63			10.6			15.8			2.78			360			6.58			92.7		
15 D7-A4	J1R2F3	11/15/12	1.23			50.6			0.220			3.80			9.25			15.5			2.20			347			6.76			80.0		

16 Statistical Computations

17	Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Manganese	Nickel	Vanadium
18 95% UCL based on	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.
19 N	4	4	4	4	4	4	4	4	4	4
20 % < Detection limit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21 Mean	1.55	50.9	0.231	5.92	9.18	15.9	2.79	331	7.15	79.2
22 Standard deviation	0.274	2.38	0.015	2.17	1.04	1.19	0.446	28.7	0.852	10.4
23 95% UCL on mean	1.77	52.9	0.243	7.69	10.0	16.9	3.16	354	7.85	87.7
24 Maximum value	1.82	54.0	0.251	8.66	10.6	17.6	3.27	360	8.42	92.7
25 Most Stringent Cleanup Limit for nonradionuclide and RAG type (mg/kg)	20 DE, GW, & River Protection	200 GW Protection	1.51 GW & River Protection	18.5 GW & River Protection	15.7 GW Protection	22.0 River Protection	10.2 GW & River Protection	512 GW and River Protection	19.1 GW Protection	85.1 GW Protection
26 WAC 173-340 3-PART TEST										
27 95% UCL > Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA	NA	YES
28 > 10% above Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA	NA	YES
29 Any sample > 2X Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NO
30 WAC 173-340 Compliance?	Because all values are below background (6.5 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (132 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (1.51 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (18.5 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (15.7 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (22.0 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (10.2 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (512 mg/kg) the WAC 173-340 3-part test is not required.	Because all values are below background (19.1 mg/kg) the WAC 173-340 3-part test is not required.	A detailed assessment will be performed. The data set meets the 3-part test criteria when compared to the direct exposure RAG.

31

118-K-1 Statistical Calculations

Verification Data - Decision Unit #7 Deep Zone (Trench N)

Sample Area	Sample Number	Sample Date	Zinc mg/kg	Q	PQL
D7-A1	J1R2F0	11/15/12	47.3		24.5
D7-A2	J1R2F1	9/26/12	47.1		28.9
D7-A3	J1R2F2	11/15/12	56.7		25.6
D7-A4	J1R2F3	11/15/12	50.9		29.1

Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Zinc mg/kg		
D7-A1	J1R2F0	11/15/12	47.3		
D7-A2	J1R2F1	9/26/12	47.1		
D7-A3	J1R2F2	11/15/12	56.7		
D7-A4	J1R2F3	11/15/12	50.9		

Statistical Computations

	Zinc		
95% UCL based on	Small (n < 10) Non-radionuclide data set. Use nonparametric z-statistic.		
N	4		
% < Detection limit	0%		
Mean	50.5		
Standard deviation	4.49		
95% UCL on mean	54.2		
Maximum value	56.7		
Most Stringent Cleanup Limit for nonradionuclide and RAG type (mg/kg)	67.8	River Protection	
WAC 173-340 3-PART TEST			
95% UCL > Cleanup Limit?	NA		
> 10% above Cleanup Limit?	NA		
Any sample > 2X Cleanup Limit?	NA		
WAC 173-340 Compliance?	Because all values are below background (67.8 mg/kg) the WAC 173-340 3-part test is not required.		

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Radionuclides).

Location	HEIS Number	Sample Date	Americium-241 (AEA)			Americium-241 (GEA)			Carbon-14			Cesium-137			Cobalt-60			Europium-152			Europium-154		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
S7-A1	J1R2D6	11/15/12	0.023	U	0.249	0.105	U	0.105	1.15		0.850	0.146		0.018	0.026	U	0.026	0.066	U	0.066	0.074	U	0.074
S7-A2	J1R2D7	11/15/12	-0.070	U	0.335	0.042	U	0.042	1.16		0.856	0.064		0.031	0.028	U	0.028	0.090	U	0.090	0.105	U	0.105
S7-A3	J1R2D8	11/15/12	0.031	U	0.296	0.106	U	0.106	1.16		0.875	0.273		0.034	0.031	U	0.031	0.077	U	0.077	0.117	U	0.117
S7-A4	J1R2D9	11/15/12	0.031	U	0.297	0.374	U	0.374	0.863	U	0.890	0.134		0.052	0.046	U	0.046	0.129	U	0.129	0.158	U	0.158
D7-A1	J1R2F0	11/15/12	0.127	U	0.304	0.042	U	0.042	0.875		0.837	0.043		0.025	0.021	U	0.021	0.060	U	0.060	0.070	U	0.070
D7-A2	J1R2F1	9/26/12	-0.064	U	0.307	0.082	U	0.082	0.457	U	0.879	0.144		0.026	0.025	U	0.025	0.059	U	0.059	0.085	U	0.085
D7-A3	J1R2F2	11/15/12	-0.058	U	0.322	0.137	U	0.137	1.16		0.815	0.022	U	0.026	0.022	U	0.022	0.058	U	0.058	0.069	U	0.069
D7-A4	J1R2F3	11/15/12	1.79		0.280	1.12		0.187	1.18		0.876	11.5		0.039	0.021	U	0.021	0.114	U	0.114	0.068	U	0.068
FS-13	J1R2D0	9/26/12	0	U	0.287	0.092	U	0.092	0.352	U	0.890	0.046		0.023	0.019	U	0.019	0.049	U	0.049	0.064	U	0.064
FS-14	J1R2D1	9/26/12	0.025	U	0.236	0.037	U	0.037	0.266	U	0.848	0.039		0.033	0.029	U	0.029	0.078	U	0.078	0.099	U	0.099
FS-15	J1R2D2	9/26/12	0.033	U	0.320	0.098	U	0.098	0.498	U	0.935	0.056		0.031	0.031	U	0.031	0.065	U	0.065	0.107	U	0.107
FS-16	J1R2D3	9/26/12	-0.022	U	0.210	0.353	U	0.353	-0.021	U	0.832	0.043	U	0.043	0.042	U	0.042	0.107	U	0.107	0.143	U	0.143
FS-17	J1R2D4	9/26/12	0.117	U	0.258	0.094	U	0.094	0.092	U	0.889	0.627		0.026	0.018	U	0.018	0.056	U	0.056	0.066	U	0.066

Location	HEIS Number	Sample Date	Europium-155			Nickel-63			Plutonium-238			Plutonium-239/240			Potassium-40			Radium-226			Radium-228		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
S7-A1	J1R2D6	11/15/12	0.081	U	0.081	0.685	U	3.17	0	U	0.341	0	U	0.340	12.7		0.192	0.443		0.041	0.789		0.069
S7-A2	J1R2D7	11/15/12	0.075	U	0.075	-0.284	U	3.19	-0.047	U	0.356	0	U	0.356	13.2		0.368	0.491		0.063	0.764		0.125
S7-A3	J1R2D8	11/15/12	0.077	U	0.077	0.445	U	3.18	0	U	0.245	0.032	U	0.245	10.9		0.262	0.412		0.049	0.683		0.116
S7-A4	J1R2D9	11/15/12	0.150	U	0.150	-0.543	U	3.28	0.031	U	0.240	0.063	U	0.239	8.85		0.513	0.393		0.083	0.726		0.216
D7-A1	J1R2F0	11/15/12	0.065	U	0.065	-0.249	U	3.26	0	U	0.259	0.068	U	0.259	11.2		0.246	0.368		0.044	0.650		0.090
D7-A2	J1R2F1	9/26/12	0.068	U	0.068	2.62	U	3.06	0.026	U	0.199	0	U	0.199	9.84		0.214	0.314		0.045	0.575		0.080
D7-A3	J1R2F2	11/15/12	0.076	U	0.076	0	U	3.23	0	U	0.237	0.031	U	0.237	9.86		0.191	0.320		0.046	0.646		0.097
D7-A4	J1R2F3	11/15/12	0.116	U	0.116	3.37		3.23	0.204	U	0.260	1.60		0.260	9.61		0.146	0.316		0.062	0.526		0.080
FS-13	J1R2D0	9/26/12	0.071	U	0.071	1.19	U	2.92	0.101	U	0.194	0.101	U	0.193	13.9		0.172	0.459		0.039	0.655		0.085
FS-14	J1R2D1	9/26/12	0.073	U	0.073	0.566	U	3.11	0.028	U	0.215	0	U	0.215	15.2		0.339	0.534		0.051	0.704		0.107
FS-15	J1R2D2	9/26/12	0.089	U	0.089	0.588	U	3.00	0	U	0.200	0	U	0.200	13.1		0.203	0.410		0.048	0.632		0.133
FS-16	J1R2D3	9/26/12	0.131	U	0.131	0.505	U	3.00	0.028	U	0.213	0	U	0.213	12.3		0.341	0.466		0.080	0.661		0.186
FS-17	J1R2D4	9/26/12	0.074	U	0.074	1.51	U	2.98	0.029	U	0.220	0.115	U	0.219	14.5		0.188	0.388		0.046	0.564		0.074

Acronyms and notes apply to all of the tables in this attachment.
Note: Data qualified with B and/or J are considered acceptable values.
AEA = alpha energy analysis
B = blank contamination (organic constituents) = Estimated (inorganic)
D = dilution
FS = focused sample
GEA = gamma energy analysis
HEIS = Hanford Environmental Information
J = estimate (organic) = blank contamination
MDA = minimum detection allowed
PQL = practical quantitation limit
Q = qualifier
SVOA = semivolatile organic analysis
U = undetected

Attachment	1	Sheet No.	1 of 8
Originator	J. D. Skoglie	Date	12/21/12
Checked	N. K. Schiffern	Date	12/21/12
Calc. No.	0100K-CA-V0088	Rev. No.	0

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Radionuclides).

Location	HEIS Number	Sample Date	Silver-108 metastable			Technetium-99			Thorium-228			Thorium-232			Total beta radiostrontium			Tritium			Uranium-233/234 (AEA)		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
S7-A1	J1R2D6	11/15/12	0.017	U	0.017	0.124	U	0.569	0.695		0.036	0.789		0.069	0.149	U	0.241	-1.70	U	4.20	0.368		0.216
S7-A2	J1R2D7	11/15/12	0.023	U	0.023	0.137	U	0.565	0.839		0.045	0.764		0.125	-0.061	U	0.258	-0.355	U	4.24	0.348		0.296
S7-A3	J1R2D8	11/15/12	0.022	U	0.022	0.061	U	0.589	0.593		0.037	0.683		0.116	0.063	U	0.259	0.323	U	3.86	0.722		0.212
S7-A4	J1R2D9	11/15/12	0.035	U	0.035	0.026	U	0.611	0.760		0.082	0.726		0.216	-0.020	U	0.266	-1.17	U	4.66	0.510		0.260
D7-A1	J1R2F0	11/15/12	0.016	U	0.016	0.196	U	0.597	0.569		0.026	0.650		0.090	0.055	U	0.280	-1.26	U	4.50	0.463		0.221
D7-A2	J1R2F1	9/26/12	0.016	U	0.016	-0.039	U	0.689	0.500		0.028	0.575		0.080	7.34		0.236	7.48		3.25	0.429		0.219
D7-A3	J1R2F2	11/15/12	0.017	U	0.017	-0.065	U	0.516	0.548		0.032	0.646		0.097	0.027	U	0.236	0.315	U	4.51	0.188	U	0.239
D7-A4	J1R2F3	11/15/12	0.038	U	0.038	0.035	U	0.565	0.517		0.059	0.526		0.080	3.36		0.254	2.70	U	4.39	0.417		0.213
FS-13	J1R2D0	9/26/12	0.014	U	0.014	0.035	U	0.608	0.607		0.031	0.655		0.085	-0.048	U	0.233	0.860	U	3.11	0.526		0.224
FS-14	J1R2D1	9/26/12	0.021	U	0.021	-0.058	U	0.668	0.828		0.041	0.704		0.107	0.027	U	0.347	11.7		3.13	0.530		0.213
FS-15	J1R2D2	9/26/12	0.018	U	0.018	-0.179	U	0.695	0.560		0.030	0.632		0.133	-0.047	U	0.316	0.939	U	3.19	0.532		0.226
FS-16	J1R2D3	9/26/12	0.030	U	0.030	-0.054	U	0.629	0.777		0.082	0.661		0.186	0.136	U	0.337	-0.456	U	2.93	0.307		0.235
FS-17	J1R2D4	9/26/12	0.015	U	0.015	-0.048	U	0.640	0.608		0.031	0.564		0.074	0.179	U	0.303	0.053	U	3.09	0.550		0.263

Location	HEIS Number	Sample Date	Uranium-235 (AEA)			Uranium-235 (GEA)			Uranium-238 (AEA)			Uranium-238 (GEA)		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
S7-A1	J1R2D6	11/15/12	0.034	U	0.262	0.160	U	0.160	0.396		0.216	2.51	U	2.51
S7-A2	J1R2D7	11/15/12	0.047	U	0.358	0.202	U	0.202	0.387		0.296	3.60	U	3.60
S7-A3	J1R2D8	11/15/12	0.034	U	0.257	0.158	U	0.158	0.361		0.212	4.17	U	4.17
S7-A4	J1R2D9	11/15/12	0.082	U	0.315	0.278	U	0.278	0.782		0.260	5.29	U	5.29
D7-A1	J1R2F0	11/15/12	0.035	U	0.268	0.129	U	0.129	0.434		0.221	3.00	U	3.00
D7-A2	J1R2F1	9/26/12	0.069	U	0.265	0.130	U	0.130	0.773		0.219	2.82	U	2.82
D7-A3	J1R2F2	11/15/12	0	U	0.290	0.145	U	0.145	0.250		0.239	2.58	U	2.58
D7-A4	J1R2F3	11/15/12	0	U	0.258	0.238	U	0.238	0.500		0.213	2.28	U	2.28
FS-13	J1R2D0	9/26/12	0.035	U	0.271	0.200	U	0.200	0.818		0.224	2.25	U	2.25
FS-14	J1R2D1	9/26/12	0	U	0.258	0.162	U	0.162	0.697		0.213	3.34	U	3.34
FS-15	J1R2D2	9/26/12	0.143	U	0.274	0.156	U	0.156	0.562		0.226	3.41	U	3.41
FS-16	J1R2D3	9/26/12	0.037	U	0.284	0.251	U	0.251	0.491		0.235	5.50	U	5.50
FS-17	J1R2D4	9/26/12	0	U	0.318	0.149	U	0.149	0.584		0.263	2.22	U	2.22

Attachment	1	Sheet No.	2 of 8
Originator	J. D. Skoglie	Date	12/21/12
Checked	N. K. Schiffern	Date	12/21/12
Calc. No.	0100K-CA-V0088	Rev. No.	0

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Metals).

Location	HEIS Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron			Cadmium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
S7-A1	J1R2D6	11/15/12	9470		14.6	1.76	U	1.76	2.90	B	2.93	67.4		1.46	0.374	B	0.585	1.69	B	5.85	0.585	U	0.585
S7-A2	J1R2D7	11/15/12	6830		13.4	1.60	U	1.60	2.40	B	2.67	73.9		1.34	0.294	B	0.534	1.35	B	5.34	0.534	U	0.534
S7-A3	J1R2D8	11/15/12	8410		15.1	16.3		1.81	3.67		3.02	66.1		1.51	0.312	B	0.603	1.84	B	6.03	0.603	U	0.603
S7-A4	J1R2D9	11/15/12	7980		13.5	1.62	U	1.62	2.48	B	2.70	59.2		1.35	0.269	B	0.540	5.40	U	5.40	0.540	U	0.540
D7-A1	J1R2F0	11/15/12	6380		12.2	1.47	U	1.47	1.82	B	2.45	48.2		1.22	0.220	B	0.489	4.89	U	4.89	0.489	U	0.489
D7-A2	J1R2F1	9/26/12	5110		14.5	1.74	U	1.74	1.73	B	2.89	54.0		1.45	0.251	B	0.578	5.78	U	5.78	0.578	U	0.578
D7-A3	J1R2F2	11/15/12	5030		12.8	1.53	U	1.53	1.42	B	2.56	50.8		1.28	0.232	B	0.511	5.11	U	5.11	0.511	U	0.511
D7-A4	J1R2F3	11/15/12	5520		14.6	1.75	U	1.75	1.23	B	2.91	50.6		1.46	0.220	B	0.582	5.82	U	5.82	0.582	U	0.582
FS-13	J1R2D0	9/26/12	6920		13.0	1.56	U	1.56	2.66		2.61	55.0		1.30	0.246	B	0.521	1.39	B	5.21	0.521	U	0.521
FS-14	J1R2D1	9/26/12	7500		13.0	1.56	U	1.56	2.26	B	2.61	60.4		1.30	0.266	B	0.521	5.21	U	5.21	0.521	U	0.521
FS-15	J1R2D2	9/26/12	8170		12.8	1.54	U	1.54	3.18		2.56	68.7		1.28	0.296	B	0.513	5.13	U	5.13	0.513	U	0.513
FS-16	J1R2D3	9/26/12	8130		13.2	1.59	U	1.59	3.74		2.65	83.5		1.32	0.292	B	0.530	5.30	U	5.30	0.530	U	0.530
FS-17	J1R2D4	9/26/12	9100		13.3	1.59	U	1.59	3.52		2.66	86.2		1.33	0.302	B	0.531	5.31	U	5.31	0.531	U	0.531
Equipment Blank	J1R2D5	9/26/12	230		4.72	0.566	U	0.566	0.944	U	0.944	1.98		0.472	0.189	U	0.189	1.89	U	1.89	0.189	U	0.189

Location	HEIS Number	Sample Date	Calcium			Chromium			Cobalt			Copper			Iron			Lead			Magnesium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
S7-A1	J1R2D6	11/15/12	6520		293	9.91		0.585	9.57		5.85	19.7		2.93	29000		58.5	5.17		1.46	5020		219
S7-A2	J1R2D7	11/15/12	5580		267	7.56		0.534	9.02		5.34	16.8		2.67	27300		53.4	3.87		1.34	4250		200
S7-A3	J1R2D8	11/15/12	8600		302	10.3		0.603	9.17		6.03	22.5		3.02	27600		60.3	12.3		1.51	4910		226
S7-A4	J1R2D9	11/15/12	8390		270	7.55		0.540	9.67		5.40	20.7		2.70	29100		54.0	5.23		1.35	4630		202
D7-A1	J1R2F0	11/15/12	5970		245	8.66		0.489	8.21		4.89	17.6		2.45	25300		48.9	3.27		1.22	4360		184
D7-A2	J1R2F1	9/26/12	5780		289	6.57		0.578	8.66		5.78	14.8		2.89	27800		57.8	2.92		1.45	4770		217
D7-A3	J1R2F2	11/15/12	6520		256	4.63		0.511	10.6		5.11	15.8		2.56	31500		51.1	2.78		1.28	4780		192
D7-A4	J1R2F3	11/15/12	5980		291	3.80		0.582	9.25		5.82	15.5		2.91	29600		58.2	2.20		1.46	4270		218
FS-13	J1R2D0	9/26/12	3980		261	11.8		0.521	5.73		5.21	14.9		2.61	16700		52.1	3.34		1.30	4620		195
FS-14	J1R2D1	9/26/12	3850		261	9.90		0.521	5.37		5.21	15.6		2.61	16400		52.1	3.86		1.30	4360		195
FS-15	J1R2D2	9/26/12	4820		256	12.6		0.513	5.93		5.13	16.9		2.56	17700		51.3	4.34		1.28	4680		192
FS-16	J1R2D3	9/26/12	4080		265	15.4		0.530	6.23		5.30	16.2		2.65	17400		53.0	3.70		1.32	5020		199
FS-17	J1R2D4	9/26/12	4280		266	20.3		0.531	6.71		5.31	17.2		2.66	18000		53.1	4.81		1.33	5820		199
Equipment Blank	J1R2D5	9/26/12	34.8	B	94.4	0.189	U	0.189	1.89	U	1.89	0.944	U	0.944	338		18.9	0.403	B	0.472	24.4	B	70.8

Attachment	1	Sheet No.	3 of 8
Originator	J. D. Skoglie	Date	12/21/12
Checked	N. K. Schiffern	Date	12/21/12
Calc. No.	0100K-CA-V0088	Rev. No.	0

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Metals).

Location	HEIS Number	Sample Date	Manganese			Mercury			Molybdenum			Nickel			Potassium			Selenium			Silicon		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
S7-A1	J1R2D6	11/15/12	391		14.6	0.0268	U	0.0268	0.650	B	5.85	10.6	B	11.7	1460		1170	0.878	U	0.878	563		5.85
S7-A2	J1R2D7	11/15/12	367		13.4	0.0283	U	0.0283	5.34	U	5.34	7.75	B	10.7	1120		1070	0.802	U	0.802	488		5.34
S7-A3	J1R2D8	11/15/12	446		15.1	0.0619		0.0272	6.03	U	6.03	11.9	B	12.1	1320		1210	0.905	U	0.905	778		6.03
S7-A4	J1R2D9	11/15/12	355		13.5	0.129		0.0263	5.40	U	5.40	8.46	B	10.8	973	B	1080	0.809	U	0.809	414		5.40
D7-A1	J1R2F0	11/15/12	296		12.2	0.0258	U	0.0258	4.89	U	4.89	8.42	B	9.79	689	B	979	0.734	U	0.734	214		4.89
D7-A2	J1R2F1	9/26/12	319		14.5	0.0175	B	0.0258	5.78	U	5.78	6.85	B	11.6	677	B	1160	0.868	U	0.868	203		5.78
D7-A3	J1R2F2	11/15/12	360		12.8	0.0297	U	0.0297	5.11	U	5.11	6.58	B	10.2	628	B	1020	0.767	U	0.767	249		5.11
D7-A4	J1R2F3	11/15/12	347		14.6	0.0253	U	0.0253	5.82	U	5.82	6.76	B	11.6	617	B	1160	0.874	U	0.874	279		5.82
FS-13	J1R2D0	9/26/12	256		13.0	0.0267	U	0.0267	5.21	U	5.21	18.7		10.4	944	B	1040	0.782	U	0.782	243		5.21
FS-14	J1R2D1	9/26/12	255		13.0	0.0239	U	0.0239	5.21	U	5.21	12.1		10.4	1050		1040	0.782	U	0.782	477		5.21
FS-15	J1R2D2	9/26/12	315		12.8	0.0267	U	0.0267	5.13	U	5.13	12.2		10.3	1560		1030	0.769	U	0.769	206		5.13
FS-16	J1R2D3	9/26/12	283		13.2	0.0238	U	0.0238	5.30	U	5.30	14.5		10.6	1070		1060	0.794	U	0.794	277		5.30
FS-17	J1R2D4	9/26/12	308		13.3	0.0245	U	0.0245	5.31	U	5.31	20.4		10.6	1300		1060	0.797	U	0.797	272		5.31
Equipment Blank	J1R2D5	9/26/12	5.54		4.72	0.0265	U	0.0265	1.89	U	1.89	3.77	U	3.77	51.3	B	377	0.283	U	0.283	119		1.89

Location	HEIS Number	Sample Date	Silver			Sodium			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
S7-A1	J1R2D6	11/15/12	0.585	U	0.585	480		146	76.5		7.31	53.0		29.3
S7-A2	J1R2D7	11/15/12	0.534	U	0.534	380		134	67.9		6.68	50.4		26.7
S7-A3	J1R2D8	11/15/12	0.603	U	0.603	517		151	74.0		7.54	58.4		30.2
S7-A4	J1R2D9	11/15/12	0.540	U	0.540	434		135	79.1		6.75	81.1		27.0
D7-A1	J1R2F0	11/15/12	0.489	U	0.489	319		122	76.5		6.12	47.3		24.5
D7-A2	J1R2F1	9/26/12	0.578	U	0.578	341		145	67.5		7.23	47.1		28.9
D7-A3	J1R2F2	11/15/12	0.511	U	0.511	451		128	92.7		6.39	56.7		25.6
D7-A4	J1R2F3	11/15/12	0.582	U	0.582	570		146	80.0		7.28	50.9		29.1
FS-13	J1R2D0	9/26/12	0.521	U	0.521	217		130	41.8		6.52	34.1		26.1
FS-14	J1R2D1	9/26/12	0.521	U	0.521	248		130	39.7		6.51	34.5		26.1
FS-15	J1R2D2	9/26/12	0.513	U	0.513	173		128	43.9		6.41	40.3		25.6
FS-16	J1R2D3	9/26/12	0.530	U	0.530	267		132	43.9		6.62	38.3		26.5
FS-17	J1R2D4	9/26/12	0.531	U	0.531	278		133	43.2		6.64	39.1		26.6
Equipment Blank	J1R2D5	9/26/12	0.189	U	0.189	47.2	U	47.2	0.295	B	2.36	1.19	B	9.44

Attachment	1	Sheet No.	4 of 8
Originator	J. D. Skoglie	Date	12/21/12
Checked	N. K. Schiffern	Date	12/21/12
Calc. No.	0100K-CA-V0088	Rev. No.	0

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Organics).

CONSTITUENT	CLASS	S7-A1 - J1R2D6			S7-A2 - J1R2D7			S7-A3 - J1R2D8			S7-A4 - J1R2D9		
		11/15/12			11/15/12			11/15/12			11/15/12		
		ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL
1,2,4-Trichlorobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
1,2-Dichlorobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
1,3-Dichlorobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
1,4-Dichlorobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,4,5-Trichlorophenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,4,6-Trichlorophenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,4-Dichlorophenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,4-Dimethylphenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,4-Dinitrophenol	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
2,4-Dinitrotoluene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2,6-Dinitrotoluene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2-Chloronaphthalene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2-Chlorophenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2-Methylnaphthalene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2-Methylphenol (cresol, o-)	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
2-Nitroaniline	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
2-Nitrophenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
3+4 Methylphenol (cresol, m+p)	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
3,3'-Dichlorobenzidine	SVOA	698	U	698	704	U	704	3500	UD	3500	2100	UD	2100
3-Nitroaniline	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
4,6-Dinitro-2-methylphenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
4-Bromophenylphenyl ether	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
4-Chloro-3-methylphenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
4-Chloroaniline	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
4-Chlorophenylphenyl ether	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
4-Nitroaniline	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
4-Nitrophenol	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
Acenaphthene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Acenaphthylene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Anthracene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Benzo(a)anthracene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Benzo(a)pyrene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Benzo(b)fluoranthene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Benzo(ghi)perylene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Benzo(k)fluoranthene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Bis(2-chloro-1-methylethyl)ether	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Bis(2-Chloroethoxy)methane	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Bis(2-chloroethyl) ether	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Bis(2-ethylhexyl) phthalate	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Butylbenzylphthalate	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Carbazole	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Chrysene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Di-n-butylphthalate	SVOA	76.1	J	349	352	U	352	1750	UD	1750	1050	UD	1050
Di-n-octylphthalate	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Dibenz[a,h]anthracene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Dibenzofuran	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Diethyl phthalate	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Dimethyl phthalate	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Fluoranthene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Fluorene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Hexachlorobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Hexachlorobutadiene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Hexachlorocyclopentadiene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Hexachloroethane	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Indeno(1,2,3-cd)pyrene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Isophorone	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
N-Nitroso-di-n-dipropylamine	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
N-Nitrosodiphenylamine	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Naphthalene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Nitrobenzene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Pentachlorophenol	SVOA	1750	U	1750	1760	U	1760	8740	UD	8740	5240	UD	5240
Phenanthrene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Phenol	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050
Pyrene	SVOA	349	U	349	352	U	352	1750	UD	1750	1050	UD	1050

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Organics).

CONSTITUENT	CLASS	D7-A1 - J1R2F0			D7-A2 - J1R2F1			D7-A3 - J1R2F2			D7-A4 - J1R2F3		
		11/15/12			9/26/12			11/15/12			11/15/12		
		ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL
1,2,4-Trichlorobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
1,2-Dichlorobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
1,3-Dichlorobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
1,4-Dichlorobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,4,5-Trichlorophenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,4,6-Trichlorophenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,4-Dichlorophenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,4-Dimethylphenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,4-Dinitrophenol	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
2,4-Dinitrotoluene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2,6-Dinitrotoluene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2-Chloronaphthalene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2-Chlorophenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2-Methylnaphthalene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2-Methylphenol (cresol, o-)	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
2-Nitroaniline	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
2-Nitrophenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
3+4 Methylphenol (cresol, m+p)	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
3,3'-Dichlorobenzidine	SVOA	3440	UD	3440	660	U	660	685	U	685	686	U	686
3-Nitroaniline	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
4,6-Dinitro-2-methylphenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
4-Bromophenylphenyl ether	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
4-Chloro-3-methylphenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
4-Chloroaniline	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
4-Chlorophenylphenyl ether	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
4-Nitroaniline	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
4-Nitrophenol	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
Acenaphthene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Acenaphthylene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Anthracene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Benzo(a)anthracene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Benzo(a)pyrene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Benzo(b)fluoranthene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Benzo(ghi)perylene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Benzo(k)fluoranthene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Bis(2-chloro-1-methylethyl)ether	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Bis(2-Chloroethoxy)methane	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Bis(2-chloroethyl) ether	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Bis(2-ethylhexyl) phthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Butylbenzylphthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Carbazole	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Chrysene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Di-n-butylphthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Di-n-octylphthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Dibenz[a,h]anthracene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Dibenzofuran	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Diethyl phthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Dimethyl phthalate	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Fluoranthene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Fluorene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Hexachlorobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Hexachlorobutadiene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Hexachlorocyclopentadiene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Hexachloroethane	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Indeno(1,2,3-cd)pyrene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Isophorone	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
N-Nitroso-di-n-dipropylamine	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
N-Nitrosodiphenylamine	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Naphthalene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Nitrobenzene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Pentachlorophenol	SVOA	8600	UD	8600	1650	U	1650	1710	U	1710	1720	U	1720
Phenanthrene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Phenol	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343
Pyrene	SVOA	1720	UD	1720	330	U	330	343	U	343	343	U	343

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Organics).

CONSTITUENT	CLASS	FS-13 - J1R2D0			FS-14 - J1R2D1			FS-15 - J1R2D2			FS-16 - J1R2D3		
		9/26/12			9/26/12			9/26/12			9/26/12		
		ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL
1,2,4-Trichlorobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
1,2-Dichlorobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
1,3-Dichlorobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
1,4-Dichlorobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,4,5-Trichlorophenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,4,6-Trichlorophenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,4-Dichlorophenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,4-Dimethylphenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,4-Dinitrophenol	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
2,4-Dinitrotoluene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2,6-Dinitrotoluene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2-Chloronaphthalene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2-Chlorophenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2-Methylnaphthalene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2-Methylphenol (cresol, o-)	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
2-Nitroaniline	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
2-Nitrophenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
3+4 Methylphenol (cresol, m+p)	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
3,3'-Dichlorobenzidine	SVOA	654	U	654	657	U	657	658	U	658	645	U	645
3-Nitroaniline	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
4,6-Dinitro-2-methylphenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
4-Bromophenylphenyl ether	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
4-Chloro-3-methylphenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
4-Chloroaniline	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
4-Chlorophenylphenyl ether	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
4-Nitroaniline	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
4-Nitrophenol	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
Acenaphthene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Acenaphthylene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Anthracene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Benzo(a)anthracene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Benzo(a)pyrene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Benzo(b)fluoranthene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Benzo(ghi)perylene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Benzo(k)fluoranthene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Bis(2-chloro-1-methylethyl)ether	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Bis(2-Chloroethoxy)methane	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Bis(2-chloroethyl) ether	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Bis(2-ethylhexyl) phthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Butylbenzylphthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Carbazole	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Chrysene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Di-n-butylphthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Di-n-octylphthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Dibenz[a,h]anthracene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Dibenzofuran	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Diethyl phthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Dimethyl phthalate	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Fluoranthene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Fluorene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Hexachlorobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Hexachlorobutadiene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Hexachlorocyclopentadiene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Hexachloroethane	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Indeno(1,2,3-cd)pyrene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Isophorone	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
N-Nitroso-di-n-dipropylamine	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
N-Nitrosodiphenylamine	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Naphthalene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Nitrobenzene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Pentachlorophenol	SVOA	1640	U	1640	1640	U	1640	1640	U	1640	1610	U	1610
Phenanthrene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Phenol	SVOA	327	U	327	328	U	328	329	U	329	322	U	322
Pyrene	SVOA	327	U	327	328	U	328	329	U	329	322	U	322

Attachment 1. 118-K-1 Burial Ground Trench N Verification Sample Results (Organics).

CONSTITUENT	CLASS	FS-17 - J1R2D4			Equipment Blank - J1R2D5		
		9/26/12			9/26/12		
		ug/kg	Q	PQL	ug/kg	Q	PQL
1,2,4-Trichlorobenzene	SVOA	331	U	331	328	U	328
1,2-Dichlorobenzene	SVOA	331	U	331	328	U	328
1,3-Dichlorobenzene	SVOA	331	U	331	328	U	328
1,4-Dichlorobenzene	SVOA	331	U	331	328	U	328
2,4,5-Trichlorophenol	SVOA	331	U	331	328	U	328
2,4,6-Trichlorophenol	SVOA	331	U	331	328	U	328
2,4-Dichlorophenol	SVOA	331	U	331	328	U	328
2,4-Dimethylphenol	SVOA	331	U	331	328	U	328
2,4-Dinitrophenol	SVOA	1660	U	1660	1640	U	1640
2,4-Dinitrotoluene	SVOA	331	U	331	328	U	328
2,6-Dinitrotoluene	SVOA	331	U	331	328	U	328
2-Chloronaphthalene	SVOA	331	U	331	328	U	328
2-Chlorophenol	SVOA	331	U	331	328	U	328
2-Methylnaphthalene	SVOA	331	U	331	328	U	328
2-Methylphenol (cresol, o-)	SVOA	331	U	331	328	U	328
2-Nitroaniline	SVOA	1660	U	1660	1640	U	1640
2-Nitrophenol	SVOA	331	U	331	328	U	328
3+4 Methylphenol (cresol, m+p)	SVOA	331	U	331	328	U	328
3,3'-Dichlorobenzidine	SVOA	662	U	662	656	U	656
3-Nitroaniline	SVOA	1660	U	1660	1640	U	1640
4,6-Dinitro-2-methylphenol	SVOA	331	U	331	328	U	328
4-Bromophenylphenyl ether	SVOA	331	U	331	328	U	328
4-Chloro-3-methylphenol	SVOA	331	U	331	328	U	328
4-Chloroaniline	SVOA	331	U	331	328	U	328
4-Chlorophenylphenyl ether	SVOA	331	U	331	328	U	328
4-Nitroaniline	SVOA	1660	U	1660	1640	U	1640
4-Nitrophenol	SVOA	1660	U	1660	1640	U	1640
Acenaphthene	SVOA	331	U	331	328	U	328
Acenaphthylene	SVOA	331	U	331	328	U	328
Anthracene	SVOA	331	U	331	328	U	328
Benzo(a)anthracene	SVOA	331	U	331	328	U	328
Benzo(a)pyrene	SVOA	331	U	331	328	U	328
Benzo(b)fluoranthene	SVOA	331	U	331	328	U	328
Benzo(ghi)perylene	SVOA	331	U	331	328	U	328
Benzo(k)fluoranthene	SVOA	331	U	331	328	U	328
Bis(2-chloro-1-methylethyl)ether	SVOA	331	U	331	328	U	328
Bis(2-Chloroethoxy)methane	SVOA	331	U	331	328	U	328
Bis(2-chloroethyl) ether	SVOA	331	U	331	328	U	328
Bis(2-ethylhexyl) phthalate	SVOA	331	U	331	328	U	328
Butylbenzylphthalate	SVOA	331	U	331	328	U	328
Carbazole	SVOA	331	U	331	328	U	328
Chrysene	SVOA	331	U	331	328	U	328
Di-n-butylphthalate	SVOA	331	U	331	328	U	328
Di-n-octylphthalate	SVOA	331	U	331	328	U	328
Dibenz[a,h]anthracene	SVOA	331	U	331	328	U	328
Dibenzofuran	SVOA	331	U	331	328	U	328
Diethyl phthalate	SVOA	331	U	331	328	U	328
Dimethyl phthalate	SVOA	331	U	331	328	U	328
Fluoranthene	SVOA	331	U	331	328	U	328
Fluorene	SVOA	331	U	331	328	U	328
Hexachlorobenzene	SVOA	331	U	331	328	U	328
Hexachlorobutadiene	SVOA	331	U	331	328	U	328
Hexachlorocyclopentadiene	SVOA	331	U	331	328	U	328
Hexachloroethane	SVOA	331	U	331	328	U	328
Indeno(1,2,3-cd)pyrene	SVOA	331	U	331	328	U	328
Isophorone	SVOA	331	U	331	328	U	328
N-Nitroso-di-n-dipropylamine	SVOA	331	U	331	328	U	328
N-Nitrosodiphenylamine	SVOA	331	U	331	328	U	328
Naphthalene	SVOA	331	U	331	328	U	328
Nitrobenzene	SVOA	331	U	331	328	U	328
Pentachlorophenol	SVOA	1660	U	1660	1640	U	1640
Phenanthrene	SVOA	331	U	331	328	U	328
Phenol	SVOA	331	U	331	328	U	328
Pyrene	SVOA	331	U	331	328	U	328

Attachment D

118-K-1 Burial Ground Trench N Direct Contact Hazard Quotient and Carcinogenic Risk Calculations

CALCULATION COVER SHEET

Project Title: 100-K Field Remediation **Job No. 14655**

Area: 100-K

Discipline: Environmental *Calculation No: 0100K-CA-V0089

Subject: 118-K-1 Burial Ground Trench N Direct Contact Hazard Quotient and Carcinogenic Risk Calculations

Computer Program: Excel Program No: Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒ Preliminary ☐ Superseded ☐ Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover = 1 Sheets = 3 Total = 4	J. D. Skoglie	N. K. Schiffern	C. H. Dobie	D. F. Obenauer	1/16/13

SUMMARY OF REVISION

*Obtain Calc. No. from Document Control and Form from Intranet

PURPOSE:

Provide documentation to support the calculation of the direct contact hazard quotient (HQ) and excess carcinogenic risk for the 118-K-1 burial ground Trench N. In accordance with the remedial action goals (RAGs) in the remedial design report/remedial action work plan (RDR/RAWP) (DOE-RL 2009b), the following criteria must be met:

1) An HQ of <1.0 for all individual noncarcinogens
2) A cumulative HQ of <1.0 for noncarcinogens
3) An excess cancer risk of $<1 \times 10^{-6}$ for individual carcinogens
4) A cumulative excess cancer risk of $<1 \times 10^{-5}$ for carcinogens.

GIVEN/REFERENCES:

1) DOE-RL, 2009a, *100 Area Remedial Action Sampling and Analysis Plan*, DOE/RL-96-22, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

2) DOE-RL, 2009b, *Remedial Design Report/Remedial Action Work Plan for the 100 Areas*, DOE/RL-96-17, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

3) WAC 173-340, "Model Toxics Control Act – Cleanup," *Washington Administrative Code*, 1996.

4) WCH, 2012, *118-K-1 Burial Ground Trench N Cleanup Verification 95% UCL Calculation, 0100K-CA-V0088,* Washington Closure Hanford, Inc., Richland, Washington.

SOLUTION:

1) Generate an HQ for each noncarcinogenic constituent detected above background or required detection limit/practical quantitation limit and compare it to the individual HQ of <1.0 (DOE-RL 2009b).

2) Sum the HQs and compare this value to the cumulative HQ of <1.0.

3) Generate an excess cancer risk value for each carcinogenic constituent detected above background or required detection limit/practical quantitation limit and compare it to the excess cancer risk of $<1 \times 10^{-6}$ (DOE-RL 2009b).

4) Sum the excess cancer risk value(s) and compare it to the cumulative cancer risk of $<1 \times 10^{-5}$.

METHODOLOGY:

Trench N within the 118-K-1 burial ground underwent statistical and focused sampling and has two decision units for verification sampling, consisting of the shallow zone and deep zone for decision unit #7. Five focused samples were also collected. The direct contact hazard quotient and carcinogenic risk calculations for Trench N within the 118-K-1 burial ground were conservatively calculated for the shallow zone excavation only and five focused samples using the greater of the statistical or maximum value for each analyte in all decision units mentioned from the 95% UCL Calculation (WCH 2012). Of the contaminants of potential concern (COPCs) for this site, antimony, total chromium, nickel, and zinc were detected above a Washington State or Hanford Site background. Boron, molybdenum, and di-n-butylphthalate require HQ and risk calculations because these analytes were detected and a Washington State or Hanford Site background value is not available. All other site nonradionuclide COPCs were not detected or were quantified below background levels. An example of the HQ and risk calculations is presented below:

1) For example, the statistical value for boron is 2.37 mg/kg, divided by the noncarcinogenic RAG value of 7,200 mg/kg (calculated in accordance with the noncarcinogenic toxics effects formula in WAC 173-340-740[3]), produces an HQ value of 3.3×10^{-4}. Comparing this value, and all other individual values, to the requirement of <1.0, this criterion is met.

2) After the HQ calculation is completed for the appropriate analytes, the cumulative HQ can be obtained by summing the individual values. To avoid errors due to intermediate rounding, the individual HQ values prior to rounding are used for this calculation. The sum of the HQ values is 5.3×10^{-1}. Comparing this value to the requirement of <1.0, this criterion is met.

3) To calculate the excess cancer risk, the maximum or statistical value is divided by the carcinogenic RAG value, and then multiplied by 1.0×10^{-6}. There were not any constituents with a carcinogenic RAG for evaluation in direct exposure at the Trench N within the 118-K-1 burial ground; therefore, no calculation of excess carcinogenic risk was performed. Therefore, Trench N meets the requirements of $<1 \times 10^{-6}$ for individual carcinogens and $<1 \times 10^{-5}$ for cumulative excess cancer risk.

RESULTS:

1) List individual noncarcinogens and corresponding HQs >1.0: None
2) List the cumulative noncarcinogenic HQ >1.0: None
3) List individual carcinogens and corresponding excess cancer risk $>1 \times 10^{-6}$: None
4) List the cumulative excess cancer risk for carcinogens $>1 \times 10^{-5}$: None

Table 1 shows the results of the calculations.

Table 1. Direct Contact Hazard Quotient and Excess Cancer Risk Results for Trench N within the 118-K-1 Burial Ground.

Contaminants of Potential Concern	Statistical or Maximum Value [a] (mg/kg)	Noncarcinogen RAG [b] (mg/kg)	Hazard Quotient	Carcinogen RAG [b] (mg/kg)	Carcinogen Risk
Metals					
Antimony	16.3	32	5.1E-01	--	--
Boron	2.37	7,200	3.3E-04	--	--
Chromium, total	20.3	80,000	2.5E-04	--	--
Molybdenum	0.650	400	1.6E-03	--	--
Nickel	20.4	1,600	1.3E-02	--	--
Zinc	72.2	24,000	3.0E-03	--	--
Semivolatiles					
Di-n-butylphthalate	0.0761	8,000	9.5E-06	--	--
Totals					
Cumulative Hazard Quotient:			**5.3E-01**		
Cumulative Excess Cancer Risk:					**0.0E+00**

Notes:

[a] = From WCH (2012).

[b] = Value obtained from the RDR/RAWP (DOE-RL 2009b) or *Washington Administrative Code* (WAC) 173-340-740(3), Method B, 1996, unless otherwise noted.

-- = not applicable

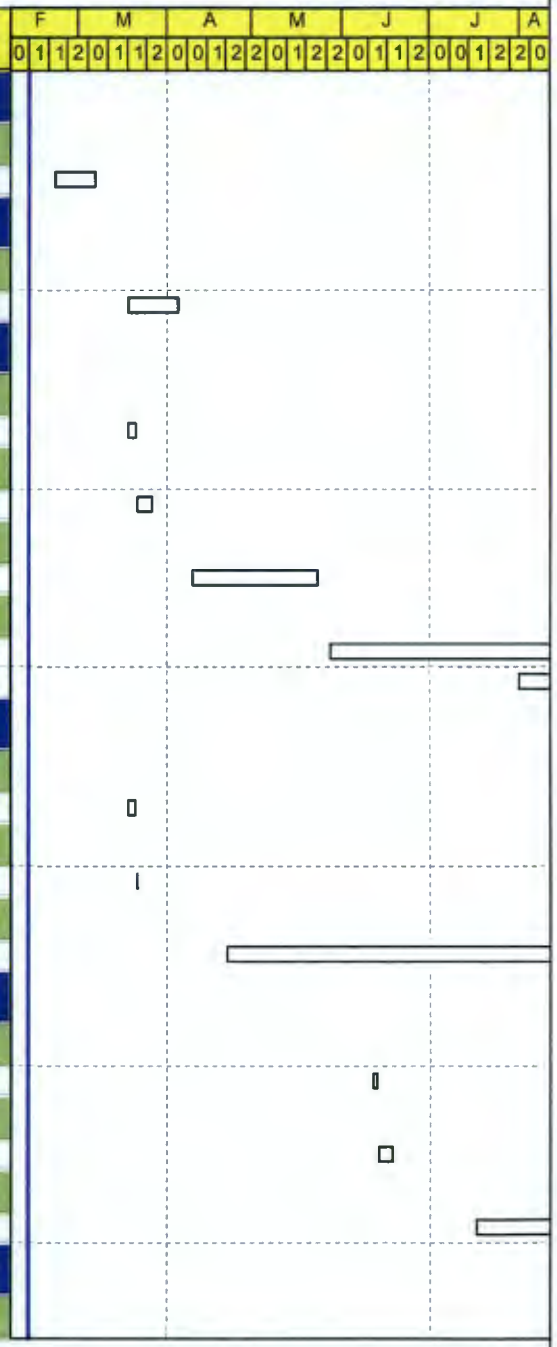
RAG = remedial action goal

CONCLUSION:

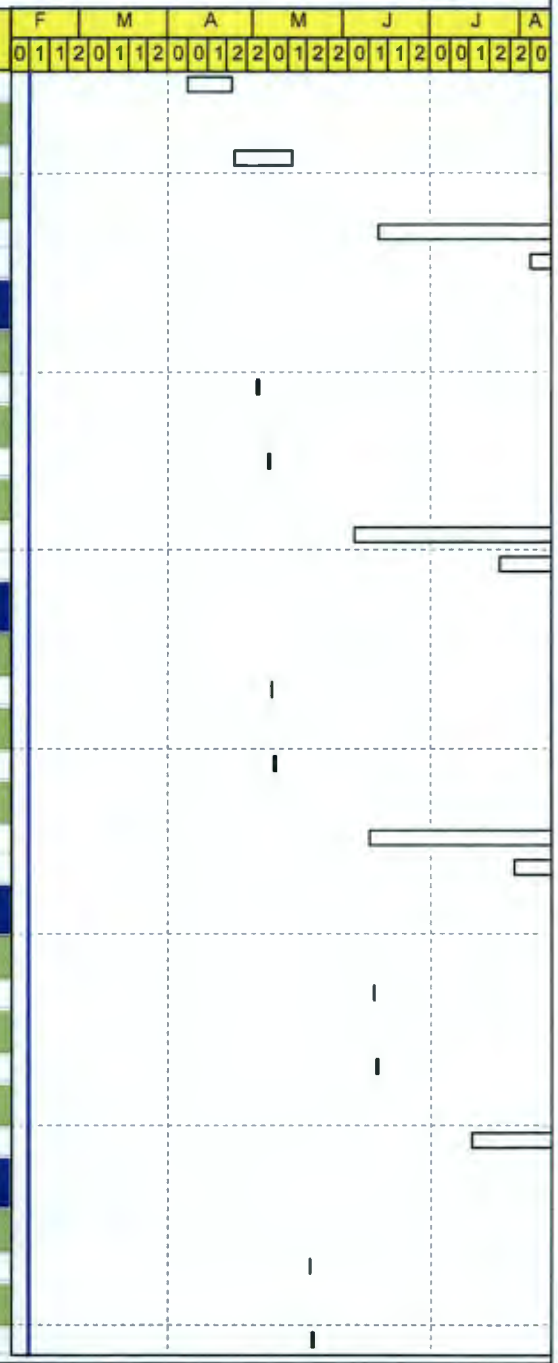
The calculations in Table 1 demonstrate that Trench N within the 118-K-1 burial ground meets the requirements for the direct contact hazard quotients and carcinogenic (excess cancer) risk, respectively, as identified in the RDR/RAWP (DOE-RL 2009b) and SAP (DOE-RL 2009a). The direct contact hazard quotients and carcinogenic (excess cancer) risk calculations are for use in the CVP for this site.

Attachment 11

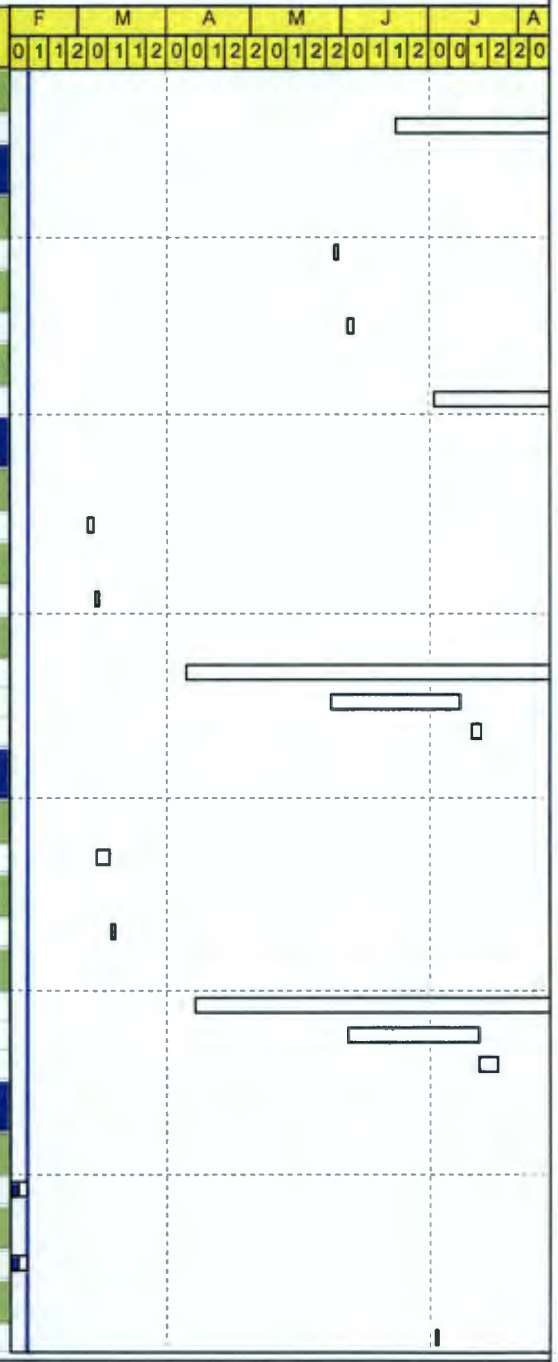
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
MR IU-2 & Segment 4						
Loadout						
IU226090	IU-2 & Segment 4 MR	N	0%	9	20-Feb-13*	06-Mar-13
MR fencing removal 600-275						
Loadout						
IU226080	Remove Fence around 600-275	N	0%	12	18-Mar-13*	04-Apr-13
600-326						
Excavation						
IU222640	Excavation 600-326	Y	0%	3	18-Mar-13*	20-Mar-13
Loadout						
IU222650	Loadout 600-326 (2 tons)	Y	0%	3	21-Mar-13*	26-Mar-13
Closeout Sampling & Docs						
IU222710	Closure Sampling 600-326	Y	0%	26	10-Apr-13	23-May-13
Final Project Closeout						
IU222720	Prepare Closure Document 600-326	Y	0%	83	28-May-13	22-Oct-13
IU222730	RL/Reg Review of Draft A Closure Document 600-326	Y	0%	26	01-Aug-13	17-Sep-13
600-356						
Excavation						
IU226010	Excavation 600-356	N	0%	3	18-Mar-13*	20-Mar-13
Loadout						
IU226020	Loadout 600-356	N	0%	1	21-Mar-13	21-Mar-13
Closeout Sampling & Docs						
IU226070	Work Instructions 600-356	N	0%	75	22-Apr-13	03-Sep-13
600-279						
Excavation						
IU223360	Excavation 600-279	N	0%	2	11-Jun-13	12-Jun-13
Loadout						
IU223260	Loadout 600-279	N	0%	2	13-Jun-13	17-Jun-13
Closeout Sampling & Docs						
IU223320	Prepare Work Instruction 600-279	N	0%	75	17-Jul-13	26-Nov-13
600-370						
Excavation						



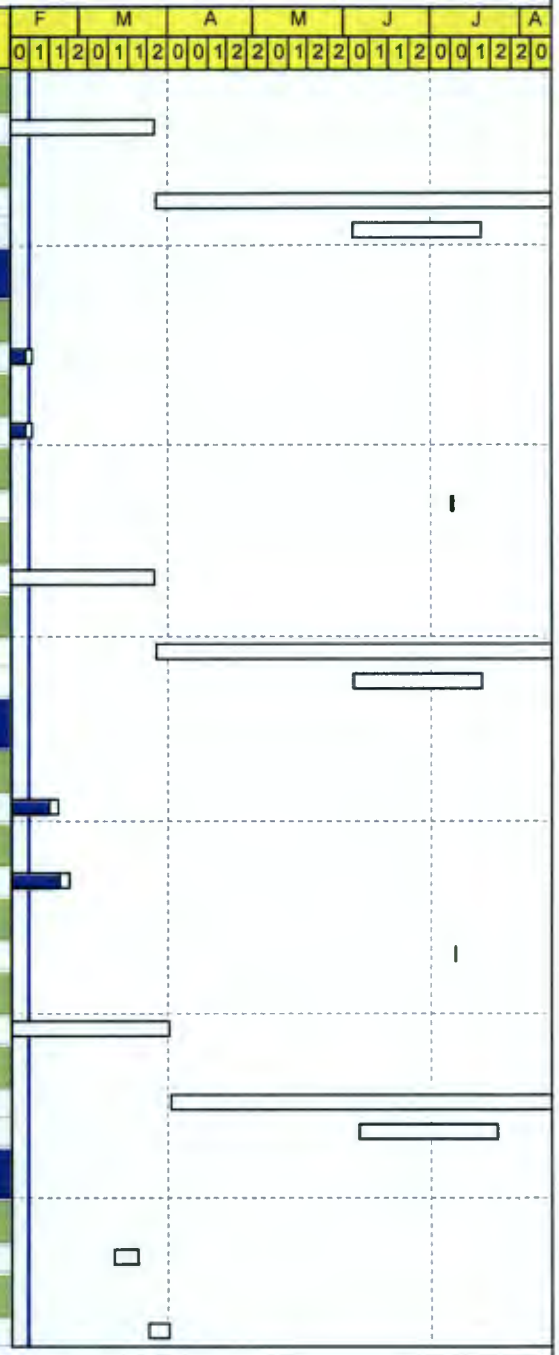
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
IU224020	Excavation 600-370	Y	0%	10	08-Apr-13	23-Apr-13
Loadout						
IU223920	Loadout 600-370	Y	0%	12	24-Apr-13	14-May-13
Closeout Sampling & Docs						
IU223980	Prepare Work Instruction 600-370	Y	0%	75	13-Jun-13	24-Oct-13
IU223990	RL/Reg Review of Draft A Work Instruction 600-370	Y	0%	26	05-Aug-13	18-Sep-13
600-373						
Excavation						
IU224350	Excavation 600-373	Y	0%	1	02-May-13	02-May-13
Loadout						
IU224250	Loadout 600-373	Y	0%	1	06-May-13	06-May-13
Closeout Sampling & Docs						
IU224310	Prepare Work Instruction 600-373	Y	0%	75	05-Jun-13	16-Oct-13
IU224320	RL/Reg Review of Draft A Work Instruction 600-373	Y	0%	26	25-Jul-13	10-Sep-13
600-374						
Excavation						
IU224460	Excavation 600-374	Y	0%	1	07-May-13	07-May-13
Loadout						
IU224360	Loadout 600-374	Y	0%	1	08-May-13	08-May-13
Closeout Sampling & Docs						
IU224420	Prepare Work Instruction 600-374	Y	0%	75	10-Jun-13	21-Oct-13
IU224430	RL/Reg Review of Draft A Work Instruction 600-374	Y	0%	26	30-Jul-13	12-Sep-13
600-377						
Excavation						
IU224790	Excavation 600-377	Y	0%	1	11-Jun-13	11-Jun-13
Loadout						
IU224690	Loadout 600-377	Y	0%	1	12-Jun-13	12-Jun-13
Closeout Sampling & Docs						
IU224750	Prepare Work Instruction 600-377	Y	0%	75	15-Jul-13	21-Nov-13
600-382						
Excavation						
IU225340	Excavation 600-382	N	0%	1	20-May-13	20-May-13
Loadout						
IU225240	Loadout 600-382	N	0%	1	21-May-13	21-May-13



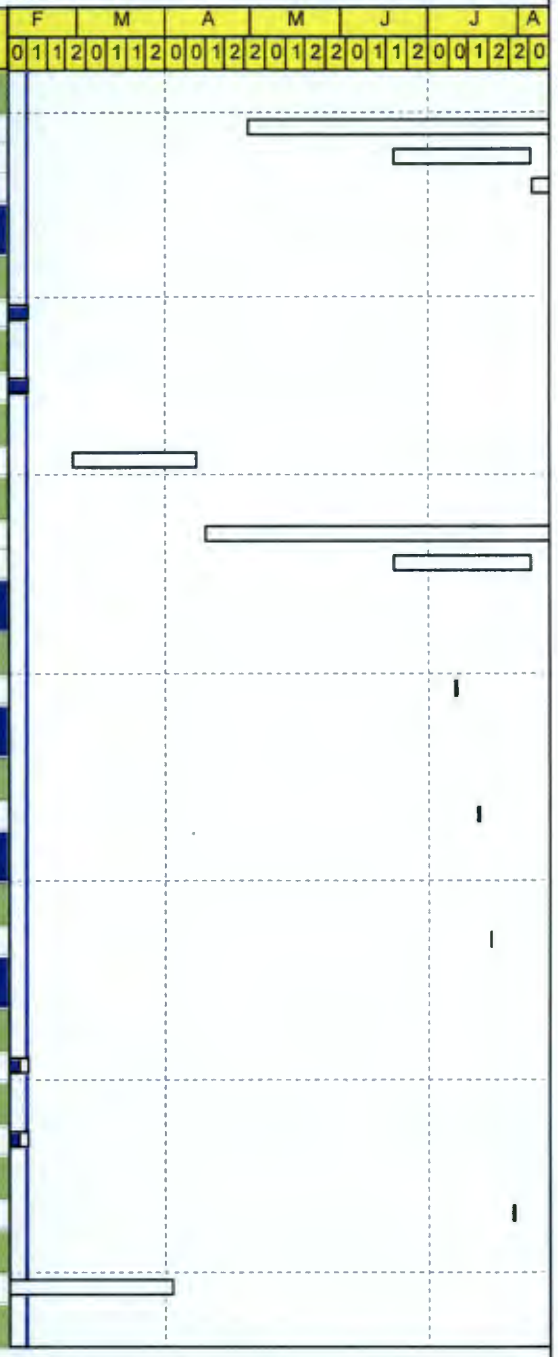
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
Closeout Sampling & Docs						
IU225300	Prepare Work Instruction 600-382	N	0%	75	20-Jun-13	31-Oct-13
600-384						
Excavation						
IU225560	Excavation 600-384	N	0%	2	29-May-13	30-May-13
Loadout						
IU225460	Loadout 600-384	N	0%	2	03-Jun-13	04-Jun-13
Closeout Sampling & Docs						
IU225520	Prepare Work Instruction 600-384	N	0%	75	03-Jul-13	13-Nov-13
600-293						
Excavation						
IU222920	Excavation 600-293	Y	0%	2	04-Mar-13*	05-Mar-13
Loadout						
IU222820	Loadout 600-293	Y	0%	2	06-Mar-13	07-Mar-13
Closeout Sampling & Docs						
IU222880	Prepare Work Instruction 600-293	Y	0%	75	08-Apr-13*	19-Aug-13
IU222890	RL/Reg Review of Draft A Work Instruction 600-293	Y	0%	26	28-May-13	11-Jul-13
IU222830	RL/Reg Signature Rev.0 WI 600-293	Y	0%	4	15-Jul-13*	18-Jul-13
600-294						
Excavation						
IU223030	Excavation 600-294	Y	0%	2	07-Mar-13*	11-Mar-13
Loadout						
IU222930	Loadout 600-294	Y	0%	2	12-Mar-13	13-Mar-13
Closeout Sampling & Docs						
IU222990	Prepare Work Instruction 600-294	Y	0%	75	11-Apr-13*	22-Aug-13
IU223000	RL/Reg Review of Draft A Work Instruction 600-294	Y	0%	26	03-Jun-13	17-Jul-13
IU222940	RL/Reg Signature Rev.0 WI 600-294	Y	0%	4	18-Jul-13*	24-Jul-13
600-298						
Excavation						
IU2210	Excavation (White Bluffs Review 9 Sites) 600-298	Y	99%	0	13-Feb-12 A	11-Feb-13
Loadout						
IU2220	Loadout (White Bluffs Review 9 Sites) 600-298	Y	99%	0	13-Feb-12 A	11-Feb-13
Backfill						
IU2230	Backfill 600-298	Y	0%	1	03-Jul-13*	03-Jul-13



Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
Closeout Sampling & Docs						
IU2280	Closure Sampling 600-298	Y	15%	26	17-Apr-12 A	27-Mar-13
Final Project Closeout						
IU2290	Prepare Closure Document 600-298	Y	0%	93	28-Mar-13	11-Sep-13
IU2300	RL/Reg Review of Draft A Closure Document 600-298	Y	0%	26	04-Jun-13	18-Jul-13
600-299						
Excavation						
IU22100	Excavation (Shoreline Review 1 Site) 600-299	Y	99%	2	08-May-12 A	12-Feb-13
Loadout						
IU22110	Loadout (Shoreline Review 1 Site) 600-299	Y	99%	2	08-May-12 A	12-Feb-13
Backfill						
IU22120	Backfill 600-299	Y	0%	1	08-Jul-13*	08-Jul-13
Closeout Sampling & Docs						
IU22170	Closure Sampling 600-299	Y	60%	26	17-Feb-12 A	27-Mar-13
Final Project Closeout						
IU22180	Prepare Closure Document 600-299	Y	0%	93	28-Mar-13	11-Sep-13
IU22190	RL/Reg Review of Draft A Closure Document 600-299	Y	0%	26	04-Jun-13	18-Jul-13
600-300						
Excavation						
IU22210	Excavation (White Bluffs Review 12 Sites) 600-300	Y	99%	7	08-Mar-12 A	21-Feb-13
Loadout						
IU22220	Loadout (White Bluffs Review 12 Sites) 600-300	Y	99%	8	08-Mar-12 A	25-Feb-13
Backfill						
IU22230	Backfill 600-300	Y	0%	1	09-Jul-13*	09-Jul-13
Closeout Sampling & Docs						
IU22280	Closure Sampling 600-300	Y	20%	26	28-Feb-12 A	01-Apr-13
Final Project Closeout						
IU22290	Prepare Closure Document 600-300	Y	0%	93	02-Apr-13	16-Sep-13
IU22300	RL/Reg Review of Draft A Closure Document 600-300	Y	0%	26	06-Jun-13	23-Jul-13
600-301						
Excavation						
IU223140	Excavation 600-301	Y	0%	6	13-Mar-13*	21-Mar-13
Loadout						
IU223040	Loadout 600-301	Y	0%	5	25-Mar-13	01-Apr-13



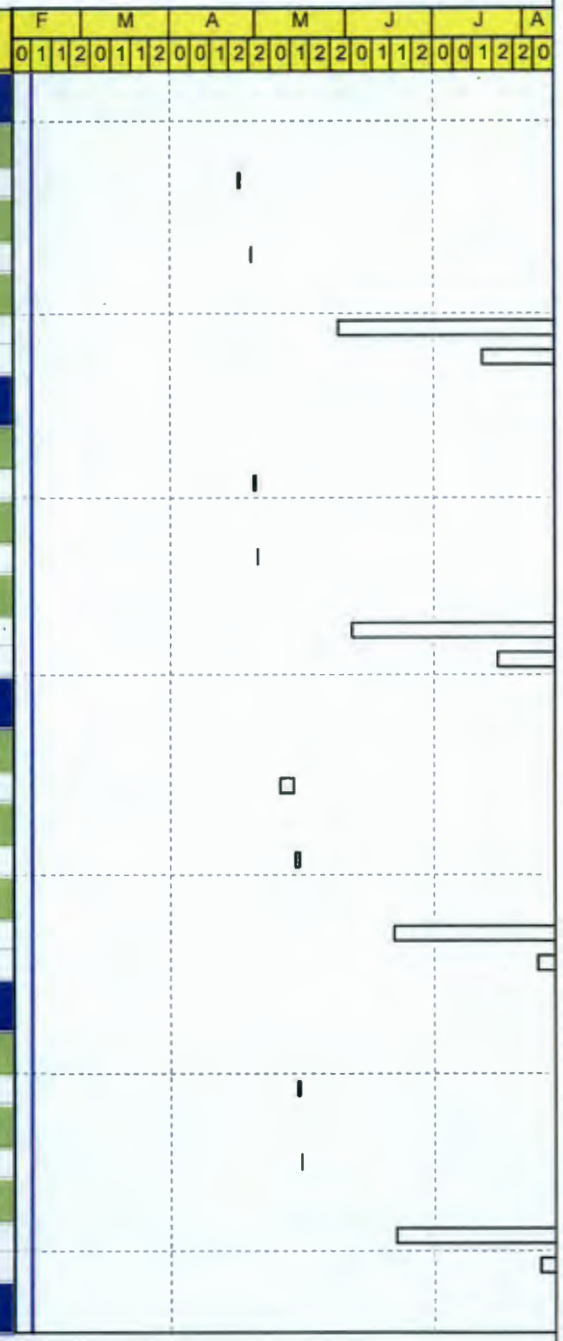
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
Closeout Sampling & Docs						
IU223100	Prepare Work Instruction 600-301	Y	0%	75	30-Apr-13*	11-Sep-13
IU223110	RL/Reg Review of Draft A Work Instruction 600-301	Y	0%	26	19-Jun-13	05-Aug-13
IU223050	RL/Reg Signature Rev.0 WI 600-301	Y	0%	4	06-Aug-13*	12-Aug-13
600-303						
Excavation						
IU222530	Excavation 600-303	Y	99%	1	04-Feb-13 A	11-Feb-13
Loadout						
IU222540	Loadout 600-303	Y	99%	1	04-Feb-13 A	11-Feb-13
Closeout Sampling & Docs						
IU222600	Closure Sampling 600-303	Y	0%	26	27-Feb-13	11-Apr-13
Final Project Closeout						
IU222610	Prepare Closure Document 600-303	Y	0%	83	15-Apr-13	10-Sep-13
IU222620	RL/Reg Review of Draft A Closure Document 600-303	Y	0%	26	19-Jun-13	05-Aug-13
600-305						
Backfill						
IU22340	Backfill 600-305	Y	0%	1	10-Jul-13*	10-Jul-13
600-309						
Backfill						
IU22780	Backfill 600-309	Y	0%	1	18-Jul-13*	18-Jul-13
600-310						
Backfill						
IU22890	Backfill 600-310	Y	0%	1	22-Jul-13*	22-Jul-13
600-316						
Excavation						
IU221420	Excavation (Farmstead Review 6 Sites) 600-316	Y	99%	1	03-May-12 A	11-Feb-13
Loadout						
IU221430	Loadout (Farmstead Review 6 Sites) 600-316 (68 tons)	Y	99%	1	03-May-12 A	11-Feb-13
Backfill						
IU221440	Backfill 600-316	Y	0%	1	30-Jul-13*	30-Jul-13
Closeout Sampling & Docs						
IU221490	Closure Sampling 600-316	Y	5%	26	23-May-12 A	03-Apr-13
Final Project Closeout						



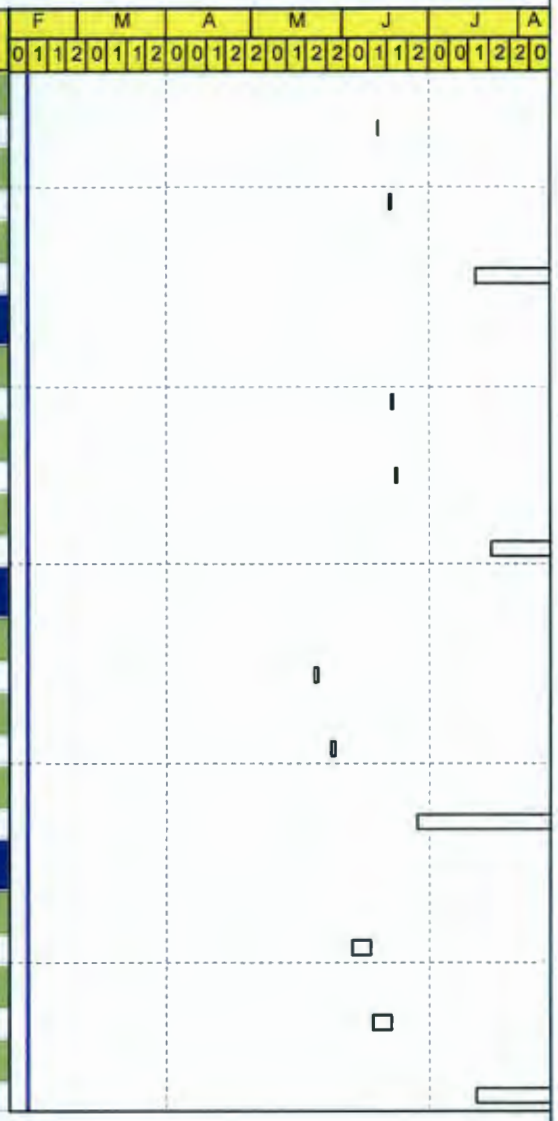
Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
IU221500	Prepare Closure Document 600-316	Y	0%	93	04-Apr-13	18-Sep-13
IU221510	RL/Reg Review of Draft A Closure Document 600-316	Y	0%	26	11-Jun-13	25-Jul-13
600-317						
Backfill						
IU221550	Backfill 600-317	Y	0%	1	31-Jul-13*	31-Jul-13
600-318						
Excavation						
IU222430	Excavation (Farmstead Review 3 Sites) 600-318	Y	99%	1	05-Mar-12 A	11-Feb-13
Loadout						
IU222440	Loadout (Farmstead Review 3 Sites) 600-318 (114 tons)	Y	99%	1	30-Apr-12 A	11-Feb-13
Backfill						
IU221660	Backfill 600-318	Y	0%	1	01-Aug-13*	01-Aug-13
Closeout Sampling & Docs						
IU221710	Closure Sampling 600-318	Y	50%	26	01-May-12 A	04-Apr-13
Final Project Closeout						
IU221720	Prepare Closure Document 600-318	Y	0%	93	08-Apr-13	19-Sep-13
IU221730	RL/Reg Review of Draft A Closure Document 600-318	Y	0%	26	12-Jun-13	29-Jul-13
600-319						
Backfill						
IU221770	Backfill 600-319	N	0%	1	05-Aug-13*	05-Aug-13
600-320						
Excavation						
IU222480	Excavation (Shoreline Review 1 Site) 600-320	Y	99%	1	16-May-12 A	11-Feb-13
Loadout						
IU222500	Loadout (Shoreline Review 1 Site) 600-320 (tons)	Y	99%	1	16-May-12 A	11-Feb-13
Backfill						
IU221880	Backfill 600-320	Y	0%	1	06-Aug-13*	06-Aug-13
Closeout Sampling & Docs						
IU221930	Closure Sampling 600-320	Y	40%	26	14-May-12 A	08-Apr-13
Final Project Closeout						
IU221940	Prepare Closure Document 600-320	Y	0%	93	09-Apr-13	23-Sep-13
IU221950	RL/Reg Review of Draft A Closure Document 600-320	Y	0%	26	13-Jun-13	30-Jul-13
600-321						

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
Excavation						
IU222510	Excavation (Farmstead Review 1 Site) 600-321	Y	50%	4	24-May-12 A	19-Feb-13
Loadout						
IU222520	Loadout (Farmstead Review 1 Site) 600-321 (177 tons)	Y	50%	4	24-May-12 A	19-Feb-13
Backfill						
IU221990	Backfill 600-321	Y	0%	1	07-Aug-13*	07-Aug-13
Closeout Sampling & Docs						
IU222040	Closure Sampling 600-321	Y	5%	26	24-May-12 A	09-Apr-13
Final Project Closeout						
IU222050	Prepare Closure Document 600-321	Y	0%	93	10-Apr-13	24-Sep-13
IU222060	RL/Reg Review of Draft A Closure Document 600-321	Y	0%	26	17-Jun-13	31-Jul-13
600-328						
Closeout Sampling & Docs						
IU222370	Closure Sampling 600-328	Y	5%	26	01-May-12 A	09-Apr-13
Final Project Closeout						
IU222380	Prepare Closure Document 600-328	Y	0%	93	10-Apr-13	24-Sep-13
IU222390	RL/Reg Review of Draft A Closure Document 600-328	Y	0%	26	17-Jun-13	31-Jul-13
600-368						
Excavation						
IU223800	Excavation 600-368	Y	0%	1	25-Mar-13	25-Mar-13
Loadout						
IU223700	Loadout 600-368	Y	0%	1	26-Mar-13	26-Mar-13
Closeout Sampling & Docs						
IU223760	Prepare Work Instruction 600-368	Y	0%	75	24-Apr-13	05-Sep-13
IU223770	RL/Reg Review of Draft A Work Instruction 600-368	Y	0%	26	13-Jun-13	30-Jul-13
IU223710	RL/Reg Signature Rev.0 WI 600-368	Y	0%	4	31-Jul-13	06-Aug-13
600-369						
Excavation						
IU223910	Excavation 600-369	Y	0%	5	27-Mar-13	03-Apr-13
Loadout						
IU223810	Loadout 600-369	Y	0%	5	04-Apr-13	11-Apr-13
Closeout Sampling & Docs						
IU223870	Prepare Work Instruction 600-369	Y	0%	75	13-May-13	24-Sep-13
IU223880	RL/Reg Review of Draft A Work Instruction 600-369	Y	0%	26	02-Jul-13	15-Aug-13

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
600-371						
Excavation						
IU224130	Excavation 600-371	Y	0%	1	25-Apr-13	25-Apr-13
Loadout						
IU224030	Loadout 600-371	Y	0%	1	29-Apr-13	29-Apr-13
Closeout Sampling & Docs						
IU224090	Prepare Work Instruction 600-371	Y	0%	75	29-May-13	09-Oct-13
IU224100	RL/Reg Review of Draft A Work Instruction 600-371	Y	0%	26	18-Jul-13	03-Sep-13
600-372						
Excavation						
IU224240	Excavation 600-372	Y	0%	1	30-Apr-13	30-Apr-13
Loadout						
IU224140	Loadout 600-372	Y	0%	1	01-May-13	01-May-13
Closeout Sampling & Docs						
IU224200	Prepare Work Instruction 600-372	Y	0%	75	03-Jun-13	14-Oct-13
IU224210	RL/Reg Review of Draft A Work Instruction 600-372	Y	0%	26	23-Jul-13	05-Sep-13
600-375						
Excavation						
IU224570	Excavation 600-375	Y	0%	2	09-May-13	13-May-13
Loadout						
IU224470	Loadout 600-375	Y	0%	2	14-May-13	15-May-13
Closeout Sampling & Docs						
IU224530	Prepare Work Instruction 600-375	Y	0%	75	17-Jun-13	28-Oct-13
IU224540	RL/Reg Review of Draft A Work Instruction 600-375	Y	0%	26	06-Aug-13	19-Sep-13
600-376						
Excavation						
IU224680	Excavation 600-376	Y	0%	1	15-May-13	15-May-13
Loadout						
IU224580	Loadout 600-376	Y	0%	1	16-May-13	16-May-13
Closeout Sampling & Docs						
IU224640	Prepare Work Instruction 600-376	Y	0%	75	18-Jun-13	29-Oct-13
IU224650	RL/Reg Review of Draft A Work Instruction 600-376	Y	0%	26	07-Aug-13	23-Sep-13
600-378						



Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
Excavation						
IU224900	Excavation 600-378	Y	0%	1	13-Jun-13	13-Jun-13
Loadout						
IU224800	Loadout 600-378	Y	0%	1	17-Jun-13	17-Jun-13
Closeout Sampling & Docs						
IU224860	Prepare Work Instruction 600-378	Y	0%	75	17-Jul-13	26-Nov-13
600-379						
Excavation						
IU225010	Excavation 600-379	Y	0%	1	18-Jun-13	18-Jun-13
Loadout						
IU224910	Loadout 600-379	Y	0%	1	19-Jun-13	19-Jun-13
Closeout Sampling & Docs						
IU224970	Prepare Work Instruction 600-379	Y	0%	75	22-Jul-13	03-Dec-13
600-383						
Excavation						
IU225450	Excavation 600-383	N	0%	2	22-May-13	23-May-13
Loadout						
IU225350	Loadout 600-383	N	0%	2	28-May-13	29-May-13
Closeout Sampling & Docs						
IU225410	Prepare Work Instruction 600-383	N	0%	75	27-Jun-13	07-Nov-13
600-385						
Excavation						
IU225670	Excavation 600-385	N	0%	4	04-Jun-13	10-Jun-13
Loadout						
IU225570	Loadout 600-385	N	0%	4	11-Jun-13	17-Jun-13
Closeout Sampling & Docs						
IU225630	Prepare Work Instruction 600-385	N	0%	75	17-Jul-13	26-Nov-13



Attachment 12

169789

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 11, 2013 3:00 PM
To: ^WCH Document Control
Subject: FW: REVEGETATION OF IU-2 AND 118-K-1

Please provide a chron number. This email documents a regulatory approval.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
Sent: Thursday, February 07, 2013 10:23 AM
To: Saueressig, Daniel G
Cc: Glossbrenner, Ellwood T; Zeisloft, Jamie
Subject: Re: REVEGETATION OF IU-2 AND 118-K-1

I concur.

Christopher J. Guzzetti
U.S. EPA Region 10
Hanford Project Office
Phone: (509) 376-9529
Fax: (509) 376-2396
Email: guzzetti.christopher@epa.gov

"Saueressig, Daniel G" ---02/07/2013 10:17:29 AM---Chris, I'd like to request the ability to conduct some revegetation activities at 118-K-1 and some I

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Christopher Guzzetti/R10/USEPA/US@EPA
Cc: "Glossbrenner, Ellwood T" <ellwood.glossbrenner@rl.doe.gov>, "Zeisloft, Jamie" <jamie.zeisloft@rl.doe.gov>
Date: 02/07/2013 10:17 AM
Subject: REVEGETATION OF IU-2 AND 118-K-1

Chris, I'd like to request the ability to conduct some revegetation activities at 118-K-1 and some IU-2/6 site through the end of March 2013, similar to the request below for revegetation at 100-C-7. Let me know if you concur.

Thanks,

Dan Saueressig
FR Environmental Project Lead

Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Thursday, January 31, 2013 12:23 PM
To: Saueressig, Daniel G
Cc: Post, Thomas C
Subject: Re:

I concur with planting into March. I encourage DOE to conduct the revegetation as early as possible to increase chances of success.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Saueressig, Daniel G" ---01/31/2013 12:16:31 PM---Hi Laura, I would like to request your approval to conduct revegetation activities at 100-C-7 in Feb

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Laura Buelow/R10/USEPA/US@EPA
Cc: "Post, Thomas C" <thomas.post@rl.doe.gov>
Date: 01/31/2013 12:16 PM
Subject:

Hi Laura, I would like to request your approval to conduct revegetation activities at 100-C-7 in February and possibly into March 2013. Appendix H of the RDR/RAWP (DOE/RL-96-17), Revegetation Plan for the 100 Areas, specifies a planting window of November through January of each year, although it also states that the plan is generic and that site specific conditions will be evaluated and adjustments made when necessary.

Delays associated with weather and labor issues has necessitated this request to extend the window for revegetation. Our revegetation subject matter expert believes that the soil moisture content will remain conducive to conducting this activity through March 2013 and if conditions change, the sites would be manually watered to ensure viability of the seeds and seedlings. In addition, these sites will be evaluated in the fall to ascertain the success of the revegetation effort and if the plants did not take as determined by the criteria in the Revegetation Plan, the sites would be revegetated again during the next planting window (November 2013 through January 2014). We currently have personnel and materials (seed and seedlings) available onsite to conduct this work and would like to accomplish this task while the materials are available.

Let me know if you concur and I'll document the agreement at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead

Washington Closure Hanford
521-5326

Attachment 13

^WCH Document Control 169585

From: Saueressig, Daniel G
Sent: Thursday, January 24, 2013 3:41 PM
To: ^WCH Document Control
Subject: FW: TEMPORARY QUEUE TO SUPPORT IU-2

Please provide a chron number.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
Sent: Thursday, January 24, 2013 3:40 PM
To: Saueressig, Daniel G
Cc: Glossbrenner, Ellwood T
Subject: RE: TEMPORARY QUEUE TO SUPPORT IU-2

If it was used before, I don't have an issue.

Christopher J. Guzzetti
U.S. EPA Region 10
Hanford Project Office
Phone: (509) 376-9529
Fax: (509) 376-2396
Email: guzzetti.christopher@epa.gov

"Saueressig, Daniel G" ---01/24/2013 09:51:45 AM---Yes.

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: "Glossbrenner, Ellwood T" <ellwood.glossbrenner@rl.doe.gov>, Christopher Guzzetti/R10/USEPA/US@EPA
Date: 01/24/2013 09:51 AM
Subject: RE: TEMPORARY QUEUE TO SUPPORT IU-2

Yes.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

169585

From: Glossbrenner, Ellwood T [mailto:ellwood.glossbrenner@rl.doe.gov]
Sent: Thursday, January 24, 2013 9:48 AM
To: Saueressig, Daniel G; Guzzetti.Christopher@epamail.epa.gov
Subject: RE: TEMPORARY QUEUE TO SUPPORT IU-2

Dan,

Is this the same queue that was used in last years' remediation of 100-IU-2/6 waste sites?

If it is, I'm O.K. with that location.

Ellwood T. Glossbrenner
509-376-5828

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, January 24, 2013 9:42 AM
To: Guzzetti.Christopher@epamail.epa.gov; Glossbrenner, Ellwood T
Subject: TEMPORARY QUEUE TO SUPPORT IU-2

Chris/Ellwood, we need to set up a temporary queue to support remediation of some IU-2 waste sites. The attached map depicts the location we would like to use. It is just west of the old White Bluffs bank on Federal Avenue.

Let me know if you concur with staging our ERDF cans there for pick-up and transport to ERDF.

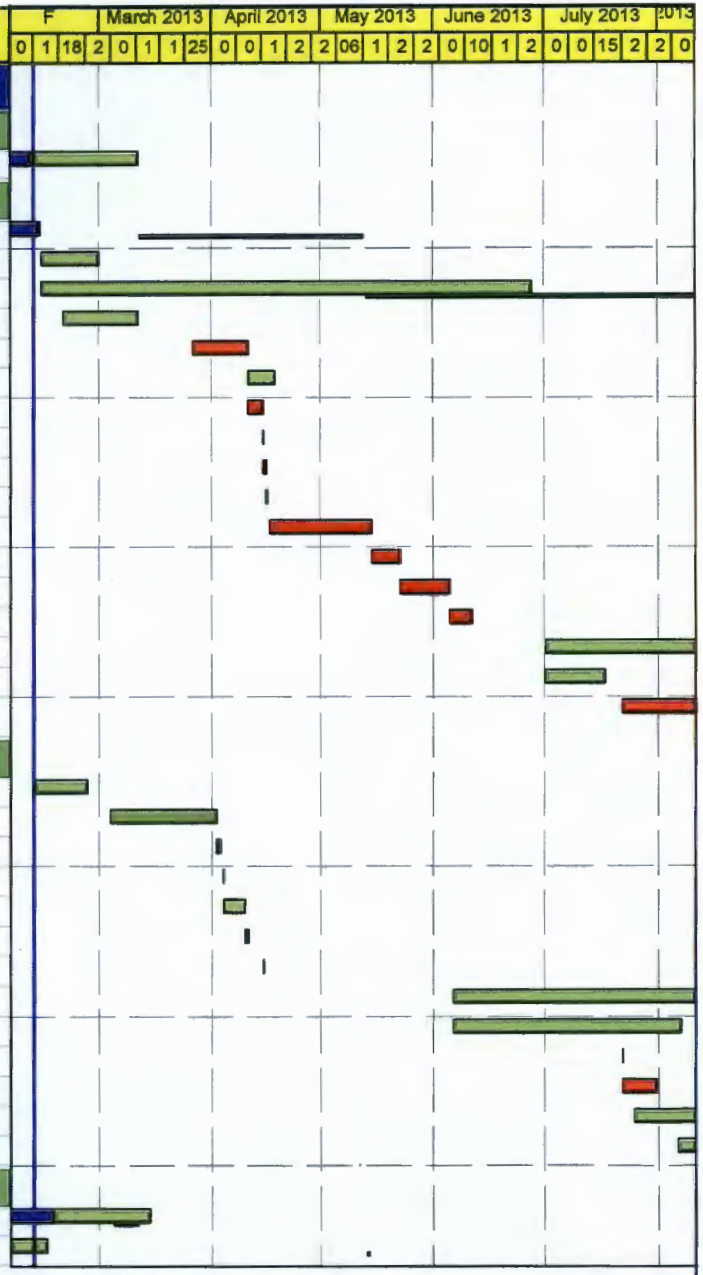
Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

<<MO474000.PDF>>

Attachment 14

Activity ID	Activity Name	% Cmpl	RD	Start	Finish
100 D					
Special Projects					
100D100A373	Well Replacement @ 100-D (REA-184) 4 wells	75%	16	12-Nov-12 A	11-Mar-13
Excavation					
100D100A311B	Excavate 100-D-100: Tier 3 Phase 2 (85,000 BCM)	99%	2	08-Jan-13 A	12-Feb-13
100D104A333	Excavate 100-D-104 Tier 3 Phase 1 (22,680 BCM)	0%	9	13-Feb-13*	28-Feb-13
100D100A311A	Excavate 100-D-100: Tier 3 Phase 3 (215,000 BCM)	0%	76	13-Feb-13	27-Jun-13
100D100A393	Excavate Contaminated Stockpile Area (D-100 Tier 1&2 Chrome)	0%	12	19-Feb-13*	11-Mar-13
RD05509AUW	Excavate 100-D-50:7 (5,125 BCM) (stage 3)	0%	10	27-Mar-13	11-Apr-13
CBB0534A	Excavate 100-D-81 (2,417 BCM)	0%	4	11-Apr-13	18-Apr-13
CBB0537A	Excavate 100-D-72 (3,506 BCM)	0%	1	11-Apr-13	15-Apr-13
CBB0541A	Excavate 100-D-83:3 (182 BCM)	0%	0	15-Apr-13	15-Apr-13
CBB0543A	Excavate 100-D-84:2 (634 BCM)	0%	1	15-Apr-13	16-Apr-13
CBB0548A	Excavate 100-D-97 (128 BCM)	0%	1	16-Apr-13	16-Apr-13
CBB0542A	Excavate 100-D-83:5 (14,788 BCM)	0%	17	17-Apr-13	15-May-13
CBB0545A	Excavate 100-D-86:1 (5,200 BCM) **RAD**	0%	5	15-May-13	23-May-13
CBB0544A	Excavate 100-D-85:2 (7,000 BCM) **RAD**	0%	6	23-May-13	05-Jun-13
CBB0546A	Excavate 100-D-86:3 (1,817 BCM) **RAD**	0%	3	05-Jun-13	11-Jun-13
RD10D301AUW2	Excavate 100-D-30 Plume Excavation (244,074 BCM)	0%	90	01-Jul-13	10-Dec-13
RD10D301SP	Relocate Interfering Stockpile 100-D-30 Plume Excavation (3,6...	0%	10	01-Jul-13	17-Jul-13
CBB0542A10	Demo 100-D-83:5 (14,788 BCM)	0%	15	22-Jul-13*	14-Aug-13
Loadout					
100D100A383	Build New LDR Staging Area for 100-D-100 Tier 3	0%	8	11-Feb-13*	25-Feb-13
100D100A394	Loadout 100-D-100 Tier 1&2 Stockpile Area (30,000 Tons)	0%	18	04-Mar-13*	02-Apr-13
RD100D30A44	Loadout 100-D-30 (MHVs - 2,350 Tons) - ACL staged from prio...	0%	2	02-Apr-13*	03-Apr-13
100D77A342	Loadout 100-D-77 (MHVs - 795 Tons) - ACL staged from prior ...	0%	1	04-Apr-13	04-Apr-13
100D78A091	Loadout 100-D-78 (MHV - 5,950 Tons) ACL staged from prior s...	0%	3	04-Apr-13	10-Apr-13
RD05509284	Loadout 100-D-50:7 (MHVs - 728 Tons) - ACL staged from prio...	0%	0	10-Apr-13	11-Apr-13
RD05507110	Loadout 100-D-50:7 (MHVs - 500 Tons)	0%	0	15-Apr-13	15-Apr-13
100D100A372	Loadout 100-D-100 Tier 3 (LDR - 65,127 Tons)	0%	91	06-Jun-13	18-Nov-13
100D100A372U	Loadout 100-D-100 Tier 3 (LDR - 65,127 Tons) *Rate Increase ...	0%	34	06-Jun-13	07-Aug-13
CBB0546B	Loadout 100-D-86:3 (Orange Cans - 506 Tons)	0%	0	22-Jul-13	22-Jul-13*
CBB0540B10	Loadout 100-D-85:2 (RAD)	0%	6	22-Jul-13	31-Jul-13
100D100A313	Loadout 100-D-100 Tier 3 (Blue Dot Cans - 85,500 Tons)	0%	68	25-Jul-13*	25-Nov-13
100D100A312	Loadout 100-D-100 Tier 3 (MHVs - 183,360 Tons)	0%	90	06-Aug-13*	21-Jan-14
Backfill					
RD1506400	Backfill - 100-D-50:6 (97,100 BCM)	60%	23	08-Jan-13 A	14-Mar-13
RD1D66400	Backfill - 100-D-66 (2,367 BCM)	0%	4	05-Feb-13 A	14-Feb-13



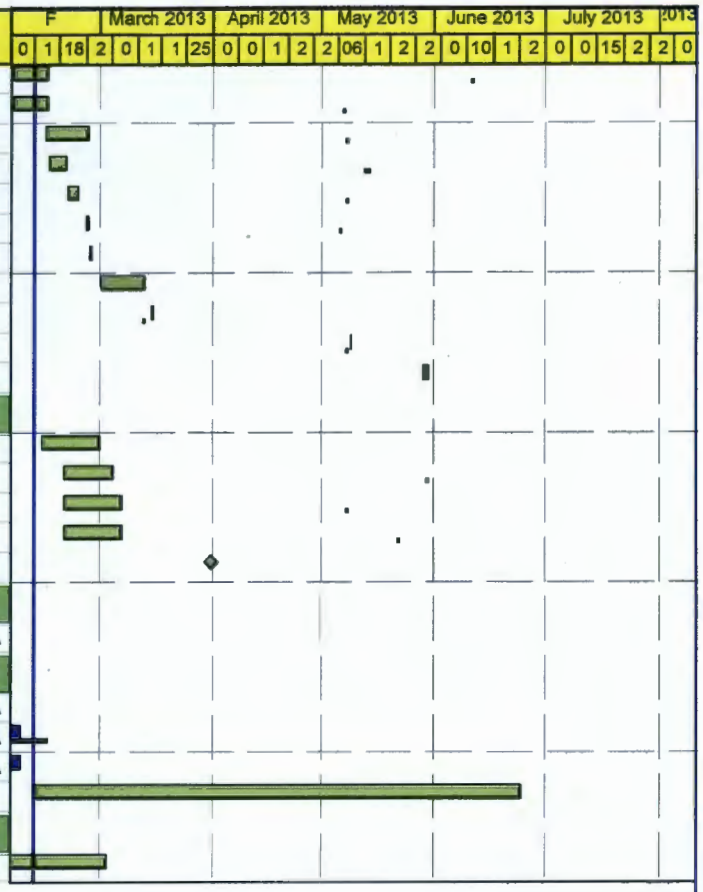
SPIF Bar | Remaining Work | Critical Remaining Work
Actual Work | Actual Critical Work | Remaining Level of Effort

Data Date: 11-Feb-13

CPP 100-H - Current after FR-519...

TASK filter: 100-DH POW Content.

Activity ID	Activity Name	% Cmpl	RD	Start	Finish
RD1D65400	Backfill - 100-D-65 (804 BCM)	0%	4	05-Feb-13 A	14-Feb-13
CBB0506C	Backfill - 116-D-5 (3,630 BCM)	0%	4	05-Feb-13 A	14-Feb-13
CBB0515C	Backfill - 100-D-50:4/8 (5,795 BCM)	0%	7	14-Feb-13*	25-Feb-13
CBB0508C	Backfill - 118-D-6 (9,167 BCM)	0%	2	15-Feb-13	19-Feb-13
RD132D400	Backfill - 132-D-1 (11,370 BCM)	0%	3	20-Feb-13*	22-Feb-13
RD05509120	Backfill - 100-D-50:9 (3,590 BCM)	0%	1	25-Feb-13*	25-Feb-13
RD67D1400	Backfill - 1607-D1 (3,709 BCM)	0%	1	26-Feb-13*	26-Feb-13
100D501A030	Backfill - 100-D-50:1	0%	8	01-Mar-13	12-Mar-13
CBC0507C	Backfill - 100-D-28:1 - (3,816 BCM)	0%	1	15-Mar-13*	15-Mar-13
CBB0507C	Backfill - 116-DR-5 (3,526 BCM)	0%	1	09-May-13	09-May-13
CBB0403CAUW1	Backfill - 100-D-56 (9,209 BCM)	0%	2	29-May-13	30-May-13
Revegetation					
100D14A280	Revegetation - 100-D-14	0%	16	13-Feb-13*	28-Feb-13
RD1D65500	Revegetation - 100-D-65	0%	8	19-Feb-13*	04-Mar-13
CBB0506E	Revegetation - 116-D-5	0%	10	19-Feb-13*	06-Mar-13
RD1D66500	Revegetation - 100-D-66	0%	10	19-Feb-13	06-Mar-13
DMS060	100-D Reveg Window Closed	0%	0		31-Mar-13*
Closeout Sampling & Docs					
RD15060391	SPA Area Closeout Sampling 100-D-50:6	100%	0	24-Jan-13 A	04-Feb-13 A
Final Project Closeout					
RD1D65325	Prepare Closure Document for 100-D-65	100%	0	08-Aug-12 A	04-Feb-13 A
RD05509138	Prepare RSVP for 100-D-50:9 (Summary Activity)	100%	0	20-Sep-12 A	07-Feb-13 A
RD1D66325	Prepare Closure Document for 100-D-66	100%	0	01-Oct-12 A	07-Feb-13 A
RD15060340	Prepare Closure Document for 100-D-50:6	0%	75	11-Feb-13	24-Jun-13
Utilities (Electrical)					
100D100A405	Power Pole Relocation - Closeout Docs (MSA Scope)	0%	20	25-Jan-13 A	02-Mar-13



SPIF Bar | Remaining Work | Critical Remaining Work
Actual Work | Actual Critical Work | Remaining Level of Effort

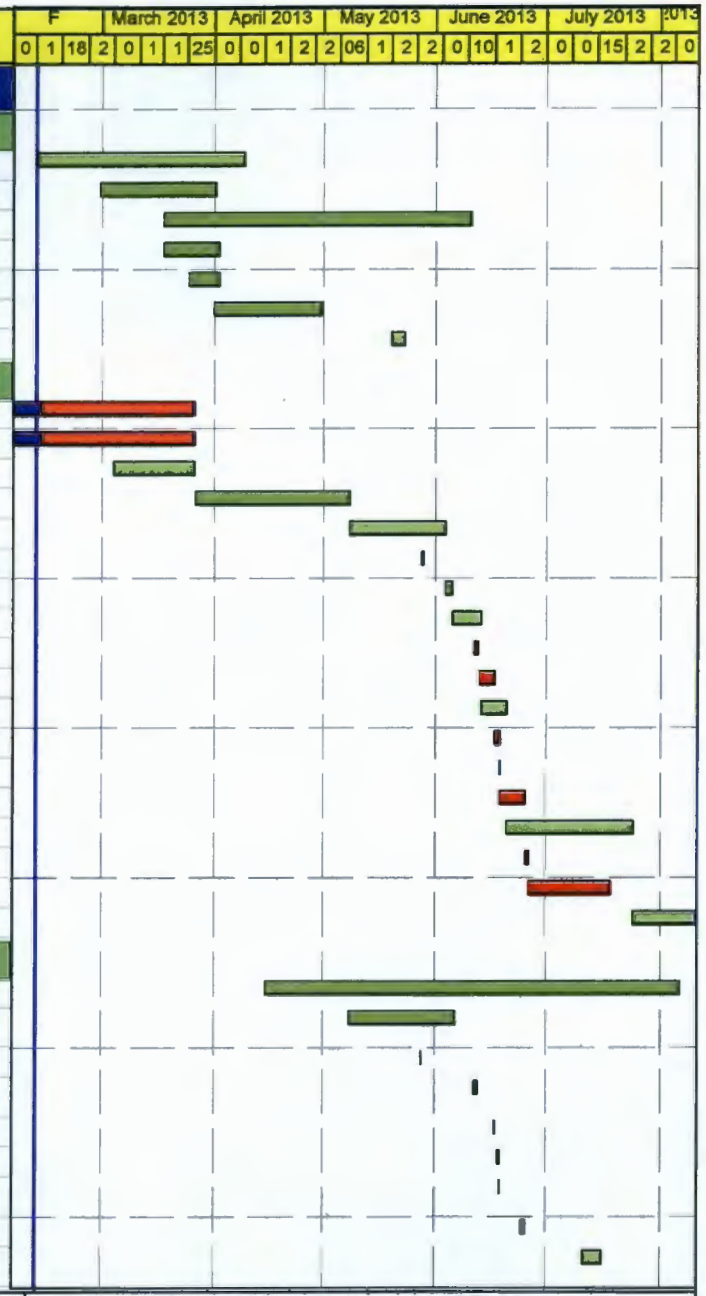
Data Date: 11-Feb-13

CPP 100-H - Current after FR-519...

TASK filter: 100-DH POW Content.

Attachment 15

Activity ID	Activity Name	% Cmpl	RD	Start	Finish
100 H					
Special Projects					
HB512A3	Well Decommissioning (100-H REA 138)	0%	33	11-Feb-13*	09-Apr-13
HB512A4	Well Replacement (100-H REA 138)	0%	18	28-Feb-13*	01-Apr-13
HB512A2	Reroute Export Water Line (100-H REA 138)	0%	48	18-Mar-13*	10-Jun-13
HB512A8	Construct Access Road (100-H REA 138)	0%	10	18-Mar-13*	02-Apr-13
HB512A7	Reroute Pump & Treat Lines (100-H REA 138)	0%	6	25-Mar-13*	02-Apr-13
HB512A1	Power Line Relocation (100-H REA 138)	0%	18	01-Apr-13*	30-Apr-13
HB512A9	Power Air Monitor #4 (Required for H-28:2 work)	0%	4	20-May-13*	23-May-13
Excavation					
HB518A32	Demo 100-H-46	15%	25	05-Feb-13 A	26-Mar-13
HB518A22D	Excavate 100-H-46 - Stage 1 *3 Meters Deep* (24,500 BCM)	15%	25	05-Feb-13 A	26-Mar-13
HB518A42	Relocate 100-H-28:2 Stock Pile *Interferes w/H-46* (35,000 BC...	0%	14	04-Mar-13*	26-Mar-13
HB518A22ME	Excavate 100-H-46 - Stage 2 *To Groundwater* (61,000 BCM)	0%	24	27-Mar-13	08-May-13
HB515A	Excavate 100-H-42 (33,197 BCM) **RAD**	0%	14	08-May-13	03-Jun-13
HB520A	Excavate 100-H-51:2 (873 BCM)	0%	1	28-May-13*	28-May-13
HB512A	Excavate 100-H-28:3 Section A - Export Water Line (5,000 BCM)	0%	2	03-Jun-13	05-Jun-13
HB512A5	Excavate 100-H-28:3 Section B - Power Line (12,500 BCM)	0%	5	05-Jun-13	13-Jun-13
HB516A	Excavate 100-H-43 - Powerline Interference (819 BCM)	0%	1	11-Jun-13	12-Jun-13
HB517A	Excavate 100-H-44 (24 BCM)	0%	1	13-Jun-13	17-Jun-13
HB512A6	Excavate 100-H-28:3 Section C - All Else (9,788 BCM)	0%	4	13-Jun-13	20-Jun-13
HB519A	Excavate 100-H-48 (1,300 BCM)	0%	1	17-Jun-13	18-Jun-13
HB521A	Excavate 100-H-52 (225 BCM)	0%	0	18-Jun-13	18-Jun-13
HB513A02	Excavate 100-H-28:4 Phase 2 (3,644 BCMs)	0%	4	18-Jun-13	25-Jun-13
HB511A013	Excavate 100-H-28:2 Phase 2 - Section A - Under Power Lines...	0%	18	20-Jun-13	24-Jul-13
HB514A	Excavate 100-H-28:5 Section A - Power Line (650 BCM)	0%	1	25-Jun-13	26-Jun-13
HB514A1	Excavate 100-H-28:5 Section B - All else (5,866 BCM)	0%	13	26-Jun-13	18-Jul-13
HB511A04	Excavate 100-H-28:2 Phase 2 - Section B - All Else (137,898 B...	0%	55	24-Jul-13	30-Oct-13
Loadout					
HB518B1	Loadout 100-H-46 (MHVs - 127,351 Tons)	0%	63	15-Apr-13*	06-Aug-13
HB518B2	Loadout 100-H-46 (LDR - 11,900 Tons)	0%	17	08-May-13	06-Jun-13
HB520B	Loadout 100-H-51:2 (Direct Load - 336 Tons)	0%	0	28-May-13	28-May-13
HB516B	Loadout 100-H-43 (Blue Dot Containers - 1,803 Tons)	0%	1	11-Jun-13	12-Jun-13
HB517B	Loadout 100-H-44 (Blue Dot Containers - 63 Tons)	0%	0	17-Jun-13	17-Jun-13
HB519B	Loadout 100-H-48 (Blue Dot Containers - 951 Tons)	0%	0	18-Jun-13	18-Jun-13
HB521B	Loadout 100-H-52 (Blue Dot Containers - 156 Tons)	0%	0	18-Jun-13	18-Jun-13
HB513B4	Loadout 100-H-28:4 (Blue Dot Containers - 2,202 Tons)	0%	1	24-Jun-13	25-Jun-13
HB514B1	Loadout 100-H-28:5 (Blue Dot Containers - 4,096 Tons)	0%	2	11-Jul-13	16-Jul-13



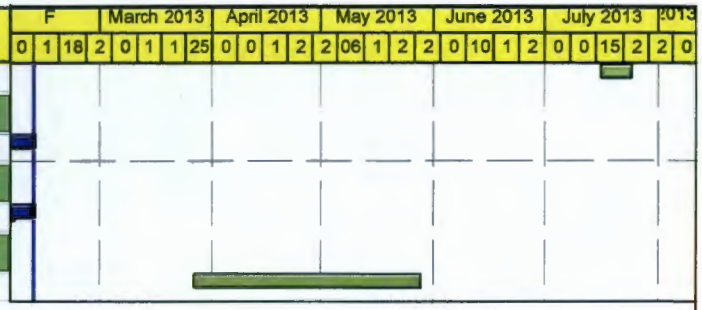
SPIF Bar | Remaining Work | Critical Remaining Work
Actual Work | Actual Critical Work | Remaining Level of Effort

Data Date: 11-Feb-13

CPP 100-H - Current after FR-519...

TASK filter: 100-DH POW Content.

Activity ID	Activity Name	% Cmpl	RD	Start	Finish
HB518B3	Loadout 100-H-46 (Blue Dot Containers - 10,749 Tons)	0%	5	16-Jul-13	24-Jul-13
Backfill					
HB505C1	Backfill - 100H Mud Dauber (3 Days Recontouring)	99%	0	14-Dec-12 A	11-Feb-13
Revegetation					
HB505E20	Revegetation - 100H Mud Dauber (7 acres)	99%	0	14-Dec-12 A	11-Feb-13
In-Process Sampling					
HB518A22A1S	In-Process Samp 100-H-46	0%	35	27-Mar-13	28-May-13



SPIF Bar | Remaining Work | Critical Remaining Work
Actual Work | Actual Critical Work | Remaining Level of Effort

Data Date: 11-Feb-13

CPP 100-H - Current after FR-519...

TASK filter: 100-DH POW Content.

Attachment 16

100 Area D4/ISS Status
February 14, 2013

100-N

1904-N Sanitary Sewer Lagoon and Lift Station No. 1 – Below grade demolition of the 1904-N, including the mixing of remaining sludge with soil, and loadout of debris/soil continues.

1724-N – Above grade and below grade demolition is complete, excavation has been backfilled.

100-N Miscellaneous Items – Removal and disposition of miscellaneous materials and equipment from around the site continue in preparation for D4 demobilization from 100-N.

100-D

183-D Water Treatment Plant – Currently performing asbestos abatement activities in preparation for demolition.

151-D Electrical Substation – All characterization and work packages complete. Currently undergoing hazmat removal in preparation for demolition.

100-B

105-B Reactor Fuel Transfer Pit Sediment Removal – Assisting WCH Surveillance Maintenance and Utilities by supplying technical support for ongoing removal of sediment in the fuel transfer pits of the 105-B Reactor Fuel Storage Basin.

105-B Reactor Washpad Annex – Facility characterization complete. Preparation of work packages for hazmat removal and demolition are currently underway.

151-B Electrical Substation – Facility characterization complete. Preparation of work packages for hazmat removal and demolition are currently underway.

Attachment 17

169665

^WCH Document Control

From: Saueressig, Daniel G
Sent: Thursday, January 31, 2013 3:23 PM
To: ^WCH Document Control
Subject: FW: 100-D AND H REVEGETATION

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Kapell, Arthur (ECY) [mailto:akap461@ECY.WA.GOV]
Sent: Thursday, January 31, 2013 1:56 PM
To: Saueressig, Daniel G
Cc: Post, Thomas C; Glossbrenner, Ellwood T; Warren, David J; Boyd, Alicia
Subject: RE: 100-D AND H REVEGETATION

Dan,

I am in agreement with allowing revegetation at 100-D and 100-H to proceed through March for the following sites: 100-H-37, 100-D-14, 100-D-50:4, 100-D-50:8, 100-D-56, 100-D-65, 100-D-66, 116-D-5, 116-DR-5 and 118-D-6.

Appendix H of the RDR/RAWP and the Mitigation Action Plan for the 100 and 600 Areas require that revegetated areas are to be monitored for 5 years following planting. As it is considered impractical to monitor each site and support area annually, monitoring is required on representative sites only. Because these plantings are proceeding outside the normal time frame of November through January, I will request that each of these sites revegetated after January be included in the annual monitoring the first year following this planting. Let me know if you have any questions.

Artie Kapell
Washington State Department of Ecology
Nuclear Waste Program
(509) 372-7895
akap461@ecy.wa.gov

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, January 31, 2013 12:41 PM
To: Kapell, Arthur (ECY)
Cc: Post, Thomas C; Glossbrenner, Ellwood T; Warren, David J
Subject: 100-D AND H REVEGETATION

Hi Artie, I would like to request your approval to conduct some revegetation activities at 100-D and 100-H in February and possibly into March 2013. Appendix H of the RDR/RAWP (DOE/RL-96-17), Revegetation Plan for the 100 Areas, specifies a planting window of November through January of each year, although it also states that the plan is generic and that site specific conditions will be evaluated and adjustments made when necessary.

Delays associated with weather and labor issues have necessitated this request to extend the window for revegetation.

Our revegetation subject matter expert believes that the soil moisture content will remain conducive to conducting this activity through March 2013 and if conditions change, the sites would be manually watered to ensure viability of the seeds and seedlings. In addition, these sites will be evaluated in the fall to ascertain the success of the revegetation effort and if the plants did not take as determined by the criteria in the Revegetation Plan, the sites would be revegetated again during the next planting window (November 2013 through January 2014). We currently have personnel and materials (seed and seedlings) available onsite to conduct this work and would like to accomplish this task while the materials are available.

The sites impacted include 100-H-37, 100-D-14, 100-D-50:4, 100-D-50:8, 100-D-56, 100-D-65, 100-D-66, 116-D-5, 116-DR-5 and 118-D-6.

Let me know if you concur and I'll document the agreement at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

Attachment 18

AIR MONITORING PLAN FOR THE 100-D/DR AREA REMAINING SITES AND BURIAL GROUNDS REMEDIAL ACTION JANUARY 2013

1.0 INTRODUCTION

Remedial action (i.e., cleanup) of the remaining sites and burial grounds located in the 100-D Area has the potential to emit radionuclides. These activities are being conducted under two *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) Record of Decisions (EPA 1999, 2000). Quantification of radioactive emissions, and implementation of best available radionuclide control technology (BARCT) pursuant to *Washington Administrative Code* (WAC) 246-247-040(3), "General Standards", and air monitoring pursuant to WAC 246-247-075(3) and (8), "Monitoring, Testing, and Quality Assurance," have been identified as substantive requirements (i.e., applicable or relevant and appropriate requirements) for the remedial action.

This air monitoring plan describes how the substantive portions of these requirements will be implemented for this removal action.

1.1 PLANNED ACTIVITIES

This remedial action workscope is for the removal and disposal of waste material and associated soil and debris from burial grounds and remaining waste sites located in the 100-DR-1 and 100-DR-2 Operable Units. The remedial action operations include characterizing, excavating, sorting, size-reducing, stockpiling, treating (if necessary), decontaminating, containerizing, staging, loading, and transporting materials from the waste sites. The equipment being used is considered standard equipment for size reduction (e.g., shears, cutting torch), as well as excavating, segregating, loading, and hauling. Decontamination activities such as scabbling (e.g., removal of the surface layer) may be employed to remove radioactive contamination. Characterization activities may include, but are not limited to, sampling, test pitting, trenching, and drilling to further define the waste and/or determine the limits of some of the waste sites. Characterization activities may begin before remediation to assist in verifying design parameters, and will continue for the life of the remediation project.

The loading of contaminated soil and debris into waste containers may result in soil spilled on the waste containers and/or haul trucks. Haul trucks with loaded containers will be surveyed to detect exterior contamination. A decontamination station may be established to decontaminate containers, haul trucks, and equipment, as required. Waste containers, haul trucks, and/or equipment will be decontaminated by conventional means (e.g., brushing or wiping) or with high-efficiency particulate air (HEPA)-filtered vacuum cleaners. The HEPA-filtered vacuum cleaners may also be used, as needed, to decontaminate other equipment or to pick up other loose contaminated materials. More aggressive decontamination methods (e.g., grinding or wet-grit blasting) may be used for decontamination if the other methods fail. Decontaminated trucks and containers will then proceed to the container staging area where the transportation subcontractor will pick up the containers for transport to the Environmental Restoration Disposal Facility

(ERDF) or other approved disposal location. Portable HEPA-filtered enclosures may be used in the characterization of anomalies.

The work scope includes, but is not limited to, remediation of the following waste sites in the 100-D Area: 100-D-8, 100-D-14, 100-D-50:1, 100-D-50:2, 100-D-50:3, 100-D-50:4, 100-D-50:6 and 100-D-50:9, 100-D-63, 100-D-65, 100-D-66, 100-D-72, 100-D-73, 100-D-76, 100-D-84:2, 100-D-85:1, 100-D-85:2, 100-D-86:1, 100-D-86:3, 100-D-102, 100-D-105, 116-DR-3, 116-DR-3, 118-D-2, 128-D-2, 132-D-1, 1607-D2, 1607-D2:5, and 128-D-2. The locations of the sites discussed in this Air Monitoring Plan (AMP) are shown in Figure 1.

The 100-D-102 waste site is being added to account for future sites that contain insignificant quantities of radionuclides but that still may require remediation. The site was sampled and results indicate the residual radiological concentrations are well below remedial action goals as identified in the Record of Decisions (EPA 1999, 2000); however, remediation is required for chemical constituents. If additional sites with insignificant quantities of radionuclides are identified that require remediation and are bounded by the inventory identified for the 100-D-102 waste site, the site(s) will be added to the AMP via agreement between the U.S. Department of Energy (DOE) and the Washington State Department of Ecology (Ecology) and will be documented via a subsequent Unit Manager Meeting.

Characterization sampling (e.g., confirmatory sampling, remedial investigation sampling) at radiological contaminated sites is included in the scope of this plan since these activities (e.g., surface sampling, potholing) will generate negligible emissions. The Washington State Department of Ecology (Ecology) will be notified of confirmatory sampling activities at 100-D via the confirmatory sampling work instruction approval process already in place. Additional sites may be added to this air monitoring plan through agreement in the Unit Managers' Meeting. Additionally, if any of the nonradioactive sites in 100-D Area are determined to contain radioactive contamination based on additional information, this air monitoring plan will cover those sites based on concurrence from Ecology.

2.0 AIRBORNE SOURCE INFORMATION

There is a potential for particulate radioactive airborne emissions to result from remediation of waste sites in the 100-D Area. The concentrations of the isotopes listed in Attachment 1 represent those that were determined to exist in the waste sites. Other isotopes may also be encountered in negligible amounts during remedial action activities; however, it is expected that the total estimated dose listed in Attachment 1 is conservative and represents the upper bound of what will actually be found during remedial actions.

2.1 INVENTORY

The radionuclide inventory and subsequent potential emissions calculations are summarized in Attachment 1. Attachment 1 is a compilation of the inventories and associated estimated dose rates from the following calculations: (1) *Total Effective Dose Equivalent for the Remediation of the 100D/DR Area Burial Grounds and Remaining Sites* (WCH 2007), (2) *Total Effective Dose*

Equivalent for the Remedial Action of the 100-D Area Waste Sites (WCH 2010); and (3) *Total Effective Dose Equivalent (TEDE) for the for 100-D/DR Waste Sites* (WCH 2012).

The waste sites are likely to contain contaminated soil or soil mixed with piping and other debris. For conservatism, it was assumed that the inventory for this material is generally in the form of particulates (soil, debris, oxides). The particulate form of the inventory, for calculation purposes, is assumed to have rubbed off into the soil and a release fraction of 1.0×10^{-3} is applied. For calculation purposes, it is conservatively assumed that tritium and krypton-85 are present as a gas and a release fraction of 1 is applied. There is the potential that objects may need to be size-reduced prior to transportation to ERDF. In addition, it is conservatively assumed that all size reduction will be accomplished with a cutting torch or shears. Torch cutting was evaluated for waste sites included in WCH (2007) and could potentially be used at 100-D-31. Torch cutting was not evaluated for waste sites included in WCH (2010) and WCH (2012) and will not be used at those waste sites. A release fraction of 1 is applied for torch cutting and would represent 0.21% of the overall inventory for size reduction in 3 m (10 ft) lengths, and 0.12% of the overall inventory for size reduction in 5 m (17 ft) lengths.

It is assumed at this time that no scabbling will be performed, although it is an activity that may be necessary. Should it become necessary, concurrence from Ecology will be obtained. In addition, it is assumed that 0.1% of the particulate inventory will be picked up through a HEPA-filtered vacuum. A release fraction of 1 is applied to the HEPA vacuum inventory.

The potential for spent nuclear fuel elements is possible. It is assumed that 99.9% of the fuel element is metal with a release fraction of 1.0×10^{-6} and 0.1% is an oxide with a release fraction of 1.0×10^{-3}. Remediation of all the burial grounds in the 100-D Area that could have contained spent nuclear fuel has already been completed.

The CAP88-PC model (Version 2 or Version 3.0, depending on when the calculation was prepared) was used to determine the annual total effective dose equivalent (TEDE) to the maximally exposed individual (MEI). The appropriate release fraction was applied to the inventory of the various waste sites to calculate the potential-to-emit. The calculated potential-to-emit (curries per year) was the input used for the computer model, and the model generated the annual unabated dose. The distance to the MEI used in the model was approximately 9,714 m (31,872 ft) west-northwest. The CAP88-PC model summary and synopsis are presented in calculations cited in the first paragraph of this section. The calculated total unabated annual TEDE to the MEI for the inventory in the combined calculations is 8.33 E-01 mrem/yr. This dose estimate is conservative because it assumes all the waste sites will be remediated in 1 year. Additionally, 23 of the 25 waste sites included in WCH (2007) (TEDE to the MEI 8.25E-01 mrem/yr) and 4 of the 15 waste sites in WCH (2010) (TEDE to the MEI, 9.39E-04 mrem/yr) have already been either interim closed or have been determined not to require remediation. The TEDE to the MEI from the waste site being added in the October 2012 revision of this plan is 6.43E-03 mrem/yr.

3.0 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY

The following is the BARCT to be implemented during remedial actions.

- Water will be applied during excavation, container loading, and backfilling processes to minimize and control airborne releases.

- Soil fixatives will be applied to any contaminated soils and debris that will be inactive for more than 24 hours. Periodic monitoring (visual observation) of the contaminated soils and debris that remain inactive for greater than 1 month should be performed. Re-application of fixatives or other control measures shall be performed if warranted by the periodic monitoring.

- Fixatives will be applied to contaminated soils and debris that will be inactive less than 24 hours at the end of work operations if the sustained wind speed is predicted overnight to be greater than 32 km/hr (20 mph) based on the Hanford Meteorological Station morning forecast. This will allow the project enough time, if necessary, to prepare for the application of dust control measures. If a soil fixative has already been applied and the soil will remain undisturbed, further use of fixatives will not be needed. The fixatives or other controls will not be applied when the contaminated soils are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- Appropriate documentation on the application of fixatives to comply with BARCT shall be maintained (e.g., logbook or other project-specific documentation).

- The haul trucks will be covered to contain the materials while in transit to ERDF.

- Vacuum cleaners and ventilated enclosures for radiological work will be used when needed and equipped with HEPA filters, which are considered BARCT for radioactive emissions at the Hanford Site. HEPA filters are efficiency tested upon installation and on an annual basis thereafter. HEPA filters must be demonstrated to have a 99.95% removal efficiency.

- Additional measures for controlling small debris in waste piles may be prudent based on waste site conditions as determined by project personnel. Additional measures that may be used are as follows: (1) application of a thin layer of contaminated soil from the same waste site (that is free of debris) on the surface and follow normal fixative application, (2) apply a thin layer of uncontaminated soil on the surface and follow normal fixative applications, (3) apply bonded fiber fixative, and (4) cover the area containing small debris that is easily re-suspended with a tarp or other appropriate material.

4.0 MONITORING

Monitoring activities will consist of establishing near-facility (NFM) monitoring stations upwind and downwind of the 100-D Area. There will be four downwind air monitors. The locations of

these monitors (Figure 1) are based on the predominant wind directions. The existing air monitoring station at the Yakima Barricade (not shown in Figure 1) will be used as the upwind air monitoring station.

Near-facility air monitoring is the means/method used to measure emissions. These monitors will be operated in accordance with Hanford Site protocol established for near-facility monitors (DOE-RL 2008). Air samples will be collected every 2 weeks and analyzed for total alpha and total beta. The data from the 2 week total alpha and total beta air samples will be evaluated for unusual trends. The samples will be composited semi-annually and analyzed for gamma energy analysis (GEA), strontium-90, americium-241, plutonium-238, plutonium-239/240, and isotopic uranium. Environmental soil samples will be collected before, during, and after remediation near the downwind air monitors and analyzed for GEA, strontium-90, plutonium-238, plutonium-239/240, and isotopic uranium. The soil samples will be taken to evaluate the long-term trends in the environmental accumulation of radioactivity. The data from these activities will be included in the appropriate annual reports prepared for the Hanford Site.

As part of the site-wide evaluation of NFM data, the electronic release summary (ERS) database compares NFM composite air sample results to 10% of the values in 40 *Code of Federal Regulations* (CFR) 61, "National Emissions Standards for Hazardous Air Pollutants (NESHAPS)," Appendix E, Table 2. The database identifies results that exceed these values. Results from the downwind air monitors identified in this plan that are above these values will be investigated and the adequacy of the controls evaluated as appropriate.

The HEPA-ventilated enclosures may be used during the characterization of anomalies. It is anticipated that an insignificant portion of the overall inventory will be processed through an enclosure. HEPA-filtered vacuums may also be utilized infrequently during remediation activities. Exhaust points from HEPA filters (and any duct work, seams, or other potential release locations from enclosures) will be monitored on a routine basis for potential radionuclide releases and the results recorded (e.g., post survey results negative) during vacuuming or exhauster operations. Any positive survey results will require appropriate maintenance on the unit to ensure that continued releases do not occur. Records of routine monitoring and necessary maintenance will be provided to Ecology staff upon request.

Air monitor downtime will be minimized and all air monitors shall be operated as described in the following text. However, if a downwind air monitor is out of operation for more than 48 hours during normal work operations (e.g., excavating and loading radioactive contaminated material), Ecology will be notified. If two or more air monitors are out of operation during normal work operations, excavation and loading activities shall be temporarily suspended until operation of at least three downwind air monitors are restored or backup equipment is deployed. Normal work operations are not allowed if two downwind monitors are not operating. Air monitoring will no longer be required when excavation of the waste sites has been completed.

Characterization (e.g., test pitting and trenching, or surface soil sampling) may be conducted prior to the start of remediation, or as needed to support confirmatory or risk assessment activities. If near-facility air monitoring is not being conducted during these characterization activities, then only routine radiological control surveys will be performed.

5.0 REFERENCES

40 CFR 61, "National Emissions Standards for Hazardous Air Pollutants (NESHAPS)," *Code of Federal Regulations* as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq.

DOE-RL, 2008, *Environmental Monitoring Plan U.S. Department of Energy Richland Operations Office*, DOE/RL-91-50, as revised, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1999, *Interim Action Record of Decision 100 Area Remaining Sites 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2,100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6 and 200-CW-3 Hanford Site, Benton County, Washington,* U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2000, *Declaration of the Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2 and 100-KR-2 100 Area Burial Grounds, Hanford Site, Benton County, Washington,* U.S. Environmental Protection Agency, Region 10, Seattle, Washington..

WAC 246-247, "Radiation Protection – Air Emissions," *Washington Administrative Code*, as amended.

WCH, 2007, *Total Effective Dose Equivalent for the Remediation of the 100D/ DR Area Burial Grounds and Remaining Sites,* Calculation 0100D-CA-V0267, Rev. 1, Washington Closure Hanford, Richland, Washington

WCH, 2010, *Total Effective Dose Equivalent for the Remedial Action of the 100-D Area Waste Sites*, Calculation 0100D-CA-V0283, Rev. 1, Washington Closure Hanford, Richland, Washington

WCH, 2012, *Total Effective Dose Equivalent (TEDE) for 100-D/DR Waste Sites,* Calculation 0100D-CA-V0459, Rev. 0, Washington Closure Hanford, Richland, Washington

ATTACHMENT 1

Summary of Total Effective Dose Equivalent For 100-D Area Waste Sites. (2 Pages)

Isotope	0100D-CA-V0283, Rev. 1	0100D-CA-V0267, Rev. 1	0100D-CA-V0459, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr)[a]			
Ac-228	8.40E-08		2.47E-08	**1.09E-07**
Ag-108m				**0.00E+00**
Am-241	2.44E-05	1.53E-01	1.74E-03	**1.55E-01**
Ba-133		3.12E-04		**3.12E-04**
Ba-137m	4.63E-06	9.32E-10	5.07E-05	**5.53E-05**
Bi-212	2.52E-08		1.06E-08	**3.58E-08**
Bi-214	1.72E-07		2.43E-08	**1.96E-07**
C-14	8.24E-05	6.06E-05	3.34E-05	**1.76E-04**
Ca-41		3.43E-09		**3.43E-09**
Cd-113m		0.00E+00		**0.00E+00**
Co-60	4.96E-06	4.80E-01	2.57E-05	**4.80E-01**
Cs-134	9.96E-09	1.65E-08		**2.65E-08**
Cs-137	1.83E-04	5.55E-02	2.00E-03	**5.77E-02**
Eu-152	4.35E-06	3.13E-02	9.36E-05	**3.14E-02**
Eu-154	2.47E-07	2.52E-02	9.23E-06	**2.52E-02**
Eu-155	2.77E-09	1.12E-05	2.77E-08	**1.12E-05**
H-3[b]	1.84E-06	2.03E-02	3.68E-06	**2.03E-02**
I-129	7.91E-08			**7.91E-08**
K-40	2.76E-05	1.36E-03		**1.39E-03**
Kr-85[b]		1.73E-06		**1.73E-06**
Na-22		2.24E-06	1.32E-08	**2.25E-06**
Nb-94		2.35E-04		**2.35E-04**
Ni-59		3.46E-05		**3.46E-05**
Ni-63	6.46E-07	5.50E-03	2.18E-06	**5.50E-03**
Np-237			1.13E-05	**1.13E-05**
Pa-234	3.13E-10			**3.13E-10**
Pa-234m	1.05E-08			**1.05E-08**
Pb-210	6.03E-08			**6.03E-08**
Pb-212	1.51E-08		2.99E-07	**3.14E-07**
Pb-214	2.86E-08		3.61E-09	**3.22E-08**
Pd-107		2.22E-13		**2.22E-13**
Pm-147			2.78E-08	**2.78E-08**
Po-214	9.42E-12		1.19E-12	**1.06E-11**

Summary of Total Effective Dose Equivalent For 100-D Area Waste Sites. (2 Pages)

Isotope	0100D-CA-V0283, Rev. 1	0100D-CA-V0267, Rev. 1	0100D-CA-V0459, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr)[a]			
Po-216	1.82E-12		4.09E-13	**2.23E-12**
Po-218	1.03E-12		1.30E-13	**1.16E-12**
Pu-238	1.80E-06	7.28E-03	7.06E-04	**7.99E-03**
Pu-239[c]	4.48E-05	1.83E-02	6.86E-04	**1.90E-02**
Pu-240[c]		7.19E-05		**7.19E-05**
Pu-241	1.01E-06	4.15E-05	8.71E-06	**5.12E-05**
Ra-224	6.03E-08		9.09E-08	**1.51E-07**
Ra-226	1.37E-05	1.70E-04	1.69E-06	**1.85E-04**
Ra-228	1.48E-05		4.18E-06	**1.90E-05**
Rn-220	2.42E-16		3.18E-15	**3.42E-15**
Rn-222	2.94E-16		3.61E-17	**3.30E-16**
Se-79		0.00E+00		**0.00E+00**
Sm-151		7.68E-09	7.37E-08	**8.14E-08**
Sr-90	3.57E-04	4.50E-03	8.65E-04	**5.72E-03**
Tc-99	4.54E-08	2.47E-05	1.65E-07	**2.49E-05**
Th-228	8.70E-05		1.86E-05	**1.06E-04**
Th-231	1.16E-10		3.23E-10	**4.39E-10**
Th-232	6.83E-05		4.26E-05	**1.11E-04**
Th-234	1.18E-08		3.14E-08	**4.32E-08**
Tl-208	1.20E-07		2.72E-08	**1.47E-07**
U-233[c]	7.79E-06	1.28E-03	1.19E-05	**1.30E-03**
U-235	4.46E-07	2.86E-03	1.23E-06	**2.86E-03**
U-238	6.76E-06	1.79E-02	1.74E-05	**1.79E-02**
Y-90	1.31E-06	9.73E-06	3.18E-06	**1.42E-05**
Zr-93		7.82E-11		**7.82E-11**
TOTAL	**9.39E-04**	**8.25E-01**	**6.34E-03**	**8.33E-01**

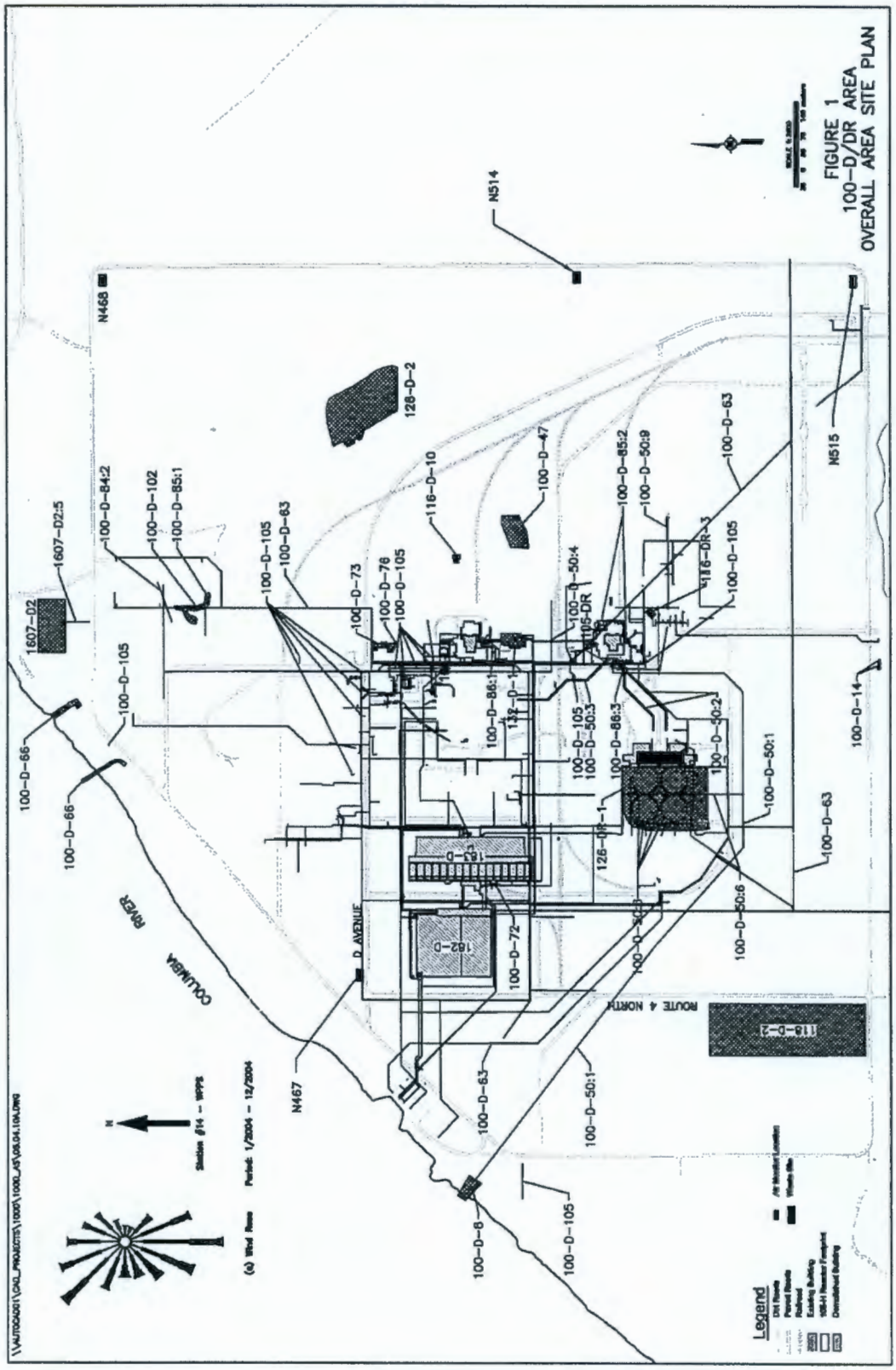
[a] The annual unabated total effective dose equivalent was determined using the CAP88-PC. The potential to emit (Ci/yr) was input to the model, and the model generated the annual unabated dose. The distance to the MEI for the 100-D Area is 9,714 m (37,872 ft) west-northwest.

[b] Release fraction for H-3 and Kr-85 is assumed to be 1 in all cases.

[c] For some sites, the MAR calculations presented combined data (i.e., Pu-239/Pu-240); all Pu-239/Pu-240 and U-233/U-234 combined values are assumed to be Pu-239 and U-233 respectively.

MAR = Material at Risk
MEI = Maximally Exposed Individual
RF = Release Fraction
TEDE = Total Effective Dose Equivalent

Figure 1. 100-D/DR Area Overall Site Plan.



Concurrence:

M. S. French — Date: 1/17/13
U.S. Department of Energy,
Richland Operations Office

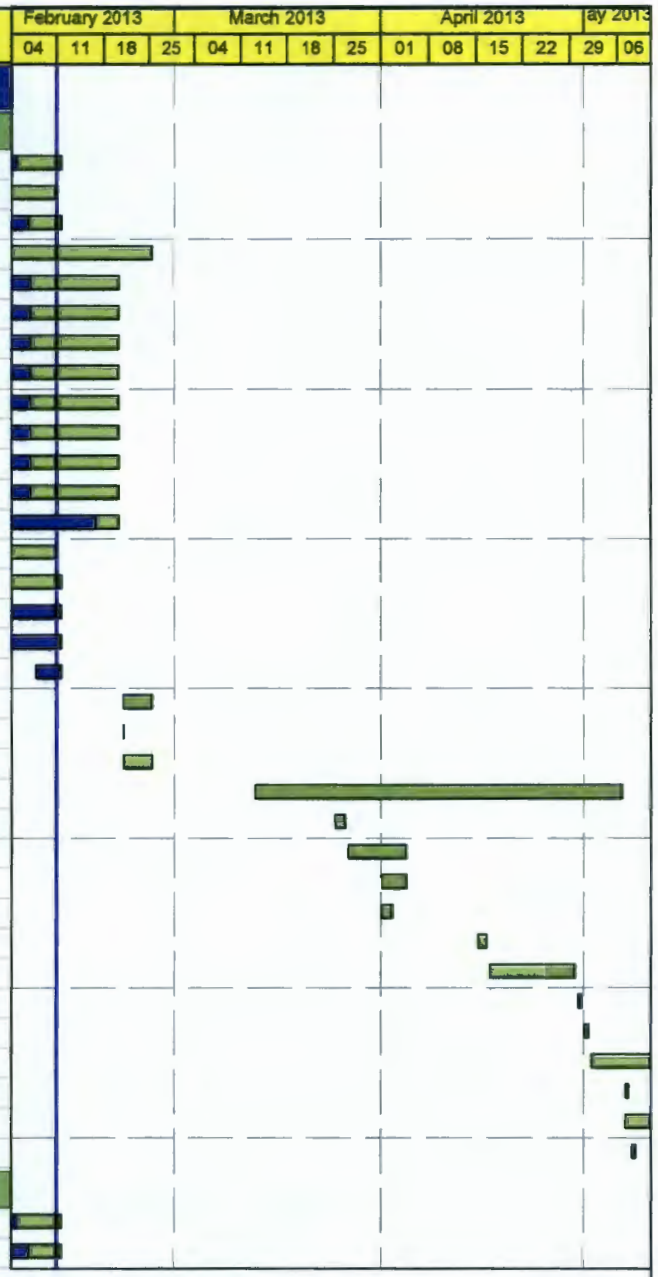
Nina Menard — Date: 1/31/13
Washington State Department of Ecology

Distribution:

Administrative Record	H6-08
Artie Kapell	
Nina Menard	H0-57
Tom Post	A3-04
Joan Woolard	H4-21
Scott Myers	N3-30
Dan Saueressig	N3-30
Steve Wilkinson	N3-30
John Winterhalder	N3-30

Attachment 19

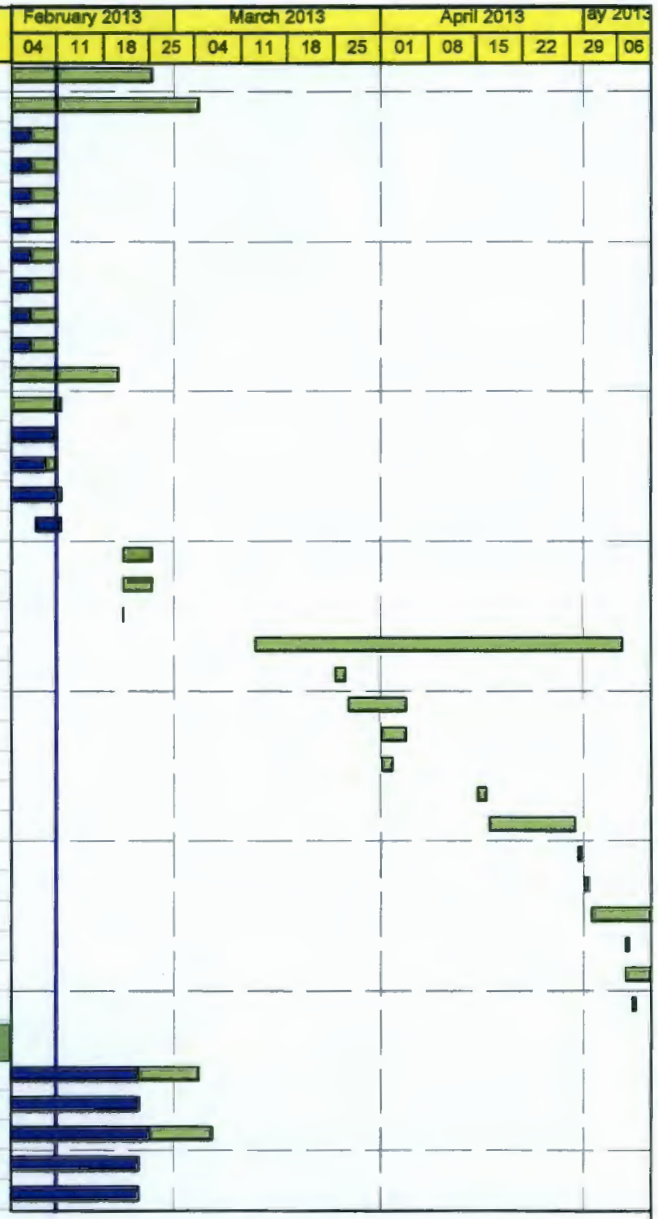
Activity ID	Activity Name	% Cmpl	RD	Start	Finish
FY13 CPP 100-N AREA CURRENT					
Excavation					
NB525A31	Excavtn -100-N-61:4 (CDD) (10K BCM)	95%	1	08-Oct-12 A	11-Feb-13
NB534D017	In Process Sampling - 124-N-1	25%	11	05-Nov-12 A	28-Feb-13
NB507A10	Plume Excavation - 100-N-23 (500 BCMs)	95%	1	09-Nov-12 A	11-Feb-13
NB578A20	100-N-63:2 Plume Excavation (20K BCM)	75%	8	20-Nov-12 A	25-Feb-13
NB575A	Plume Excavation - UPR-100-N-7 (1K BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB546A	Excavation - UPR-100-N-10 (0 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB517A	Excavation - 100-N-36 (11 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB567A	Excavation - UPR-100-N-35 (500 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB548A	Excavation - UPR-100-N-12 (0 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB537A	Excavation - 124-N-3 (0 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB563A	Excavation - UPR-100-N-3 (0 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB531A10	Plume Excavation - 118-N-1 (4000 BCMs)	70%	6	07-Jan-13 A	20-Feb-13
NB536A10	Plume Excavation - 124-N-2 (500 BCMs)	90%	6	14-Jan-13 A	20-Feb-13
NB552D017	In Process Sampling - UPR-100-N-18	25%	12	21-Jan-13 A	04-Mar-13
NB525D090	Plume (Asbestos) Excavation at 61:1 (500 BCM)	50%	1	24-Jan-13 A	11-Feb-13
NB553A10	Plume Excavation - UPR-100-N-19 (500 BCMs)	95%	1	24-Jan-13 A	11-Feb-13
NB565A10	Plume Excavation - UPR-100-N-31 (500 BCMs)	95%	1	04-Feb-13 A	11-Feb-13
NB528A20	Plume Excavation - 116-N-2 (1500 BCM)	95%	1	08-Feb-13 A	11-Feb-13
NB577A10	Plume Excavation - UPR-100-N-9 (500 BCMs)	0%	2	21-Feb-13	25-Feb-13
NB531D017	In process Sampling - 118-N-1	0%	16	21-Feb-13	20-Mar-13
NB550A10	Plume Excavation - UPR-100-N-14 (500 BCMs)	0%	2	21-Feb-13	25-Feb-13
NB5A1A	Excavation - 100-N-93 (27,000 BCM)	0%	31	13-Mar-13	06-May-13
NB596A	Excavation - 120-N-4 (646.86 BCM)	0%	2	25-Mar-13*	26-Mar-13
NB597A	Excavation - 628-2 (1,965.73 BCM)	0%	6	27-Mar-13	04-Apr-13
NB599A	Excavation - 100-N-86 (1182.22 BCM)	0%	4	01-Apr-13*	04-Apr-13
NB5B1A	Excavation - 100-N-81 (690 BCM)	0%	2	01-Apr-13*	02-Apr-13
NB586A	Excavation - 100-N-68 (824.5 BCM)	0%	2	15-Apr-13*	16-Apr-13
NB587A	Excavation - 100-N-79 (703.12 BCM)	0%	7	17-Apr-13	29-Apr-13
NB590A	Excavation - 100-N-91 (4.05 BCM)	0%	1	30-Apr-13	30-Apr-13
NB591A	Excavation - 100-N-94 (51.34 BCM)	0%	1	01-May-13	01-May-13
NB5092A	Excavation - 100-N-95 (2,256.59 BCM)	0%	7	02-May-13	14-May-13
NB5A3A	Excavation - 100-N-101 (132.36 BCM)	0%	1	07-May-13	07-May-13
NB5B2A	Excavation - 100-N-83 (20,659 BCM)	0%	35	07-May-13	09-Jul-13
NB5A4A	Excavation - 600-340 (132.36 BCM)	0%	1	08-May-13	08-May-13
Loadout					
NB525B21	Loadout - 100-N-61:4 (CDD) (20K TONS)	95%	1	08-Oct-12 A	11-Feb-13
NB507B10	Plume Loadout - 100-N-23 (1000 USTs)	95%	1	09-Nov-12 A	11-Feb-13



Actual Work ◆ Milestone ◆ Actual Milestone
Remaining Work % Complete

Data Date: 11-Feb-13

Activity ID	Activity Name	% Cmpl	RD	Start	Finish
NB578A30	100-N-63:2 Plume Loadout (25K Tons)	75%	8	20-Nov-12 A	25-Feb-13
NB578B60	Loadout - 100-N-63 AUW Quantities FY12	70%	12	20-Nov-12 A	04-Mar-13
NB575B	Plume Loadout - UPR-100-N-7 (3K USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB546B	Loadout - UPR-100-N-10 (0 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB517B	Loadout - 100-N-36 (11 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB567B	Loadout - UPR-100-N-35 (1000 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB548B	Loadout - UPR-100-N-12 (0 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB537B	Loadout - 124-N-3 (0 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB563B	Loadout - UPR-100-N-3 (0 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB531B10	Plume Loadout - 118-N-1 (15000 USTs)	70%	6	07-Jan-13 A	20-Feb-13
NB536B10	Plume Loadout - 124-N-2 (1000 USTs)	50%	6	14-Jan-13 A	20-Feb-13
NB525D0100	Plume (Asbestos) Loadout at 61:1 (1000 TONS)	50%	1	24-Jan-13 A	11-Feb-13
NB553B10	Plume Loadout - UPR-100-N-19 (1,000 USTs)	95%	1	24-Jan-13 A	11-Feb-13
NB541B10	Loadout (North Pond) - 130-N-1 (30,000 USTs)	25%	17	30-Jan-13 A	12-Mar-13
NB565B10	Plume Loadout - UPR-100-N-31 (1,000 USTs)	95%	1	04-Feb-13 A	11-Feb-13
NB528B20	Plume Loadout - 116-N-2 CDD (3,000 UST)	95%	1	08-Feb-13 A	11-Feb-13
NB577B10	Plume Loadout - UPR-100-N-9 (1500 USTs)	0%	2	21-Feb-13	25-Feb-13
NB550B10	Plume Loadout - UPR-100-N-14 (1000 USTs)	0%	2	21-Feb-13	25-Feb-13
NB552D30	Second Phase Plume Loadout - UPR-100-N-18 and UPR-100-N-20	0%	8	21-Feb-13*	06-Mar-13
NB5A1B	Loadout - 100-N-93 (50,000 UST)	0%	31	13-Mar-13	06-May-13
NB596B	Loadout - 120-N-4 (1,379.16 UST)	0%	2	25-Mar-13	26-Mar-13
NB597B	Loadout - 628-2 (4,102.56 UST)	0%	6	27-Mar-13	04-Apr-13
NB599B	Loadout - 100-N-86 (805.42 UST)	0%	4	01-Apr-13	04-Apr-13
NB5B1B	Loadout - 100-N-81 (1,518.0 UST)	0%	2	01-Apr-13	02-Apr-13
NB586B	Loadout - 100-N-68 (1,254.79 UST)	0%	2	15-Apr-13	16-Apr-13
NB587B	Loadout - 100-N-79 (702.57 UST)	0%	7	17-Apr-13	29-Apr-13
NB590B	Loadout - 100-N-91 (0.71 UST)	0%	1	30-Apr-13	30-Apr-13
NB591B	Loadout - 100-N-94 (49.5 UST)	0%	1	01-May-13	01-May-13
NB5092B	Loadout - 100-N-95 (611.56 UST)	0%	7	02-May-13	14-May-13
NB5A3B	Loadout - 100-N-101 (220.0 UST)	0%	1	07-May-13	07-May-13
NB5B2B	Loadout - 100-N-83 (45,451 UST)	0%	35	07-May-13	09-Jul-13
NB5A4B	Loadout - 600-340 (220 UST)	0%	1	08-May-13	08-May-13
Backfill					
NB540C10	Backfill - 128-N-1 AUW	90%	12	03-Dec-12 A	04-Mar-13
NB540C	Backfill - 128-N-1 (20,329 BCMs)	90%	12	03-Dec-12 A	04-Mar-13
NB5A2C	Backfill - 100-N-98 (709 BCM)	90%	14	03-Dec-12 A	06-Mar-13
NB503C	Backfill - 100-N-16 (1,164 BCMs)	90%	12	03-Dec-12 A	04-Mar-13
NB523C	Backfill - 100-N-6 (0 BCMs)	90%	12	03-Dec-12 A	04-Mar-13



Actual Work ◆ Milestone ◆ Actual Milestone
Remaining Work % Complete

Data Date: 11-Feb-13

Attachment 20

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

A. INSTRUCTIONS

This form must be completed to: 1) document existing data in order to determine if current data is suitable to prove completion of 100-N Ancillary Facilities, or 2) document that site-specific sampling and analyses are needed to provide completion for 100-N Ancillary Facilities.

B. GENERAL INFORMATION

Building Name: Emergency Diesel Building & Decontamination-Hot Shop Building

Building Number: 105-NA & 1722-N

WIDS Sites Associated or Adjacent:
Associated: 100-N-63:2, 100-N-66, 100-N-84 (colon sites 2 & 6)

Adjacent: 100-N-61:3, 100-N-64, 100-N-64:3, 100-N-84:3, UPR-100-N-3, UPR-100-N-10, UPR-100-N-12, UPR-100-N-35, UPR-100-N-39

-All Above WIDS Sites Have Been Classified As Accepted-

Other:
105-NA: This facility was made of sheet metal and wire mesh and contained an emergency lift station diesel pump (CCN 157852 pg. 1, BHI-00221 pg. 3-50, and WCH-473 pg. 1). It shared two walls with the 105-N Reactor Building (CCN 157852 pg. 1, BHI-00221 pg. 3-50, and WCH-473 pg. 1). This facility was demolished in August 2010 and demolition debris were disposed at the Environmental Restoration Disposal Facility (ERDF) (CCN 157852 pg. 1 & WCH-473 pg. 1).

1722-N: This facility was made of sheet metal positioned atop a concrete slab foundation (CCN 157865 pg. 1, BHI-00221 pg. 3-108, and WCH-473 pg. 10). It shared a wall with the 105-N Reactor building and was used both as a decontamination area for tools and equipment used to maintain the radioactively contaminated 105-N Reactor and Fuel Storage Basin, and as an airlock and loading dock for the 105-N Reactor decontamination station and adjacent areas (CCN 157865 pg. 1, BHI-00221 pg. 3-108, IHC-2005-0032, and WCH-473 pg. 10). This facility was demolished in August 2010 and demolition debris were disposed at the ERDF (CCN 157865 pg. 2 & WCH-473 pg. 10).

C. INFORMATION SOURCES

Available information (list document number for each if applicable):

Historical Site Assessment: N/A

Site Walkdown: N/A

IH Characterization Report: N/A

Radiological Survey:
- RSR-100ISS-06-0076
- RSR-100ISS-08-0528 / 0748 / 0758 / 0877
- RSR-100ISS-10-0639
- RSR-100N-07-0629 / 0758 / 0963
- RSR-100N-08-0279 / 0380 / 0382 / 0556 / 0603 / 0860 / 1381 / 1506
- RSR-100N-10-1430
- RSR-100SMT-02-0329
- RSR-100SMT-06-0146 / 0174

IHC/FHC Document: Initial Hazard Categorization (IHC) Documentation Form for D4 of Buildings 105NB, 1722N and 1605NE: IHC-2005-0032

WIDS/SIS:
- RCC Stewardship Information System (SIS) Facility Summary Reports for 105-NA, 1722-N, and UPR-100-N-39
- Waste Information Data System (WIDS) General Summary Reports for UPR-100-N-39

PDSR:
- Post-Demolition Summary Report for 105-NA Emergency Diesel Enclosure: CCN 157852
- Post-Demolition Summary Report for 1722-N Decontamination-Hot Shop Building: CCN 157865

Facility Inspection: N/A

Waste Characterization Checklist: N/A

Summary Report: N/A

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

Other:
- 100 Area D4 Project Building Completion Report, Rev. 0: WCH-473
- 100-N Ancillary Facilities Preliminary Hazard Classification: CCN 095435
- 100-N Area Underground Storage Tank Closures, Rev. 0: WHC-SD-EN-TI-136
- Information and Notifications for Underground Storage Tanks (USTs) at the Hanford Site: 91-ERB-129
- "Pre-Existing" Conditions Survey of Hanford Site Facilities Phase II, Rev. 0: BHI-00221
- WCH Industrial Hygiene Beryllium Wipe Sampling: CCN 0576105
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001 A
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001 B
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001 E
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001 F
- Work Package for Hazardous Material Removal from 105-NA and 1722-N, Rev. 0: ISS-07-06-27-001 G
- Pre-Demolition Facility Photographs, Time-Stamped: SIS Facility Summary Report for 105-NA pg. 4 (6/20/2006), SIS Facility Summary Report for 1722-N pg. 5 (1/31/2007), CCN 157582 pg. 5 (1/25/2007), and CCN 157865 pg. 5 (1/25/2007)
- Pre-Demolition Facility Photographs, No Time Stamp: SIS Facility Summary Report for 105-NA pgs. 3, 5, 6, and 7; SIS Facility Summary Report for 1722-N pgs. 3, 4, 6, 7, and 8; and SIS Facility Summary Report for UPR-100-N-39 pg. 3
- Post-Demolition Facility Photographs, No Time Stamp: CCN 157582 pg. 6 & CCN 157865 pg. 6

D. HAZARDOUS SUBSTANCES

Check all that apply:

☐ None ☐ Asbestos containing material ☐ Lead ☐ PCBs/PCB Articles ☒ Oils/Greases

☐ Chemicals List: N/A

☒ Radiological Contamination ☐ Mercury/Mercury Devices

☒ Other: Several unlabeled containers were present at the 105-NA facility (BHI-00221 pg. 3-50).

References/Comments:
- Oils/Greases: A carbon steel single-shell UST (105-N-LFT), used to store diesel fuel, was associated with the 105-NA facility (CCN 157582 pg. 2, CCN 157865 pg. 2, SIS Facility Summary Report for 105-NA pg. 1, and WHC-SD-EN-TI-136 pgs. 1 & 7). The 105-NA facility contained bottled oil and a diesel pump (CCN 157852 pg. 1, BHI-00221 pg. 3-50, and WCH-473 pg. 1).

- Radiological Contamination: Radiological contamination was detected at the 105-NA facility, the 1722-N facility, on the exterior of the diesel fuel UST, and in the soil surrounding the diesel fuel UST (RSR-100SMT-06-0146, BHI-00221 pgs. 3-50 & 3-108, WHC-SD-EN-TI-136 pg. 3, and 91-ERB-129 pg. 2). The vicinity of the 105-NA facility was considered "radiological" (CCN 095435 Appendix A pg. 1). The 1722-N facility was used as a decontamination area for radiologically contaminated equipment from the 105-N Reactor and Fuel Storage Basin (CCN 157865 pg. 1, BHI-00221 pg. 3-108, IHC-2005-0032, and WCH-473 pg. 10).

There was potential for the presence of standard industrial hazardous substances such as lead, beryllium, cadmium, PCBs, and asbestos within the 1722-N facility (IHC-2005-0032 pg. 3).

Liquids: ☒ Yes ☐ No

If yes, describe source and nature of liquids:
A 5,000 gallon diesel fuel UST (removed 12/1990) was associated with the 105-NA facility (CCN 157582 pg. 2; CCN 157865 pg. 2; SIS Facility Summary Report for 105-NA pg. 1; WHC-SD-EN-TI-136 pgs. 1, 3, and 7; and 91-ERB-129 Attachments 2 & 4). Also, standing water was present on the floor of the 105-NA facility during an inspection (BHI-00221 pg. 3-50).

Were the hazardous substances removed from the facility prior to demolition? ☒ Yes ☐ No

As verified by what documentation:
All known hazardous substances were removed from these facilities prior to their demolition (WCH-473 pg. 15).

Any PCB light ballast, fluorescent light, sodium vapor light, process chemical, residual liquid chemical, door actuator, oil,

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

mercury component, and free mercury cache contained within the 105-NA and 1722-N facilities would have been removed prior to demolition (ISS-07-06-27-001 Base Work Package and ISS-07-06-27-001 A-Packs A, B, E, F, and G). Reviewed documentation did not indicate the presence of lead, beryllium, cadmium, or asbestos at these facilities. The 1722-N facility was deactivated in the early 1990s and was documented to have remained empty at least through November of 2005 (IHC-2005-0032 pg. 1).

The diesel fuel UST was removed December 7, 1990 (CCN 157582 pg. 2, CCN 157865 pg. 2, SIS Facility Summary Report for 105-NA pg. 1, WHC-SD-EN-TI-136 pgs. 3, 7, and 8, and 91-ERB-129 pgs. 1 & 2 and Attachments 2 & 4). There was no indication that the contents of the UST had leaked into the surrounding soil (WHC-SD-EN-TI-136 pg. 8).

Was there potential for hazardous substances to be introduced into the soils during facility operations or demolition? ☒ Yes ☐ No ☐ N/A

References/Comments:
The 105-NA and 1722-N facilities did not contain considerable amounts of chemical or radiological substances (CCN 095435 pg. 2-1 & Appendix A pgs. 1 & 7). Nevertheless, the 1722-N facility was used as a decontamination area for equipment from the 105-N Reactor and the Fuel Storage Basin, both of which were radiologically contaminated (CCN 157865 pg. 1, BHI-00221 pg. 3-108, IHC-2005-0032, and WCH-473 pg. 10). Accordingly, elevated levels of radiological contamination were discovered within the 105-NA facility and the 1722-N facility (RSR-100SMT-06-0146, and BHI-00221 pgs. 3-50 & 3-108). The risk of migration of radiological contamination during excavation was mitigated by isolation of any floor drains and sanitary sewers from these facilities prior to demolition (WCH-473 pg. 15).

Following its removal, the exterior of the diesel fuel UST was found to be radiologically contaminated (WHC-SD-EN-TI-136 pg. 3 & 91-ERB-129 pg. 2). Decontamination and subsequent disposal of the UST at the Hanford low level waste burial ground was planned as a result of the radiological contamination (91-ERB-129 pg. 2). The soil around the tank was sampled and radiological contamination was discovered in a sufficient level to prevent laboratory analysis before the expiration of the holding time (WHC-SD-EN-TI-136 pg. 3). A past unplanned release had displaced several hundred liters of radioactively contaminated water from the Fission Product Trap to a concrete pad and surrounding soil directly adjacent to the location of the UST (WIDS General Summary Report for UPR-100-N-39 pg. 1). It is possible that this unplanned release was the cause of the radiological contamination present on the tank exterior and in the surrounding soil.

Standing water was present on the floor of the 105-NA facility during an inspection (BHI-00221 pg. 3-50). If this water were to have migrated from the facility, it could have leached radiological contamination into the underlying or adjacent soil.

List any hazardous materials left in the building for demolition:
N/A

Does review of historical records and process knowledge indicate a potential for radiological or chemical contamination to be present in the facility?
A work progress radiological survey detected substantially elevated levels of removable radiological contamination within the 1722-N facility (RSR-100SMT-06-0146, conducted 3/30/2006). Twenty additional radiological surveys pertaining to the 105-NA and 1722-N facilities do not indicate the presence of radiological contamination (RSR-100ISS-06-0076, RSR-100ISS-08-0528 / 0748 / 0758 / 0877, RSR-100ISS-10-0639, RSR-100N-07-0629 / 0758 / 0963, RSR-100N-08-0279 / 0380 / 0382 / 0556 / 0603 / 0860 / 1381 / 1506, RSR-100N-10-1430, RSR-100SMT-02-0329, and RSR-100SMT-06-0146 / 0174).

As addressed above, historical documentation indicates that the 105-NA facility, the 1722-N facility, and the nearby diesel fuel UST were radiologically contaminated. The UST was removed in 1990 and the facilities were demolished in 2010 and demolition debris were disposed at the ERDF.

Comments:
Pertinent design drawings include H-1-38995 & H-1-45007, Sheet 37.

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

E. FIELD OBSERVATIONS

Visual Inspection

Were any stained soils/anomalies discovered during or after demolition of the facility? ☐ Yes ☒ No

References/Comments:

No anomalies were found at either the 105-NA or 1722-N facilities (CCN 157582 pg. 2 & CCN 157865 pg. 2). No reviewed documentation indicates the presence of stained soils in the area.

Were samples taken of the stained soils/anomalies? ☐ Yes ☐ No ☒ N/A

References/Comments:

Do results of the samples indicate that chemical contamination exists? ☐ Yes ☐ No ☒ N/A

References/Comments:

Is the area potentially a discovery site? ☐ Yes ☒ No

References/Comments:

Radiological Surveys

Did radiological surveys (GPERS or equivalent) identify contamination? ☐ Yes ☐ No

References/Comments:
N/A. Post demolition GPERS surveys of the areas underneath the 105-NA and 1722-N have not yet been conducted as the area is still being utilized to support ongoing work activities for removal of adjacent WIDS sites. It should be noted that the footprints of the 105-NA and 1722-N are to be included in the 100-N-66 Confirmatory Waste Site footprint which includes the 105-N/109-N Interim Safe Storage (ISS) Enclosure. Post demolition radiological area surveys, depicting the final radiological conditions of the 105-NA and 1722-N areas will be performed at a later date and will be included in the Facility Status Change Form for the 109-N/105-N as supporting information for as left conditions of the 100-N-66 Reactor WIDS footprint.

Were samples taken of the radiologically contaminated soils? ☐ Yes ☐ No ☒ N/A

References/Comments:

Is the area potentially a discovery site? ☐ Yes ☒ No

References/Comments:

Were the contaminated materials removed? ☐ Yes ☐ No ☒ N/A

References/Comments:

F. WIDS SITES

Were there any WIDS sites affected by D4 activities? ☒ Yes ☐ No

If yes, list the WIDS sites:
The excavation for removal of the 1722-N and 105-NB, as well as well as excavations for work-scope required to complete Interim Safe Storage of the 105-N reactor, effectively removed the UPR-100-N-39, parts of 100-N-66 (Reactor footprint WIDS) and portions of WIDS pipelines 100-N-84:2, :6, and 100-N-63:2. The excavation required for removal of these structures was left open and eventually became part of a larger excavation required for removal of the 105-N Fuel Storage Basin/Transfer Bay, 1303-N Spacer Silos, 107-N and associated pipe trenches, and the 105-NE Fission Products Trap. The accepted WIDS sites will be verification sampled by FR at a later date.

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

Were the WIDS site(s) completely removed? ☒ Yes ☐ No

References/Comments:
It is likely that excavation for removal of the 105-NB, 1722-N, and other 105-N Reactor Interim Safer Storage work-scope completely removed UPR-100N-39. At that time various sections of WIDS pipelines were also partially removed, since that time the remaining sections of these pipelines have been removed during demolition/remediation of the 105-N Fuel Storage Basin/Transfer Bay, 1303-N Spacer Silos, 107-N and associated pipe trenches, and the 105-NE Fission Products Trap.

Will the Ancillary Facility Footprint be deferred to FR to be closed out with a co-located Waste Site? ☐ Yes ☒ No

References/Comments:
As mentioned above, excavations for removal of the 1722-N and 105-NB, as well as additional demolition/removal work scope related to ISS of the 105-N reactor, effectively removed the 1722-N and 105-NB facilities as well as portions of WIDS sites co-located within their boundaries. The 105-NA has overlap with the 100-N-66 WIDS site, and the 1722-N shared a common wall with the 105-N Reactor Building. Facilities sharing a common wall with the 105-N/109-N were generally included in the footprint of the 100-N-66 WIDS footprint. This was the case with half of the 105-NA but was not the case for the 1722-N. For this reason, it is requested that the 100-N-66 be expanded to include the entire footprint of the 105-NA and 1722-N. The 100-N-66 is a confirmatory waste site and will not be verification sampled or closed out at this time because the footprint of the site encompasses the 105-N/109-N Reactor ISS which will be addressed at a later date.

G. COPCs FOR SOILS AND STRUCTURES REMAINING AFTER DEMOLITION

What are the potential contaminants of concern for the remaining below-grade soil?

☐ None ☐ SVOC ☐ VOC ☐ Metals ☐ TPH ☒ Rad ☐ PCBs

☐ Other (Specify): _____

Comments:
Elevated levels of radiological contamination were discovered within the 105-NA facility, the 1722-N facility, on the exterior of the diesel fuel UST, and in the soil surrounding the diesel fuel UST (RSR-100SMT-06-0146, BHI-00221 pgs. 3-50 & 3-108, WHC-SD-EN-TI-136 pg. 3, and 91-ERB-129 pg. 2).

The soil around the diesel fuel UST was sampled and radiological contamination was discovered in a sufficient level to prevent laboratory analysis before the expiration of the holding time (WHC-SD-EN-TI-136 pg. 3).

In 1983/1984, an unplanned release displaced several hundred liters of radioactively contaminated water from the Fission Product Trap to a concrete pad and surrounding soil directly adjacent to the location of the UST (WIDS General Summary Report for UPR-100-N-39 pg. 1).

The 105-NA facility was found to be holding standing water which could have leached radiological contamination into the underlying or adjacent soil (BHI-00221 pg. 3-50, December 1994).

Summary of in-process soil sampling requirements:
N/A

Constituents detected / concentrations / rationale
Consult Sample Collection Summary below

Sample Collection Summary
• Drywall and tape at the 105-NA facility: Sample (HEIS) Number J135K6 (CCN 157852 pg. 1)

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-025

• Beryllium wipe sample at the 1722-N facility: Sample (HEIS) Number J110T1 (CCN 0576105 pg. 2)

Sample numbers and corresponding analysis results for the diesel fuel UST are provided in 100-N Area Underground Storage Tank Closures (WHC-SD-EN-TI-136 pgs. 3-7). The initial sampling below the tank (conducted 12/7/1990) yielded radiological levels from 20,000 - 50,000 counts per minutes, which prevented analysis before the holding times expired. The site was then backfilled. The site was re-excavated using plastic markers to identify the original excavation boundary, and eventually sampled on 3/30/1992. No indication of tank leakage or petroleum contamination was found and the analytical results were below action levels.

H. NOTES / ADDITIONAL INFORMATION

☒ Check here if additional information / data / maps / sketches are attached to this form.

If checked, list the attachment(s):
Figure 1: GIS Site Map for 105-NA and 1722-N

I. SAMPLING

Are soil samples required to demonstrate that remaining structure or below-grade soils meet cleanup standards? ☐ Yes ☒ No

Based on the above information it was determined that sampling: ☐ will ☒ will not be required in order to demonstrate that cleanup criteria have been met.

The individual below acknowledges that the review of this facility has been completed. He or she also commits to provide to the Department of Energy (DOE) and the Washington State Department of Ecology (Ecology) any available information that could alter the sampling decision established in this form.

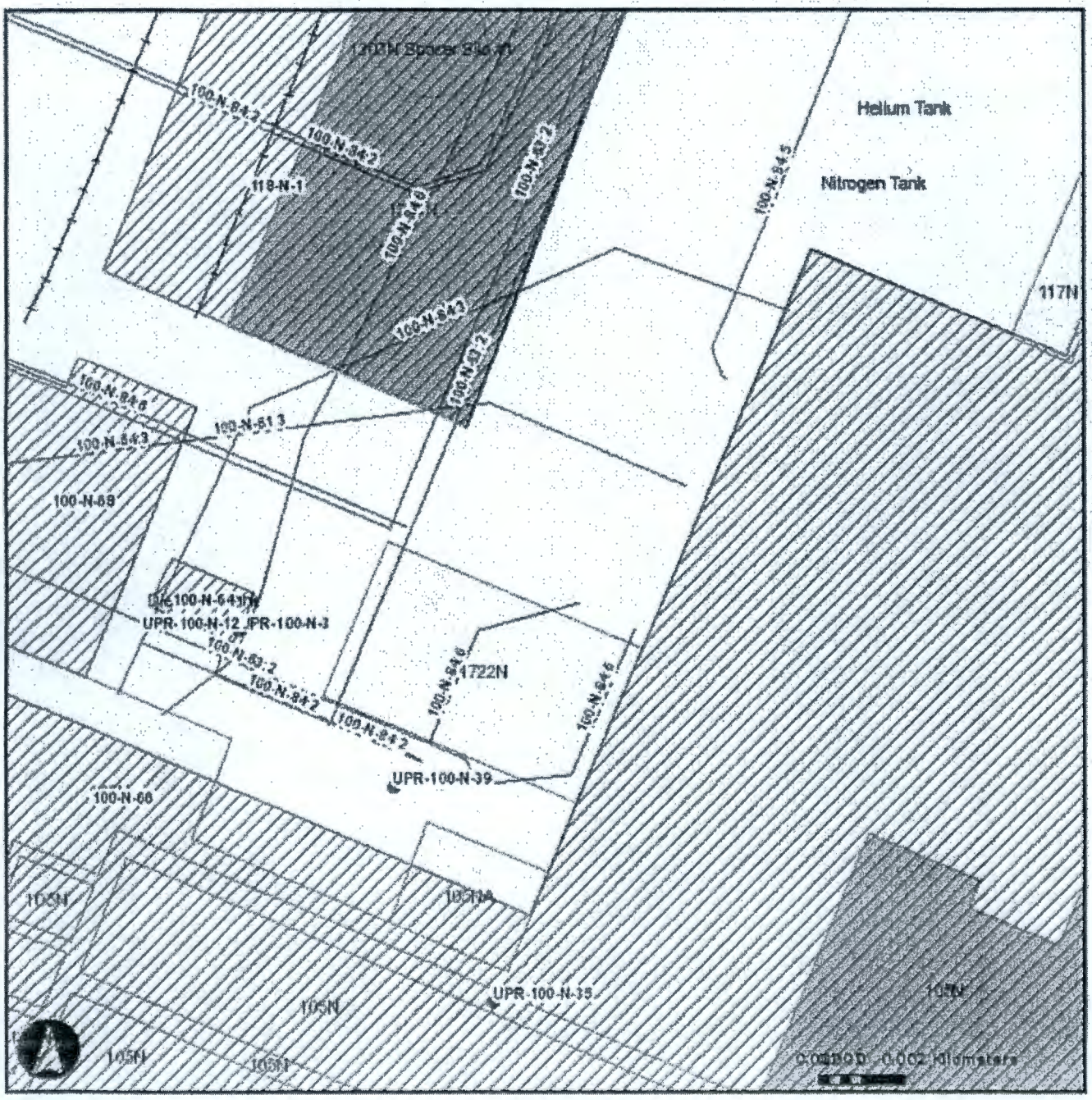
Information Reviewer Signature	Printed Name	Date
David Warren	David Warren	DJW 1.9.13 1.9.~~12~~ 13

The regulatory representative below agrees with the decision outlined in section I of this form for the indicated facility and supports implementation of that decision based on the information currently available.

DOE Signature	Printed Name Rudy Guercia	Date 1/9/13
Ecology Signature Rick Bond	Printed Name Rick Bond	Date 1/16/13

Figure 1
GIS site map for
105-NA and 1722-N

Map



Active Lines

Hydrant Names

Fire Hydrants

WasteSitePoints

- Sitecode Missing in SIS

WasteSitesLine (continued)

- Accepted, Interim Closed Out
- Accepted, No Action
- Accepted, Rejected
- Discovery,
- Not Accepted,

WasteSitePolys

- Sitecode Missing in SIS

Waste Line Labels

Waste Point Labels

Main Roads

Railroads

Roads

- Accepted,
- Accepted, Closed Out
- Accepted, Consolidated
- Accepted, Interim Closed Out
- Accepted, No Action
- Accepted, Rejected
- Discovery
- Not Accepted,

WasteSitesLine

- Sitecode Missing in SIS
- Accepted,
- Accepted, Closed Out
- Accepted,
- Accepted, Closed Out
- Accepted, Consolidated
- Accepted, Deleted From NPL
- Accepted, Interim Closed Out
- Accepted, No Action
- Accepted, Rejected
- Discovery,
- Not Accepted (Proposed),
- Not Accepted,

Waste Polygon Labels

Buildings

- Unknown
- Active
- Demolished
- Inactive
- Removed

Building Labels

Attachment 21

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-030

A. INSTRUCTIONS

This form must be completed to: 1) document existing data in order to determine if current data is suitable to prove completion of 100-N Ancillary Facilities, or 2) document that site-specific sampling and analyses are needed to provide completion for 100-N Ancillary Facilities.

B. GENERAL INFORMATION

Building Name: Sanitary Sewer Lift Station No. 2 & Sanitary Sewer Lift Station No. 3

Building Number: 1904-NB & 1904-NC

WIDS Sites Associated or Adjacent:
Associated: 100-N-84:5 (Accepted Classification Status) & 124-N-10 (Accepted Classification Status)
Adjacent: 100-N-84:3 (No Action Reclassification Status)

Other:
1904-NB: This facility consisted of a below grade concrete wet well and a below grade concrete valve pit. It was located approximately 275 feet southeast of the 1120-N Storage and Training Building. The wet well had an interior diameter of 6 feet and contained two submersible pumps for transferring waste water into the valve pit. The valve pit had a gravel bottom to allow for drainage and contained valves and metering equipment for controlling the system's flow rate. The 1904-NB facility was part of the sanitary sewer collection system that transferred waste water from the various facilities in the 100-N Area to the 1904-N Sanitary Sewer Lagoon (BHI-00221 pg. 3-116, SIS Facility Summary Report for 1904-NB pg. 1, and WIDS General Summary Report for 124-N-10).

1904-NC: This facility consisted of a below grade concrete wet well and a below grade concrete valve pit. It was located approximately 130 feet south of the 1310-N Radioactive Liquid and Waste Treatment Facility. The wet well had an interior diameter of 6 feet and contained two submersible pumps for transferring waste water into the valve pit. The valve pit had a gravel bottom to allow for drainage and contained valves and metering equipment for controlling the system's flow rate. The 1904-NC facility was part of the sanitary sewer collection system that transferred waste water from the various facilities in the 100-N Area to the 1904-N Sanitary Sewer Lagoon (BHI-00221 pg. 3-117, SIS Facility Summary Report for 1904-NC pg. 1, and WIDS General Summary Report for 124-N-10).

Demolition of both facilities, as well as subsequent debris loadout, occurred in December of 2012. Demolition debris was transported to the Environmental Restoration Disposal Facility (ERDF) for disposal. The entire 1904-NC facility, and all but the bottom two feet of the 1904-NB facility, were demolished. The remaining portion of the 1904-NB facility will not be removed, as permitted by a pre-demolition agreement with the Washington State Department of Ecology (CCN 166420 pg. 1).

C. INFORMATION SOURCES

Available information (list document number for each if applicable):

Historical Site Assessment: N/A

Site Walkdown: N/A

IH Characterization Report: N/A

Radiological Survey:
- RSR-100N-12-1893
- RSR-100N-12-2503
- RSR-100N-12-2534

IHC/FHC Document: N/A

WIDS/SIS:
- RCC Stewardship Information System (SIS) Facility Summary Reports for 1904-NB & 1904-NC
- Waste Information Data System (WIDS) General Summary Reports for 100-N-84 & 124-N-10

PDSR: N/A

Facility Inspection:
- Visual Inspection of the 1904-NB Lift Station Excavation Soils and Debris Staging Area: CCN 169043
- Visual Inspection of the 1904-NC Lift Station Excavation Area Soils: CCN 169107

Waste Characterization Checklist: N/A

Summary Report: N/A

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-030

Other:
- 100-N Sewage Lagoon (1904-N) Decommissioning and Demolition Plan, Rev. 0: PLN-0015
- Ecology Approval of 1904-NB Staging Pile: CCN 167522
- Ecology Approval to Leave 1904-N Lift Stations: CCN 166420
- Environmental Restoration Disposal Facility Waste Profile Datasheet, Rev. 0: 1904N001
- Miscellaneous Sampling Logbook: EL-1516-20
- "Pre-Existing" Conditions Survey of Hanford Site Facilities, Rev. 0: BHI-00221
- Visual Inspection of the 1904-NB Lift Station Excavation Soils and Debris Staging Area: CCN 169043
- Visual Inspection of the 1904-NC Lift Station Excavation Area Soils: CCN 169107

---------- Facility Photographs ----------

- Pre-Demolition Facility Photographs, No Time Stamp: SIS Facility Summary Report for 1904-NB pgs. 3-4, SIS Facility Summary Report for 1904-NC pg. 3, BHI-00221 pgs. 3-116 through 3-117, CCN 167522 pg. 2, and EL-1516-20 pg. 84
- Post-Demolition Facility Photographs, No Time Stamp: CCN 169043 pgs. 2-3 and CCN 169107 pgs. 2-3

D. HAZARDOUS SUBSTANCES

Check all that apply:

☐ None ☐ Asbestos containing material ☐ Lead ☐ PCBs/PCB Articles ☒ Oils/Greases

☐ Chemicals List: N/A

☐ Radiological Contamination ☒ Mercury/Mercury Devices

☐ Other: N/A

References/Comments:

- Oils/Greases: Lubricating oils contained within the two pumps in the bottom of the lift stations were removed with the pumps.
- Mercury: Mercury contained within the float switches were removed with the switches.
- Radiological Contamination: The 1904-NC Lift Station was marked with a radiological sign associated with mud dauber nests, which were removed with one of the facility access hatches (CCN 167522 pgs. 3-4, CCN 169107 pg. 1, and RSR-100N-12-1893).

Liquids: ☒ Yes ☐ No

If yes, describe source and nature of liquids:
The 1904-NB and 1904-NC Lift Stations transferred waste water, including domestic human sewage, from the various facilities in the 100-N Area to the 1904-N Sanitary Sewer Lagoon (BHI-00221 pgs. 3-116 through 3-117, SIS Facility Summary Report for 1904-NB pg. 1, SIS Facility Summary Report for 1904-NC pg. 1, and WIDS General Summary Report for 124-N-10 pgs. 1-2).

Were the hazardous substances removed from the facility prior to demolition? ☒ Yes ☐ No

As verified by what documentation:
The waste water contained within the 1904-NB and 1904-NC Lift Stations was removed prior to demolition and hydrated lime was added to the Lift Stations to disinfect any residual contents (Waste Profile 1904N001 pg. 4).

Was there potential for hazardous substances to be introduced into the soils during facility operations or demolition? ☐ Yes ☒ No ☐ N/A

References/Comments:
It is believed that the 1904-N Sanitary Sewer Lagoon collection system, comprised in part of the 1904-NB and 1904-NC Lift Stations, emitted no leakage. This belief is supported by the visual inspections performed following removal of the lift stations, which did not identify any soil staining. The collection system was installed in 1986 and designed to last a minimum of 25 years (WIDS General Summary Report for 124-N-10 pg. 2).

List any hazardous materials left in the building for demolition:
N/A

Does review of historical records and process knowledge indicate a potential for radiological or chemical contamination to be present in the facility?
Radiological: Mud dauber nests were encountered at the 1904-NB Lift Station. A radiological survey of the mud dauber

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number SDF-100N-030

nests, 1904-NB Lift Station hatch, and the surrounding soil was performed (CCN 167522 pgs. 3-4 & RSR-100N-12-1893). Radiological contamination was not detected during this survey, which also functioned as a pre-usage survey of the waste staging area to be used in conjunction with demolition of the 1904-NB Lift Station. The 1904-NB and 1904-NC Lift Station excavation footprints each underwent a post-demolition radiological survey (CCN 169043 pgs. 4-5, CCN 169107 pgs. 4-5, RSR-100N-12-2503, and RSR-100N-12-2534). Radiological contamination was not detected during these two additional surveys.

Chemical: Five samples were taken from the 1904-N Sanitary Sewer Lagoon and analyzed for metals. The results of the analysis supported the conclusion that the sewage sludge in the 1904-N facility was non-hazardous and was not prohibited from being disposed at the ERDF (PLN-0015 pgs. 3-5). Such results are relevant to the 1904-NB and 1904-NC facilities because 1904-N Sanitary Sewer Lagoon influent was received from the 1904-NB and 1904-NC facilities (SIS Facility Summary Report for 1904-NB pg. 1, SIS Facility Summary Report for 1904-NC pg. 1, and WIDS General Summary Report for 124-N-10).

Comments:
A waste staging area was designated and approved for use by the Washington State Department of Ecology to be used in conjunction with demolition of the 1904-NB Lift Station (CCN 167522). The waste staging area was located around the 1904-NB Lift Station footprint. It was intended to store only non-hazardous demolition debris from the 1904-NB Lift Station. Prior to its use, the waste staging area underwent a radiological survey. No radiological contamination was detected during this survey (CCN 167522 pgs. 3-4 & RSR-100N-12-1893).

Pertinent design drawings include H-1-49461, Sheet 1, Rev. 1; and H-1-49465, Sheet 1, Rev. 2.

E. FIELD OBSERVATIONS

Visual Inspection

Were any stained soils/anomalies discovered during or after demolition of the facility? ☐ Yes ☒ No

References/Comments:
The 1904-NB and 1904-NC Lift Station excavations did not contain stained soil or any anomaly during post-demolition visual inspection (CCN 169043 pg. 1 & CCN 169107 pg. 1), nor were any stained soils or anomalies discovered during the demolition/removal process. The waste staging area used for 1904-NB demolition debris was likewise found to be free of stained soil and anomalies.

Were samples taken of the stained soils/anomalies? ☐ Yes ☐ No ☒ N/A

References/Comments:
N/A

Do results of the samples indicate that chemical contamination exists? ☐ Yes ☐ No ☒ N/A

References/Comments:
N/A

Is the area potentially a discovery site? ☐ Yes ☒ No

References/Comments:
No stained soil or anomaly was encountered within the 1904-NB or 1904-NC facility footprints.

Radiological Surveys

Did radiological surveys (GPERS or equivalent) identify contamination? ☐ Yes ☒ No

References/Comments:
CCN 167522 pgs. 3-4, CCN 169043 pgs. 4-5, CCN 169107 pgs. 4-5, RSR-100N-12-1893, RSR-100N-12-2503, and RSR-100N-12-2534

Were samples taken of the radiologically contaminated soils? ☐ Yes ☐ No ☒ N/A

References/Comments:
N/A

Is the area potentially a discovery site? ☐ Yes ☒ No

References/Comments:
No radiological contamination was encountered within the 1904-NB or 1904-NC facility footprints.

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-030

Were the contaminated materials removed? ☐ Yes ☐ No ☒ N/A

References/Comments:
N/A

F. WIDS SITES

Were there any WIDS sites affected by D4 activities? ☒ Yes ☐ No

If yes, list the WIDS sites:
- 100-N-84:3
- 100-N-84:5

Were the WIDS site(s) completely removed? ☐ Yes ☒ No

References/Comments:
Both the 100-N-84:3 and 100-N-84:5 WIDS subsites are sanitary sewer pipelines that span a large section of the 100-N area. Accordingly, only the portions of these subsites that were present within the 1904-NB and 1904-NC excavation boundaries were removed during D4 activities at the 1904-NB and 1904-NC Lift Stations.

Will the Ancillary Facility Footprint be deferred to FR to be closed out with a co-located Waste Site? ☐ Yes ☒ No

References/Comments:
Deferral will not be necessary for the footprint of the 1904-NB Lift Station or the footprint of the 1904-NC Lift Station. All but the bottom two feet of the 1904-NB facility was demolished and removed by the D4 Organization. The entire 1904-NC facility was demolished and removed by the D4 Organization. Accordingly, the only remaining portion of these two facilities is the bottom two feet of the 1904-NB facility, which will remain in place in accordance with a documented agreement with the Washington State Department of Ecology (CCN 166420 pg. 1).

There are two WIDS subsites within the vicinity of the 1904-NB and 1904-NC Lift Stations. WIDS subsite 100-N-84:3 has received a No Action reclassification status, and accordingly the remaining portion of this subsite will not require remedial action (WIDS General Summary Report for 100-N-84 pg. 2). Conversely, WIDS subsite 100-N-84:5 may require future remedial action. However, this subsite is already within the work scope of the FR Organization and accordingly deferral of this subsite to the FR Organization is unnecessary for its closeout.

G. COPCs FOR SOILS AND STRUCTURES REMAINING AFTER DEMOLITION

What are the potential contaminants of concern for the remaining below-grade soil?

☒ None ☐ SVOC ☐ VOC ☐ Metals ☐ TPH ☐ Rad ☐ PCBs

☐ Other (Specify): _____

Comments:
N/A

Summary of in-process soil sampling requirements:
N/A

Constituents detected / concentrations / rationale
Consult Sample Collection Summary below

Sample Collection Summary
- Liquid within 1904-NB Lift Station: Sample (HEIS) Number J1R1N4 (Logbook EL-1516-20 pgs. 82-84)
- Liquid within 1904-NC Lift Station: Sample (HEIS) Number J1R1N8 (Logbook EL-1516-20 pgs. 82-84)
- Sludge within 1904-NB Lift Station: Sample (HEIS) Number J1R1N5 (Logbook EL-1516-20 pgs. 82-84)
- Sludge within 1904-NC Lift Station: Sample (HEIS) Number J1R1N9 (Logbook EL-1516-20 pgs. 82-84)

H. NOTES / ADDITIONAL INFORMATION

100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number
SDF-100N-030

☒ Check here if additional information / data / maps / sketches are attached to this form.

If checked, list the attachment(s):
Ecology Approval to Leave 1904-N Lift Stations: CCN 166420
Ecology Approval of 1904-NB Staging Pile: CCN 167522
Visual Inspection of the 1904-NB Lift Station Excavation Soils and Debris Staging Area: CCN 169043
Visual Inspection of the 1904-NC Lift Station Excavation Area Soils: CCN 169107

I. SAMPLING

Are soil samples required to demonstrate that remaining structure or below-grade soils meet cleanup standards? ☐ Yes ☒ No

Based on the above information it was determined that sampling: ☐ will ☒ will not be required in order to demonstrate that cleanup criteria have been met.

The individual below acknowledges that the review of this facility has been completed. He or she also commits to provide to the Department of Energy (DOE) and the Washington State Department of Ecology (Ecology) any available information that could alter the sampling decision established in this form.

Information Reviewer Signature	Printed Name	Date
David Warren	David Warren	1.24.13

The regulatory representative below agrees with the decision outlined in section I of this form for the indicated facility and supports implementation of that decision based on the information currently available.

DOE Signature	Printed Name Rudy Guercia	Date 1/29/13
Ecology Signature Nina M. Menard	Printed Name Nina Menard	Date 2/4/13

166420

^WCH Document Control

From: Warren, David J

Sent: Tuesday, July 03, 2012 7:08 AM

To: ^WCH Document Control

Subject: FW: 1904-N lift stations proposed path forward

Please CHRON this e-mail as it represents a regulatory agreement. I would like the title to be: Ecology approval to leave 1904-N Lift Stations. Please advise me of the number once complete. Thanks.

Dave Warren
100-N EPL
539-6040

From: Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]
Sent: Wednesday, June 20, 2012 12:20 PM
To: Warren, David J
Cc: Boyd, Alicia; Faust, Toni L; Saueressig, Daniel G
Subject: RE: 1904-N lift stations proposed path forward

Understood. Thanks,

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Warren, David J [mailto:djwarren@wch-rcc.com]
Sent: Wednesday, June 20, 2012 12:18 PM
To: Elliott, Wanda (ECY); Faust, Toni L; Saueressig, Daniel G
Cc: Boyd, Alicia (ECY)
Subject: RE: 1904-N lift stations proposed path forward

Wanda,

Just so we're all on the same page. I want to make sure that Ecology understands that with the proposed path the lift stations will only be removed to 3 feet below grade and backfilled, they will not come out when FR removes the 100-N-84:5 pipelines that tie into them. D4 will conduct radiological scoping surveys on the lift stations prior to demolition but that will likely be limited in extent due to the nature and configuration of the lift stations. It should be noted that we don't expect the lift stations to be radiologically contaminated. Additionally, it is likely that we won't be able to perform GPERS surveys on the excavation/remaining lift stations as there will be a significant fall hazard created when we remove the top of the structures. We won't be able to eliminate that hazard until we backfill the interior of the structures but we could probably perform GPERS surveys of the sideslopes of the excavation once that is done. I don't see any issues with providing you copies of the surveys D4 performs and I presume that FR won't either. Please contact me if you have any questions. Thanks.

Dave Warren
539-6040

From: Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]
Sent: Monday, June 18, 2012 12:18 PM
To: Faust, Toni L; Warren, David J; Saueressig, Daniel G

Cc: Boyd, Alicia
Subject: 1904-N lift stations proposed path forward

Hey guys I looked over the proposed path on the 1904-N lift stations and the only comment I have is that when the removal action is complete can you please provide copies of any rad surveys whether they are from the associated pipelines or stations?
Thanks,

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

167522

^WCH Document Control

From: Warren, David J
Sent: Wednesday, September 19, 2012 7:37 AM
To: ^WCH Document Control
Subject: FW: Staging Pile Request for 1904-NB
Attachments: 1904-NB Rad Survey.pdf

Please CHRON this e-mail (and attachment) as it represents a regulatory agreement. Title should be: Ecology approval of 1904-NB staging pile. Please advise me of the CHRON number. Thanks.

David Warren
539-6040

From: Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]
Sent: Monday, September 17, 2012 4:23 PM
To: Warren, David J
Subject: RE: Staging Pile Request for 1904-NB

I approve.

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Warren, David J [mailto:djwarren@wch-rcc.com]
Sent: Monday, September 17, 2012 4:11 PM
To: Elliott, Wanda (ECY)
Subject: Staging Pile Request for 1904-NB

Wanda.

We will soon be starting demolition of the 1904-NB Lift Station, pictured below in the red box adjacent the white truck. As we have discussed previously, the proposed path forward is to pump the septage from the structure (which MSA completed last week), remove the interior components (pumps, switches, piping, etc.), excavate down and remove the top 3 feet of the cast concrete outer shell, and backfill the interior of the structure with clean fill material. It was previously thought that the demolition debris from these activities could be direct loaded. However, after further discussions it appears that this is not the case. Since this structure sits outside the AOC identified in the *Removal Action Work Plan for 100-N Area Ancillary Facilities* (DOE/RL-2002-70, Rev. 3), we have identified an area around the lift station for managing/staging the waste (see figure pasted below) that we would like to reserve for staging non-hazardous demolition debris. As specified in section 4.2.3.2 of the RAWP, we are requesting Ecology's approval to use all or a portion of this area for managing/staging the waste. Per our phone conversation, we have had the area hand surveyed for radiological contamination, that survey detected no contamination and is attached for your review. Please let me know if you approve of this staging pile and contact me if you have any questions. Thanks.

David Warren
100-N D4 Environmental Project Lead
WCH
539-6040

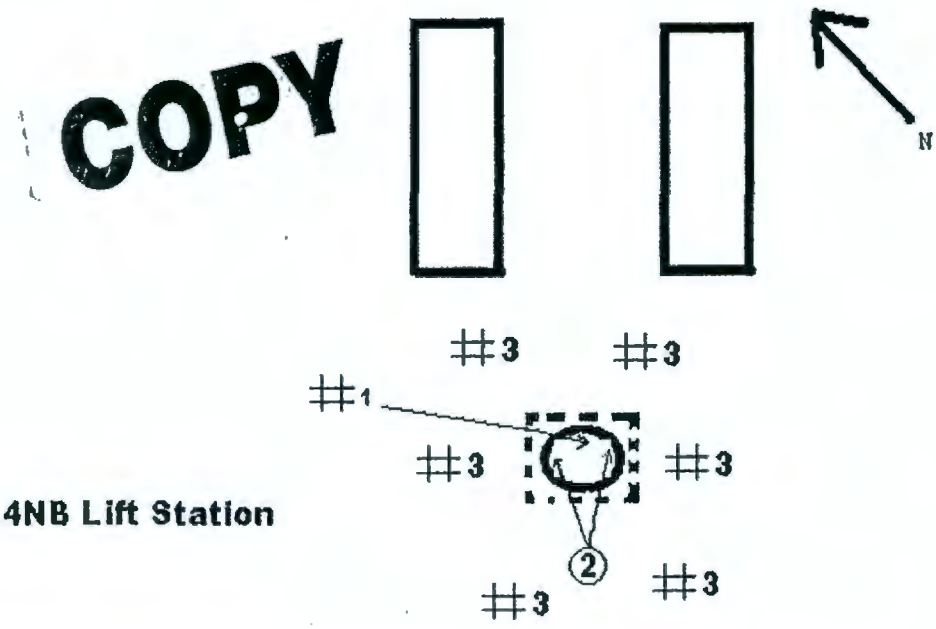
Staging Pile Area

RADIOLOGICAL SURVEY RECORD

Type of Survey			Survey #
☐ Routine	☒ Work Progress		RSR – 100N-12-1893
RWP # / Rev. #	Date	Time	Location
100N-10-001 / 04	08-29-12	1530	100N / 1904NB Lift Station

Description
Survey of lift station due to mud dauber nests

References: (e.g., SRTA, ASER, LASER, RSP, Work Package)
TA-07-SR-07 / Rev. 7



CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	(AS) Air Sample Location	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area

○ Technical Smear	# Direct	M Large Area Wipe	T Transferable	General Area Dose Rates =Uncorrected Meter Reading (mR/hr)	All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated	Contact / 30cm	N Neutrons (mRem/hr)	Δ Micro Rem (μR/hr)	SCA Soil Contamination Area	Radiological Boundary

Instruments

Model	ID #	Cal Due Date	Model	ID #	Cal Due Date
2224-3 / 43-93	SCLLB-0011 / DTLLP-0111	11-17-12	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

RCT Name/Signature/Date:
Ricardo L. Wilson / Ricardo L. Wilson / 09-05-12

RCT Supervisor Name/Signature/Date:
K. C. Burns / [signature] / 9-17-12

RCT signature indicates portable instruments checked IAW RC-300-2.1

RADIOLOGICAL SURVEY RECORD

Survey # RSR - 100N-12-1893

Contamination Measurement Information[1]

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
1	Mud dauber nests	NA	NA	NA	NA	<500	7	<5,000	10
2	Lip of the Lift station opening	<20	7	<1,000	10	<500	7	<5,000	10
3	Outside of trailer	NA	NA	NA	NA	<500	7	<5,000	10
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

[1] Unless stated otherwise in the "References" section, exempted β-γ (i.e., C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107, Eu-155) contamination levels are ≤ 10 times the β-γ contamination levels shown above.

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA

169043

^WCH Document Control

From: Warren, David J
Sent: Tuesday, December 18, 2012 3:00 PM
To: ^WCH Document Control
Subject: FW: Visual Inspection of the 1904-NB excavation soils

Attachments: 1904NB visual inspection.doc; 1904-NB Excavation Survey.pdf

Please CHRON this e-mail and attachments as: Visual inspection of the 1904-NB lift station excavation soils and debris staging area. Please advise me of the CHRON # when assigned. Thanks.

Dave Warren
539-6040

From: Warren, David J
Sent: Tuesday, December 18, 2012 2:32 PM
To: Allen, Mark E; Flannery, Michael (Mike) D; Bigby, Daniel A
Subject: Visual inspection of the 1904-NB excavation soils

At approximately 1500 hours on 12/4/12, the soils of the excavation(s) for removal of the 1904-NB Lift Station, as well as the area surrounding the excavation that was utilized for staging demolition debris, were visually inspected for signs of staining or anomalous items. The excavation and surrounding area was observed to be free of any stained soils or anomalies that would be indicative of chemical or petroleum contamination. The Radiological survey (Performed 12/5/2012) didn't identify contamination, nor was any expected since the structure was not radiologically contaminated. Please see the attached word file for photographs that were taken during the inspection and PDF file of the Radiological survey. I'll CHRON this e-mail and attachments for future use as reference for closure documentation. Feel free to contact me if you have any questions. Thanks.

David Warren
100-N D4 Environmental Project Lead
WCH
539-6040

1904NB visual nspection.doc (..

1904-NB ıvation Survey.pc

1904-NB Visual Inspection Photographs

1904-NB Excavation Looking Southwest

1904-NB Excavation Looking Southeast

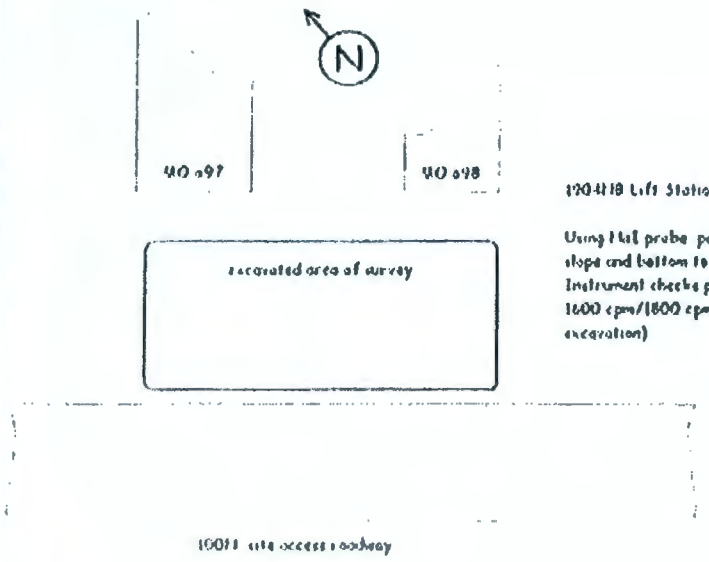
1904-NB Excavation Looking Northwest

RADIOLOGICAL SURVEY RECORD

Type of Survey			Survey #
☐ Routine N/A	☑ Work Progress		RSR – 100N-12-2503
RWP # / Rev #	Date	Time	Location
N/A	December 5th, 2012	0900	100N

Description
1904NB Lift Station, NaI survey post excavation/Demo, prior to fill

References: (e.g., SRTA, ASER, LASER, RSP, Work Package)
TA-07-SR-07 R7



1904NB Lift Station, Excavation to a depth of approx 12-15 ft

Using NaI probe performed static and scan surveys of top slope's edge slope and bottom to an extent of approx 40% of area. Background and Instrument checks performed before and after survey. Backgrounds were 1600 cpm/1800 cpm. No measurements were above 2000 cpm (bottom of excavation)

COPY

CA Contamination Area	HCA High Contamination Area	PBA Radiological Buffer Area	ARA Airborne Radioactivity Area	[AS] Air Sample Location	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area
○ General Area	[illegible]	M [illegible]	T Transferable	General Area Data Here (Uncorrected Meter Reading in RCH)	All radiation readings are in dose rates in units of mR/hr unless otherwise indicated	[illegible]	N [illegible]	V [illegible]	SCA Soil Contamination Area	Passageway Location [illegible]

Instruments

Model	ID #	Cal Due Date	Model	ID #	Cal Due Date
CMNE5	0022	1-14-13	N/A	N/A	N/A
DTLL3	0018	1-14-13	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

RCT Name/Signature/Date:	RCT Supervisor Name/Signature/Date:
Jack Conrad, December 5, 2012	

RCT signature indicates portable instruments checked IAW RC-300-2.1

RADIOLOGICAL SURVEY RECORD

Survey # RSR - 100N-12-2503

COPY

Contamination Measurement Information[1]

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] Unless stated otherwise in the "References" section, exempted β-γ (i.e., C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107 Eu-155) contamination levels are ≤ 10 times the β-γ contamination levels shown above.

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

169107

^WCH Document Control

From: Warren, David J
Sent: Wednesday, December 26, 2012 4:21 PM
To: ^WCH Document Control
Subject: FW: Visual inspection of the 1904-NC excavation soils

Attachments: 1904-NC visual inspection.doc; 1904-NC Excavation Survey.pdf

Please CHRON this e-mail and attachments as: Visual inspection of the 1904-NC lift station excavation area soils. Please advise me of the CHRON # when assigned. Thanks.

Dave Warren
539-6040

From: Warren, David J
Sent: Wednesday, December 26, 2012 4:06 PM
To: Allen, Mark E; Flannery, Michael (Mike) D; Bigby, Daniel A
Subject: Visual inspection of the 1904-NC excavation soils

All,

At approximately 0830 hours on 12/12/12, the soils of the excavation(s) for removal of the 1904-NC Lift Station were visually inspected for signs of staining or anomalous items. The entire below grade portion of the 1904-NC Lift Station structure was demolished and loaded out. The excavation and surrounding area(s) were observed to be free of any stained soils or anomalies that would be indicative of chemical or petroleum contamination. A Radiological survey (Performed 12/12/2012) of the excavation area didn't identify contamination. It should be noted that the only radiological contamination associated with the structure was from a mud dauber nest, which was removed with the lid of the structure. Please see the attached word file for photographs that were taken during the inspection and PDF file of the Radiological survey. I'll CHRON this e-mail and attachments for future use as reference for closure documentation. Feel free to contact me if you have any questions. Thanks.

David Warren
100-N D4 Environmental Project Lead
WCH
539-6040

1904-NC visual inspection.doc ...

1904-NC ıvation Survey.pc

1904-NC Visual Inspection Photographs

1904-NC Excavation Looking East

1904-NC Excavation Looking West

1904-NC Excavation Looking Northwest

RADIOLOGICAL SURVEY RECORD

Type of Survey			Survey #
☐ Routine N/A ———	☑ Work Progress		RSR – 100N-12-2534
RWP # / Rev. #	Date	Time	Location
N/A ———	December 12th, 2012	0900	100N

Description
1904NC Lift Station, NaI survey post excavation/Demo, prior to back fill

References: (e.g., SRTA, ASER, LASER, RSP, Work Package)
TA-07-SR-07 R7

1904NC lift station: demolished and excavated to a depth of about 10 ft, circular with a diameter of about 20 ft.

Using NaI probe, performed static and scan surveys of the slope's top edges, slopes and bottom to an extent of Approx 50% of the area. Background and instrument checks performed before and after survey. Backgrounds were 2000 cpm. No measurements above 2300 cpm (south edge).

COPY

CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	[AS] Air Sample Location	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area				
○ Technical Smear	# Direct	M Large Area Wipe	T Transferable	General Area Dose Rates =Uncorrected Meter Reading (mRhr)	All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated	Contact / 30cm	N Neutrons (mRem/hr)	Δ Micro Rem (μR/hr)	SCA Soil Contamination Area	Radiological Boundary		

Instruments

Model	ID #	Cal Due Date	Model	ID #	Cal Due Date
CMNE5	0022	1-14-13	N/A	N/A	N/A
DTLL3	0018	1-14-13	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

RCT Name/Signature/Date:	RCT Supervisor Name/Signature/Date:
Jack Conrad, December 12, 2012	[illegible] 12/13/12

RCT signature indicates portable instruments checked IAW RC-300-2.1

RADIOLOGICAL SURVEY RECORD

Survey # RSR - 100N-12-2534

Contamination Measurement Information[1]

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] Unless stated otherwise in the "References" section, exempted β-γ (i.e., C-14, Fe-55, Ni-59, Ni-63, Se-79, Tc-99, Pd-107, Eu-155) contamination levels are ≤ 10 times the β-γ contamination levels shown above.

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

Attachment 22

^WCH Document Control 169583

From: Saueressig, Daniel G
Sent: Thursday, January 24, 2013 3:27 PM
To: ^WCH Document Control
Subject: FW: -REVISED- 100-N-63:2 Plume Chase Agreement:
Attachments: 100-N-63_2 additional remediation and resampling writeup- Revised.doc; 63_2 - Beta Surveys.pdf; 63_2 - Gamma surveys.pdf

Please provide a chron number (and include the attachments). This email documents a regulatory approval.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Thursday, January 24, 2013 3:24 PM
To: Elliott, Wanda; Jakubek, Joshua E
Cc: Saueressig, Daniel G; Buckmaster, Mark A; Nielson, Renee J; Howell, Theresa Q; Berezovskiy, Inna B
Subject: RE: -REVISED- 100-N-63:2 Plume Chase Agreement:

I do, too. Thanks.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Wednesday, January 23, 2013 4:58 PM
To: Jakubek, Joshua E; Chance, Joanne C
Cc: Saueressig, Daniel G; Buckmaster, Mark A; Nielson, Renee J; Howell, Theresa Q; Berezovskiy, Inna B
Subject: RE: -REVISED- 100-N-63:2 Plume Chase Agreement:

I concur with the revised approach.

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

169583

From: Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]
Sent: Wednesday, January 23, 2013 4:25 PM
To: Elliott, Wanda (ECY); Chance, Joanne C
Cc: Saueressig, Daniel G; Buckmaster, Mark A; Nielson, Renee J; Howell, Theresa Q; Berezovskiy, Inna B
Subject: -REVISED- 100-N-63:2 Plume Chase Agreement:

Good afternoon, I have attached the REVISED 100-N-63:2 plume chase agreement per our discussion at today's interface meeting.

Please let me know if you have any questions and if you concur with the proposed REVISED approach.

<< File: 100-N-63_2 additional remediation and resampling writeup- Revised.doc >> << File: 63_2 - Beta Surveys.pdf >> << File: 63_2 - Gamma surveys.pdf >>

Thanks,

Josh Jakubek
Washington Closure Hanford
Resident Engineer
509-942-4703

100-N-63:2 Waste Site Additional Remediation and Resampling Request Revision (1/23/13)

Background Information

One decision unit was identified for the 100-N-63:2 subsite consisting of the excavation only. A total of twenty five focused samples plus quality assurance/quality control (QA/QC) samples were to be collected from the decision unit. Verification sampling at the 100-N-63:2 subsite was conducted periodically as new segments of pipelines were remediated. Verification sampling began on January 3, 2012, and is ongoing. All samples were collected per the approved verification work instruction (WCH 2011). To date, most of the locations have been sampled with the exception of 4 sample locations. Due to other ongoing excavations and activities in the area, the verification sampling at locations S-3, S-4, S-13, and S-16 will be performed after interfering field activities cease in the area.

From the verification data results obtained from the 100-N-63:2 sampled locations, two locations (S-1 and S-15) failed direct exposure remedial action goals (RAGs) for cobalt-60.

Revised Recommendation for Path Forward

The original recommended path forward that was presented to Ecology and DOE and agreed upon via email concurrence dated 12/27/12, was to remove additional soil from the 100-N-63:2 subsite excavation within the areas of S-1 and S-15 locations for disposal at the Environmental Restoration Disposal Facility (Figure 1) and that GEPRS surveys would be used to guide field excavations and focus on areas where contamination is most probable. The depth of additional soil removal was to be between 0.5 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.), GPERS surveys, and well interferences.

In the process of planning the work for the aforementioned path forward, it was discovered that conducting the work per the plan would render fall hazard issues along the southern facing slope of 100-N-63:2, rendering a major portion of the Bioventing well island unusable. It was decided to do further characterization of the trench to decide if the failed sample locations were indicative of localized contamination which is supported by the GPRS survey. The area between failed verification samples S-1 and S-15 (Appx. 160 LF) was broken down into 40 LF segments and three additional GEA samples were taken at this spacing (Figure 2). The results of these samples (Table 2) show that all results are below soil cleanup RAGs. Based on this data, WCH would like to revise the recommended path forward to the following:

Remove additional soil from the 100-N-63:2 subsite excavation localized at an approximately 20' radius from the failed sample locations S-1, S-15, and the GPRS hotspot adjacent to injection well 199-N-168 for disposal at the Environmental Restoration Disposal Facility (Figure 2). The depth of additional soil removal will be between 0.5 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.), GPERS surveys, well interferences, sloping / fall hazard restrictions.

Figure 1. ORIGINAL: 100-N-63:2 Approximate Remediation Area Sketch.

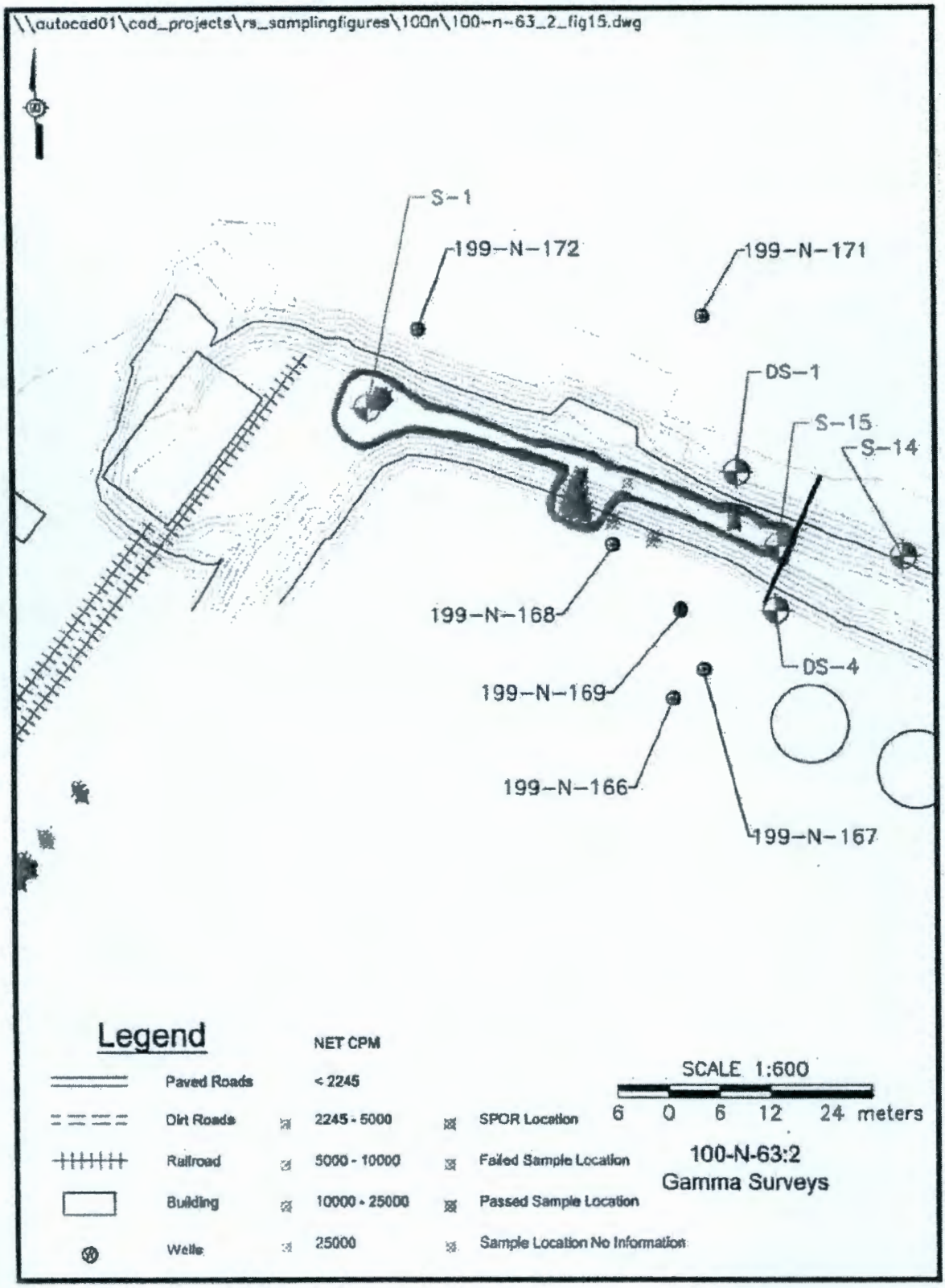
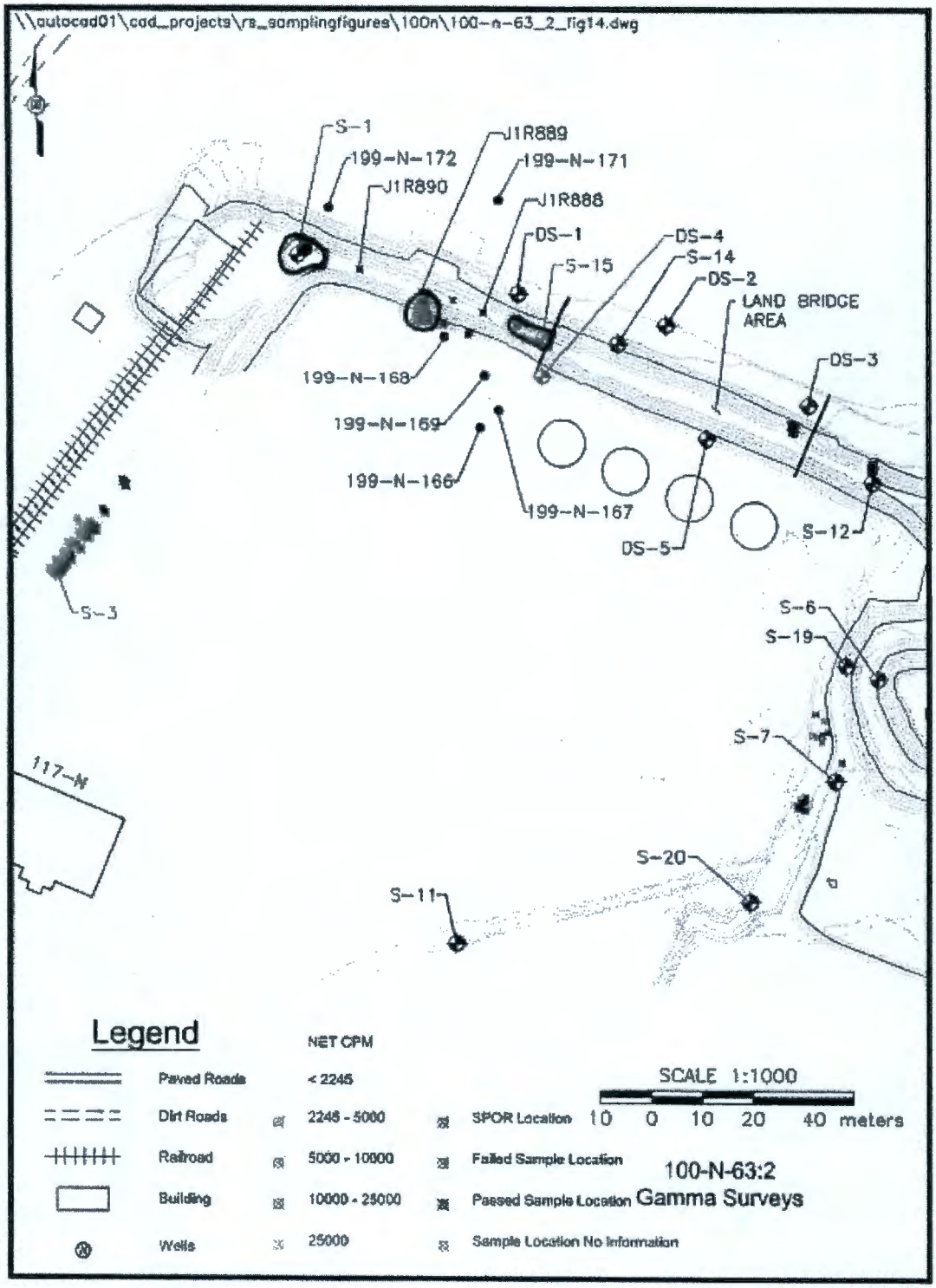


Figure 2. REVISED: 100-N-63:2 Approximate Remediation Area Sketch.



Following additional soil removal, replacement samples will be collected at S-1 and S-15. The replacement samples will be analyzed for the failing analyte(s) only. A summary of replacement samples, including sample locations and requested analyses, is provided in Table 1.

Table 1. 100-N-63:2 Grouping Replacement Sample Summary.

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analysis
		Northing	Easting	
S-1	TBD	149729.1	571257.3	GEA
S-15	TBD	149712.8	571305.6	GEA

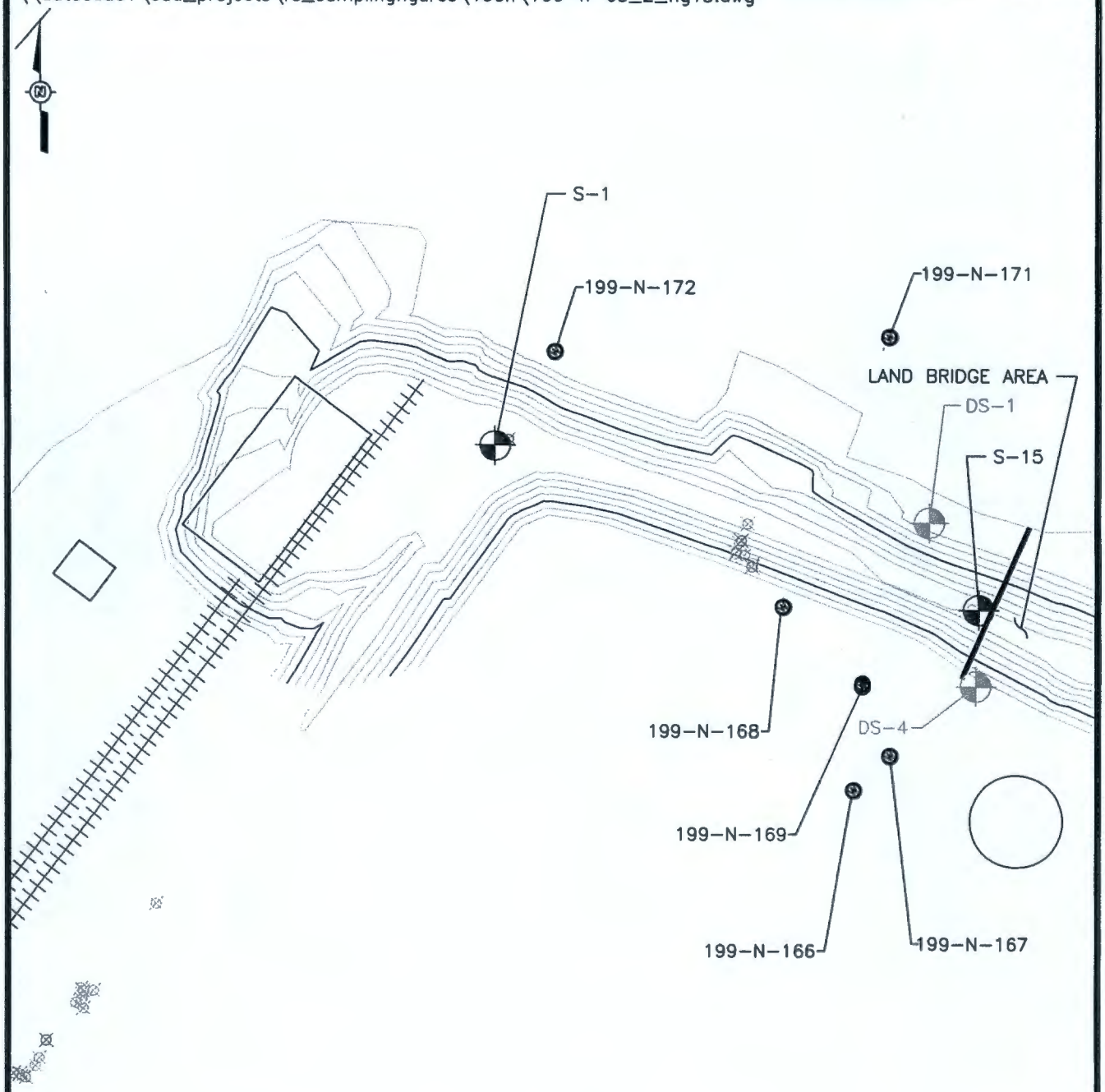
HEIS = Hanford Environmental Information System
TBD = to be determined

Table 2. Additional In-Process Samples between S-1 and S-15

LOCATION	HEIS Number	Americium-241			Cesium-137			Cobalt-60			Europium-152			Europium-154			Europium-155		
		GEA			GEA			GEA			GEA			GEA			GEA		
		pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
100-N-63:2	J1R888	0.153	U	0.153	0.226		0.071	0.07	U	0.07	0.163	U	0.163	0.178	U	0.178	0.156	U	0.156
100-N-63:2	J1R889	0.409	U	0.409	0.166		0.107	0.922		0.118	0.271	U	0.271	0.278	U	0.278	0.245	U	0.245
100-N-63:2	J1R890	0.143	U	0.143	0.158		0.075	0.083	U	0.083	0.171	U	0.171	0.248	U	0.248	0.141	U	0.141

Potassium-40			Radium-226			Radium-228			Thorium-228			Thorium-232			Uranium-235			Uranium-238		
GEA			GEA			GEA			GEA			GEA			GEA			GEA		
pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
9.31		0.5	0.351		0.106	0.559		0.197	0.51		0.077	0.559		0.197	0.35	U	0.35	5.9	U	5.9
7.47		0.9	0.307		0.14	0.455		0.406	0.72		0.16	0.455		0.406	0.49	U	0.49	13.9	U	13.9
12.6		0.675	0.413		0.111	0.737		0.31	0.809		0.112	0.737		0.31	0.337	U	0.337	8.92	U	8.92

\\autocad01\cad_projects\rs_samplingfigures\100n\100-n-63_2_fig13.dwg



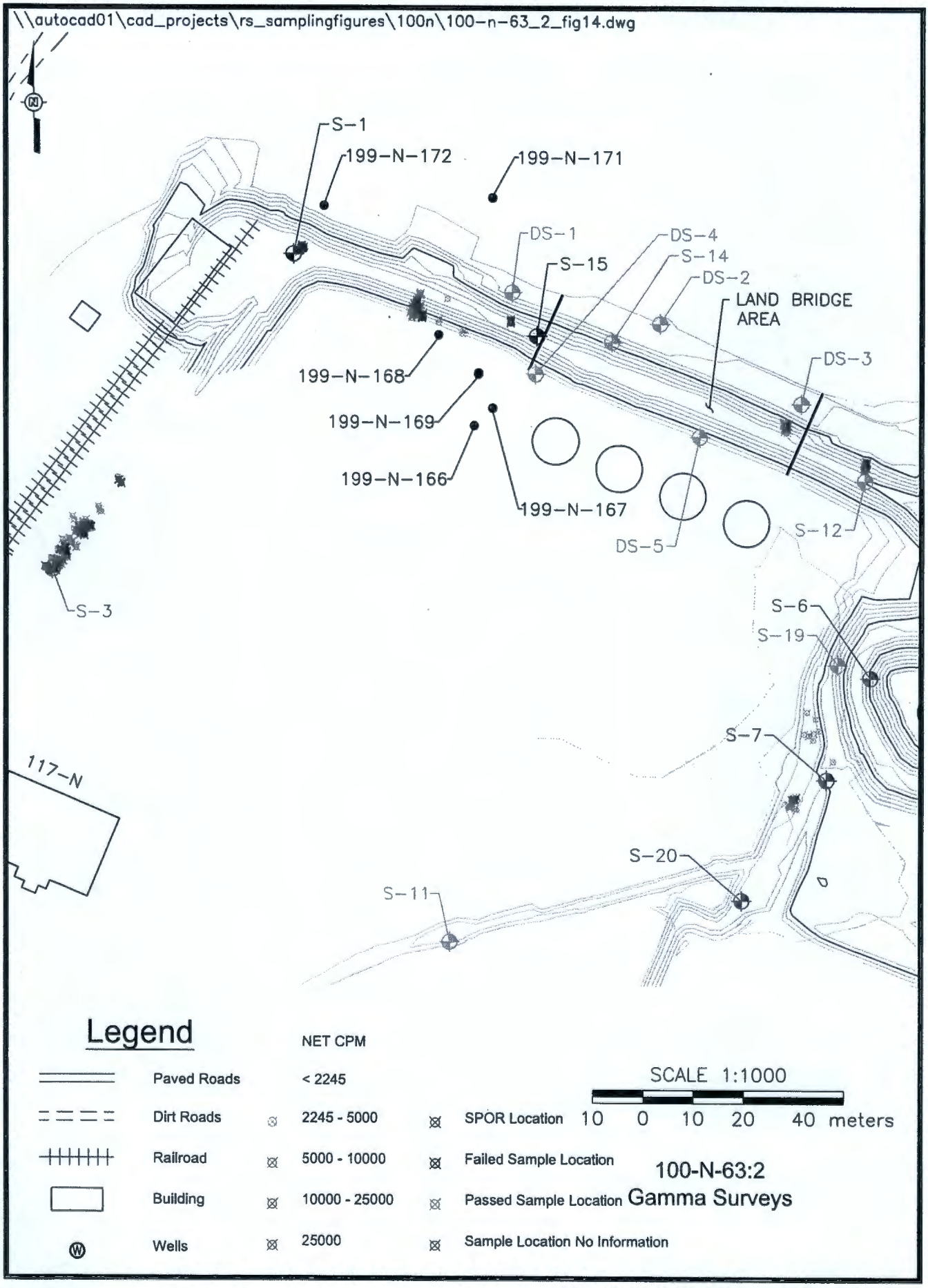
Legend

		NET CPM		
	Paved Roads	< 613		Failed Sample Location
	Dirt Roads	613 - 5000		Passed Sample Location
	Railroad	5000 - 10000		
	Building	10000 - 25000		
W	Wells	25000		

SCALE 1:600

6 0 6 12 24 meters

100-N-63:2
Beta Surveys


\\autocad01\cad_projects\rs_samplingfigures\100n\100-n-63_2_fig14.dwg
S-1
199-N-172
199-N-171
DS-1
DS-4
S-14
S-15
DS-2
LAND BRIDGE AREA
DS-3
199-N-168
199-N-169
199-N-166
199-N-167
DS-5
S-12
S-3
S-6
S-19
S-7
117-N
S-20
S-11
Legend
NET CPM
Paved Roads
< 2245
Dirt Roads
2245 - 5000
Railroad
5000 - 10000
Building
10000 - 25000
Wells
25000
SPOR Location
Failed Sample Location
Passed Sample Location
Sample Location No Information
SCALE 1:1000
10 0 10 20 40 meters
100-N-63:2
Gamma Surveys

Attachment 23

169593

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, January 28, 2013 7:45 AM
To: ^WCH Document Control
Subject: FW: Response to 100-N-79 spillway removal proposal

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]
Sent: Wednesday, January 23, 2013 3:39 PM
To: Chance, Joanne C
Cc: Buckmaster, Mark A; Boyd, Alicia; Saueressig, Daniel G
Subject: Response to 100-N-79 spillway removal proposal

Joanne,

I agree with remediating the 100-N-79 spillway only to ordinary high water mark (OHWM). I believe this is the best option to minimize potential negative impacts on the Columbia River. The remaining portions can be colonized if needed and addressed in the Remedial Investigation/Feasibility Study (RI/FS) and Final ROD for 100-N.

We need to keep in mind that the Army Corps of Engineers stated in a letter to Mr. James Bernhard of Washington Closure Hanford, LLC on November 6, 2012 that if any spillway portions remain in place below the low water mark so that they protrude above the elevation of the adjacent river bed they are considered navigational hazards and such structures "should be addressed and rectified." Further clarification with the Army Corps might be in order to discuss what they may consider effective solutions for rectifying the navigational hazard. From my perspective, this may be as simple as signage or a buoy warning vessels of a navigation hazard.

If you have any questions please let me know,

Thanks,

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

Attachment 24

169594

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, January 28, 2013 7:47 AM
To: ^WCH Document Control
Subject: FW: SINGLE LINED ASBESTOS CANS AT 100-N

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Monday, January 28, 2013 7:47 AM
To: Saueressig, Daniel G
Cc: Elliott, Wanda
Subject: FW: SINGLE LINED ASBESTOS CANS AT 100-N

Hi Dan,

I concur also. Thanks for the obtaining the multiple concurrences.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Thursday, January 24, 2013 4:44 PM
To: Saueressig, Daniel G; Chance, Joanne C
Subject: RE: SINGLE LINED ASBESTOS CANS AT 100-N

I concur.

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, January 24, 2013 4:13 PM
To: Elliott, Wanda (ECY); Chance, Joanne C
Subject: SINGLE LINED ASBESTOS CANS AT 100-N

Wanda/Joanne, Field Remediation personnel inadvertently loaded 3 and a half ERDF cans containing small amounts of asbestos in single lined cans yesterday. We would like your permission to send them to ERDF without dumping and reloading the contents in double lined cans as we believe the potential hazards with dumping and reloading the material outweighs the benefits. The cans are currently segregated in the CTA at 100-N.

The waste contained soil with small pieces of mastic from the 100-N-61:1 waste site, the cause was based on a mis-communication between personnel and the situation is being rectified so that it doesn't happen again.

We have talked with ERDF personnel and Dave Einan at EPA and they agreed that these cans can be sent to ERDF without repackaging, if you both concur.

Let me know if you concur and give me a call if you have any questions.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

Attachment 25

169683

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 04, 2013 11:12 AM
To: ^WCH Document Control
Subject: FW: SINGLE LINED ASBESTOS CANS AT 100-N

Please provide a chron number. This email documents a regulatory approval.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Monday, February 04, 2013 11:11 AM
To: Elliott, Wanda; Saueressig, Daniel G
Cc: Boyd, Alicia; Robertson, Owen C
Subject: RE: SINGLE LINED ASBESTOS CANS AT 100-N

I concur also. Thanks.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Monday, February 04, 2013 8:59 AM
To: Saueressig, Daniel G; Chance, Joanne C
Cc: Boyd, Alicia (ECY)
Subject: RE: SINGLE LINED ASBESTOS CANS AT 100-N

I concur.

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, January 31, 2013 3:27 PM
To: Chance, Joanne C; Elliott, Wanda (ECY); Boyd, Alicia (ECY)
Subject: SINGLE LINED ASBESTOS CANS AT 100-N

Joanne/Wanda/Alicia, regarding the asbestos cans discussed below that were inadvertently loaded with only one liner, I would like to get your concurrence to dump the cans at ERDF with only one liner. We believe being allowed to dump the containers at ERDF would provide greater worker protection as opposed to returning the cans to the 100-N Area, dumping them and reloading the material into double lined cans.

We know that sending asbestos waste to ERDF in single lined cans is not consistent with the requirements in the RDR/RAWP (DOE/RL-2005-93) but don't believe there are any issues associated with compliance with the NESHAPs requirements which are identified as an ARAR in the 100-N RDR/RAWP.

Let me know if you concur and give me a call if you have any questions.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Monday, January 28, 2013 7:47 AM
To: Saueressig, Daniel G
Cc: Elliott, Wanda
Subject: FW: SINGLE LINED ASBESTOS CANS AT 100-N

Hi Dan,

I concur also. Thanks for the obtaining the multiple concurrences.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Thursday, January 24, 2013 4:44 PM
To: Saueressig, Daniel G; Chance, Joanne C
Subject: RE: SINGLE LINED ASBESTOS CANS AT 100-N

I concur.

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, January 24, 2013 4:13 PM
To: Elliott, Wanda (ECY); Chance, Joanne C
Subject: SINGLE LINED ASBESTOS CANS AT 100-N

Wanda/Joanne, Field Remediation personnel inadvertently loaded 3 and a half ERDF cans containing small amounts of asbestos in single lined cans yesterday. We would like your permission to send them to ERDF without dumping and reloading the contents in double lined cans as we believe the potential hazards with dumping and reloading the material outweighs the benefits. The cans are currently segregated in the CTA at 100-N.

The waste contained soil with small pieces of mastic from the 100-N-61:1 waste site, the cause was based on a mis-communication between personnel and the situation is being rectified so that it doesn't happen again.

We have talked with ERDF personnel and Dave Einan at EPA and they agreed that these cans can be sent to ERDF without repackaging, if you both concur.

Let me know if you concur and give me a call if you have any questions.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

Attachment 26

169684

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 04, 2013 11:18 AM
To: ^WCH Document Control
Subject: FW: 130-N-1 NO ACTION REQUEST FOR SOUTHWESTERN POND
Attachments: 130-N-1 Southeastern pond No Action Request.doc

Please provide a chron number (and include the attachment). This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Monday, February 04, 2013 11:15 AM
To: Elliott, Wanda
Cc: Buckmaster, Mark A; Boyd, Alicia; Saueressig, Daniel G
Subject: RE: 130-N-1 NO ACTION REQUEST FOR SOUTHWESTERN POND

Hi Wanda,

Thank you. I will let RL's archaeologist know of our reduced footprint in the Mooli Mooli TCP.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Monday, February 04, 2013 8:59 AM
To: Saueressig, Daniel G; Chance, Joanne C
Cc: Buckmaster, Mark A; Boyd, Alicia (ECY)
Subject: RE: 130-N-1 NO ACTION REQUEST FOR SOUTHWESTERN POND

I concur with the proposed no action for the southwestern portion of 130-N-1.

Wanda Elliott
(509) 372-7904

Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Monday, January 28, 2013 6:23 AM
To: Elliott, Wanda (ECY); Chance, Joanne C
Cc: Buckmaster, Mark A
Subject: 130-N-1 NO ACTION REQUEST FOR SOUTHWESTERN POND

Wanda/Joanne, per our discussion at the last interface meeting, attached is a proposal to reclassify the southwestern pond at 130-N-1 as no action. Let me know if you have any questions or need anything else.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

<< File: 130-N-1 Southeastern pond No Action Request.doc >>

NO ACTION REQUEST FOR 130-N-1 SOUTHWESTERN POND

The 130-N-1, 183-N Backwash Discharge Pond waste site was recommended for remove, treat, and dispose (RTD) without confirmatory evaluation or issuance of a RTD memo. The 130-N-1 waste site can be divided into two areas: the northeastern pond and the southwestern pond (Figure 1).

The 130-N-1 RTD recommendation was made based on three in-process soil samples collected in August 2012 from the northeastern pond near the inlet pipe.

Based on process knowledge and additional in-process soil samples collected on October 22, 2012 it is requested that the 130-N-1 southwestern pond be reclassified as "no action" while the northeastern pond will be remediated and closed out with verification sampling once remediation is complete.

Figure 1. 130-N-1 Waste Site Aerial Photo and Waste Site Shape (March 2012)

BACKGROUND

In preparation for development of a verification sampling work instruction three in-process soil samples were collected near the inlet pipe at the north end of the northeastern pond on August 23, 2012 and analyzed for metals, hexavalent chromium and anions. These COPCs were identified based on the 130-N-1 process knowledge, results of biweekly and monthly required water monitoring samples for ICP metals, volatile organic compounds, sulfate, residual chlorine and acrylamide as required by the *State Waste Discharge Permit ST 4503* (WDOE 1997). Volatile organic compounds and acrylamide were eliminated for the in-process soil samples based on historical monitoring results. The final 130-N-1 list of COPCs is consistent with the verification and

close out COPCs used for the 100-N-58 pipeline waste site. The 100-N-58 pipeline waste site was determined to be "closed out" with no remediation required as documented in the *Cleanup Verification Package/Clean Closure Report for the soil Column of the 120-N-1 and 120-N-2 Dangerous Waste Treatment and Disposal Sites and the 100-N-58 Site* (BHI, 2002).

The August 2012 in-process samples were collected at locations identified within a low area in the northeastern pond of the 130-N-1 waste site as described in Table 1. The results of these samples when compared to the Remedial Action Goals (RAGs) indicate that the all three soil sample arsenic results were greater than the direct exposure RAG of 6.5 mg/kg. Additional analyte results were greater than ground water and/or river protection RAGs (Table 1).

Table 1. August 23, 2012 130-N-1 Waste Site In-Process Samples Summary

Sample Number	Sample Location Description and Coordinates	List of Analytes with Results Greater than RAGs
J1R0M6	The deepest spot in the trench flowing through the middle of the dry pond. N148746.05, E 5715010.5	**Direct Exposure:** arsenic **Ground Water or River Protection:** beryllium, cadmium, chromium total, copper, lead, mercury, vanadium, zinc
J1R0M7	The bottom of the channel near the inlet pipe on north side of the pond. N148772.9, E571496.7	**Direct Exposure:** arsenic **Ground Water or River Protection:** cadmium, chromium total, copper, lead, manganese, mercury
J1R0M8	The brown fluffy material found in the north east corner of the pond. N148779.7, E571509.8	**Direct Exposure:** arsenic **Ground Water or River Protection:** cadmium, chromium total, copper, lead, mercury, vanadium

SITE DESCRIPTION

According to the Waste Information Data System and Stewardship Information System reports, the 130-N-1 waste site is described as consisting of a natural marsh-like pond and a pipeline from the 183-N Water Filter Plant. The 130-N-1 waste site received filter backwash water from the 183-N Filtration Plant through the 100-N-58 pipeline. The wastewater streams were discharged to the 183-N Backwash Discharge Pond without treatment. The discharge pond began operation in 1983 and was added to the State Waste Discharge Permit No. 4503 on May 12, 1997. The 130-N-1 ponds stopped receiving water after the 183-N Potable Water Plant was shut down on June 13, 2000.

The original description of the 130-N-1 waste site described the pond as consisting of three adjoining parts: a rectangular portion, a neck, and a dry pond. The rectangular portion trends nearly north-south and is approximately 91.4 m (300 ft) long and 36.6 m (120 ft) wide. The neck portion is approximately 18.3 m (60 ft) long and 13.7 m (45 ft) wide and was attached to the east side of the rectangular portion. The dry pond was approximately 45.7 m (150 ft) in diameter and was located east of the rectangular portion. The total area covered by the three portions was approximately 0.53 hectares (1.3 acres) according to State Waste Discharge Permit No. 4503.

Aerial photography and drawing H-1-41421 (Kaiser 1982) show the pond as considerably larger. By scanning the drawing, registering the drawing to real world coordinates, the total area was 2.9 hectares (7.2 acres). The northeastern pond covers 1.0 hectares (2.5 acres) and the southwestern pond covers 1.9 hectares (4.7 acres).

Since 1991, standing water was only occasionally present in the northeastern pond area near the discharge pipe. Since 1991, the southwestern pond did not receive water as the 193-N Water Treatment Plant operations were

greatly curtailed. However, prior to 1991 and during operation of the 105-N Reactor, enough water was processed such that the southwestern pond would frequently receive wastewater.

Location

The 183-N Backwash Discharge Pond was an unlined, natural depression that was located approximately 518 m (1,700 ft) southeast of the 183-N Building and approximately 823 m (2,700 ft) southeast of the Columbia River. The site was also located approximately 0.4 kilometers (0.25 miles) southeast of the 1324-N Facility.

Ecological and Cultural

Ecological and cultural resources reviews were performed on the 130-N-1 waste site in November 2012. The 2012 ecological review covered the area identified in the proposed remediation excavation permit including both the northeastern and southwestern ponds. The 2012 cultural resources review (WCH 2012b) covered the northeastern pond and only a small portion of the southwestern pond. The remaining southwestern pond cultural review is pending.

The ecological review identified vegetation surrounding 130-N-1 consisting of a Gray Rabbitbrush (Ericameria nauseosa)/Sandberg's Bluegrass (Poa sandbergii), cheatgrass (Bromus tectorum) community, including yarrow (Achillea millefolium), snow buckwheat (Eriogonum niveum), Carey's balsamroot (Balsamorhiza careyana), Munro's globemallow (Sphaeralcea munroana), Indian wheat (Plantago patagonica), tall tumblemustard (Sisymbrium altissimum) and Russian thistle (Salsola kali). Plants also noted around 130-N-1 were big sagebrush (Artemisia tridentata) on the south side of site, buckwheat milk-vetch (Astragalus caricinus), rush skeletonweed (Chondrillajuncea) and common mullien (Verbascum Thapsus) (WCH, 2012a).

Although the cultural review covered the northeastern pond and a small portion of the southwestern pond, the review identified potential cultural resource items of historical, traditional, or cultural importance expected to be similar for the entire southwestern pond. The 130-N-1 cultural review states the cultural resource item could be prehistoric or historic. Examples include:

- A multi-species accumulation of shell (shell-midden) with associated bone, stone, burned rocks or charcoal.
- Bones that appear to be human or animal bones associated with a shell-midden (i.e. with associated artifacts or cooking features).
- An area of charcoal or very dark stained soil with associated artifacts.
- Artifacts made of chipped or ground stone (i.e. an arrowhead) or an accumulation (more than one) of crypto crystalline stone flakes (lithic debitage).
- Clusters of tin cans or bottles, or agricultural equipment that appears to be older than 50 years.

SOUTHWESTERN POND IN-PROCESS SAMPLES

On October 22, 2012, ten in-process soil samples were collected from the 130-N-1 waste site including seven in the northeastern pond area and three in the southwestern pond.

The elevation of the 130-N-1 southwestern pond varies from 141.5 m (464.3 ft) above sea level down to 140.0 m (459.3 ft) above sea level at its lowest point, with higher elevations surrounding the waste site. The three in-process samples collected in the 130-N-1 southwestern pond were collected in the lowest elevation [140 m (459.3 ft) above sea level] area of the pond near the wastewater entry point from the 130-N-1 northeastern pond to the southwestern pond. This is most likely location for the maximum amount of water collection in a single area during the operational life of the 130-N-1 southwestern pond and therefore the worst-case scenario for soil contamination in the southwestern pond (Figure 2).

Table 2 list the three 130-N-1 southwestern in-process sample coordinates. The individual results for these samples are provided in Table 3. Results of the in-process samples for the 130-N-1 northeastern pond are not included in this review because this area will be remediated.

Table 2. 130-N-1 Southwestern Pond In-Process Sample Summary

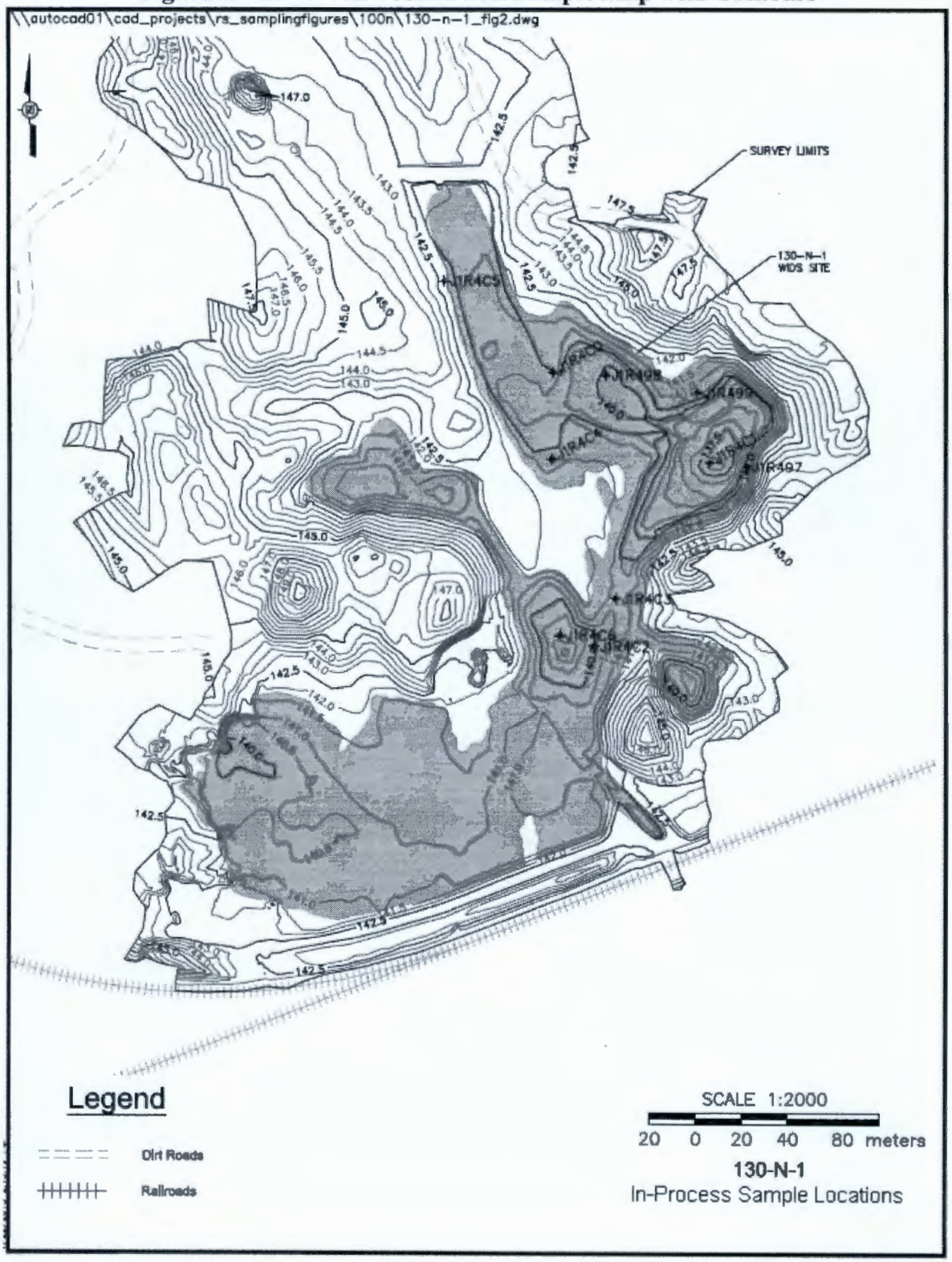
Sample Number	Sample Coordinates
J1R4C2	N148582.71, E571562.31
J1R4C3	N148603.20, E571571.64
J1R4C6	N148587.49, E571547.60

CONCLUSIONS AND RECOMENDATION

The 1.9 hectares (4.7 acres) 130-N-1 southwestern pond lies in a culturally sensitive area and shows signs of supporting native plant life and wildlife. There is little evidence to show that the southwestern pond received the volumes of water the northeastern pond did and had a limited operational life between 1983 and 1991. Results of three in-process soil samples collected at the lowest elevation with the pond as a worse-case scenario were below direct exposure, ground water and river protection RAGs. Therefore, the 130-N-1 southwestern pond is requested to be reclassified as "no action".

This supporting documentation will be included in a future 130-N-1 reclassification form and remaining sites verification

Figure 2. 130-N-1 In-Process Soil Sample Map with Contours



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DOE-RL, 2006, *100-N Area Sampling and Analysis Plan for CERCLA Waste Sites*, DOE/RL-2005-92, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Kaiser, 1982, *Civil Site Plan Backwash Lake*, H-1-41421 rev 3, Kaiser Engineers Hanford Company, Richland, Washington.

WCH, 2012a, *Ecological Resources Review for Remediation of 130-N-1 (12-ER-040)*, CCN 168745, Washington Closure Hanford, Richland, Washington.

WCH, 2012b, *Cultural Resources Review for Remedial Actions at Waste Site 130-N-1 in the 100-N Area of the Hanford Site (HCRC#2007-100-022)*, CCN 168746, Washington Closure Hanford, Richland, Washington.

WDOE, 1997, *State Waste Discharge Permit, ST 4503*, IDMS Document number 004716, State of Washington Department of Ecology Nuclear Waste Program, Richland, Washington.

Table 3. 130-N-1 Southwestern Pond In-Process Metals and General Chemistry Results

Sample Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium		
		METALS			METALS			METALS			METALS			METALS		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	9710		14.2	1.7	U	1.7	2.63	B	2.84	75.5		1.42	0.318	B	0.57
J1R4C3	10/22/2012	9710		14.2	1.71	U	1.71	2.67	B	2.85	79.4		1.42	0.322	B	0.57
J1R4C6	10/22/2012	8940		12.3	1.47	U	1.47	2.49		2.46	78.2		1.23	0.327	B	0.49

Sample Number	Sample Date	Boron			Cadmium			Calcium			Chromium			Cobalt		
		METALS			METALS			METALS			METALS			METALS		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	2.22	B	5.67	0.567	U	0.57	3570		284	12.4		0.57	6.52		5.67
J1R4C3	10/22/2012	2.72	B	5.69	0.171	B	0.57	3800		285	13.5		0.57	6.99		5.69
J1R4C6	10/22/2012	1.83	B	4.91	0.136	B	0.49	4140		246	11.3		0.49	6.68		4.91

Sample Number	Sample Date	Copper			Iron			Lead			Magnesium			Manganese		
		METALS			METALS			METALS			METALS			METALS		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	12.9		2.84	19200		56.7	6.47		1.42	3760		213	319		14.2
J1R4C3	10/22/2012	13.7		2.85	20600		56.9	6.3		1.42	3920		214	348		14.2
J1R4C6	10/22/2012	12.4		2.46	19500		49.1	4.68		1.23	3850		184	325		12.3

Sample Number	Sample Date	Mercury			Molybdenum			Nickel			Potassium			Selenium		
		METALS			METALS			METALS			METALS			METALS		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	0.0253	U	0.0253	5.67	U	5.67	12.8		11.3	1950		1130	0.851	U	0.85
J1R4C3	10/22/2012	0.0252	U	0.0252	5.69	U	5.69	13.6		11.4	2220		1140	0.854	U	0.85
J1R4C6	10/22/2012	0.0274	U	0.0274	4.91	U	4.91	10.5		9.83	2130		983	0.737	U	0.74

Sample Number	Sample Date	Silicon			Silver			Sodium			Vanadium			Zinc		
		METALS			METALS			METALS			METALS			METALS		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	315		5.67	0.567	U	0.57	261		142	47.6		7.09	42.2		28.4
J1R4C3	10/22/2012	748		5.69	0.569	U	0.57	237		142	51		7.12	45.1		28.5
J1R4C6	10/22/2012	310		4.91	0.491	U	0.49	231		123	44.9		6.14	39.9		24.6

Sample Number	Sample Date	Bromide			Chloride			Fluoride			Nitrate			Nitrite		
		GENCHEM			GENCHEM			GENCHEM			GENCHEM			GENCHEM		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1R4C2	10/22/2012	1	U	1	1	B	1	1	U	1	23.4		1	1	U	1
J1R4C3	10/22/2012	1	U	1	3.4	B	1	1	U	1	45.3		1	1	U	1
J1R4C6	10/22/2012	1	U	1	2.9	B	1	1	U	1	71.4		1	1	U	1

Sample Number	Sample Date	Nitrogen in Nitrite and Nitrate			Phosphate			Sulfate			Percent Solids			pH Measurement		
		GENCHEM			GENCHEM			GENCHEM			PHYSICAL			PHYSICAL		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	%	Q	PQL	pH	Q	PQL
J1R4C2	10/22/2012	5.35		0.1	8.6	B	2	4.7	B	1	96.1		0.1	6.87		0.1
J1R4C3	10/22/2012	9.68	D	0.2	10.4		2	4.3	B	1	94.1		0.1	6.95		0.1
J1R4C6	10/22/2012	15.5	D	0.21	10.6		2.1	7.1		1	93.9		0.1	6.96		0.1

B = Detected be low reporting limit
D = Analyte was reported from a dilution
Q = qualifier
PQL = practical quantization limit
U = undetected

Attachment 27

169555

^WCH Document Control

From: Saueressig, Daniel G
Sent: Wednesday, January 23, 2013 1:02 PM
To: ^WCH Document Control
Subject: 100-N-84:5 pipeline request for no action proposal
Attachments: 100-N-84-5 no action request.docx

Please provide a chron number (and include attachment). This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]
Sent: Tuesday, January 22, 2013 3:42 PM
To: Elliott, Wanda; Saueressig, Daniel G
Cc: Howell, Theresa Q; Boyd, Alicia; Buckmaster, Mark A
Subject: RE: 100-N-84:5 pipeline request for no action proposal

Hi Dan and Wanda,

Yes, I concur with No Action for this section and find the documentation attached for UMM to be acceptable. Thanks.

Joanne C. Chance
U.S. Department of Energy
Office of Assistant Manager for River and Plateau
825 Jadwin Ave / MSIN A3-04
Richland, WA 99352
(509) 376-0811

From: Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]
Sent: Tuesday, January 22, 2013 8:40 AM
To: Saueressig, Daniel G; Chance, Joanne C
Cc: Howell, Theresa Q; Boyd, Alicia (ECY); Buckmaster, Mark A
Subject: RE: 100-N-84:5 pipeline request for no action proposal

Looks good. Highlighting may need to be removed for "attachment 1" and in attachment one itself.

I still concur with the request for no action.

Thanks,

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Monday, January 21, 2013 12:37 PM
To: Elliott, Wanda (ECY); Chance, Joanne C
Cc: Howell, Theresa Q; Boyd, Alicia (ECY); Buckmaster, Mark A
Subject: RE: 100-N-84:5 pipeline request for no action proposal

Wanda/Joanne, the proposal has been revised to address the comments below and to clean up the document a bit. Let me know if you still concur with making this portion of 100-N-84:5 a no action site and I'll get the agreement documented at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]
Sent: Thursday, January 10, 2013 11:09 AM
To: Saueressig, Daniel G; Chance, Joanne C
Cc: Howell, Theresa Q; Boyd, Alicia
Subject: 100-N-84:5 pipeline request for no action proposal

I have looked over the 100-N-84:5 pipeline request for no action proposal and have the following comment:

#3 on page one lists out a synopsis of the RAG comparisons to the analytic results that I mostly agree with. From my review (and perhaps I could be wrong) sample number J1R744 (manhole #2) has more exceedances (chromium, mercury, copper, and aroclor-1254) that what have been listed in the synopsis. Manhole 2 could be considered the worst case scenario as it is the last in line of the manholes sampled before the waste goes to the lagoon. While I realize all of these contaminants have high kds and are not expected to reach groundwater I would like the synopsis (#3) to include all of the exceedances as they pertain.

Could you please have someone re- review the data to either revise text or provide me with the RAG values they are comparing against??

Now having said all that- I approve the request for no action. I see no reason why these exceedances would drive us to disturb a culturally sensitive area when modeling will show that there is little risk for migration.

If you have any questions please let me know.

Thanks,

Wanda Elliott
(509) 372-7904
Environmental Scientist
Nuclear Waste Program
Washington State Department of Ecology

WCH requests DOE and Ecology approval to leave the portion of the 100-N-84:5 100-N Area Sanitary Pipelines subsite that was installed as part of the H-677 project, in place with no action required (Figure 1). This request is based on the following:

1. The pipelines are constructed of polyvinyl chloride (PVC) piping ranging from 4" to 10" diameter and do not corrode therefore they are unlikely to have leaked.

2. The three sampled manholes along the H-677 project pipeline are in good condition with little residual waste in them (Figure 2). The other manholes along the pipeline are expected to be similar.

3. While remedial action goals (RAGs) are based on soil samples, the analytical results for samples taken from solid material inside each of the three manholes along the pipeline were compared to the RAGs for information purposes only. The maximum sample results do not exceed the direct exposure remedial action goals (RAGs) (Attachment 1). Table 1 shows the maximum solids sample result compared to the RAGs for those analytes exceeding the RAGs. Residual concentrations of these constituents exceed groundwater and river protection RAGs; however, none of these constituents are predicted to impact groundwater or the Columbia River based on a soil-partitioning coefficient (K_d) of 22 mL/g for copper (the constituent with the lowest K_d). The 100-N Area ground water elevation level is approximately 119 m (653 ft.). The H-677 project system (pipelines, manholes and lift stations) ground surface elevation is approximately 136 m (446 ft.) at its lowest elevation (KEH 1988), resulting in a minimum vadose thickness of 17 m (56 ft). In soil, copper, having the lowest Kd is predicted to not migrate more than 3 m (9.8 ft.). Additionally, the amount of residual solid material in the manholes is minimal (Figure 2), most having been removed as part of the sampling media. Therefore, residual concentrations of these constituents remaining in the manholes and pipeline are not expected to impact groundwater or the Columbia River.

Table 1. 100-N-84:5 Manhole Solid Sample Maximum Results Exceeding RAGs Comparison

Contaminant	Maximum Sample Result (mg/kg)	Maximum Sample Result Qualifier	Kd (mL/g)	Direct Exposure	Ground-water Protection	River Protection	RAG Units	RAG Exceeded
Metals								
Chromium	28.1		200	80000	18.5	18.5	mg/kg	**GW/RP**
Copper	150		22	2960	59.2	22	mg/kg	**GW/RP**
Lead	299		30	353	10.2	10.2	mg/kg	**GW/RP**
Mercury	13.9		30	24	0.33	0.33	mg/kg	**GW/RP**
Zinc	628		30	24000	480	67.8	mg/kg	**GW/RP**
Polyaromatic Hydrocarbons								
Benzo(k)fluoranthene	0.0162		2,020	1.37	0.015	0.015	mg/kg	**GW/RP**
Polychlorinated Biphenyls								
PCB Aroclor-1254	0.0583	J	75.6	0.5	0.017	0.017	mg/kg	**GW/RP**
PCB Aroclor-1260	0.0171	J	530	0.5	0.017	0.017	mg/kg	**GW/RP**
Other								
Motor oil (petroleum hydrocarbon)*	307		50	NA	200	200	mg/kg	**GW/RP**

NA = not available
GW/RP = groundwater/river protection

*The cleanup level for petroleum hydrocarbons is based on protection of groundwater as discussed in WAC 173-340-740, Table 2, "Method A Cleanup Levels – Soil".

Sampling Summary

On December 12, 2012 manholes #2, #5 and #7 were visually inspected and solid material found inside the manholes sampled. Because the manholes are low spots along the gravity drain pipeline between the source and the adjacent downstream lift station, material in the manholes represents the worst case scenario of any material held up in the H-677 project pipeline. Table 2 lists the manhole numbers, sample numbers and analysis preformed. Due to the limited material in Manhole #7 sample J1R746 was not analyzed for semi-volatile organics and anions.

Table 2. 100-N-84:5 Manhole Solid Samples Summary

Manhole Number	Sample Number	Sample Analysis
#2	J1R744	metals, mercury, anions, semi-volatile organics, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, pesticides, percent solids, pH
#2	J1R747	hexavalent chromium
#5	J1R745	metals, mercury, anions, semi-volatile organics, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, pesticides, percent solids, pH
#5	J1R748	hexavalent chromium
#7	J1R746	metals, mercury, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, pesticides, percent solids, pH
#7	J1R749	hexavalent chromium

Figure 1. Project H-677; 100-N Septic System Location Map

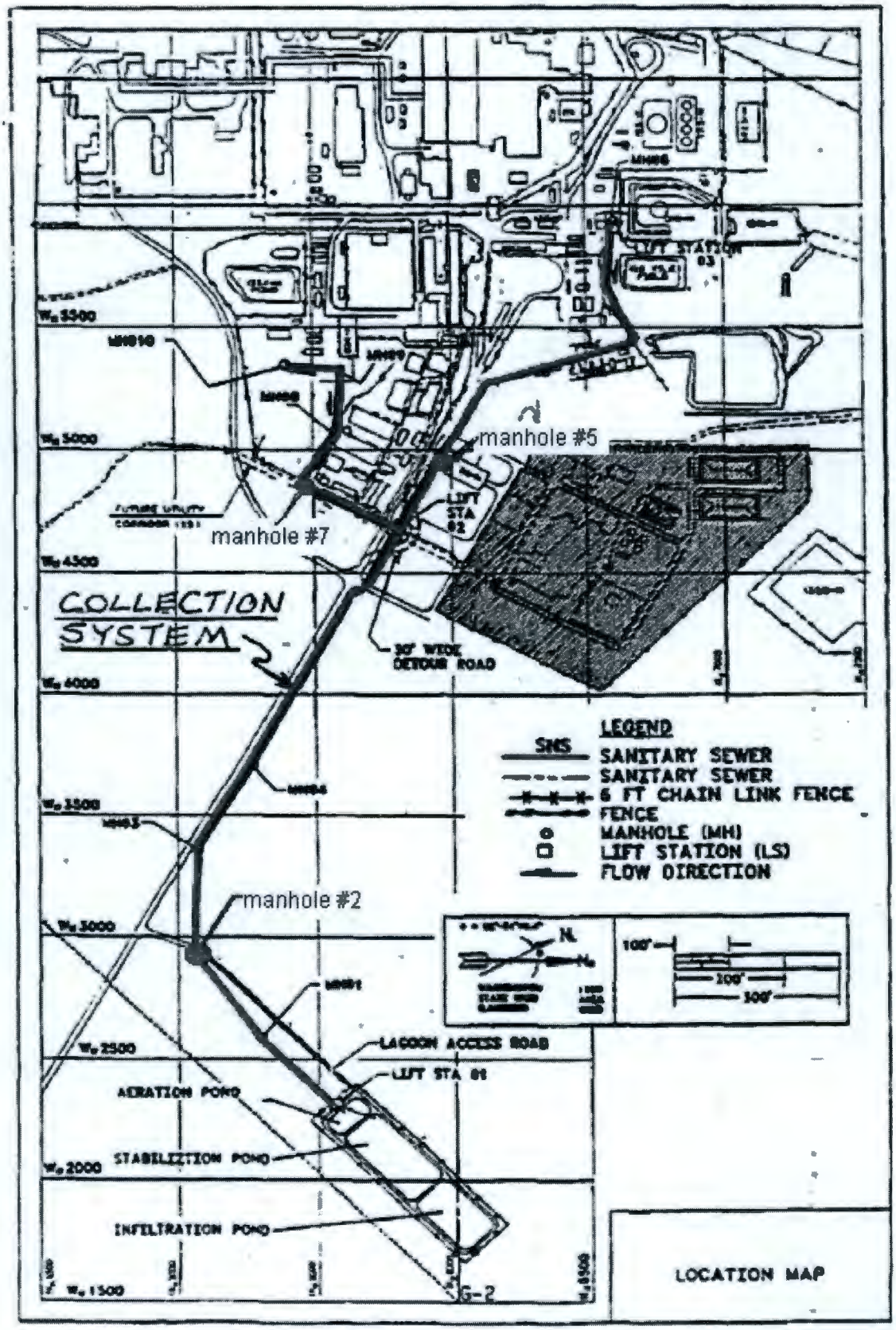
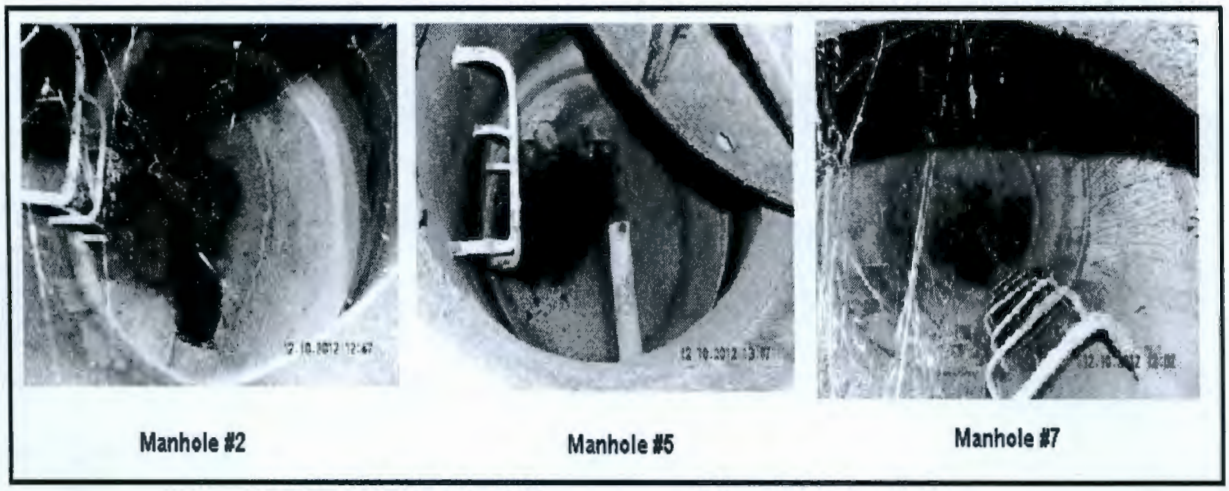


Figure 2. Project H-677; Manholes #2, #5, and #7 Interior Photographs



Description

The 100-N-84:5 100-N Area Sanitary Pipelines subsite consist of the sanitary water and sewer, storm drains and disposal field pipelines in the 100-N Area. These pipelines include a section of sewer lines installed as part of the 100-N Sewage Lagoon Project H-677 in 1987 (Figure 1) to replace the eight individual 100N Area sewer systems that were in poor conditions (KEH 1985).

The H-677 Project installed three lift stations (1904-NA, 1904-NB and 1904-NC), the 1904-N sewage lagoon, and 1,695.5 m (5562.9 ft) of PVC piping ranging from 4" to 10" diameter. Table 3 lists the sections of 100-N-84:5 subsite pipelines installed by the H-677 Project.

The H-677 Project's, 100-N sewage system is located between the 1904-NC lift station located approximately 40 m (130 ft) south of the 1310-N Golf ball to the 1904-N sewage lagoon located north east of N Avenue off Route 4 North. A second line of pipeline enters the system at the 1904-NB lift station located approximately 80 m (260 ft) southeast of the 1120-N building. This branch of pipeline originates at Man Hole #10 east of the 1140-N building.

The H-677 Project's 100-N sewage system was built so that the 100-N-84:5 existing pipelines from the originating ancillary facilities would connect to the new central system at a lift station. From there the pipelines would gravity drain to the next lift station and between each following lift station heading toward the 1904-N sewage lagoon.

History

The H-677 Project septic system was operated between 1987 and 2012 to support mobile offices and ancillary facilities during the shutdown and interim safe storage of the 105-N Reactor, and demolition of the 100-N ancillary facilities.

The majority of the 100-N-84:5 subsite pipelines remained in operation until after the shutdown of the Hanford Generating Plant (HGP) in January 1987 and the cold shutdown of the 105-N Reactor in February 1988 (WHC 1994). Some of the sanitary sewer pipelines including that installed as part of the H-677 project remained in service until June 2012 when the last of the system was shutdown as part of the isolation of the 1904-N sewage lagoon from the 1120-N and 1101-N buildings.

RTD Determination

The 100-N-84:5 100-N Area Sanitary Pipelines subsite was recommended for remove, treat, and dispose (RTD) based on the history of the 105-N Reactor and the potential for contamination from the ancillary facilities the system supported (WCH 2011). This determination was based on one confirmatory sample collected north of the 1904-NC lift station. This sample location is not within the section of H-677 Project pipeline. Due to the limited set of sample results, no comparison to regulatory limits was made in the RTD memo (WCH 2011).

Table 3. H-677 Project installed PVC Pipeline Segments

Line Number [a]	Length of pipe (meters)	Diameter of pipe (inches)
Pipeline Segments between 1904-NA and 1904-NB		
5877	830.8	4
Pipeline Segments between 1904-NB and 1904-NC		
3384	87.3	8
5878	446.1	4
Pipeline Segments between 1904-NB and Manhole #10		
5641	119.6	10
5640	78	10
5639	77.2	10
5821	56.5	8

[a] Line number is a reference number used to track individual line segments in a geographic information system

References:

1977, DOE , Fact Sheet for State Waste Discharge Permit ST-4507, 100-N Sewage Lagoon Summary, CCN 0047290, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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1985, KEH, *Preliminary Engineering Study Report 100-N Sewer System Project H-677,* UNI-2951, Rev 0, Kaiser Engineers Hanford Company, Richland, Washington.

1988, KEH, *Civil Plans & Profiles 100-N Sewer,* H-1-49464 (7 sheets), Rev 1, Kaiser Engineers Hanford Company, Richland, Washington.

2011, WCH, *100-N-84:5 100-N Area Sanitary Pipelines for Remedial Action*, CCN 163085, Washington Closure Hanford, Richland, Washington.

2012, WCH, *1904-N Lift Stations Proposed Path forward,* CCN 166420, Washington Closure Hanford, Richland, Washington.

1994, WHC, *100-N Area Technical Baseline Report*, WCH-SD-EN-Ti-251, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

2011, DOE, *Hanford Site Groundwater Monitoring Report for 2010*, DOE/RL-2011-01, Rev 0,

Attachment 1: Manhole Solid Sample Data

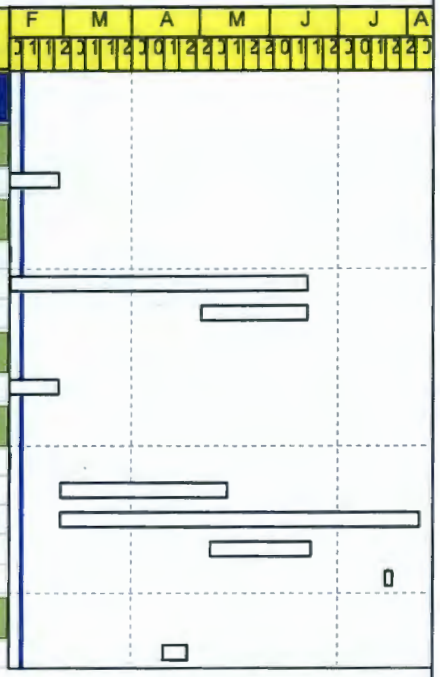
Contaminant	J1R745 Sample Result (mg/kg)	J1R745 Sample Result Qualifier	J1R746 Sample Result (mg/kg)	J1R746 Sample Result Qualifier	J1R744 Sample Result (mg/kg)	J1R744 Sample Result Qualifier
pH and Percent Solids						
% solids	94.8		89.9		61.2	
pH	8.5		6.13		—	
Anions						
Bromide	1	U	1.1	U	—	
Chloride	222		1.1	U	—	
Fluoride	1	U	1.1	U	—	
Nitrate (as Nitrogen)	56.6		195		—	
Nitrite (as Nitrogen)	1	U	1.1	U	—	
Sulfate	37.4		383		—	
Metals						
Aluminum	8120		4820		8360	
Antimony	1.58	U	1.7	U	2.26	B
Arsenic	2.32	B	2.2	B	4.33	
Barium	74.1		73.7		122	
Beryllium	0.28	B	0.201	B	0.262	B
Boron	2.67	B	5.65	U	2.58	B
Cadmium	0.195	B	0.565	U	0.378	B
Calcium	6900		4920		8410	
Chromium	11.9		15.3		28.1	
Cobalt	7.57		5.53	B	8.21	B
Copper	20.9		19		150	
Iron	26900		18200		43800	
Lead	11.9		7.36		**299**	
Magnesium	4640		2970		4530	
Manganese	328		245		**453**	
Mercury	0.0538		0.0261	B	13.9	
Molybdenum	0.774	B	5.65	U	3.01	B
Nickel	11.4		8.26	B	**23.6**	
Potassium	1290		1060	B	1750	
Selenium	0.791	U	0.848	U	1.25	U
Silicon	473		378		759	
Silver	0.527	U	0.565	U	**6.61**	
Sodium	1040		256		457	
Vanadium	67.4		39.8		62.3	
Zinc	97.4		101		**628**	
Polycyclic Aromatic Hydrocarbons						
Acenapthene	0.0697		0.00367	U	0.035	
Acenapthylene	0.0267		0.0763		0.0539	U
Anthracene	0.00347	U	0.00222	J	0.00539	U
Benzo(a)anthracene	0.035		0.00846		0.00478	J
Benzo(a)pyrene	0.0395		0.0177		0.0105	
Benzo(b)fluoranthene	0.0237		0.0151		0.00539	U
Benzo(g,h,i)perylene	0.0271		0.00367	U	0.00539	U

Contaminant	J1R745 Sample Result (mg/kg)	J1R745 Sample Result Qualifier	J1R746 Sample Result (mg/kg)	J1R746 Sample Result Qualifier	J1R744 Sample Result (mg/kg)	J1R744 Sample Result Qualifier
Benzo(k)fluoranthene	**0.0162**		0.00792		0.00539	U
Chrysene	0.0384		0.0191		0.00864	
Dibenz(a,h)anthracene	0.00205	J	0.00118	J	0.00539	U
Fluoranthene	0.0511		0.0886		0.0287	
Fluorene	0.0576		0.0148		0.0113	
Indeno(1,2,3-cd) pyrene	0.0151		0.00367	U	0.00539	U
Naphthalene	0.0406		0.0938		0.00539	U
Phenanthrene	0.0208		0.0725		0.00742	
Pyrene	0.0529		0.0361		0.0144	
Pesticides and Polychlorinated Biphenyls						
Aldrin	0.00139	U	0.00145	U	0.00645	U
BHC, alpha	0.00139	U	0.00145	U	0.00645	U
BHC, beta	0.00139	U	0.00145	U	0.00645	U
BHC, delta	0.00139	U	0.00145	U	0.00645	U
BHC, gamma (Lindane)	0.00139	U	0.00145	U	0.00645	U
Chlordane (alpha, gamma)	0.00139	U	0.00145	U	0.00645	U
DDD, 4,4'-	0.00139	U	0.00145	U	0.00645	U
DDE, 4,4'-	0.00139	U	0.00145	U	0.00645	U
DDT, 4,4'-	0.00139	U	0.00145	U	0.00645	U
Dieldrin	0.00139	U	0.00145	U	0.00645	U
Endosulfan (I, II, sulfate)	0.00139	U	0.00145	U	0.00645	U
Endrin (and ketone, aldehyde)	0.00139	U	0.00145	U	0.00645	U
Heptachlor	0.00139	U	0.00145	U	0.00645	U
Heptachlor epoxide	0.00139	U	0.00145	U	0.00645	U
Methoxychlor	0.00139	U	0.00145	U	0.00645	U
PCB Aroclor-1016	0.0139	U	0.0145	U	0.0644	U
PCB Aroclor-1221	0.0139	U	0.0145	U	0.0644	U
PCB Aroclor-1232	0.0139	U	0.0145	U	0.0644	U
PCB Aroclor-1242	0.0139	U	0.00735	J	0.0644	U
PCB Aroclor-1248	0.0139	U	0.0145	U	0.0644	U
PCB Aroclor-1254	0.0139	U	0.0141	J	0.0583	J
PCB Aroclor-1260	0.0139	U	0.00382	J	**0.0171**	J
PCB Aroclor-1262	0.0139	U	0.0145	U	0.0644	U
PCB Aroclor-1268	0.0139	U	0.0145	U	0.0644	U
Toxaphene	0.0208	U	0.0218	U	0.0969	U
Semi-Volatile Organics						
1,2,4-Trichlorobenzene	1.03	U	1.07	U	—	
1,2-Dichlorobenzene	1.03	U	1.07	U	—	
1,3-Dichlorobenzene	1.03	U	1.07	U	—	
1,4-Dichlorobenzene	1.03	U	1.07	U	—	
2,4,5-Trichlorophenol	1.03	U	1.07	U	—	
2,4,6-Trichlorophenol	1.03	U	1.07	U	—	
2,4-Dichlorophenol	1.03	U	1.07	U	—	
2,4-Dimethylphenol	1.03	U	1.07	U	—	
2,4-Dinitrophenol	5.14	U	5.36	U	—	
2,4-Dinitrotoluene	1.03	U	1.07	U	—	
2,6-Dinitrotoluene	1.03	U	1.07	U	—	

Contaminant	J1R745 Sample Result (mg/kg)	J1R745 Sample Result Qualifier	J1R746 Sample Result (mg/kg)	J1R746 Sample Result Qualifier	J1R744 Sample Result (mg/kg)	J1R744 Sample Result Qualifier
2-Chloronaphthalene	1.03	U	1.07	U	—	
2-Chlorophenol	1.03	U	1.07	U	—	
2-Methylnaphthalene	1.03	U	1.07	U	—	
2-Methylphenol (cresol, o-)	1.03	U	1.07	U	—	
2-Nitroaniline	5.14	U	5.36	U	—	
2-Nitrophenol	1.03	U	1.07	U	—	
3,3'-Dichlorobenzidine	2.06	U	2.14	U	—	
3-Nitroaniline	5.14	U	5.36	U	—	
4,6-Dinitro-2-methylphenol	1.03	U	1.07	U	—	
4-Bromophenylphenyl ether	1.03	U	1.07	U	—	
4-Chloro-3-methylphenol	1.03	U	1.07	U	—	
4-Chloroanilene	1.03	U	1.07	U	—	
4-Chlorophenylphenyl ether	1.03	U	1.07	U	—	
4-Nitroaniline	5.14	U	5.36	U	—	
4-Nitrophenol	5.14	U	5.36	U	—	
Bis(2-chloroethoxy)methane	1.03	U	1.07	U	—	
Bis(2-chloroethyl) ether	1.03	U	1.07	U	—	
Bis(2-ethylhexyl) phthalate	1.03	U	1.07	U	—	
Butylbenzylphthalate	1.03	U	1.07	U	—	
Carbazole	1.03	U	1.07	U	—	
Dibenzofuran	1.03	U	1.07	U	—	
Diethylphthalate	1.03	U	1.07	U	—	
Dimethylphthalate	1.03	U	1.07	U	—	
Di-n-butylphthalate	1.03	U	1.07	U	—	
Di-n-octylphthalate	1.03	U	1.07	U	—	
Hexachlorobenzene	1.03	U	1.07	U	—	
Hexachlorobutadiene	1.03	U	1.07	U	—	
Hexachlorocyclopentadiene	1.03	U	1.07	U	—	
Hexachloroethane	1.03	U	1.07	U	—	
Isophorone	1.03	U	1.07	U	—	
Nitrobenzene	1.03	U	1.07	U	—	
N-Nitroso-di-n-propylamine	1.03	U	1.07	U	—	
N-Nitrosodiphenylamine	1.03	U	1.07	U	—	
Pentachlorophenol	5.14	U	5.36	U	—	
Phenol	1.03	U	1.07	U		
Motor Oil and Total Petroleum Hydrocarbons						
Motor Oil Extractable	101		35.8		307	
Total petroleum hydrocarbons - diesel range	7	U	3.53	U	52.7	U
Contaminant	J1R747 Sample Result (mg/kg)	J1R747 Sample Result Qualifier	J1R748 Sample Result (mg/kg)	J1R748 Sample Result Qualifier	J1R749 Sample Result (mg/kg)	J1R749 Sample Result Qualifier
Hexavalent Chromium	0.155	U	0.155	U	0.155	U

Attachment 28

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish
100-C-7 Waste Site Remediation						
Loadout						
BC502B41	100-C-7:1 Loadout	Y	50%	10	06-Nov-12 A	27-Feb-13
Backfill						
BC502C1	100-C-7 Backfill (352,000 BCMs)	Y	100%	0	25-Oct-12 A	06-Feb-13 A
BC502C31	100-C-7:1 Post C-7 Work Remaining Material (475,000 BCMs)	Y	0%	89	06-Feb-13 A	17-Jun-13
BC502C21	100-C-7:1 West Wall Backfill (125,000 BCMs)	Y	0%	25	02-May-13*	17-Jun-13
Revegetation						
BC502E2	100-C-7 Perform Revegetation (30 acres)	Y	10%	10	07-Jan-13 A	27-Feb-13
Closeout Sampling & Docs						
BC502D111	Closure Sampling & Analysis for 100-C-7:1 West Sidewall	Y	100%	0	18-Dec-12 A	06-Feb-13 A
BC502D121	Closure Sampling & Analysis for 100-C-7:1 Stock Pile Areas	Y	0%	42	28-Feb-13*	13-May-13
BC502D131	Prepare Closure Document for 100-C-7:1 West Sidewall	Y	0%	89	28-Feb-13*	06-Aug-13
BC524G76	RL/Regulator Review Draft A Closure Document for 100-C-7:1 West Sidewall	Y	0%	26	06-May-13	19-Jun-13
BC524G86	RL/Regulator Sign Rev. 0 Closure Document for 100-C-7:1 West Sidewall	Y	0%	4	22-Jul-13	25-Jul-13
Final Project Closeout						
BC524G96	Backfill Concurrence for 100-C-7:1 and West Wall Plume	Y	0%	8	15-Apr-13*	25-Apr-13



Attachment 29

169660

^WCH Document Control

From: Saueressig, Daniel G
Sent: Thursday, January 31, 2013 12:32 PM
To: ^WCH Document Control
Subject: 100-C-7 REVEGETATION

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Thursday, January 31, 2013 12:23 PM
To: Saueressig, Daniel G
Cc: Post, Thomas C
Subject: Re:

I concur with planting into March. I encourage DOE to conduct the revegetation as early as possible to increase chances of success.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Saueressig, Daniel G" ---01/31/2013 12:16:31 PM---Hi Laura, I would like to request your approval to conduct revegetation activities at 100-C-7 in Feb

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Laura Buelow/R10/USEPA/US@EPA
Cc: "Post, Thomas C" <thomas.post@rl.doe.gov>
Date: 01/31/2013 12:16 PM
Subject:

Hi Laura, I would like to request your approval to conduct revegetation activities at 100-C-7 in February and possibly into March 2013. Appendix H of the RDR/RAWP (DOE/RL-96-17), Revegetation Plan for the 100 Areas, specifies a planting window of November through January of each year, although it also states that the plan is generic and that site specific conditions will be evaluated and adjustments made when necessary.

Delays associated with weather and labor issues has necessitated this request to extend the window for revegetation. Our revegetation subject matter expert believes that the soil moisture content will remain conducive to conducting this activity through March 2013 and if conditions change, the sites would be manually watered to ensure viability of the seeds and seedlings. In addition, these sites will be evaluated in the fall to ascertain the success of the revegetation effort and if the plants did not take as determined by the criteria in the Revegetation Plan, the sites would be revegetated again during the next planting window (November 2013 through January 2014). We currently have personnel and materials (seed and seedlings) available onsite to conduct this work and would like to accomplish this task while the materials are available.

Let me know if you concur and I'll document the agreement at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

Attachment 30

169779

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 11, 2013 8:46 AM
To: ^WCH Document Control
Subject: FW: REQUEST FOR STAGING PILE APPROVAL
Attachments: REQUEST FOR STAGING PILE APPROVAL.htm

Please provide a chron number (and include attachment). This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Thursday, February 07, 2013 4:12 PM
To: Saueressig, Daniel G
Cc: Strom, Dean N; Carman, Hans M; Post, Thomas C
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

I concur.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Saueressig, Daniel G" ---02/07/2013 03:55:50 PM---Laura/Tom, I'd like to request your concurrence to remove the conservative staging pile designation

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Laura Buelow/R10/USEPA/US@EPA, "Post, Thomas C" <thomas.post@rl.doe.gov>
Cc: "Strom, Dean N" <dnstrom@wch-rcc.com>, "Carman, Hans M" <hmcarman@wch-rcc.com>
Date: 02/07/2013 03:55 PM
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

Laura/Tom, I'd like to request your concurrence to remove the conservative staging pile designation for stockpile area 24A which received potential contaminated material discussed in the emails below. The soil was sampled in place and determined to be clean before it was posted as an exclusion zone to allow transport of waste material to stockpile 34. Once the material was moved to stockpile area 24A (due to lowering the ramp/access into the C-7:1 west plume), it was resampled for metals, mercury and hex

chrome (see attached results) and found to be clean.

Since we plan to leave the material where it was placed and use it for backfill, I'd like your concurrence that the staging pile area designation approved in the emails below can be removed.

Thanks and give me a call if you have any questions.

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Wednesday, December 05, 2012 3:16 PM
To: Post, Thomas C
Cc: Saueressig, Daniel G; Strom, Dean N; Carman, Hans M
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

I concur with the path forward.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Post, Thomas C" ---12/05/2012 02:18:57 PM---Dan, I concur. Thanks for the maps.

From: "Post, Thomas C" <thomas.post@rl.doe.gov>
To: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>, Laura Buelow/R10/USEPA/US@EPA
Cc: "Strom, Dean N" <dnstrom@wch-rcc.com>, "Carman, Hans M" <hmcarman@wch-rcc.com>
Date: 12/05/2012 02:18 PM
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

Dan,

I concur. Thanks for the maps.

Tom

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Wednesday, December 05, 2012 12:57 PM
To: Buelow, Laura (EPA); Post, Thomas C
Cc: Strom, Dean N; Carman, Hans M
Subject: REQUEST FOR STAGING PILE APPROVAL

Laura/Tom, I'd like to request your approval to set up a staging pile area to support stockpiling of some potential Above Contamination Level (ACL) material coming from 100-C-7:1. The travel path connecting the C-7:1 to staging pile area (SPA) 34 has been posted as an exclusion zone to allow removal and stockpiling of material from C-7:1 in SPA 34 until the Superdumps are once again available to perform direct loadout of the waste. As we cut the ramp down to begin a new lift, we'd like to stockpile this potentially contaminated material in SPA 24 (see attached drawing depicting the 3 SPA 24 locations), which will be referred to as SPA 24A. We believe this material is clean layback, however, since trucks have utilized this surface for transporting ACL to the SPA 34, we are conservatively managing this material as ACL until sample data shows it to be clean.

SPA 24 has been remediated and sample data showed that it now meets the cleanup goals. In addition, backfill concurrence has been approved for this area. We'd like to propose relocating this ramp material to the SPA 24 area and sampling it to confirm it is, in fact clean. If the sample data shows the material is clean, it would be left and used as backfill.

The RDR for the 100 Area requires a pre-use survey of the area prior to use, I'd like to propose no survey be performed of this area since it has already been sampled and proven the meet cleanup goals.

Let me know if you concur and I'll get this agreement documented at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

<< File: spaforfill.PDF >>

[attachment "winmail.dat" deleted by Laura Buelow/R10/USEPA/US] [attachment "message_body.rtf" deleted by Laura Buelow/R10/USEPA/US] [attachment "JP0435_Summary.pdf" deleted by Laura Buelow/R10/USEPA/US] [attachment "JP0435_sp_24a.pdf" deleted by Laura Buelow/R10/USEPA/US]

From: Post, Thomas C [thomas.post@rl.doe.gov]
Sent: Monday, February 11, 2013 8:44 AM
To: Saueressig, Daniel G
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

Dan,

I concur.

Tom

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thursday, February 07, 2013 3:54 PM
To: Buelow.Laura@epamail.epa.gov; Post, Thomas C
Cc: Strom, Dean N; Carman, Hans M
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

Laura/Tom, I'd like to request your concurrence to remove the conservative staging pile designation for stockpile area 24A which received potential contaminated material discussed in the emails below. The soil was sampled in place and determined to be clean before it was posted as an exclusion zone to allow transport of waste material to stockpile 34. Once the material was moved to stockpile area 24A (due to lowering the ramp/access into the C-7:1 west plume), it was resampled for metals, mercury and hex chrome (see attached results) and found to be clean.

Since we plan to leave the material where it was placed and use it for backfill, I'd like your concurrence that the staging pile area designation approved in the emails below can be removed.

Thanks and give me a call if you have any questions.

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Wednesday, December 05, 2012 3:16 PM
To: Post, Thomas C
Cc: Saueressig, Daniel G; Strom, Dean N; Carman, Hans M
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

I concur with the path forward.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Post, Thomas C" ---12/05/2012 02:18:57 PM---Dan, I concur. Thanks for the maps.

From: "Post, Thomas C" <thomas.post@rl.doe.gov>
To: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>, Laura Buelow/R10/USEPA/US@EPA
Cc: "Strom, Dean N" <dnstrom@wch-rcc.com>, "Carman, Hans M" <hmcarman@wch-rcc.com>

Date: 12/05/2012 02:18 PM
Subject: RE: REQUEST FOR STAGING PILE APPROVAL

Dan,

I concur. Thanks for the maps.

Tom

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Wednesday, December 05, 2012 12:57 PM
To: Buelow, Laura (EPA); Post, Thomas C
Cc: Strom, Dean N; Carman, Hans M
Subject: REQUEST FOR STAGING PILE APPROVAL

Laura/Tom, I'd like to request your approval to set up a staging pile area to support stockpiling of some potential Above Contamination Level (ACL) material coming from 100-C-7:1. The travel path connecting the C-7:1 to staging pile area (SPA) 34 has been posted as an exclusion zone to allow removal and stockpiling of material from C-7:1 in SPA 34 until the Superdumps are once again available to perform direct loadout of the waste. As we cut the ramp down to begin a new lift, we'd like to stockpile this potentially contaminated material in SPA 24 (see attached drawing depicting the 3 SPA 24 locations), which will be referred to as SPA 24A. We believe this material is clean layback, however, since trucks have utilized this surface for transporting ACL to the SPA 34, we are conservatively managing this material as ACL until sample data shows it to be clean.

SPA 24 has been remediated and sample data showed that it now meets the cleanup goals. In addition, backfill concurrence has been approved for this area. We'd like to propose relocating this ramp material to the SPA 24 area and sampling it to confirm it is, in fact clean. If the sample data shows the material is clean, it would be left and used as backfill.

The RDR for the 100 Area requires a pre-use survey of the area prior to use, I'd like to propose no survey be performed of this area since it has already been sampled and proven the meet cleanup goals.

Let me know if you concur and I'll get this agreement documented at the next UMM.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

<< File: spaforfill.PDF >>

[attachment "winmail.dat" deleted by Laura Buelow/R10/USEPA/US] [attachment "message_body.rtf" deleted by Laura Buelow/R10/USEPA/US]

Attachment 31

169782

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 11, 2013 8:52 AM
To: ^WCH Document Control
Subject: FW: WSW-6 overlaid on design drawing

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Post, Thomas C [mailto:thomas.post@rl.doe.gov]
Sent: Monday, February 11, 2013 8:50 AM
To: Saueressig, Daniel G
Subject: RE: WSW-6 overlaid on design drawing

I concur, Dan.

Thanks.

Tom

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Monday, February 11, 2013 8:49 AM
To: Post, Thomas C
Subject: FW: WSW-6 overlaid on design drawing

Tom, do you also concur?

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Thursday, February 07, 2013 11:13 AM
To: Carman, Hans M

Cc: Martinez, Charlene R; Saueressig, Daniel G; Strom, Dean N; Berezovskiy, Inna B; Post, Thomas C
Subject: RE: WSW-6 overlaid on design drawing

I concur.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Carman, Hans M" ---02/07/2013 10:55:34 AM---Laura, As we discussed during your field visit we would like to move the sample

From: "Carman, Hans M" <hmcarman@wch-rcc.com>
To: "Martinez, Charlene R" <crmartin@wch-rcc.com>, "Strom, Dean N" <dnstrom@wch-rcc.com>, "Berezovskiy, Inna B" <ibberezo@wch-rcc.com>, Laura Buelow/R10/USEPA/US@EPA, "Post, Thomas C" <thomas.post@rl.doe.gov>
Cc: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
Date: 02/07/2013 10:55 AM
Subject: RE: WSW-6 overlaid on design drawing

Laura,
As we discussed during your field visit we would like to move the sample location for sample WSW-6 due west about 14 meters. The new sample location is N 144044, E 564721. The reason we need to move this sample location is that it falls in the floor of the excavation at ground water. The reason the sample is located outside of the side wall of the excavation is that the sample design was based upon the design of the excavation and the actually excavation was further to the west than the design.

Tom,
Do you concur with the verification sample relocation as well?

If I can answer any questions please let me know.

Hans Carman
Resident Engineer
Washington Closure Hanford, LLC
Field Remediation
(509) 554-1992

<<VSP overlaid on design drawing 07feb13.doc>> [attachment "VSP overlaid on design drawing 07feb13.doc" deleted by Laura Buelow/R10/USEPA/US]

Attachment 32

169689

^WCH Document Control

From: Saueressig, Daniel G
Sent: Monday, February 04, 2013 12:47 PM
To: ^WCH Document Control
Subject: FW: 100-C-7:1 Verification Sampling Addendum

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Post, Thomas C [mailto:thomas.post@rl.doe.gov]
Sent: Monday, February 04, 2013 12:46 PM
To: Saueressig, Daniel G
Subject: RE: 100-C-7:1 Verification Sampling Addendum

I concur as well.

Thanks.

Tom

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Monday, February 04, 2013 12:39 PM
To: Post, Thomas C
Subject: RE: 100-C-7:1 Verification Sampling Addendum

Tom, can you reply to Laura's original email below?

Thanks,

Dan Saueressig
FR Environmental Project Lead
Washington Closure Hanford
521-5326

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Thursday, January 24, 2013 9:58 AM
To: Capron, Jason M

Cc: Saueressig, Daniel G; Strom, Dean N; Carman, Hans M; Berezovskiy, Inna B; Post, Thomas C
Subject: Re: 100-C-7:1 Verification Sampling Addendum

I concur.

Laura Buelow, Ph.D.
Project Manager
U.S. Environmental Protection Agency
Hanford Project Office
309 Bradley Blvd, Suite 115
Richland, WA 99352
Phone: 509 376-5466
Fax: 509 376-2396
E-mail: buelow.laura@epa.gov

"Capron, Jason M" ---01/24/2013 07:53:49 AM---Laura & Tom- To capture our discussions yesterday:

From: "Capron, Jason M" <jmcapron@wch-rcc.com>
To: Laura Buelow/R10/USEPA/US@EPA, "Post, Thomas C" <thomas.post@rl.doe.gov>
Cc: "Strom, Dean N" <dnstrom@wch-rcc.com>, "Saueressig, Daniel G" <dgsauere@wch-rcc.com>, "Carman, Hans M" <hmcarman@wch-rcc.com>, "Berezovskiy, Inna B" <ibberezo@wch-rcc.com>
Date: 01/24/2013 07:53 AM
Subject: 100-C-7:1 Verification Sampling Addendum

Laura & Tom-

To capture our discussions yesterday:

Due to data transposition at the laboratory, some ACL soil from the eastern sidewall area of the 100-C-7:1 remediation was erroneously classified as BCL material and backfilled to the main 100-C-7:1 excavation. The correct sample results for the ACL area were undetected total chromium and 3.6 mg/kg hexavalent chromium. These results were associated with approximately 70 BCM of soil. However, the total backfill material moved in the timeframe of this occurrence is approximately 870 BCM of material. The additional 800 BCM of material was correctly classified as BCL based on analytical results. We are confident in the location of the approximately 870 BCM of material, but do not have a means to reliably differentiate the 70 BCM of ACL. Therefore, per our discussions, we are removing all of the backfilled material for disposal at ERDF. Following removal of the material, multiple aliquots of material will be collected from the footprint and combined into a single sample, submitted for full protocol ICP metals, mercury, and hexavalent chromium analysis. We will include the analytical results for this sample as part of the overall verification data set for BCL material for future reclassification of the 100-C-7:1 subsite.

I would appreciate your concurrence with the approach we're taking; I'm not planning to produce any further instruction/documentation for this amendment to the verification sampling approach.

Thanks again,

Jason

[attachment "winmail.dat" deleted by Laura Buelow/R10/USEPA/US] [attachment "message_body.rtf" deleted by Laura Buelow/R10/USEPA/US]

Attachment 33

300 Area Closure Project Status
February 14, 2013
100/300 Area Combined Unit Manager Meeting

Ongoing Activities

- M-016-139 – TPA Milestone completed with all north of Apple waste sites backfilled and revegetated.
- 309 Reactor – Core drilling and lower reactor space interference removal ongoing, 100% design for reactor lift and transport to ERDF completed.
- 340 Complex – Preparations for vault removal ongoing.
- 308/308A – Final backfill of site nearly complete.
- UPR-300-4 (321/323) – Remediation completed, verification sampling pending.
- 329 – Demolition completed.
- 324 – Zone II HEPA filter replacement initiated and ongoing.
- 3506A, 3506B, 3707H, and 3727 slabs demolished and backfilled.

Demolition & Remediation Preparation Activities

- 326 Building – Hazardous material and asbestos abatement initiated.
- 309 Below-Grade & Remaining 300 Area Waste Sites – Subcontractor mobilization initiated.
- RRLWS & RLWS Piping – Characterization sampling ongoing.
- 3701D – Initiated below-grade demolition.
- 3718E & 3718G – demolition of both slabs initiated.

60-Day Project Look Ahead

- Complete 340 Vault removal preparations, prepare for lift and transport.
- Complete characterization of the 300-257 pipeline to river.
- Initiate balance of 300 Area waste site remediation.
- Demolish 3730 above-grade, lift and transport hot-cells to ERDF.

Attachment 34

ESH&QA Mission Completion Project
February 14, 2013

Long-Term Stewardship

- RL continues to review the 100-F Area turnover and transition package.
- Continue drafting of the 100-FR-1 Operable Unit Interim Remedial Action Report.

100-K Shoreline Characterization Sample Design

- Discussions were held with the Tribes to resolve comments on the *Characterization of Surface Soils in the 100-K-64 and 100-K-111 Waste Site Areas Sampling and Analysis Instructions* document. The document is expected to be issued by the end of February.

Document Review Look-Ahead

Document	Regulator Review Start	Duration
100-FR-1 Operable Unit Interim Remedial Action Report	March 2013	30 days