

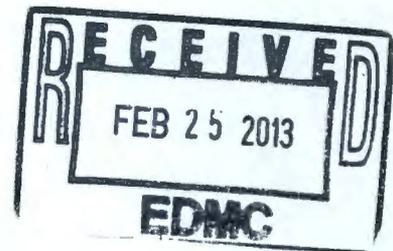
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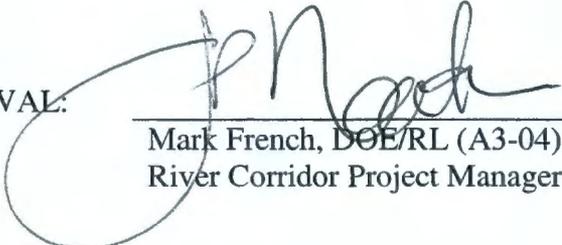
## 100/300 AREA UNIT MANAGER MEETING ATTENDANCE AND DISTRIBUTION

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Hadley, Karl A	karl.hadley@wch-rcc.com	H4-21	WCH

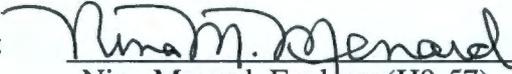


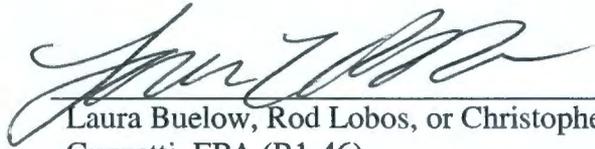
100/300 AREA UNIT MANAGERS MEETING  
APPROVAL OF MEETING MINUTES

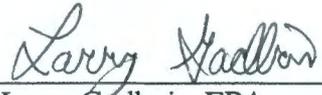
January 10, 2013

APPROVAL:  Date 2/14/13  
Mark French, DOE/RL (A3-04)  
River Corridor Project Manager

APPROVAL:  Date 2/14/13  
Briant Charboneau, DOE/RL (A6-33)  
Groundwater Project Manager

APPROVAL:  Date 2/14/13  
Nina Menard, Ecology (H0-57)  
Environmental Restoration Project  
Manager

APPROVAL:  Date 2/14/13  
Laura Buelow, Rod Lobos, or Christopher  
Guzzetti, EPA (B1-46)  
100 Area Project Manager

APPROVAL:  Date 2-14-2013  
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**

January 10, 2013

### ADMINISTRATIVE

- Next Unit Manager Meeting (UMM) –The next meeting will be held February 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 November 8, 2012, 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 January 10, 2013, UMM.

### 100-K AREA (GROUNDWATER, SOILS, D4/ISS) (out of sequence due to meeting conflict)

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

Agreement 1: Attachment 5 provides DOE's and EPA's concurrences with the revised sample locations for verification sampling of trench N at 118-K-1.

Agreement 2: Attachment 6 provides DOE's and EPA's approvals to pull two air monitors at 100-K (N-403 on the west side of 118-K-1 and the tritium monitor on the northeast edge of 118-K-1).

### 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 7 provides the Field Remediation Schedule for IU-2/6. No issues were identified and no action items were documented.

Agreement 1: Attachment 8 provides DOE's and EPA's approval to treat 600-318 lead contaminated soil in accordance with the "Treatment Plan and Protocol for the Treatment of Lead Contaminated Soils, WCH-252, Rev.2."

#### **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 9 provides the Field Remediation Schedule for 100-D. Attachment 10 provides the Field Remediation Schedule for 100-H. Attachment 11 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 12 provides Ecology's agreement to reduce the groundwater sampling frequency from monthly to quarterly for wells 199-H1-40, 199-H1-42, 199-H1-43, 699-99-41, and 199-H2-1.

#### **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 11 provides status and information for D4/ISS activities at 100-N, 100-D and 100-B. Attachment 13 provides the 100-N Area FR Schedule. No issues were identified and no action items were documented.

Agreement 1: Attachment 14 provides a 100-N Ancillary Facilities Removal Action Sampling Determination Form (Rev. 1) for various 100-N mobile offices and storage containers.

Agreement 2: Attachment 15 provides Ecology's approval for recontouring 100-N-33.

Agreement 3: Attachment 16 provides Ecology's approval of a plume chase request for additional remediation and resampling at the 116-N-2 waste site.

Agreement 4: Attachment 17 provides Ecology's approval of a request for additional remediation and resampling of the 100-N-60 waste site.

Agreement 5: Attachment 18 provides Ecology's approval of a plume chase request for additional remediation and resampling at the 100-N-63:2 waste site.

Agreement 6: Attachment 19 provides Ecology's agreement that the removal of the 100-N-79 spillway under the authority of the 100-N D4 Action Memorandum. An ESD will be required to add the 100-N-104 spillway to the 100-N ROD before its remediation can proceed.

Agreement 7: Attachment 20 provides Ecology's approval to move an air monitor at 100-N so that it has permanent electricity.

Agreement 8: Attachment 21 provides Ecology's approval of a plume chase request for additional remediation and resampling at the 128-N-1 staging pile.

Agreement 9: Attachment 22 provides Ecology's approval of a plume chase request for additional remediation and resampling at the 100-N-87 group of waste sites.

Agreement 10: Attachment 23 provides Ecology's approval of a plume chase request for additional remediation and resampling at the UPR-100-N-31 group of waste sites.

Agreement 11: Attachment 24 provides Ecology's approval of the revised 100-N Bioventing Well Island Agreement.

Agreement 12: Attachment 25 provides the approved November 2012 Air Monitoring Plan for the 100-N Area Remedial Action.

Agreement 13: Attachment 26 provides Ecology's approval of a plume chase request for additional remediation and resampling at the 100-N-61:1 group of waste sites.

### **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 12 provides status and information for D4/ISS activities at 100-N, 100-D and 100-B. Attachment 27 provides a schedule for Field Remediation at 100-B/C Area. No issues were identified and no action items were documented.

Agreement 1: Attachment 28 provides EPA's approval of the plan to administratively close the 100-C-7:1 staging pile areas (SPAs 100-C-9, 100-C-10, and 100-C-11) within 180 days of its January 8, 2013, expiration date. (The backfill concurrence that addressed these piles demonstrated that the areas met the remedial action goals.) The 100-C-14 SPA set to expire in February 2013 is also considered to be closed per its backfill concurrence.

Agreement 2: Attachment 29 provides EPA's approval to set up a staging pile area to support stockpiling of potential Above Contamination Level material coming from 100-C-7:1.

### **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 action items were documented.

Agreement 1: EPA approved the reduction in the sampling frequency from monthly to quarterly for 618-10 wells.

Agreement 2: EPA approved the continuation of the quarterly sampling for calcium and magnesium for an additional 6 months at the 618-10 wells.

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

Attachment 1 provides status and information for groundwater. Attachment 30 provides status of the 300 Area Closure Project activities. No issues were identified and no action items were documented.

Agreement 1: EPA approved the reduction in the sampling frequency from monthly to quarterly for well 399-4-15.

### **SPECIAL TOPIC**

Ecology noted that the new Waste Site Reclassification Form in TPA-MP-14 did not include a statement from the previous version of the form that backfill of the waste management unit was authorized. After discussion as to whether this represented a problem in need of correction, it was agreed by the agencies that the reclassification of a site to interim closeout represented approval to backfill.

### **MISSION COMPLETION PROJECT**

Attachment 31 provides status and information regarding the Long-Term Stewardship, the Remedial Investigation of Hanford Releases to the Columbia River, 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**

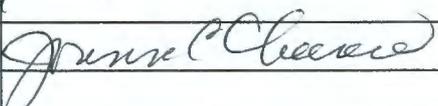
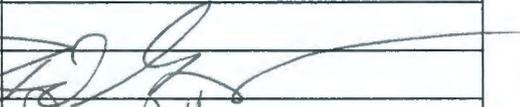
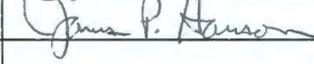
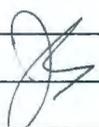
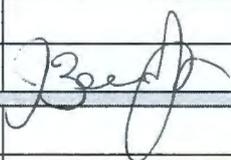
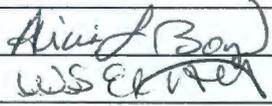
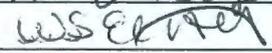
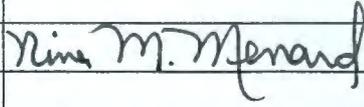
No changes were reported to the status of the CERCLA Five-Year Review action Items. No issues were identified and no agreements or action items were documented.

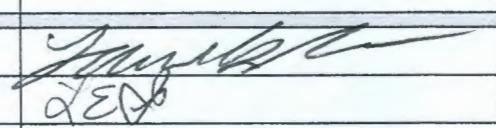
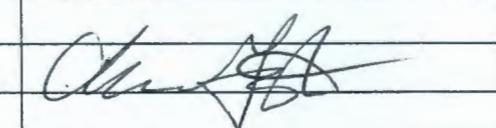
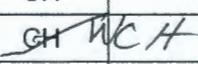
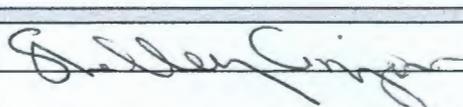
# Attachment A

100/300 AREA UNIT MANAGER MEETING

ATTENDANCE AND DISTRIBUTION

January 10, 2013

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# Attachment B

100/300 Area UMM  
Action List  
January 10, 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  
January 10, 2013  
Washington Closure Hanford Building  
2620 Fermi Avenue, Richland, WA 99354  
Room C209; 2:00p.m.

**Administrative:**

- Approval and signing of previous meeting minutes (November 8, 2012)
- Update to Action Items List
- Next UMM (2/14/2013, Room C209)

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

- 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-K Area (Jim Hanson, Jamie Zeisloft, Tom Teynor)
- 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**

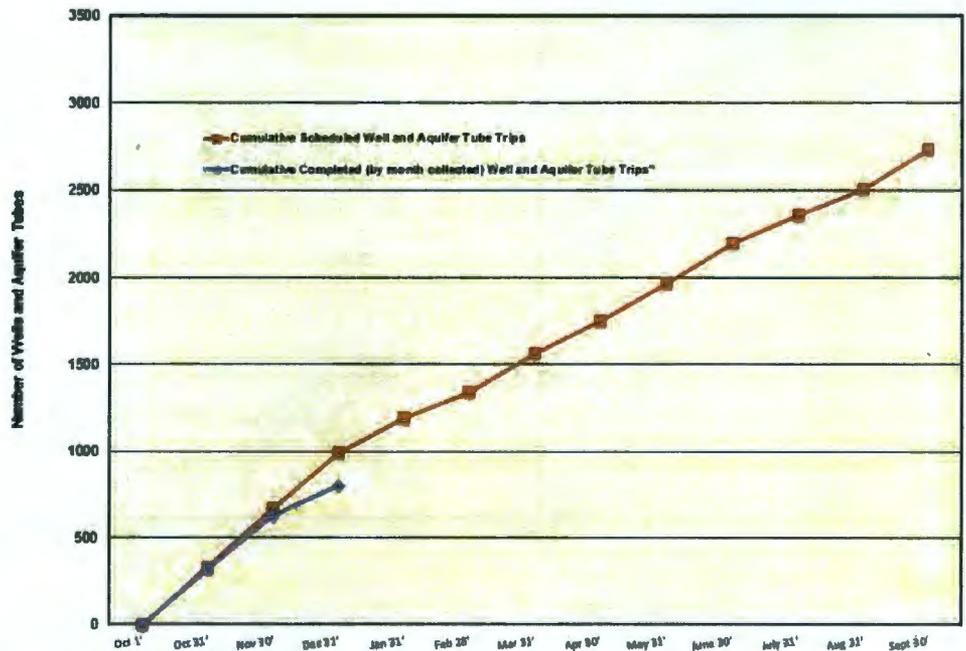
# Attachment 1

**100/300 Areas Unit Managers Meeting  
January 10, 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. The last samples for December were collected on the 21<sup>st</sup>. Work will commence on January 7<sup>th</sup>. Ten wells at 100-D were not sampled because IH monitoring indicated the lower explosive limit was surpassed. These wells are located in proximity to the bioremediation treatability tests. Safe sampling techniques are being evaluated. 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/>).

**FY 2013 Cumulative Well + Aquifer Tube Collection Progress vs Schedule  
(December 31, 2012)**



**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 14, 2012 to RL (12-AMRP-0712).

**100-FR-3 Groundwater Operable Unit – Bert Day / Mary Hartman**

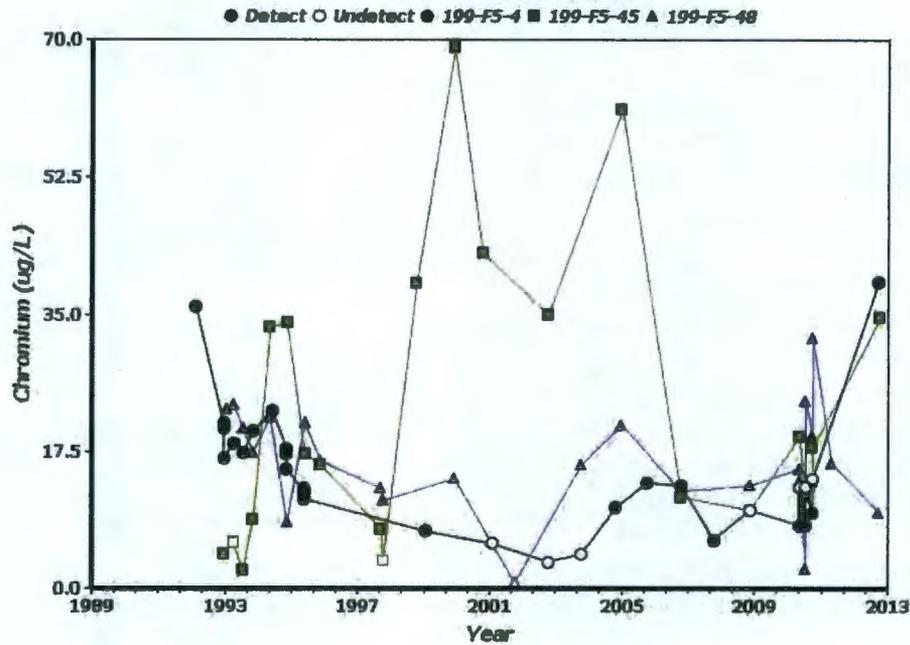
(M-015-64-T01, 12/17/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units for groundwater and soil.)

*Schedule Status* – Completed on December 20, 2012.

- CERCLA Process Implementation:
  - RI/FS & PP: The Draft A documents were delivered to EPA on December 20, 2012.
- Monitoring and Reporting:
  - The fall 2012 well sampling was completed. Monitoring results did not result in significant changes to previous contaminant plume interpretations.
  - Cr(VI) and total chromium concentrations increased in two wells in central 100-F (199-F5-4 and 199-F5-45). The cause of the change is unknown and concentrations didn't increase in nearby well 199-F5-48.

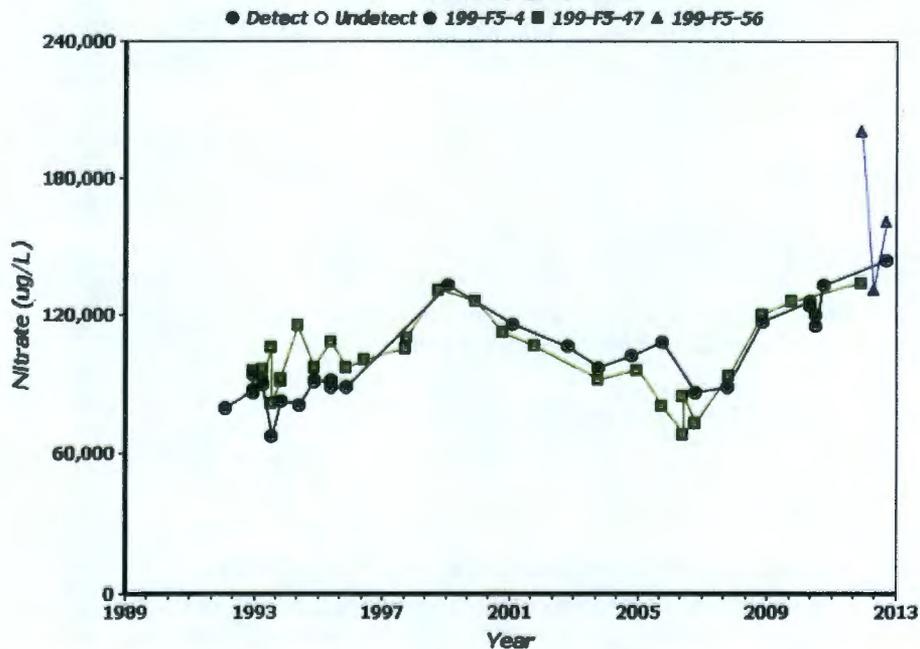
**100/300 Areas Unit Managers Meeting  
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**199-F5-4, 199-F5-45, 199-F5-48  
Filtered Chromium (ug/L)**



- Nitrate concentrations were within previously established ranges. The highest concentration was 161 mg/L in temporary well 199-F5-56; nearby wells had similar concentrations.

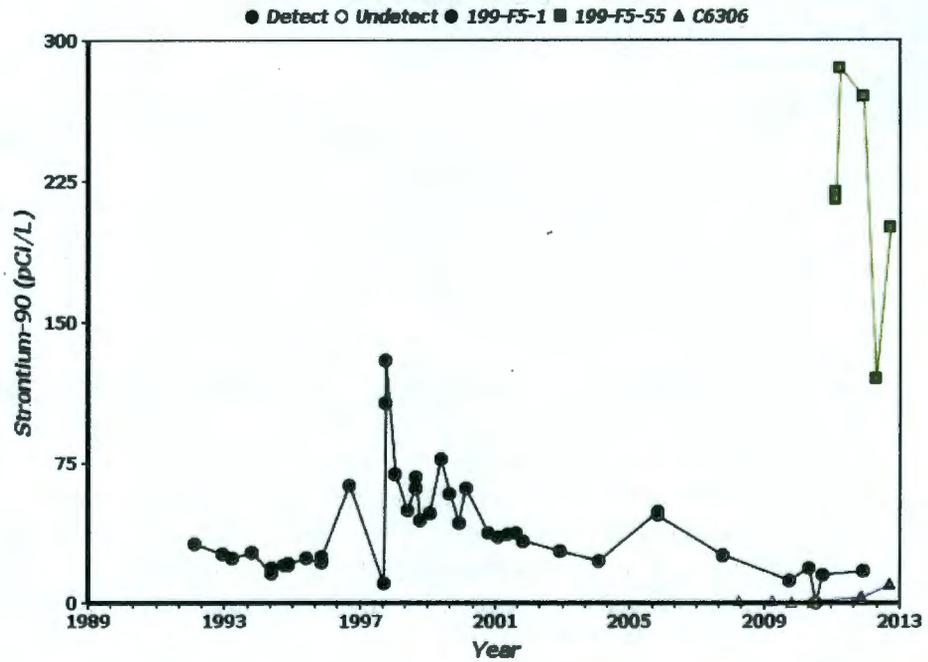
**199-F5-4, 199-F5-47, 199-F5-56  
Nitrate (ug/L)**



- The highest strontium-90 concentration was 200 pCi/L in temporary well 199-F5-55, located near the former 116-F-14 waste site. Only one other well in eastern 100-F had a concentration above the DWS (18 pCi/L in 199-F5-1). Aquifer tube C6306 also had a concentration above the standard for the first time (9.6 pCi/L). Temporary well 199-F5-56, located near the reactor building, was the only other well with a strontium-90 concentration above the DWS in fall 2012 samples.

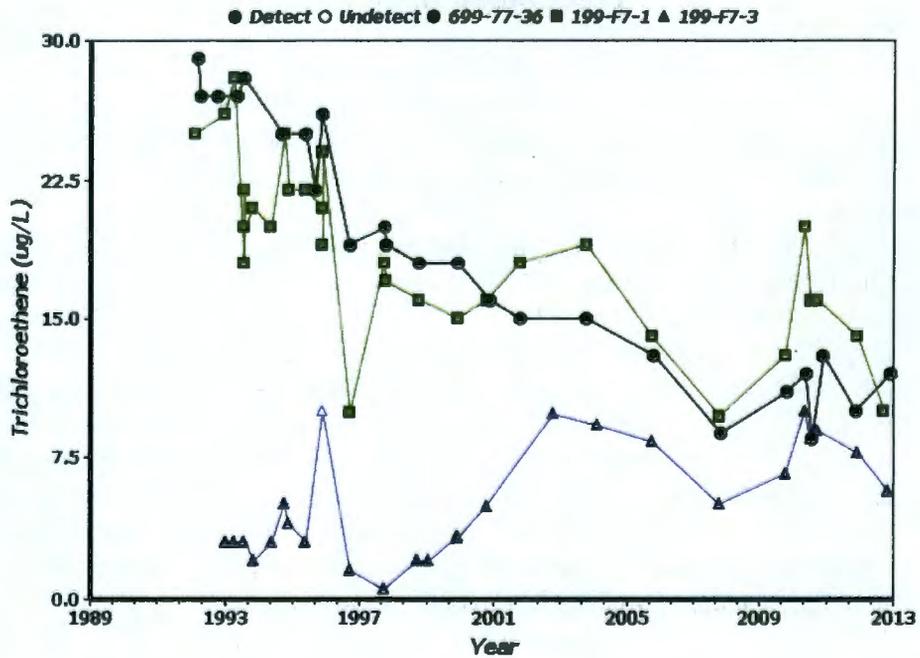
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**199-F5-1, 199-F5-55, C6306  
Strontium-90 (pCi/L)**



- Trichloroethene concentrations were within previously established ranges. The maximum concentration was 12 ug/L in well 699-77-36, southwest of 100-F.

**699-77-36, 199-F7-1, 199-F7-3  
Trichloroethene (ug/L)**



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

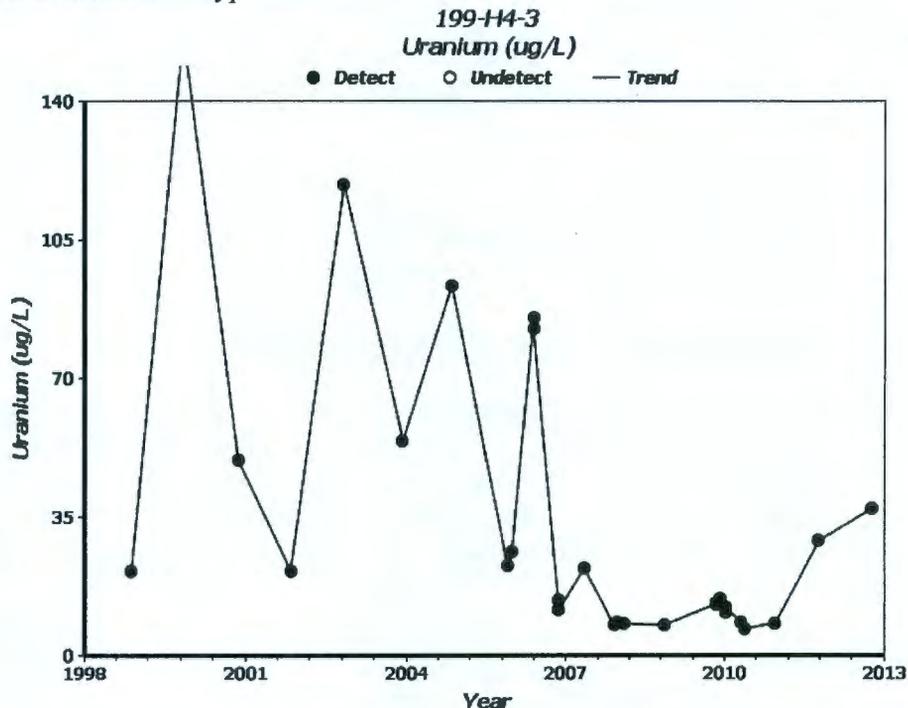
(M-15-70-T01, 11/24/2011, Submit feasibility study report and proposed plan for the 100-HR-1, 100-HR-2, 100-HR-3, 100-DR-1 and 100-DR-2 operable units for groundwater and soil.)

*Schedule Status – Completed on December 14, 2012*

- Project Management
  - 183-H DQO: DOE, Ecology and CHPRC met on Dec. 19, 2012. The DQO was presented and discussed. Revisions are being made.
    - Agreement was reached that this meeting completed Recommendation #1 from the letter 12-AMRP-0123 dated August 17, 2012 from RL to Ecology.
    - The next meeting will include regulatory actions and will be scheduled for the end of January 2013.
  - WCH Integration:
    - Power Outages: The last scheduled power outage was completed on December 7, 2012 in preparation of the 100-D-100 waste site remediation. The systems were back on line before the end of the day.
    - 100-D and 100-H Well Decommissioning and Replacement: Eight wells have been decommissioned at 100-D. The wells are: 199-D5-99, 199-D5-119, 199-D5-120, 199-D5-121, 199-D5-144, 199-D5-98, 199-D5-102, and 199-D5-122. All wells were sampled within a few days of decommissioning. Replacement well drilling is scheduled to start on January 9, 2013.
- CERCLA Process Implementation:
  - RI/FS & PP: The Draft A document was transmitted to the regulators on December 14, 2012
- Remedial Actions:
  - Operations continue at DX and HX pump-and treat system. November 1 through December 31, 2012 performance:
    - The systems treated 99.5 million gallons
    - The system removed 61.6 kg of hexavalent chromium
  - The placement of new and/or realignment of existing wells is being evaluated with the goal of optimizing the plume capture and mass treated.
- Monitoring and reporting:
  - The 100-D/H aquifer tube monitoring was completed in November 2012. All 61 aquifer tubes at 100-H and 70 of the tubes at 100-D were sampled. Only one aquifer tube was not sampled successfully (36-D) within HR-3.
  - Groundwater monitoring well sampling for the quarter resulted in all but 18 wells being sampled. Of those 18, two are being converted to monitoring wells and are not available for sampling due to the presence of equipment, 12 were not available for sampling due to Industrial Hygiene concerns with odors in the wells, and 4 were not sampled but are scheduled for next quarter. Of the 12 wells not sampled, ten wells at 100-D were not sampled because monitoring indicated the lower explosive limit was surpassed. These wells are located in the proximity of the bioremediation treatability test and are currently being evaluated for safe sampling techniques. One well will be sampled in January and the other is being evaluated.
  - TPA-CN-556 has been signed by Ecology on November 31, 2012. The change notice reduces the aquifer tube monitoring downgradient of the ISRM barrier to a semi-annual basis instead of a quarterly basis. The aquifer tubes were being monitored quarterly for ongoing evaluation of the ISRM barrier. As these aquifer tubes are now downgradient of several extraction wells, the frequency was adjusted accordingly.

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- Ecology has concurred in reducing the sampling frequency of wells downgradient of waste site 128-H from monthly to quarterly, since the waste site has now been remediated and substantial continuing contributions are not expected. The wells this affects are: 199-H1-40, 199-H1-42, 199-H1-43, 699-99-41, and 199-H2-1. Emails with concurrence are attached.
- Uranium concentrations in Well 199-H4-3 exceeded the drinking water standard of 30 µg/L for the first time since 2006, with a concentration of 37.10 µg/L. This is the second year that an increase has been noted (see Figure, below). The increases in concentration appear to be related to two consecutive years of very high river water levels. Additional monitoring is recommended to determine to assess this hypothesis.



**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 schedule for preparation of the Draft A RI/FS report and proposed plan has been adjusted to the new delivery date of June 30, 2013 for transmittal to Ecology.
  - Meeting was held with Ecology on December 13, 2012 to discuss a potential ARARs waiver for the Sr-90 contamination in the groundwater.
- Yearly Sample Events for 2012
  - Annual sampling of CERCLA and AEA wells was completed on September 27, 2012 for all scheduled wells, with the exception of 199-N-16, where access is limited by nearby soil excavation.
  - Well 199-N-16 was sampled on November 6, 2012. Results were non-detect for Total Petroleum Hydrocarbons (TPH) – Diesel (70.00 U µg/L), TPH – Gasoline (50.00 U µg/L), Oil & Grease (2,100.00 U µg/L), and Strontium-90 (0.11 U pCi/L).

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- RL and Ecology provided approval to decommission well 199-N-16 to allow for continued shallow zone petroleum remediation at that location. Decommissioning was completed in December 2012.
- Apatite PRB Performance Monitoring
  - The low river stage (fall) sampling event was conducted on September 26 and 27, 2012. Samples were collected from the 900 feet of installed barrier and included 12 monitoring wells and 10 aquifer tubes. Results are being used to evaluate the performance of the apatite permeable reactive barrier.
- 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
  - Fifty-three 100-N aquifer tubes are scheduled for sampling in December. As of December 31, 2012, 13 aquifer tubes have been sampled. Additional sampling is ongoing.

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

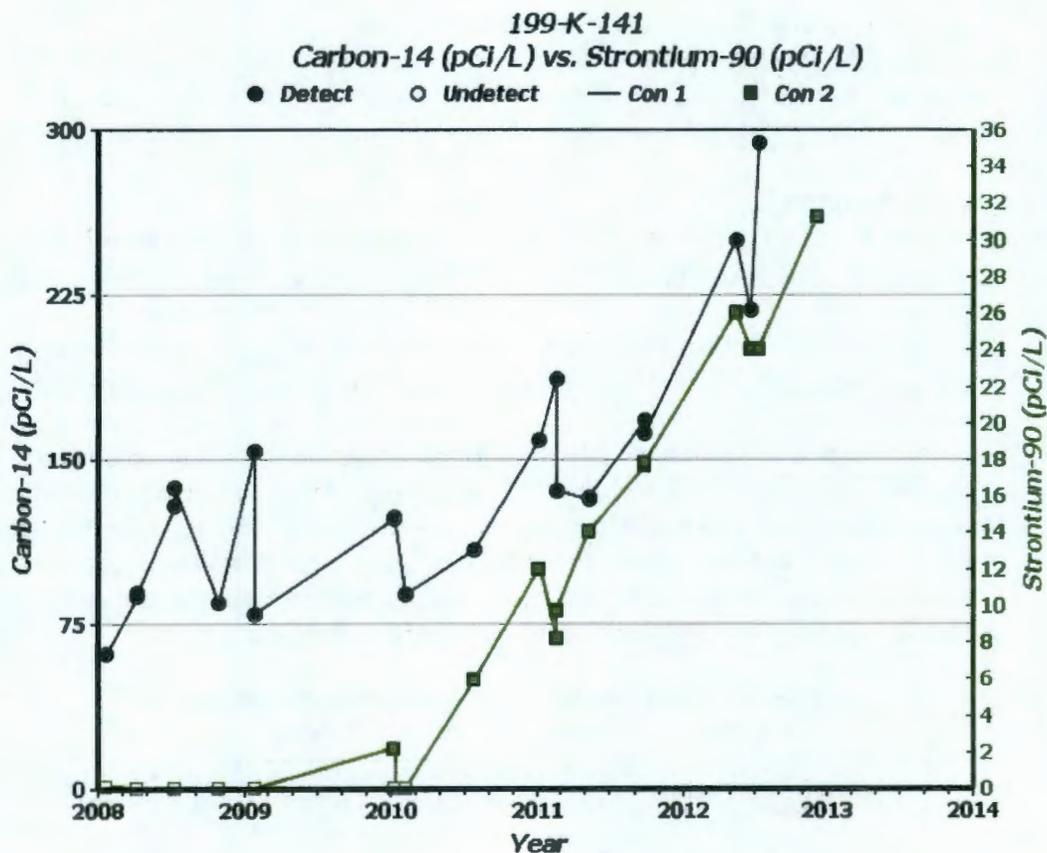
- Project Management

KE Reactor Waste Site characterization DQO: PRC staff developed data quality objectives for vadose characterization borings at two waste sites in KE Reactor area. The DQOs were presented to RL and EPA for concurrence. A draft DQO summary report and sampling instruction are currently under internal review by PRC. One boring at UPR-100K-1 is planned, with completion as a monitoring well. Mock-up boring and characterization activities in the vicinity of 116-KE-3 will be used to demonstrate readiness to proceed to the high-risk waste site.

- WCH Integration:
  - Power Outages: The last scheduled power outage was completed on December 7, 2012 in preparation of the 100-D-100 waste site remediation. The systems were back on line before the end of the day.
- CERCLA Process Implementation:
  - RI/FS and Proposed Plan: Production of both documents are on hold.
- Remedial Actions:
  - Operations continue at KX, KR4, and KW pump-and-treat systems. November through December 2012 performance:
    - The systems treated 109.3 million gallons.
    - The system removed 10.9 kg of hexavalent chromium
  - Well Realignment
    - Well 199-K-173 is operating as an extraction well at about 60 gpm and continues to exhibit the highest hexavalent chromium concentration of the extraction wells at the KW system (about 80 ug/L).
    - Well 199-K-182 is operating as an extraction well in the KX system at about 26 gpm and a Cr(VI) concentration of about 66 ug/L.
    - Five additional existing wells in 100-K are being currently evaluated for re-alignment as extraction wells. Locations are being evaluated based on capture zone performance of the three K Area systems.
    - Three additional new extraction wells and one new injection well are being evaluated to enhance river protection and mass removal at 100-K Area.



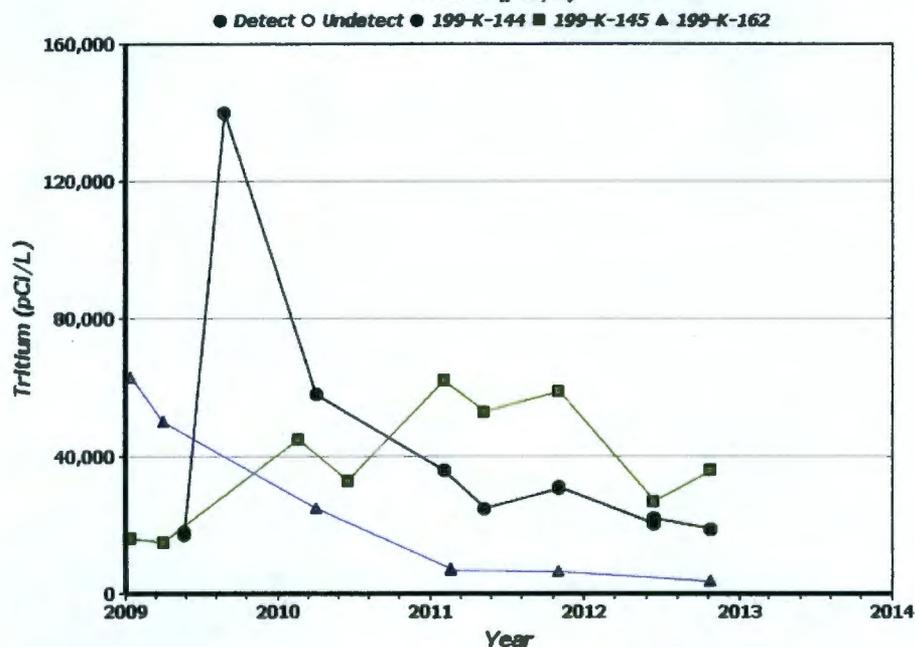
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- Other co-contaminants of interest include tritium in groundwater within the 100-KX treatment area. Several KX extraction wells continue to exhibit tritium concentrations at, or near, the MCL-equivalent concentration of 20,000 pCi/L. These include 199-K-144 and -145 (see figure below). These wells are capturing the down gradient side of the high-concentration tritium plume that has migrated apparently from the vicinity of 116-KE-1 Gas Condensate Crib and potentially from the 118-K-1 Burial Ground.
- We will continue to watch the behavior of major co-contaminants as the Cr(VI) remedial activities continue at 100-K Area.

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199-K-144, 199-K-145, 199-K-162  
Tritium (pCi/L)



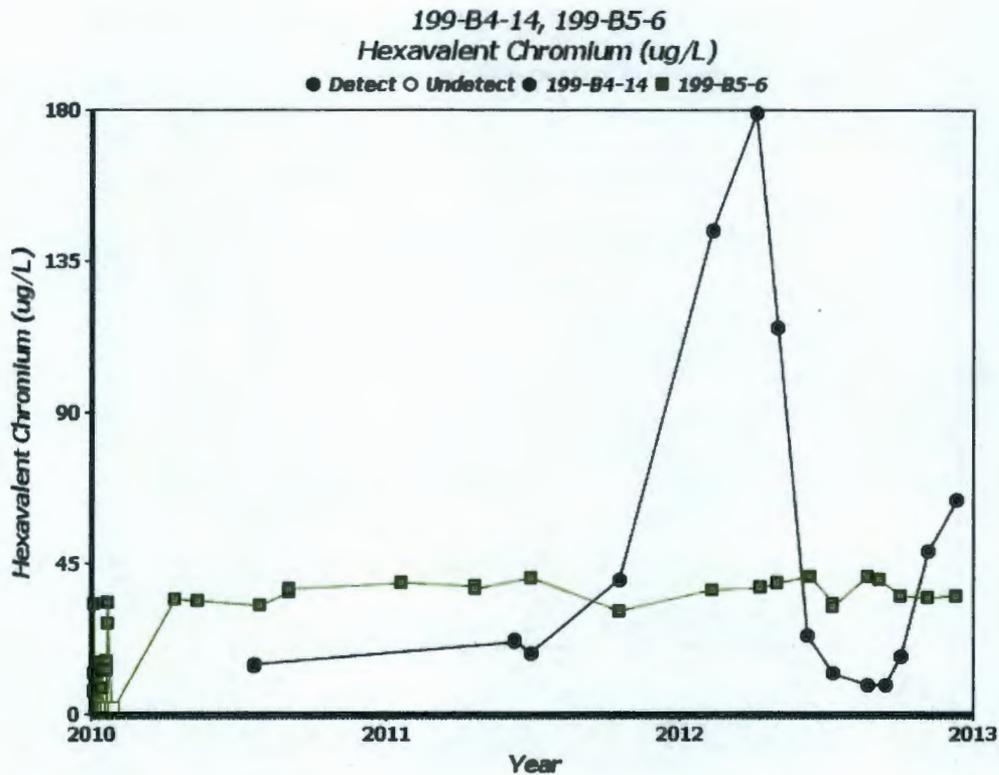
**100-BC-5 Groundwater Operable Unit – Bert Day/ Mary Hartman**

(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 are due January 31, 2013.
  - Locations for planned new monitoring wells have been staked; EPA gave concurrence to the locations.
- Monitoring & Reporting
  - The comprehensive, annual groundwater well sampling event is scheduled for January 2013.
  - The two wells downgradient of the 100-C-7:1 excavation were sampled in November and December. The Cr(VI) concentration in shallow well 199-B4-14 rose (63.8  $\mu\text{g/L}$  in December). The concentration in the deep well remained steady. Tritium concentrations remained in previously established ranges.

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- All but three of the 100-BC aquifer tubes were sampled as scheduled in December. River levels rose in December and tube cluster C6233/34/35 could not be sampled at the same time as the others and will be re-attempted in January. December 2012 Cr(VI) results received from the lab to date are consistent with previous results, with maximum concentrations approximately 25 µg/L.

**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. Two outstanding issues (groundwater cleanup levels and ARARs) remain to be resolved before the document can be finalized.
- 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. The outstanding issues identified above need to be resolved before the document can be finalized.
  - 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

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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 30<sup>th</sup>. The results from this monitoring are as follows:

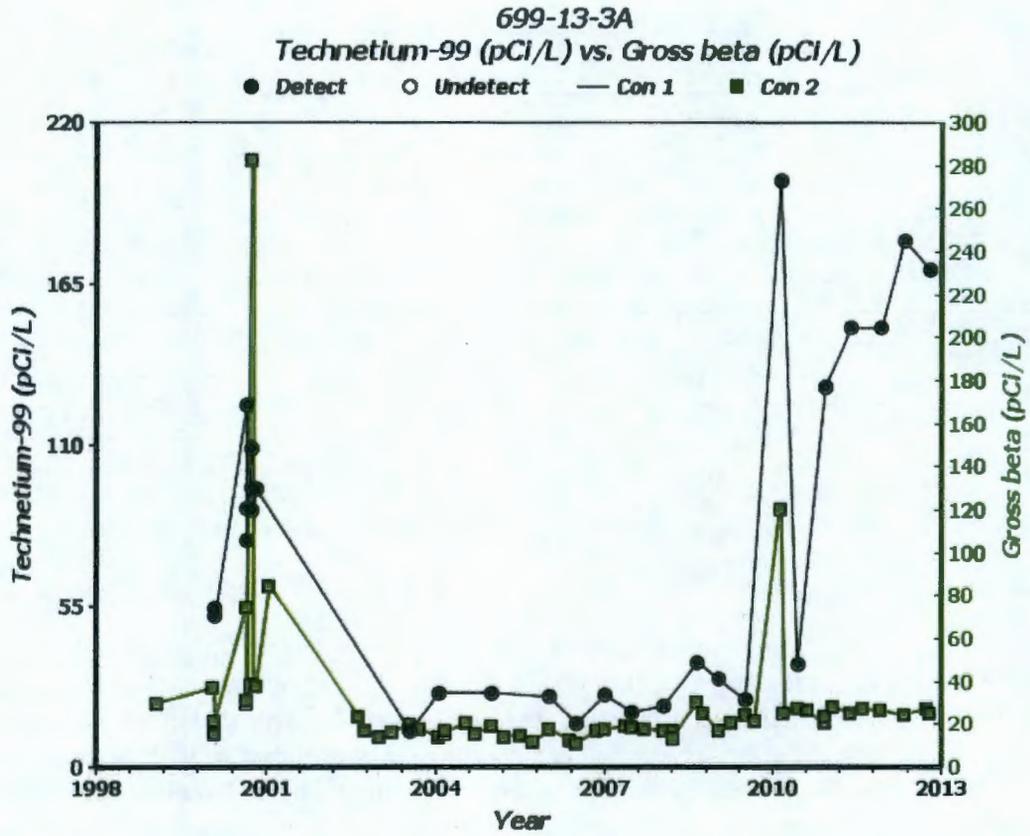
Well	Date	Gross Alpha (pCi/L)	Uranium (µg/L)	Gross Beta (pCi/L)
399-4-15	5/30/12	23.0	77.5	20.0
399-4-15	6/29/12	24.0	81.5	20.0
399-4-15	7/25/12	28.0	71.5	18.0
399-4-15	8/15/12	56.0	111.0	26.0
399-4-15	9/7/12	31.0	88.3	40.0
399-4-15	10/11/12	27.0	52.6	32.0
399-4-15	11/15/12	16.0	46.6	20.0
399-4-15	12/20/12	Not Available	Not Available	Not Available
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	Not Available	Not Available	Not Available

The gross alpha and uranium concentrations in well 399-4-15 were higher in August, but declined to more typical levels in September, October, and November. 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 had declined to more typical levels by November. 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. Results are not yet available for the sample collected from Well 399-4-15 in December 2012.

- 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 is scheduled for sampling in January.
- 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. Well 699-S6-E4K was sampled on December 19, 2012 and the sampling for well 699-S6-E4L has not yet been completed.
- 300 Area Aquifer Tubes  
Twenty-eight 300-FF-5 aquifer tubes are scheduled for sampling in December. As of December 31, 2012, 15 had been sampled. Additional sampling is ongoing.

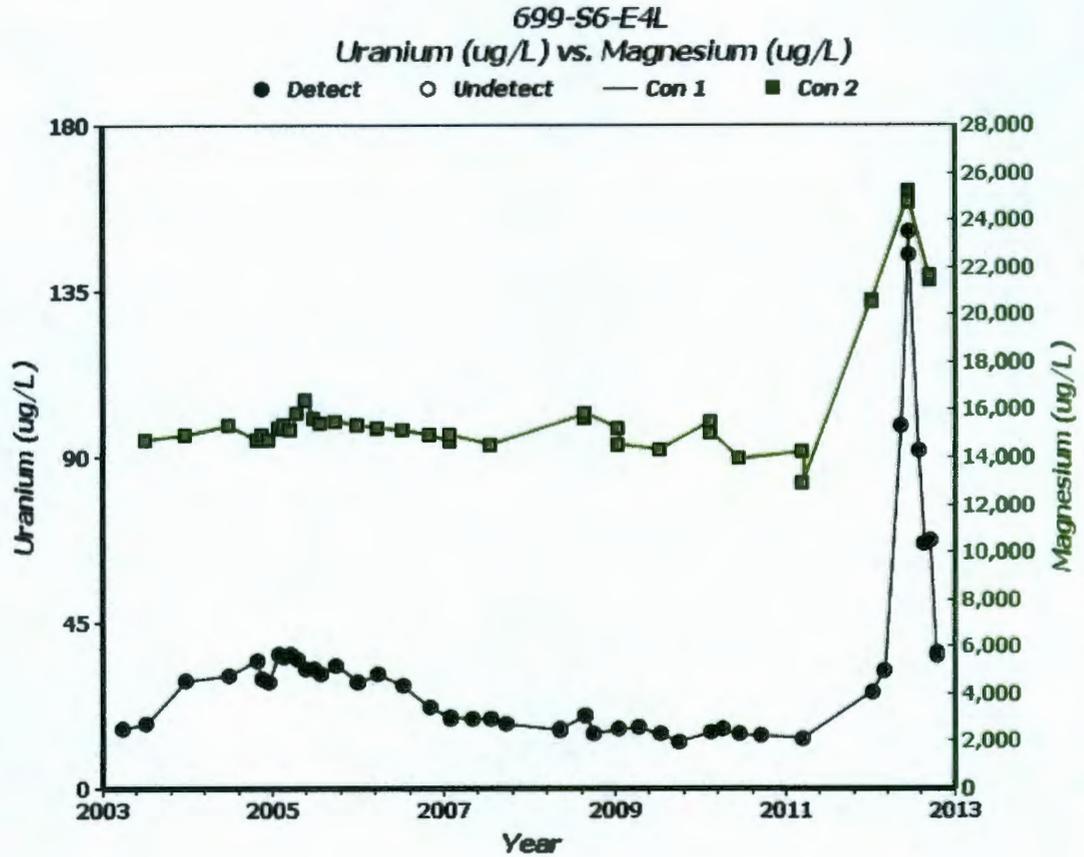
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Figure 300FF5-1. Technetium-99 and Gross Beta Trends (through October 18, 2012) at Well 699-13-3A at the 618-11 Burial Ground.



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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 December 2012**

Week	100-BC	100-K	100-N	100-D/H	100-F	300 Area
02-08	C6227	199-K-200	199-K-150	199-H4-3		399-4-14
Dec 12	01-M	199-K-201		199-D4-36		399-1-18C
	03-D	199-K-141		199-D4-7		399-3-19
	AT-B-2-D	199-K-140		199-D5-15		399-3-21
	04-D			199-D5-43		399-3-22
	C6229			199-H4-80		399-1-9
	C6228			199-H4-81		399-1-7
	AT-B-1-M					399-1-57
	C7718					399-1-17C
	C7725					399-1-16C
	05-D					399-8-3
	AT-B-3-D					
	05-M					
	05-S					
	C7719					
	C7720					
	AT-B-3-S					
	C7724					
	C7726					
	AT-B-3-M					
	C7780					

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<b>Table 1. Summary of Wells &amp; Aquifer Tubes Sampled in the River Corridor Areas During December 2012</b>						
<b>Week</b>	<b>100-BC</b>	<b>100-K</b>	<b>100-N</b>	<b>100-D/H</b>	<b>100-F</b>	<b>300 Area</b>
	C6232 AT-B-7-M C6231 C7781 C6230 C7782 06-D 06-M 06-S					
<b>09-15 Dec 12</b>	AT-B-5-D 199-B4-14 199-B5-6	199-K-189 199-K-188 199-K-36	C7937 C7936 C7935 C7938 C7939 C6328 C6327 C6326 C7934 C6132	199-D5-144 199-D5-120 199-D5-121 199-D5-99 199-D5-119 199-D4-31 199-D4-4 199-D4-32 199-D5-103 199-D5-125 199-D5-126 199-D4-48 C6334 C6333 C6332	699-63-25A	AT-3-1-S C6343 C6342 C6341 AT-3-2-S AT-3-2-M AT-3-1-D(1) AT-3-1-M 699-S19-E13 399-1-10B 399-1-16A 699-S20-E10 399-1-18B 399-1-17B 399-1-17A 399-1-10A 399-1-18A
<b>16-22 Dec 12</b>		199-K-184	199-K-150	199-D5-38		399-1-16B 399-3-6 399-2-5 399-1-23 AT-3-3-D AT-3-3-M AT-3-4-S AT-3-4-M AT-3-4-D AT-3-3-S C6344 399-1-15 699-S6-E4K 699-S6-E4D 399-4-11 699-12-2C 699-13-1E 699-13-0A 399-4-15

# Attachment 2

January 10, 2013 Unit Manager's Meeting  
Field Remediation Status

**100-B/C**

- Continued excavation, load-out and backfill activities at 100-C-7:1
- Continued backfill activities at 100-C-7

**100-D**

- Completed subcontractor mobilization activities
- Commenced layback removal at 100-D-100
- Completed backfill/contouring and revegetation activities at 100-D-8, 118-D-2 and 118-D-3
- Completed backfill activities at 100-D-14 and 100-D-56

**100-H**

- No excavation/remediation field activities being conducted at 100-H at this time
- Mobilization to 100-H anticipated to being in January 2013
- Completed backfill and revegetation activities at 128-H-1 and 132-H-3
- Completed backfill activities at 126-H-2
- Commenced backfill/contouring and revegetation activities at 100-H-37

**100-K**

- Completed remediation of 100-K-86, 100-K-91, 100-K-92 and 100-K-93
- Completed remediation of miscellaneous restoration sites K-25, K-26, K-27, K-29, K-30, K-31, K-36 and K-131
- Completed backfill/contouring and revegetation activities at 128-K-2, 600-29 and 100-K-89
- Continued remediation of 100-K-84
- Commenced remediation of 100-K-95
- Continued backfill at 118-K-1

**100-N**

- Continued excavation, stockpile and load-out activities at 100-N-61:4, 100-N-63:2, UPR-100-N-18, UPR-100-N-20 and UPR-100-N-24
- Completed excavation and load-out of 120-N-7
- Initiated site preparation activities at 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**

- Field work scheduled to begin in January 2013

# Attachment 3

**100K Area Unit Managers Meeting Status  
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**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 ECRTS Preliminary Documented Safety Analysis (PDSA) has been provided to DOE for review.
- 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 building concrete footings were completed in late November. Construction progress has been limited since then due to a stand-down on quality-affecting work by the construction contractor initiated on December 4, 2012. The contractor has submitted and CHPRC has approved a formal Corrective Action Plan (CAP). CHPRC began validating the completion of corrective actions contained in the CAP the week of January 7, 2013, and authorized the re-start of backfill work. The contractor's work will be released in a phased approach to restart remaining quality affecting work as validations are completed.
- 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-016-53, *Complete the Interim Response Actions for 100 K Area Phase 1*

- The re-vegetation of Areas AA, AG, and AH was completed in November.
- This milestone was completed prior to the 12/31/2012 due date as documented by DOE letter 13-AMRP-0058, dated 11/29/2012. A table summarizing the documentation supporting completion of the remedial actions is provided at the end of this report.

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

- There are 50 waste sites and 22 facilities in the Phase 2 milestone which has a due date of 12/31/2015.

- The Removal Action Report for 1724-KB (Phase 2) and 1908-KE (Phase 3) has been approved by DOE.
- The 100-K-106 RSVP has been reviewed by DOE and EPA and comments have been incorporated. The Waste Site Reclassification Form should be signed in January.

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

- Construction of below-grade concrete pourbacks was completed 12/6/2012
- Closure of reactor building above-ground openings was completed 12/27/2012
- Interior reactor cleanout work was completed 12/20/2012
- A Tentative Agreement between the Tri-Parties was signed on 11/26/2012 to delete this milestone and to incorporate 105-KE interim safe storage into Milestone M-093-27. The public review period for the TPA Change Package ends on January 24, 2013.

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

- A Tentative Agreement between the Tri-Parties to delete this milestone was signed on 11/26/2012. The public review period for the TPA Change Package ends on January 24, 2013.

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

- A Tentative Agreement between the Tri-Parties to revise this milestone to include 105-KE reactor and align the schedules for interim safe storage for both reactors was signed on 11/26/2012. The due date for the milestone remains the same. The public review period for the TPA Change Package ends on January 24, 2013.

#### Other Information

- A Data Quality Objectives workshop for borehole characterization activities around the KE reactor was conducted and agreement between the parties was reached.
- No demolition activities were conducted in the 100K area during November or December.

Completion Documentation for TPA Milestone M-016-53  
Phase 1 Waste Sites and Facilities

Waste Site	RSVP DOE/RL-	Reclassification Form
100-K-3	2012-40	2012-089
100-K-6	2012-38	2012-063
100-K-18	2012-27	2012-017
100-K-19	2012-27	2012-018
100-K-34	2012-28	2012-023
100-K-36	2012-40	2012-083
100-K-37	2010-44	2010-038
100-K-38	2010-44	2010-039
100-K-46	2012-38	2012-064
100-K-53	2012-37	2012-055
100-K-56 <sup>3</sup>	2012-46	NA
100-K-62	2012-38	2012-065
100-K-63	2012-25	2012-013
100-K-68	2012-46	2012-090
100-K-69	2012-46	2012-091
100-K-70	2012-46	2012-092
100-K-71	2012-46	2012-093
100-K-77	2011-105	2012-098
116-KE-6A	2010-42	2010-029
116-KE-6B	2010-42	2010-030
116-KE-6C	2010-42	2010-031
116-KE-6D	2010-42	2010-032
118-KE-2	2010-50	2010-042
120-KW-1	2011-113	2011-108
120-KW-2	2011-113	2011-109
120-KW-3	2011-113	2011-110
120-KW-4	2011-113	2011-111
120-KW-5	2012-27	2012-021
120-KW-7	2012-27	2012-022
130-KE-1	2010-45	2010-040
132-KE-1	2012-28	2012-066
1607-K3	2012-28	2012-024

Facility	Removal Action Report
110KE	DOE/RL-2011-19
110KW	DOE/RL-2011-84
115KE	DOE/RL-2011-20
116KE	DOE/RL-2011-20
117KE	DOE/RL-2011-20
118KE <sup>1</sup>	DOE/RL-2011-54
119KE	DOE/RL-2011-18
1605KE	DOE/RL-2011-84
1706KE <sup>2</sup>	DOE/RL-2011-21
1706KEL	DOE/RL-2011-21
1706KER	DOE/RL-2011-21
1713KE	DOE/RL-2011-18
1714KE	DOE/RL-2011-18
1717AKE	DOE/RL-2011-97
181KE	DOE/RL-2011-84
183.1KW	DOE/RL-2011-62
183.2KW	DOE/RL-2011-62
183.3KW	DOE/RL-2011-62
183.4KW	DOE/RL-2011-60
183.7KW	DOE/RL-2011-62
183.1KE	DOE/RL-2011-73
183.3KE	DOE/RL-2011-63
183.4KE	DOE/RL-2011-63
183.5KE	DOE/RL-2011-63
183.6KE	DOE/RL-2011-63
MO048	DOE/RL-2011-17
MO060	DOE/RL-2011-17
MO969	DOE/RL-2011-17

<sup>1</sup> DOE/RL-2012-50 documents sampling and analysis of underlying soils as required by DOE/RL-2011-54

<sup>2</sup> DOE/RL-2012-40 documents sampling and analysis of underlying soils as required by DOE/RL-2011-21

<sup>3</sup> 100-K-56 is a pipeline site that will be excavated in three phases. The phase 1 portion is complete and documented in the associated RSVP. The waste site will be reclassified when all portions of the pipeline have been remediated.

# Attachment 4

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J			F			M			April 2013		May 2013		June 2013					
							3	0	1	2	2	0	1	1	2	0	1	1	2	0	0	1	2	2	0

### 100-K-84 Red Soil Sw. of 118-K-1

#### Excavation

RK084A	Excavation - 100-K-84 (1,532 BCMs)	Y	99%	11	19-Nov-12 A	23-Jan-13	[Gantt bar: 19-Nov-12 to 23-Jan-13]																	
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#### Loadout

RK084B	Loadout - 100-K-84 (3,371 USTs)	Y	99%	11	19-Nov-12 A	23-Jan-13	[Gantt bar: 19-Nov-12 to 23-Jan-13]																	
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#### Closeout Sampling & Docs

RK084D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13	[Gantt bar: 19-Dec-12 to 31-Jan-13]																	
RK084D7	Resolve Draft A Work Instruction Comments - 100-K-84	Y	0%	8	04-Feb-13	14-Feb-13	[Gantt bar: 04-Feb-13 to 14-Feb-13]																	
RK084D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13	[Gantt bar: 19-Feb-13 to 19-Feb-13]																	
RK084D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-84	Y	0%	1	20-Feb-13	20-Feb-13	[Gantt bar: 20-Feb-13 to 20-Feb-13]																	
RK084D10	Verification Closeout Samples - 100-K-84	Y	0%	16	21-Feb-13	20-Mar-13	[Gantt bar: 21-Feb-13 to 20-Mar-13]																	
RK084D11	Lab Analysis 100-K-84	Y	0%	26	21-Mar-13	06-May-13	[Gantt bar: 21-Mar-13 to 06-May-13]																	

### 100-K-86 - Stained Areas

#### Excavation

RK086A	Excavation - 100-K-86 (140 BCMs)	Y	100%	0	12-Nov-12 A	03-Jan-13 A	[Gantt bar: 12-Nov-12 to 03-Jan-13]																	
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#### Loadout

RK086B	Loadout - 100-K-86 (307 USTs)	Y	100%	0	12-Nov-12 A	03-Jan-13 A	[Gantt bar: 12-Nov-12 to 03-Jan-13]																	
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#### Closeout Sampling & Docs

RK086D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13	[Gantt bar: 19-Dec-12 to 31-Jan-13]																	
RK086D7	Resolve Draft A Work Instruction Comments - 100-K-86	Y	0%	8	04-Feb-13	14-Feb-13	[Gantt bar: 04-Feb-13 to 14-Feb-13]																	
RK086D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13	[Gantt bar: 19-Feb-13 to 19-Feb-13]																	
RK086D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-86	Y	0%	1	20-Feb-13	20-Feb-13	[Gantt bar: 20-Feb-13 to 20-Feb-13]																	
RK086D10	Verification Closeout Samples - 100-K-86	Y	0%	16	21-Feb-13	20-Mar-13	[Gantt bar: 21-Feb-13 to 20-Mar-13]																	
RK086D11	Lab Analysis 100-K-86	Y	0%	26	21-Mar-13	06-May-13	[Gantt bar: 21-Mar-13 to 06-May-13]																	

### 100-K-87 Asbestos

#### Excavation

RK087A	Excavation - 100-K-87 (0.5 BCMs)	Y	0%	4	21-Jan-13*	24-Jan-13	[Gantt bar: 21-Jan-13 to 24-Jan-13]																	
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#### Loadout

RK087B	Loadout - 100-K-87 (1.1 USTs)	Y	0%	4	21-Jan-13*	24-Jan-13	[Gantt bar: 21-Jan-13 to 24-Jan-13]																	
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#### Closeout Sampling & Docs

RK087D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13	[Gantt bar: 19-Dec-12 to 31-Jan-13]																	
RK087D7	Resolve Draft A Work Instruction Comments - 100-K-87	Y	0%	8	04-Feb-13	14-Feb-13	[Gantt bar: 04-Feb-13 to 14-Feb-13]																	
RK087D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13	[Gantt bar: 19-Feb-13 to 19-Feb-13]																	
RK087D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-87	Y	0%	1	20-Feb-13	20-Feb-13	[Gantt bar: 20-Feb-13 to 20-Feb-13]																	

### 100-K-91 - Battery

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J		F		M		April 2013		May 2013		June 2013		13			
							3	0	1	2	2	0	1	1	2	0	1	1	2	0	0	1
<b>Excavation</b>																						
RK091A	Excavation - 100-K-91 (0.5 BCMs)	Y	100%	0	01-Nov-12 A	03-Jan-13 A																
<b>Loadout</b>																						
RK091B	Loadout -- 100-K-91 (1.1 USTs)	Y	100%	0	07-Nov-12 A	03-Jan-13 A																
<b>Closeout Sampling &amp; Docs</b>																						
RK091D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13																
RK091D7	Resolve Draft A Work Instruction Comments - 100-K-91	Y	0%	8	04-Feb-13	14-Feb-13																
RK091D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13																
RK091D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-91	Y	0%	1	20-Feb-13	20-Feb-13																
<b>100-K-92 - Reddish Stained Gravels</b>																						
<b>Closeout Sampling &amp; Docs</b>																						
RK092D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13																
RK092D7	Resolve Draft A Work Instruction Comments - 100-K-92	Y	0%	8	04-Feb-13	14-Feb-13																
RK092D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13																
RK092D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-92	Y	0%	1	20-Feb-13	20-Feb-13																
RK092D10	Verification Closeout Samples - 100-K-92	Y	0%	16	21-Feb-13	20-Mar-13																
RK092D11	Lab Analysis 100-K-92	Y	0%	26	21-Mar-13	06-May-13																
<b>100-K-93 - Drum Remnant</b>																						
<b>Closeout Sampling &amp; Docs</b>																						
RK093D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	0%	16	19-Dec-12 A	31-Jan-13																
RK093D7	Resolve Draft A Work Instruction Comments - 100-K-93	Y	0%	8	04-Feb-13	14-Feb-13																
RK093D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13																
RK093D9	Prepare and Issue Rev. 0 Work Instrm - 100-K-93	Y	0%	1	20-Feb-13	20-Feb-13																
<b>100-K-95 - Tar Dump</b>																						
<b>Excavation</b>																						
RK095A	Excavation - 100-K-95 (124 BCMs)	Y	0%	7	07-Jan-13*	16-Jan-13																
<b>Loadout</b>																						
RK095B	Loadout -- 100-K-95 (273 USTs)	Y	0%	7	07-Jan-13*	16-Jan-13																
<b>Closeout Sampling &amp; Docs</b>																						
RK095D6	RL/Regulator Review Draft A Work Instruction for - 10...	Y	20%	16	19-Dec-12 A	31-Jan-13																
RK095D7	Resolve Draft A Work Instruction Comments - 100-K-95	Y	0%	8	04-Feb-13	14-Feb-13																
RK095D8	RL/Regulator Sign Rev. 0 Work Instruction for - 100-K...	Y	0%	1	19-Feb-13	19-Feb-13																
<b>118-K-1 Burial Ground</b>																						
<b>Backfill</b>																						
RK18K18035	Backfill 118-K-1 Trenches (Not including N)	Y	0%	32	10-Jan-13*	25-Feb-13																

# Attachment 5

168913

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 05, 2012 11:07 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 118-K-1 Trench N - Please send the sample locations that were re-located  
**Attachments:** 118-K-1\_Nsamps.pdf

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:** Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]  
**Sent:** Tuesday, December 04, 2012 3:06 PM  
**To:** Zeisloft, Jamie  
**Cc:** Heidelberg, Donald D; Saueressig, Daniel G; Strom, Dean N; Carman, Hans M; Capron, Jason M; Hudson, William K; Thompson, Wendy S  
**Subject:** RE: 118-K-1 Trench N - Please send the sample locations that were re-located

All-

Jason stopped by my office as well. I also concur with the revised sample locations.

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

"Zeisloft, Jamie" ---12/04/2012 02:51:22 PM---All - Jason just stopped by and explained the situation with the two relocated shallow zone samples.

From: "Zeisloft, Jamie" <jamie.zeisloft@rl.doe.gov>  
 To: "Carman, Hans M" <hmcarm@wch-rcc.com>, Christopher Guzzetti/R10/USEPA/US@EPA  
 Cc: "Thompson, Wendy S" <WSTHOMPS@wch-rcc.com>, "Saueressig, Daniel G" <dgsauere@wch-rcc.com>, "Strom, Dean N" <dnstrom@wch-rcc.com>, "Hudson, William K" <wkudson@wch-rcc.com>, "Heidelberg, Donald D" <ddheidel@wch-rcc.com>, "Capron, Jason M" <jmcapron@wch-rcc.com>  
 Date: 12/04/2012 02:51 PM  
 Subject: RE: 118-K-1 Trench N - Please send the sample locations that were re-located

---

All - Jason just stopped by and explained the situation with the two relocated shallow zone

samples. I concur with the revised sample locations and the justification for the relocation.

---

**From:** Carman, Hans M [mailto:hmcarman@wch-rcc.com]  
**Sent:** Monday, November 26, 2012 9:11 AM  
**To:** Zeisloft, Jamie; Christopher Guzzetti  
**Cc:** Thompson, Wendy S; Saueressig, Daniel G; Strom, Dean N; Hudson, William K; Heidelberg, Donald D  
**Subject:** 118-K-1 Trench N - Please send the sample locations that were re-located

Chris and Jamie,

On Thursday 11/15/12 we were able to complete the verification sampling of trench N at 118-K-1. The shallow zone samples in quadrant 4 sections 3 and 7 were relocated due to location of an access ramp that constructed from BCL material. The samples were taken immediately adjacent the identified locations off to the side of the ramp in native material. All of the other samples were collected as close to the designated location as we were able to get using an excavator and laser assisted GPS. If you concur with the sample locations or you would like for us to try some additional measures please let me know.

<< File: 118-K-1\_Nsamps.pdf >>

Hans Carman  
Resident Engineer  
Washington Closure Hanford, LLC  
118-K-1 Burial Grounds Field Remediation  
(509) 554-1992

---

**From:** Hudson, William K  
**Sent:** Monday, November 19, 2012 6:41 AM  
**To:** Strom, Dean N; Carman, Hans M; Martinez, Charlene R; Howell, Theresa Q; Thompson, Wendy S  
**Subject:** RE: Please send the sample locations that were re-located

Attached is a map that includes information on where the verification samples at 118-K-1 Trench N were collected.

Notes:

- (1) if a position is not listed on the figure it is because we were able to collect it by hand at the planned location.
- (2) the two greatest "deltas" come for the locations that fell out on the ramp that had to be moved (S-A4-7, and S-A4-3).
- (3) otherwise, only one delta was greater than 2 meters, and the majority were less than 1 meter.

<< File: 118-K-1\_Nsamps.pdf >>

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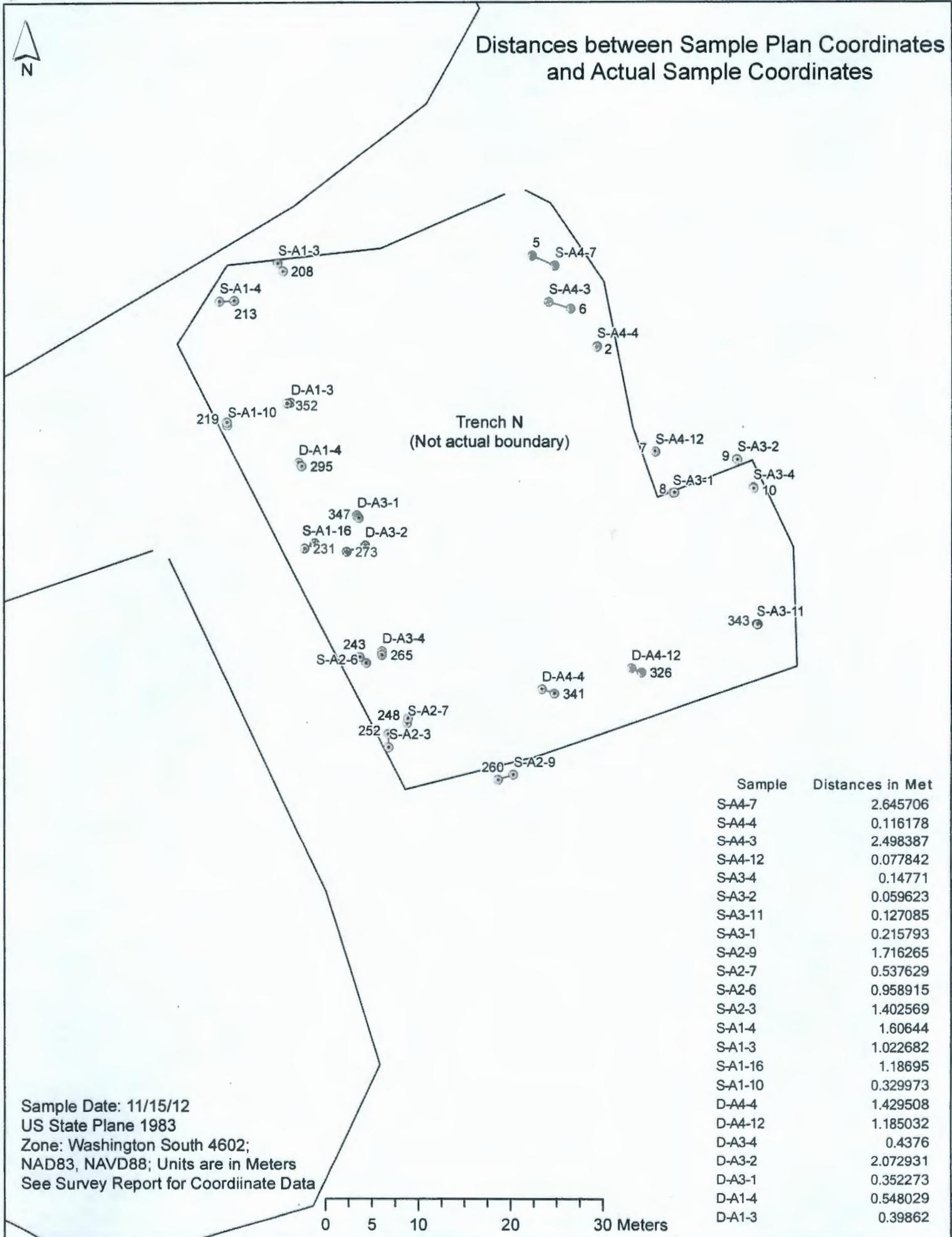
**From:** Strom, Dean N  
**Sent:** Thursday, November 15, 2012 2:57 PM  
**To:** Hudson, William K; Carman, Hans M

**Subject:** Please send the sample locations that were re-located

Thanks

I left message with EPA and DOE, no response yet.

# Distances between Sample Plan Coordinates and Actual Sample Coordinates



Trench N  
(Not actual boundary)

Sample	Distances in Met
S-A4-7	2.645706
S-A4-4	0.116178
S-A4-3	2.498387
S-A4-12	0.077842
S-A3-4	0.14771
S-A3-2	0.059623
S-A3-11	0.127085
S-A3-1	0.215793
S-A2-9	1.716265
S-A2-7	0.537629
S-A2-6	0.958915
S-A2-3	1.402569
S-A1-4	1.60644
S-A1-3	1.022682
S-A1-16	1.18695
S-A1-10	0.329973
D-A4-4	1.429508
D-A4-12	1.185032
D-A3-4	0.4376
D-A3-2	2.072931
D-A3-1	0.352273
D-A1-4	0.548029
D-A1-3	0.39862

Sample Date: 11/15/12  
 US State Plane 1983  
 Zone: Washington South 4602;  
 NAD83, NAVD88; Units are in Meters  
 See Survey Report for Coordinate Data



# Attachment 6

169047

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 7:36 AM  
**To:** ^WCH Document Control  
**Subject:** FW: RL Concurrence - 100-K AIR MONITORS

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:** Wednesday, December 19, 2012 7:28 AM  
**To:** Zeisloft, Jamie  
**Cc:** Saueressig, Daniel G; Carman, Hans M  
**Subject:** Re: RL Concurrence - 100-K AIR MONITORS

I concur as well.

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

"Zeisloft, Jamie" ---12/18/2012 10:48:33 AM---Dan - I concur with pulling the 2 air monitors as described. Thanks. \_\_\_\_\_

From: "Zeisloft, Jamie" <jamie.zeisloft@rl.doe.gov>  
 To: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>, Christopher Guzzetti/R10/USEPA/US@EPA  
 Cc: "Carman, Hans M" <hmcarman@wch-rcc.com>  
 Date: 12/18/2012 10:48 AM  
 Subject: RL Concurrence - 100-K AIR MONITORS

---

Dan – I concur with pulling the 2 air monitors as described. Thanks.

---

**From:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Tuesday, December 18, 2012 8:10 AM  
**To:** Guzzetti.Christopher@epamail.epa.gov; Zeisloft, Jamie  
**Cc:** Carman, Hans M  
**Subject:** 100-K AIR MONITORS

Chris/Jamie, I'd like to request your approval to pull 2 air monitors at 100-K. N-403 (on the west side of 118-K-1) and the tritium monitor located on the northeast edge of 118-K-1 are proposed for removal. Backfill concurrence for 118-K-1 (with the exception of trench N) has been signed and all sample results at trench N indicate that the remedial action goals (with the exception of tritium) have been met. As you know, plans are being finalized to interim backfill trench N (no additional remediation will take place at this time), which will include a clay layer to help prevent liquid infiltration. Monitors N534 and N535 will remain as they are part of the site wide near field monitoring network.

Attached for you information is a copy of the air monitoring plan for 118-K-1.

Let me know if you concur and I'll move forward with getting these monitors pulled.

Thanks,

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

<< File: 100-K AMP REV 1.pdf >>

# Attachment 7

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J		F		M		April 2013		May 2013		June 2013		13				
							3	0	1	2	2	0	1	1	2	0	1	1		2	0	0	1
<b>MR fencing removal 600-275</b>																							
<b>Loadout</b>																							
IU226080	Remove Fence around 600-275	N	0%	12	18-Mar-13*	04-Apr-13																	
<b>600-326</b>																							
<b>Excavation</b>																							
IU222640	Excavation 600-326	Y	0%	3	18-Mar-13*	20-Mar-13																	
<b>Loadout</b>																							
IU222650	Loadout 600-326 (2 tons)	Y	0%	3	21-Mar-13*	26-Mar-13																	
<b>Closeout Sampling &amp; Docs</b>																							
IU222710	Closure Sampling 600-326	Y	0%	26	10-Apr-13	23-May-13																	
<b>Final Project Closeout</b>																							
IU222720	Prepare Closure Document 600-326	Y	0%	83	28-May-13	22-Oct-13																	
<b>600-356</b>																							
<b>Excavation</b>																							
IU226010	Excavation 600-356	N	0%	3	18-Mar-13*	20-Mar-13																	
<b>Loadout</b>																							
IU226020	Loadout 600-356	N	0%	1	21-Mar-13	21-Mar-13																	
<b>Closeout Sampling &amp; Docs</b>																							
IU226070	Work Instructions 600-356	N	0%	75	22-Apr-13	03-Sep-13																	
<b>600-279</b>																							
<b>Excavation</b>																							
IU223360	Excavation 600-279		0%	4	02-Apr-13	08-Apr-13																	
<b>Loadout</b>																							
IU223260	Loadout 600-279 (1,600 tons)		0%	4	09-Apr-13	15-Apr-13																	
<b>Closeout Sampling &amp; Docs</b>																							
IU223320	Prepare Work Instruction 600-279		0%	75	14-May-13	25-Sep-13																	
IU223330	RL/Reg Review of Draft A Work Instruction 600-279		0%	26	03-Jul-13	19-Aug-13																	
<b>600-370</b>																							
<b>Excavation</b>																							
IU224020	Excavation 600-370		0%	2	11-Apr-13	15-Apr-13																	
<b>Loadout</b>																							
IU223920	Loadout 600-370 (100 tons)		0%	2	16-Apr-13	17-Apr-13																	

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J			F			M			April 2013		May 2013		June 2013		13			
							3	0	1	2	2	0	1	1	2	0	1	1	2	0	1	2	0	0	1
<b>Closeout Sampling &amp; Docs</b>																									
IU223980	Prepare Work Instruction 600-370		0%	75	16-May-13	30-Sep-13																			
<b>600-373</b>																									
<b>Excavation</b>																									
IU224350	Excavation 600-373		0%	2	29-Apr-13	30-Apr-13																			
<b>Loadout</b>																									
IU224250	Loadout 600-373 (100 tons)		0%	2	01-May-13	02-May-13																			
<b>Closeout Sampling &amp; Docs</b>																									
IU224310	Prepare Work Instruction 600-373		0%	75	04-Jun-13	15-Oct-13																			
<b>600-374</b>																									
<b>Excavation</b>																									
IU224460	Excavation 600-374		0%	2	02-May-13	06-May-13																			
<b>Loadout</b>																									
IU224360	Loadout 600-374 (100 tons)		0%	2	07-May-13	08-May-13																			
<b>Closeout Sampling &amp; Docs</b>																									
IU224420	Prepare Work Instruction 600-374		0%	75	10-Jun-13	21-Oct-13																			
<b>600-377</b>																									
<b>Excavation</b>																									
IU224790	Excavation 600-377		0%	2	10-Jun-13	11-Jun-13																			
<b>Loadout</b>																									
IU224690	Loadout 600-377 (100 tons)		0%	2	12-Jun-13	13-Jun-13																			
<b>600-382</b>																									
<b>Excavation</b>																									
IU225340	Excavation 600-382		0%	2	20-May-13	21-May-13																			
<b>Loadout</b>																									
IU225240	Loadout 600-382 (100 tons)		0%	2	22-May-13	23-May-13																			
<b>Closeout Sampling &amp; Docs</b>																									
IU225300	Prepare Work Instruction 600-382		0%	75	25-Jun-13	05-Nov-13																			
<b>600-384</b>																									
<b>Excavation</b>																									
IU225560	Excavation 600-384		0%	2	30-May-13	03-Jun-13																			
<b>Loadout</b>																									





Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J			F			M			April 2013		May 2013		June 2013		13					
							3	0	1	2	2	0	1	1	2	0	1	2	0	0	1	2	0	1	2	0	1
<b>600-316</b>																											
<b>Excavation</b>																											
IU221420	Excavation (Farmstead Review 6 Sites) 600-316	Y	98%	2	03-May-12 A	04-Feb-13																					
<b>Loadout</b>																											
IU221430	Loadout (Farmstead Review 6 Sites) 600-316 (68 tons)	Y	98%	2	03-May-12 A	04-Feb-13																					
<b>Closeout Sampling &amp; Docs</b>																											
IU221490	Closure Sampling 600-316	Y	5%	26	23-May-12 A	03-Apr-13																					
<b>Final Project Closeout</b>																											
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																					
<b>600-318</b>																											
<b>Excavation</b>																											
IU222430	Excavation (Farmstead Review 3 Sites) 600-318	Y	70%	1	05-Mar-12 A	05-Feb-13																					
<b>Loadout</b>																											
IU222440	Loadout (Farmstead Review 3 Sites) 600-318 (114 tons)	Y	70%	1	30-Apr-12 A	05-Feb-13																					
<b>Closeout Sampling &amp; Docs</b>																											
IU221710	Closure Sampling 600-318	Y	50%	26	01-May-12 A	04-Apr-13																					
<b>Final Project Closeout</b>																											
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																					
<b>600-320</b>																											
<b>Excavation</b>																											
IU222470	Excavation (Farmstead Review 7 Sites) 600-320	Y	98%	1	16-Jan-12 A	06-Feb-13																					
IU222480	Excavation (Shoreline Review 1 Site) 600-320	Y	98%	1	16-May-12 A	06-Feb-13																					
<b>Loadout</b>																											
IU222490	Loadout (Farmstead Review 7 Sites) 600-320 (766 tons)	Y	98%	1	16-Jan-12 A	06-Feb-13																					
IU222500	Loadout (Shoreline Review 1 Site) 600-320 ( tons)	Y	98%	1	16-May-12 A	06-Feb-13																					
<b>Closeout Sampling &amp; Docs</b>																											
IU221930	Closure Sampling 600-320	Y	40%	26	14-May-12 A	08-Apr-13																					
<b>Final Project Closeout</b>																											
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																					
<b>600-321</b>																											
<b>Excavation</b>																											

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J			F			M			April 2013		May 2013		June 2013		13
							3	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
IU222510	Excavation (Farmstead Review 1 Site) 600-321	Y	50%	1	24-May-12 A	07-Feb-13																
<b>Loadout</b>																						
IU222520	Loadout (Farmstead Review 1 Site) 600-321 (177 tons)	Y	50%	1	24-May-12 A	07-Feb-13																
<b>Closeout Sampling &amp; Docs</b>																						
IU222040	Closure Sampling 600-321	Y	5%	26	24-May-12 A	09-Apr-13																
<b>Final Project Closeout</b>																						
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		0%	26	17-Jun-13	31-Jul-13																
<b>600-328</b>																						
<b>Closeout Sampling &amp; Docs</b>																						
IU222370	Closure Sampling 600-328	Y	5%	26	01-May-12 A	09-Apr-13																
<b>Final Project Closeout</b>																						
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		0%	26	17-Jun-13	31-Jul-13																
<b>600-368</b>																						
<b>Excavation</b>																						
IU223800	Excavation 600-368		0%	2	02-Apr-13	03-Apr-13																
<b>Loadout</b>																						
IU223700	Loadout 600-368 (100 tons)		0%	2	04-Apr-13	08-Apr-13																
<b>Closeout Sampling &amp; Docs</b>																						
IU223760	Prepare Work Instruction 600-368		0%	75	07-May-13	18-Sep-13																
IU223770	RL/Reg Review of Draft A Work Instruction 600-368		0%	26	26-Jun-13	12-Aug-13																
<b>600-369</b>																						
<b>Excavation</b>																						
IU223910	Excavation 600-369		0%	2	08-Apr-13	09-Apr-13																
<b>Loadout</b>																						
IU223810	Loadout 600-369 (100 tons)		0%	2	10-Apr-13	11-Apr-13																
<b>Closeout Sampling &amp; Docs</b>																						
IU223870	Prepare Work Instruction 600-369		0%	75	13-May-13	24-Sep-13																
IU223880	RL/Reg Review of Draft A Work Instruction 600-369		0%	26	02-Jul-13	15-Aug-13																
<b>600-371</b>																						
<b>Excavation</b>																						
IU224130	Excavation 600-371		0%	2	17-Apr-13	18-Apr-13																
<b>Loadout</b>																						





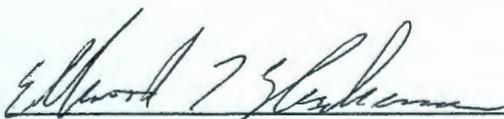
# Attachment 8

**Approval to Treat the 600-318 Area 3 Lead Contaminated Soil  
in Accordance with the "TREATMENT PLAN AND  
PROTOCOL FOR TREATMENT OF LEAD  
CONTAMINATED SOILS, WCH-252, Rev. 2"**

This approval applies to approximately 5 m<sup>3</sup> lead contaminated soil from the 600-318 Area 3 Wet Cell Battery Debris waste site as described under waste profile WPIU26PBSOIL003. The waste matrix consists mainly of soil. Sample# J1P1L2 had a high of 131 mg/L TCLP Lead and Sample# J1NPJ7 (one meter below Sample# J1P1L2) had a high of 0.02 mg/L TCLP Lead. Averaging these samples to obtain a representative concentration of the waste form equates to an average concentration of 65.5 mg/L TCLP Lead.

The waste is similar to the material treated in "*TREATMENT PLAN AND PROTOCOL FOR TREATMENT OF LEAD CONTAMINATED SOILS, WCH-252, Rev. 2*". Refer to attached discussion for additional details

This approval allows treatment of this waste using the recipe described in Table 1, *Bench-Scale Test Results (Including Results and Reduction Ratios)* of the treatment plan under Mixture 3, which limits the TCLP Lead to 53 mg/L. Although the average concentration for this material had a TCLP result for Lead at 65.5 mg/L, Mixture 3 has a bench-scale test reduction factor of 27, therefore Mixture 3 will meet the minimum treatment standard of 10 times the universal treatment standard (0.75 mg/L) or 7.5 mg/L for soil.



Ellwood Glossbrenner  
U.S. Department of Energy

30, November 2012  
Date



Chris Guzzetti  
U.S. Environmental Protection Agency

12/3/12  
Date

# Attachment 9

Activity ID	Activity Name	% Cmpl	RD	Start	Finish	J		F		March 2013		April 2013		May 2013		June 2013									
						1	2	3	0	14	2	2	0	1	2	0	1	18	2	0	0	1	2	2	0
<b>100 D</b>																									
<b>Excavation</b>																									
100D100A311	Excavate 100-D-100: Tier 3 Phase 1 (81,000 BCM)	15%	26	10-Dec-12 A	11-Feb-13	[Gantt bar]																			
CBB0534A	Excavate 100-D-81 (2,417 BCM)	0%	4	24-Jan-13	30-Jan-13	[Gantt bar]																			
RD05509152	Excavate 100-D-50:7 (4,500 BCM) (stage 3)	0%	9	12-Feb-13	27-Feb-13	[Gantt bar]																			
100D100A311A	Excavate 100-D-100: Tier 3 Phase 2 (125,000 BCM)	0%	25	12-Feb-13	27-Mar-13	[Gantt bar]																			
100D100A393	Excavate Contaminated Stockpile Area	0%	29	19-Feb-13*	09-Apr-13	[Gantt bar]																			
CBB0544A	Excavate 100-D-85:2 (7,000 BCM) **RAD**	0%	6	20-Mar-13*	01-Apr-13	[Gantt bar]																			
CBB0540A	Excavate 100-D-83:2 (Remediates with D-100)	0%	0	28-Mar-13	28-Mar-13	[Gantt bar]																			
100D100A311B	Excavate 100-D-100: Tier 3 Phase 3 (162,000 BCM)	0%	64	28-Mar-13	22-Jul-13	[Gantt bar]																			
CBB0546A	Excavate 100-D-86:3 (1,817 BCM) **RAD**	0%	3	01-Apr-13	04-Apr-13	[Gantt bar]																			
CBB0537A	Excavate 100-D-72 (3,506 BCM)	0%	1	04-Apr-13	08-Apr-13	[Gantt bar]																			
CBB0548A	Excavate 100-D-97 (128 BCM)	0%	1	04-Apr-13	04-Apr-13	[Gantt bar]																			
CBB0533A	Excavate 100-D-80:2 - (1 BCM: Valve Box)	0%	0	08-Apr-13	08-Apr-13	[Gantt bar]																			
CBB0541A	Excavate 100-D-83:3 (182 BCM)	0%	0	08-Apr-13	08-Apr-13	[Gantt bar]																			
CBC0501A	Excavate 100-D-58 (876 BCM)	0%	1	08-Apr-13	09-Apr-13	[Gantt bar]																			
CBB0543A	Excavate 100-D-84:2 (634 BCM)	0%	1	08-Apr-13	09-Apr-13	[Gantt bar]																			
CBB0542A	Excavate 100-D-83:5 (14,788 BCM)	0%	17	09-Apr-13	07-May-13	[Gantt bar]																			
CBB0545A	Excavate 100-D-86:1 (5,200 BCM) **RAD**	0%	5	07-May-13	15-May-13	[Gantt bar]																			
<b>Loadout</b>																									
100D100A383	LDR Staging Area for 100-D-100 Tier 3	0%	16	04-Feb-13*	04-Mar-13	[Gantt bar]																			
RD05507110	Loadout 100-D-50:7 Phase 3 (MHVs - 2,475 tons)	0%	4	04-Mar-13	07-Mar-13	[Gantt bar]																			
100D100A394	Loadout 100-D-100 Tier 1&2 Stockpile Area (30,000 tons)	0%	16	07-Mar-13	04-Apr-13	[Gantt bar]																			
CBC0501B	Loadout 100-D-58 (ERDF Container - 500 tons)	0%	1	09-Apr-13	10-Apr-13	[Gantt bar]																			
CBB0537B1	Loadout 100-D-72 (MHVs - 2,586 Tons)	0%	2	29-May-13	03-Jun-13	[Gantt bar]																			
CBB0543B1	Loadout 100-D-84:2 (MHVs - 224 Tons)	0%	1	29-May-13	30-May-13	[Gantt bar]																			
CBB0548B	Loadout 100-D-97 (MHVs - 45 Tons)	0%	1	30-May-13	03-Jun-13	[Gantt bar]																			
CBB0541B	Loadout 100-D-83:3 (MHVs - 174 Tons)	0%	1	03-Jun-13	04-Jun-13	[Gantt bar]																			
CBB0546B1	Loadout 100-D-86:3 (MHVs - 404 Tons)	0%	1	03-Jun-13	04-Jun-13	[Gantt bar]																			
<b>Backfill</b>																									
CBB0403CAUW	Backfill - 100-D-56 (9,209 BCM)	80%	2	30-Oct-12 A	31-May-13	[Gantt bar]																			
CBB0507C	Backfill - 116-DR-5 (3,526 BCM)	0%	1	08-May-13	10-May-13	[Gantt bar]																			
CBB0506C	Backfill - 116-D-5 (3,630 BCM)	0%	1	31-May-13*	03-Jun-13	[Gantt bar]																			
CBB0515C	Backfill - 100-D-50:4/8 (5,795 BCM)	0%	2	03-Jun-13	06-Jun-13	[Gantt bar]																			
RD1506400	Backfill - 100-D-50:6 (97,100 BCM)	0%	5	05-Jun-13*	14-Jun-13	[Gantt bar]																			
RD1D65400	Backfill - 100-D-65 (804 BCM)	0%	1	06-Jun-13	07-Jun-13	[Gantt bar]																			
RD67D1400	Backfill - 1607-D1 (3,709 BCM)	0%	1	06-Jun-13*	07-Jun-13	[Gantt bar]																			
CBB0508C	Backfill - 118-D-6 (9,167 BCM)	0%	2	07-Jun-13	11-Jun-13	[Gantt bar]																			
RD1D66400	Backfill - 100-D-66 (2,367 BCM)	0%	1	07-Jun-13	10-Jun-13	[Gantt bar]																			

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

Data Date: 24-Dec-12

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



# Attachment 10

Activity ID	Activity Name	% Cmpl	RD	Start	Finish	J		F		March 2013		April 2013		May 2013		June 2013											
						1	2	3	0	1	4	2	2	0	1	1	2	0	1	18	2	0	0	1	2	2	0
<b>100 H</b>																											
<b>Special Projects</b>																											
HB512A7	Reroute Pump & Treat Lines (100-H REA 138)	0%	22	07-Jan-13*	12-Feb-13																						
HB512A2	Reroute Export Water Line (100-H REA 138)	0%	48	07-Jan-13*	01-Apr-13																						
HB512A3	Well Decommissioning (100-H REA 138)	0%	15	07-Jan-13*	30-Jan-13																						
HB512A1A	Power Line Relocation Design (100-H REA 138)	0%	32	07-Jan-13*	04-Mar-13																						
HB512A8	Construct Access Road (100-H REA 138)	0%	10	07-Jan-13*	22-Jan-13																						
HB512A4	Well Replacement (100-H REA 138)	0%	78	23-Jan-13	11-Jun-13																						
HB512A1	Power Line Relocation (100-H REA 138)	0%	48	05-Mar-13	28-May-13																						
HB512A2U	Reroute Export Water Line (100-H REA 138)	0%	36	02-Apr-13	04-Jun-13																						
<b>Excavation</b>																											
HB518A32	Demo 100-H-46	0%	12	22-Jan-13*	11-Feb-13																						
HB516A	Excavate 100-H-43 - Powerline Interference (819 BCM)	0%	1	11-Feb-13*	12-Feb-13																						
HB518A22	Excavate 100-H-46 (85,455 BCM)	0%	35	12-Feb-13	15-Apr-13																						
HB517A	Excavate 100-H-44 (24 BCM)	0%	1	12-Feb-13	13-Feb-13																						
HB519A	Excavate 100-H-48 (1,299 BCM)	0%	1	13-Feb-13	14-Feb-13																						
HB521A	Excavate 100-H-52 (225 BCM)	0%	1	14-Feb-13	19-Feb-13																						
HB513A02	Excavate 100-H-28:4 Phase 2 (3,644 BCMs)	0%	5	19-Feb-13	27-Feb-13																						
HB514A1	Excavate 100-H-28:5 Section B - All else (5,900 BCM)	0%	14	27-Feb-13	25-Mar-13																						
HB514A	Excavate 100-H-28:5 Section A - Power Line (650 BCM)	0%	14	27-Feb-13	25-Mar-13																						
HB515A	Excavate 100-H-42 (33,197 BCM) **RAD**	0%	14	15-Apr-13	08-May-13																						
HB511A013	Excavate 100-H-28:2 Phase 2 - Section A - Under Power Lines...	0%	31	08-May-13	02-Jul-13																						
HB512A	Excavate 100-H-28:3 Section A - Export Water Line (5,000 BCM)	0%	2	08-May-13	13-May-13																						
HB512A5	Excavate 100-H-28:3 Section B - Power Line (12,500 BCM)	0%	5	13-May-13	21-May-13																						
HB512A6	Excavate 100-H-28:3 Section C - All Else (9,788 BCM)	0%	12	21-May-13	12-Jun-13																						
HB512A6U	Excavate 100-H-28:3 Section C - All Else (20,824 BCM)	0%	10	12-Jun-13	01-Jul-13																						
<b>Loadout</b>																											
HB518B1	Loadout 100-H-46 (MHVs - 83,602 Tons)	0%	40	15-Apr-13	25-Jun-13																						
<b>Backfill</b>																											
HB505C1	Backfill - 100H Mud Dauber (3 Days Recontouring)	10%	10	14-Dec-12 A	14-Jan-13																						
<b>Revegetation</b>																											
HB505E20	Revegetation - 100H Mud Dauber (7 acres)	10%	17	14-Dec-12 A	24-Jan-13																						
HB507E2	Revegetation - 1607-H3 (6.59 acres)	0%	1	14-Dec-12 A	26-Dec-12																						
HB510E1	132-H-3 Revegetation	0%	1	20-Dec-12 A	26-Dec-12																						
HB504E20	Revegetation - 118-H-6:5 (less than 1.0 acres)	0%	1	24-Jan-13	24-Jan-13																						
HB504E20	Revegetation - 118-H-6:4 (less than 1.0 acre)	0%	1	28-Jan-13	28-Jan-13																						
<b>In-Process Sampling</b>																											
HB518A22A1S	In-Process Samp 100-H-46	0%	35	12-Feb-13	15-Apr-13																						

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

Data Date: 24-Dec-12

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

# Attachment 11

# 100 Area D4/ISS Status

## January 7, 2013

### 100-N

**1904-N Sanitary Sewer Lagoon and Lift Station No. 1** – Dewatering of the lagoon by MSA was completed in the month of December. A decision was made to remove the remaining sludge and pond liners utilizing conventional methods, utilizing heavy equipment to mix soil with the remaining sludge to absorb free liquids, which is currently underway.

**1904-NB and 1904-NC Sanitary Sewer Lift Stations** – Both lift stations were demolished and backfilled during the month of December.

**1724-N** – Above grade demolition is complete, currently in the process of performing below grade demolition, which should be complete within 2 weeks.

**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** – Asbestos Abatement and Demolition plan was approved by Region 10 EPA. Currently performing hazmat removal and preparing for asbestos abatement activities.

**151-D Electrical Substation** – Cold and Dark completed last week. Industrial hygiene and radiological characterization is currently underway, with waste characterization sampling to follow.

### 100-B

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

**105-B Reactor Washpad Annex** – Facility characterization complete. Preparation of work packages for hazmat removal and demolition are currently underway. Poor structural condition of the facility roof complicates entry for hazmat removal.

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

# Attachment 12

## Hadley, Karl A

---

**From:** Borghese, Jane V <Jane\_V\_Borghese@rl.gov>  
**Sent:** Thursday, January 10, 2013 9:35 AM  
**To:** Hadley, Karl A  
**Cc:** Hanson, James P; Dooley, David E; Doombos, Marty H; Crumpler, Joe; Ivarson, Kris A; Day, Roberta E  
**Subject:** FW: Sampling Frequency reduction for wells near 128-H-1

Hi Karl, this is email concurrence referenced in the groundwater information for the January 10 100 UMM. Please attach to minutes. Thanks, Jane

---

**From:** Hanson, James P  
**Sent:** Thursday, January 10, 2013 9:32 AM  
**To:** Borghese, Jane V  
**Subject:** FW: Sampling Frequency reduction for wells near 128-H-1

Jane – please see below Ecology concurrence for the UMM discussion.

---

**From:** Crumpler, Dwayne (ECY) [<mailto:dcru461@ecy.wa.gov>]  
**Sent:** Thursday, November 29, 2012 8:36 AM  
**To:** Hanson, James P  
**Subject:** RE: Sampling Frequency reduction for wells near 128-H-1

I concur.

---

**From:** Hanson, James P [<mailto:james.hanson@rl.doe.gov>]  
**Sent:** Wednesday, November 28, 2012 5:25 PM  
**To:** Ivarson, Kristine A; Crumpler, Dwayne (ECY)  
**Subject:** RE: Sampling Frequency reduction for wells near 128-H-1

Kris,

I concur with recommendation. Dwayne do you concur per our prior discussion?

Please respond to distribution.

JPH

---

**From:** Ivarson, Kristine A  
**Sent:** Thursday, November 01, 2012 2:36 PM  
**To:** Hanson, James P  
**Cc:** ^S&GRP Communications Team; Day, Roberta E; Borghese, Jane V  
**Subject:** Sampling Frequency reduction for wells near 128-H-1

Hi Jim,

As discussed in our October 25<sup>th</sup> monthly meeting with Ecology:

This email seeks your concurrence on reducing the sampling from monthly to quarterly for wells:

199-H1-40  
199-H1-42  
199-H1-43  
699-99-41  
199-H2-1

These wells were scheduled for monthly sampling during the remediation of waste site 128-H-1. This site has now been remediated and monthly monitoring shows very little change. Once we have your agreement we will ask Dwayne for his, then submit the emails for inclusion in the UMM minutes.

Thanks – Kris

*Kris Ivarson*  
200 East, MO277, C111A  
office 509-376-1941  
cell 509-302-3472

# Attachment 13

Activity ID	Activity Name	% Cmpl	RD	Start	Finish	January 2013				February 2013				March 2013				2013
						31	07	14	21	28	04	11	18	25	04	11	18	
<b>FY13 CPP 100-N AREA CURRENT</b>																		
<b>Excavation</b>																		
NB525A31	Excavtn -100-N-61:4 (CDD) (10K BCM)	90%	4	08-Oct-12 A	10-Jan-13													
NB552D20	Plume Excavation - UPR-100-N-18 and UPR-100-N-20	75%	8	23-Oct-12 A	17-Jan-13													
NB507A10	Plume Excavation - 100-N-23 (500 BCMs)	95%	2	09-Nov-12 A	08-Jan-13													
NB578A20	100-N-63:2 Plume Excavation (20K BCM)	50%	11	20-Nov-12 A	23-Jan-13													
R120N17	Excavation - 120-N-7 (10 BCMs)	95%	16	20-Dec-12 A	31-Jan-13													
NB508A10	Asbestos Cleanup: 100-N-24	25%	4	02-Jan-13 A	10-Jan-13													
NB531A10	Plume Excavation - 118-N-1 (4000 BCMs)	1%	21	07-Jan-13 A	11-Feb-13													
NB575A	Plume Excavation - UPR-100-N-7 (10K BCMs)	0%	20	14-Jan-13*	14-Feb-13													
NB517A	Excavation - 100-N-36 (11 BCMs)	0%	20	14-Jan-13*	14-Feb-13													
NB536A10	Plume Excavation - 124-N-2 (500 BCMs)	0%	4	14-Jan-13*	17-Jan-13													
NB525D090	Plume (Asbestos) Excavation at 61:1 (500 BCM)	0%	2	14-Jan-13*	15-Jan-13													
NB537A	Excavation - 124-N-3 (0 BCMs)	0%	20	14-Jan-13*	14-Feb-13													
NB546A	Excavation - UPR-100-N-10 (0 BCMs)	0%	20	14-Jan-13*	14-Feb-13													
NB548A	Excavation - UPR-100-N-12 (0 BCMs)	0%	20	14-Jan-13*	14-Feb-13													
NB563A	Excavation - UPR-100-N-3 (0 BCMs)	0%	20	14-Jan-13	14-Feb-13													
NB553A10	Plume Excavation - UPR-100-N-19 (500 BCMs)	0%	2	14-Jan-13*	15-Jan-13													
NB565A10	Plume Excavation - UPR-100-N-31 (500 BCMs)	0%	2	16-Jan-13*	17-Jan-13													
NB528A20	Plume Excavation - 116-N-2 (1500 BCM)	0%	4	16-Jan-13*	22-Jan-13													
NB541A10	Excavation - 130-N-1 (20,000 BCMs) Road construction	0%	40	21-Jan-13*	01-Apr-13													
NB577A10	Plume Excavation - UPR-100-N-9 (500 BCMs)	0%	2	29-Jan-13*	30-Jan-13													
NB550A10	Plume Excavation - UPR-100-N-14 (500 BCMs)	0%	2	29-Jan-13*	30-Jan-13													
<b>Loadout</b>																		
NB525B21	Loadout - 100-N-61:4 (CDD) (20K TONS)	90%	4	08-Oct-12 A	10-Jan-13													
NB507B10	Plume Loadout - 100-N-23 (1000 USTs)	95%	2	09-Nov-12 A	08-Jan-13													
NB578A30	100-N-63:2 Plume Loadout (25K Tons)	50%	11	20-Nov-12 A	23-Jan-13													
NB578B60	Loadout - 100-N-63 AUW Quantities FY12	50%	42	20-Nov-12 A	20-Mar-13													
NB552D10	Plume Loadout - UPR-100-N-18 and UPR-100-N-20	95%	4	03-Dec-12 A	10-Jan-13													
R120N27	Loadout - 120-N-7 (20 USTs)	95%	16	20-Dec-12 A	31-Jan-13													
NB531B10	Plume Loadout - 118-N-1 (10000 USTs)	1%	21	07-Jan-13 A	11-Feb-13													
NB575B	Plume Loadout - UPR-100-N-7 (20K USTs)	0%	20	14-Jan-13*	14-Feb-13													
NB517B	Loadout - 100-N-36 (11 USTs)	0%	20	14-Jan-13*	14-Feb-13													
NB536B10	Plume Loadout - 124-N-2 (1000 USTs)	0%	4	14-Jan-13	17-Jan-13													
NB525D0100	Plume (Asbestos) Loadout at 61:1 (1000 TONS)	0%	2	14-Jan-13*	15-Jan-13													
NB537B	Loadout - 124-N-3 (0 USTs)	0%	20	14-Jan-13*	14-Feb-13													
NB546B	Loadout - UPR-100-N-10 (0 USTs)	0%	20	14-Jan-13*	14-Feb-13													
NB548B	Loadout - UPR-100-N-12 (0 USTs)	0%	20	14-Jan-13*	14-Feb-13													
NB563B	Loadout - UPR-100-N-3 (0 USTs)	0%	20	14-Jan-13	14-Feb-13													

Actual Work   
 Milestone   
 Actual Milestone  
 Remaining Work   
 % Complete

Data Date: 07-Jan-13

Activity ID	Activity Name	% Cmpl	RD	Start	Finish	January 2013					February 2013				March 2013				2013	
						31	07	14	21	28	04	11	18	25	04	11	18	25		01
NB565B10	Plume Loadout - UPR-100-N-31 (1,000 USTs)	0%	2	16-Jan-13	17-Jan-13															
NB553B10	Plume Loadout - UPR-100-N-19 (1,000 USTs)	0%	2	16-Jan-13*	17-Jan-13															
NB528B20	Plume Loadout - 116-N-2 CDD (3,000 UST)	0%	4	16-Jan-13	22-Jan-13															
NB541B10	Loadout - 130-N-1 (45,000 USTs)	0%	40	21-Jan-13*	01-Apr-13															
NB577B10	Plume Loadout - UPR-100-N-9 (1500 USTs)	0%	2	29-Jan-13	30-Jan-13															
NB550B10	Plume Loadout - UPR-100-N-14 (1000 USTs)	0%	2	29-Jan-13*	30-Jan-13															
<b>Backfill</b>																				
NB540C10	Backfill - 128-N-1 AUW	90%	14	03-Dec-12 A	29-Jan-13															
NB540C	Backfill - 128-N-1 (20,329 BCMs)	90%	14	03-Dec-12 A	29-Jan-13															
NB523C	Backfill - 100-N-6 (0 BCMs)	90%	14	03-Dec-12 A	29-Jan-13															
NB503C	Backfill - 100-N-16 (1,164 BCMs)	90%	14	03-Dec-12 A	29-Jan-13															
NB5A2C	Backfill - 100-N-98 (709 BCM)	90%	14	03-Dec-12 A	29-Jan-13															

 Actual Work  
  Milestone  
  Actual Milestone  
 Remaining Work  
  % Complete

Data Date: 07-Jan-13

# Attachment 14

# 100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number  
SDF-100N-029

## 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:	Various 100-N mobile offices (MOs) and storage containers (HS)	MO-100 (1110-N), MO-415 (1103-N), MO-425 (1158-NA), MO-426 (1158-NB), MO-427 (1158-NC), MO-765; HS storage containers HS-007 (HS-0007) and HS-008 (HS-0008); Includes staging pile areas utilized to manage non-hazardous demolition debris.
	Building Number:	

### WIDS Sites Associated or Adjacent:

Multiple WIDS sites were located adjacent to the facilities listed above. However, no WIDS site was associated with these facilities and demolition/removal activities required only minimal disturbance of the soil underneath and around these facilities.

### Other:

**MO-100 (also known as 1110-N):** This mobile office consisted of two adjoined trailers constructed of sheet metal and plywood positioned atop an I-beam trailer frame (SIS Facility Summary Report for 1110-N pg. 1 & CCN 165394 pg. 1). It was located east of the 1101-N Office Building, approximately 1050 feet southeast of the 105-N Reactor. This mobile office was used as an office space and did not contain a water or sewer utility (SIS Facility Summary Report for 1110-N pg. 1 & CCN 165394 pg. 1). It was demolished in July of 2012 (SIS Facility Summary Report for 1110-N pg. 1 & CCN 165394 pg. 2). The use of a staging pile area for demolition debris was approved prior to demolition (CCN 165821).

**MO-415 (also known as 1103-N):** This mobile office consisted of many adjoined trailers constructed of sheet metal and plywood positioned atop an I-beam trailer frame (SIS Facility Summary Report for 1103-N [2] pg. 1 & CCN 165395 pg. 1). It was located approximately 1050 feet southeast of the 105-N Reactor. This mobile office was used as an office space and contained sewer utilities to support kitchens and restrooms (SIS Facility Summary Report for 1103-N [2] pg. 1 & CCN 165395 pg. 1). It received potable water from a 500 gallon tank located near its southeast corner (CCN 165395 pg. 1). It was demolished in July of 2012 (SIS Facility Summary Report for 1103-N [2] pg. 1 & CCN 165395 pg. 1). The use of a staging pile area for demolition debris was approved prior to demolition (CCN 165821).

**MO-425 & MO-426 (also known as 1158-NA & 1158-NB, respectively):** These mobile offices were single-wide trailers constructed of sheet metal and plywood that were connected to each other by an enclosed wooden breezeway (SIS Facility Summary Report for 1158-NA pg. 1, SIS Facility Summary Report for 1158-NB pg. 1, and CCN 167654 pg. 1). They were located approximately 1800 feet southeast of the 105-N Reactor. These mobile offices were used as an analytical laboratory and later as enclosures to calibrate and repair industrial hygiene instruments (SIS Facility Summary Report for 1158-NA pg. 1, SIS Facility Summary Report for 1158-NB pg. 1, and CCN 167654 pg. 1). They contained sinks that drained to four underground tanks located just north of their location (CCN 167654 pg. 1). The contents of the tanks were sampled prior to their disposal to a sanitary sewer (CCN 167654 pg. 1). These mobile offices were demolished along with the adjacent underground tanks in July of 2012 (SIS Facility Summary Report for 1158-NA pg. 1, SIS Facility Summary Report for 1158-NB pg. 1, and CCN 167654 pg. 1). The use of a staging pile area for demolition debris was approved prior demolition (CCN 166168).

**MO-427 (also known as 1158-NC):** This mobile office was a single-wide trailer constructed of sheet metal and plywood and capped with a rubber membrane roof (SIS Facility Summary Report for 1158-NC pg. 1, SIS Facility Summary Report for MO-427 pg. 1, and CCN 165396 pg. 1). It was historically located near the MO-425 and MO-426 trailers, approximately 1800 feet southeast of the 105-N Reactor. During July or August of 2012, it was relocated east of MO-415, approximately 1100 feet southeast of the 105-N Reactor (SIS Facility Summary Report for 1158-NC pg. 1 & SIS Facility Summary Report for MO-427 pg. 1). In both locations, this mobile office was used as a dressing room and contained sewer utilities to support a restroom (SIS Facility Summary Report for 1158-NC pg. 1; SIS Facility Summary Report for MO-427 pg. 1; CCN 165396 pg. 1; and H-1-80013, Sheet 1). It was demolished in July of 2012 (SIS Facility Summary Report for MO-427 pg. 1 & CCN 165396 pg. 1). The use of a staging pile area for demolition debris was

# 100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

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approved prior to demolition (CCN 165821).

MO-765: This mobile office was a single-wide trailer constructed of sheet metal and plywood (SIS Facility Summary Report for MO-765 [1] pg. 1 & SIS Facility Summary Report for MO-765 [2] pg. 1). It was historically located near the 176-N Survey Tent, approximately 2200 feet east of the 105-N Reactor, where it was used as an office space (SIS Facility Summary Report for MO-765 [1] pg. 1 & SIS Facility Summary Report for MO-765 [2] pg. 1). Between August and October of 2006, it was relocated southeast of the 151-N Electrical Substation, approximately 1100 feet southeast of the 105-N Reactor, where it was used as a radiological counting facility (SIS Facility Summary Report for MO-765 [2] pg. 1 & CCN 164018 pg. 1). It was demolished in March of 2012 (SIS Facility Summary Report for MO-765 [2] pg. 1 & CCN 164018 pg. 1).

HS-007 & HS-008 (also known as HS-0007 & HS-0008, respectively): These storage containers were rectangular conex boxes, HS-007 had an area of 64 square feet and HS-008 had an area of 240 square feet (CCN 165382 pg. 1). They were used to store chemicals within the 100-N Area (CCN 165382 pg. 1). They were historically located east-southeast of the 1143-N Carpenter/Paint Shop, approximately 1500 feet southeast of the 105-N Reactor (CCN 165382 Figures 1 & 2). Between September of 2008 and May of 2009, these containers were relocated east of the 1120-N Training Building, approximately 1700 feet southeast of the 105-N Reactor (CCN 165382 pg. 1, Figure 3, and Figure 4). They were demolished in March of 2012 (CCN 165382 pgs. 1 & 3).

## C. INFORMATION SOURCES

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

<p>Historical Site Assessment for MO-013, MO-050, MO-055, MO-100, MO-358, MO-390, MO-403, MO-415, MO-425, Historical Site Assessment: MO-426, MO-427, MO-740, MO-765, MO-766, MO-767, MO-827, MO-848, MO-900, MO-911, MO-950, HS-007, HS-008 / 100N: CCN 128265</p>	<p>Site Walkdown: Visual Inspection of the MO-765 and HS-007 / 008 Mobile Trailer Footprints: CCN 167414</p> <p>Visual Inspection of Various 100N Mobile Offices: CCN 167421</p>
<p>IH Characterization Report: N/A</p>	<p>Radiological Survey: Global Positioning Environmental Radiological Surveyor (GPERS) surveys: • ESR-FRM-12-0108C • ESR-FRM-12-0036BC • ESR-FRM-12-0036GC • ESR-FRM-12-0116C • ESR-FRM-12-0120C</p>
<p>IHC/FHC Document: N/A</p>	<p>WIDS/SIS: RCC Stewardship Information System (SIS) Facility Summary Reports for: • 1110-N (MO-100) • 1103-N (2) (MO-415) • 1158-NA (MO-425) • 1158-NB (MO-426) • 1158-NC (MO-427) • MO-427 • MO-765 (1) • MO-765 (2) • HS-0007 (1) (HS-007) • HS-0007 (2) (HS-007) • HS-0008 (1) (HS-008) • HS-0008 (2) (HS-008)</p>

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Post-Demolition Summary Reports for: • MO-100: CCN 165394 • MO-415: CCN 165395 PDSR: • MO-425 & MO-426: CCN 167654 • MO-427: CCN 165396 • MO-765: CCN 164018 • HS-007 & HS-008: CCN 165382	Asbestos Inspection and Sampling Reports for: • MO-100: CCN 164450 • MO-415: CCN 164875 Facility Inspection: • MO-425 & MO-426: CCN 164381 • MO-427: CCN 165727 • MO-765: CCN 164344
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Waste Characterization Checklist: N/A

Summary Report: N/A

**Other:**

- Ecology Approval of Staging Pile Location for MO-425 & MO-426 Demolition: CCN 166168
- Ecology Approval of Staging Pile Locations for MO-100, MO-415, and MO-427 Demolition: CCN 165821
- Radiological Survey Record: RSR-100N-10-0128 (Radiological Scoping of MO-765)
- Photographs:

**MO-100 Photographs (time stamps shown in brackets):**

- Pre-Demolition: SIS Facility Summary Report for 1110-N pgs. 3-6 & CCN 165394 pg. 6
- Post-Demolition: SIS Facility Summary Report for 1110-N pg. 7 [7/25/2012], CCN 165394 pg. 7, and CCN 167421 pg. 3 [8/30/2012]

**MO-415 Photographs (time stamps shown in brackets):**

- Pre-Demolition: SIS Facility Summary Report for 1103-N (2) pgs. 3-8 & CCN 165395 pg. 6
- Post-Demolition: SIS Facility Summary Report for 1103-N (2) pg. 9 [7/25/2012]; CCN 165395 pg. 7 [7/25/2012]; and CCN 167421 pg. 4 [8/30/2012], pg. 5 [8/30/2012], and pg. 6 [8/30/2012]

**MO-425 & MO-426 Photographs (time stamps shown in brackets):**

- Pre-Demolition: SIS Facility Summary Report for 1158-NA pg. 3 [11/2/2005], pg. 4 [6/13/2006], and pg. 5; SIS Facility Summary Report for 1158-NB pg. 3 [11/2/2005], pg. 4 [6/13/2006], and pg. 5; and CCN 167654 pgs. 6 [11/2/2005] and 7
- Post-Demolition: SIS Facility Summary Report for 1158-NA pg. 6, SIS Facility Summary Report for 1158-NB pg. 6, CCN 167421 pg. 7 [8/30/2012], and CCN 167654 pgs. 8-9

**MO-427 Photographs (time stamps shown in brackets):**

- Pre-Demolition: SIS Facility Summary Report for 1158-NC pg. 2 [11/2/2005], pg. 3 [6/13/2006], and pg. 4; SIS Facility Summary Report for MO-427 pg. 3; and CCN 165396 pg. 5
- Post-Demolition: CCN 165396 pg. 6 & CCN 167421 pg. 8 [8/30/2012]

**MO-765 Photographs:**

- Pre-Demolition: SIS Facility Summary Report for MO-765 (1) pgs. 2 & 3, SIS Facility Summary Report for MO-765 (2) pgs. 3 & 4, and CCN 164018 pg. 5
- Post-Demolition: SIS Facility Summary Report for MO-765 (2) pgs. 5 & 6, CCN 164018 pg. 6, and CCN 167414 pgs. 4 & 6

**HS-007 & HS-008 Photographs:**

- Pre-Demolition: CCN 165382 pgs. 5 & 6
- Post-Demolition: CCN 165382 pg. 7 & CCN 167414 pg. 5

## D. HAZARDOUS SUBSTANCES

Check all that apply:

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

Chemicals    List: \_\_\_\_\_

Radiological Contamination     Mercury/Mercury Devices

Other: Various mobile offices contained HVAC units which would have held refrigerant, however neither the names nor numbers of such facilities are provided in documentation (CCN 128265 pg. 4).

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**References/Comments:**

Based on reviewed historical documentation, none of the storage containers or mobile offices addressed in this form contained processes or materials that would have resulted in contamination presence (CCN 128265 pgs. 1 & 2).

- Asbestos containing material: asbestos detected in nonfriable roof peak patch from MO-100 (CCN 164450 Appendix 1), no other facility addressed in this form appears to have contained asbestos (CCN 164344 Appendix 1, CCN 164381 Appendix 1, CCN 164875 Appendix 1, and CCN 165727 Appendix 1)
- Radiological Contamination: possibility for biological contamination presence (CCN 128265 pg. 3), a photograph of MO-765 appears to show a radiological sign on the building exterior (SIS Facility Summary Report for MO-765 [2] pg. 4 & CCN 164018 pg. 5).
- Mercury/Mercury Devices: various mobile offices reportedly exhibited signs of having underwent mercury switch removal, however neither the names nor numbers of such facilities are provided in documentation (CCN 128265 pg. 3)
- PCBs/PCB Articles: potential for presence within door actuators and fluorescent light ballasts (CCN 128265 pg. 3)

Liquids:  Yes  No

If yes, describe source and nature of liquids:

- MO-415: This mobile office contained sewer utilities to support kitchens and restrooms (SIS Facility Summary Report for 1103-N [2] pg. 1 & CCN 165395 pg. 1). It received potable water from an exterior 500 gallon tank (CCN 165395 pg. 1).
- MO-425 & MO-426: These mobile offices contained sinks that drained liquids, presumably laboratory wastes, to exterior underground storage tanks (CCN 167654 pg. 1).
- MO-427: This mobile office contained sewer utilities to support a restroom (SIS Facility Summary Report for 1158-NC pg. 1; SIS Facility Summary Report for MO-427 pg. 1; CCN 165396 pg. 1; and H-1-80013, Sheet 1).

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

As verified by what documentation:

The only apparent instance of hazardous substance presence within any of these facilities is the asbestos-containing patch found on the MO-100 roof (CCN 164450 Appendix 1). An Asbestos Hazard Emergency Response Act (AHERA)-certified inspector determined that this was nonfriable material (CCN 164450 pg. 3 & Appendix 1). Accordingly, it was not removed prior to demolition and the facility was demolished utilizing the appropriate asbestos controls.

Notwithstanding the asbestos-containing patch at the MO-100 mobile office, none of the storage containers or mobile offices addressed in this form contained processes or materials that would have resulted in contamination presence (CCN 128265 pgs. 1 & 2).

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

**References/Comments:**

Based on process knowledge and reviewed documentation, these mobile offices and storage containers were not involved in operations or processes that could have resulted in contamination or hazardous material presence (CCN 128265 pgs. 1 & 2). There was, however, potential for hazardous substances to be present at these facilities as a result of biological vector transport (CCN 128265 pgs. 1 & 2).

List any hazardous materials left in the building for demolition:

The non-friable asbestos-containing roof patch on the MO-100 mobile office was left in place for demolition.

Does review of historical records and process knowledge indicate a potential for radiological or chemical contamination to be present in the facility?

Radiological Contamination: Radiological contamination was not identified in any reviewed survey record.

- GPERs Surveys: The final location of each of the mobile offices addressed in this form underwent a post-demolition GPERs survey. Likewise, the location of the debris staging area used during demolition of the MO-425 and MO-426 mobile offices underwent a GPERs survey. None of these surveys detected radiological contamination (ESR-FRM-12-0108C / 0036BC / 0036GC / 0116C / 0120C). The locations of the HS-007 and HS-008 storage containers did not undergo a GPERs survey (CCN 165382 pg. 2).
- Radiological Scoping Surveys: No radiological contamination was identified in the radiological scoping survey for

## 100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

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the MO-765 mobile office (RSR-100N-10-0128). No other radiological scoping survey was found for the storage containers or mobile offices addressed in this form (CCN 165382 pg. 1, CCN 165394 pg. 1, CCN 165395 pg. 1, CCN 165396 pg. 1, and CCN 167654 pg. 1).

- Other Routine and Work Progress Surveys: No additional radiological surveys were reviewed during completion of this form because no pertinent GPERs survey identified radiological contamination; and, based on reviewed historical documentation, none of the storage containers or mobile offices addressed in this form contained processes or materials that would have resulted in contamination presence (CCN 128265 pgs. 1 & 2). It should be noted that a photograph of the MO-765 mobile office appears to show a radiological sign on the building exterior (SIS Facility Summary Report for MO-765 [2] pg. 4 & CCN 164018 pg. 5).

**Chemical Contamination:** Based on reviewed historical documentation, none of the storage containers or mobile offices addressed in this form contained processes or materials that would have resulted in contamination presence (CCN 128265 pgs. 1 & 2).

**Comments:**

MO-100: Pertinent design drawing is H-1-45007, Sheet 27

MO-415: Pertinent design drawings are H-1-45007, Sheets 20 & 27; H-1-41757, Sheet 1

MO-425 & MO-426: Pertinent design and location drawing is H-1-80013, Sheet 1

MO-427: Pertinent design and location drawings are H-1-91299 & H-1-80013, Sheet 1

MO-765: Pertinent location drawing is H-1-88938

### E. FIELD OBSERVATIONS

#### Visual Inspection

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

**References/Comments:**

No areas of stained soil were identified within the footprints of the locations of the MO-100, MO-415, MO-425, MO-426, or MO-427 mobile offices; nor the footprint of the locations of the HS-007 or HS-008 storage containers (CCN 167414 & CCN 167421). This determination includes the debris staging areas used during demolition of the MO-100, MO-415, MO-425, MO-426, and MO-427 mobile offices (CCN 167421 pg. 1).

One area of stained soil was identified within the footprint of the location of the MO-765 mobile office (CCN 167414 pgs. 1 & 6). A sample was taken and the analysis revealed that no contaminant was present above the Remedial Action Goals (RAGs) (CCN 167414 pgs. 1 & 8). See Attachment 2 for analysis of results.

No anomaly was encountered during or after demolition of any of the storage containers or mobile offices addressed in this form (CCN 164018 pg. 2, CCN 165382 pg. 2, CCN 165394 pg. 3, CCN 165395 pg. 3, CCN 165396 pg. 2, CCN 167414 pg. 1, CCN 167421 pg. 1, and CCN 167654 pg. 3). This determination includes the debris staging areas used during demolition of the MO-100, MO-415, MO-425, MO-426, and MO-427 mobile offices (CCN 167421 pg. 1).

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

**References/Comments:**

A sample was taken of the stained soil found within the footprint of the final location of the MO-765 mobile office (CCN 167414 pgs. 1 & 6-8). See Attachment 2 for analysis of results.

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

**References/Comments:**

Sample analysis results revealed that no contaminant was present above the Remedial Action Goals (RAGs) (CCN 167414 pgs. 1 & 8). See Attachment 2 for analysis of results.

Is the area potentially a discovery site?  Yes  No

**References/Comments:**

N/A

### Radiological Surveys

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Did radiological surveys (GPERS or equivalent) identify contamination?

Yes  No

References/Comments:

The final location of each of the mobile offices addressed in this form underwent a post-demolition GPERS survey. Likewise, the location of the debris staging area used during demolition of the MO-425 and MO-426 mobile offices underwent a GPERS survey. None of these surveys detected radiological contamination (ESR-FRM-12-0108C / 0036BC / 0036GC / 0116C / 0120C). It should be noted that the MO-427 and MO-765 facilities were relocated during their existence, and accordingly none of these GPERS surveys covered their initial locations. However, because their final location footprints do not contain radiological contamination, it is unlikely that their initial locations would contain radiological contamination (ESR-FRM-12-0116C / 0036BC / 0036GC).

No GPERS survey was performed on any of the locations occupied by the HS-007 or HS-008 storage containers (CCN 165382 pg. 2).

Were samples taken of the radiologically contaminated soils?

Yes  No  N/A

References/Comments:

This question is not applicable because radiologically contaminated soil was not found.

Is the area potentially a discovery site?

Yes  No

References/Comments:

No radiologically contaminated soil was found.

Were the contaminated materials removed?

Yes  No  N/A

References/Comments:

This question is not applicable because radiologically contaminated soil was not found.

## F. WIDS SITES

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

If yes, list the WIDS sites:

No indication of an effect to a WIDS site was found.

Were the WIDS site(s) completely removed?

Yes  No

References/Comments:

This question is not applicable because no indication of an effect to a WIDS site was found.

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

References/Comments:

Deferral is not necessary for closeout of these facilities.

## 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

Asbestos was detected in a roof patch on the MO-100 mobile office (CCN 164450 Appendix 1).

-Refer to Sample (HEIS) Number J1N494

# 100-N ANCILLARY FACILITIES REMOVAL ACTION SAMPLING DETERMINATION FORM

Determination Number  
SDF-100N-029

### Sample Collection Summary

- Potential asbestos containing material at MO-100: Sample (HEIS) Numbers J1N484-J1N494 (CCN 164450 Appendix 1)
- Potential asbestos containing material at MO-415: Sample (HEIS) Numbers J1N444-J1N473, J1N474-J1N499, and J1NJP0 (CCN 164875 Appendix 1)
- Potential asbestos containing material at MO-425 and MO-426: Sample (HEIS) Numbers J1NK31-J1NK59 & J1NKL1-J1NKL3 (CCN 164381 Appendix 1)
- Potential asbestos containing material at MO-427: Sample (HEIS) Numbers J1NNK0-J1NNK9 & J1NNM1-J1NNM3 (CCN 165727 Appendix 1)
- Potential asbestos containing material at MO-765: Sample (HEIS) Numbers J1N477-J1N480 (CCN 164344 Appendix 1)

### H. NOTES / ADDITIONAL INFORMATION

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

If checked, list the attachment(s):

Attachment 1

• Visual Inspection of various 100-N Mobile Office Trailer Footprints CCN 167421 . Includes Ecology Approval of Staging Pile Location for MO-425 & MO-426 Demolition: CCN 166168, and Ecology Approval of Staging Pile Locations for MO-100, MO-415, and MO-427 Demolition: CCN 165821.

Attachment 2

• Visual Inspection of MO-765 and HS-007/008 Mobile Trailer Footprints CCN 167414. Includes Evaluation of MO-765 Footprint Soil Sample.

### 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

*David Warren*

Printed Name

David Warren

Date

11.20.12

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

*R.F. Guerra*

Printed Name

R.F. Guerra

Date

11/26/2012

Ecology Signature

*Nina M. Menard*

Printed Name

NINA Menard

Date

11/27/2012

**Attachment 1**

**^WCH Document Control**

---

**From:** Warren, David J  
**Sent:** Monday, September 10, 2012 3:52 PM  
**To:** ^WCH Document Control  
**Subject:** FW: Visual Inspection of various 100-N Mobile Offices

**Attachments:** 100-N Mobile Offices Visual Inspection.doc; ESRFRM120116C.pdf; ESRFRM120120C.pdf; 1103-N Ecology Approval of Staging Pile Locations.pdf; MO-425.426 Staing Pile Approval.pdf; ESRFRM120108C.pdf

Please CHRON this e-mail and attachments as visual inspection of various 100-N mobile office trailer footprints. Please advise me of the CHRON # assigned. Thanks.

Dave Warren  
539-6040

---

**From:** Warren, David J  
**Sent:** Monday, September 10, 2012 3:30 PM  
**To:** Allen, Mark E  
**Cc:** McCurley, Clay D  
**Subject:** Visual Inspection of various 100-N Mobile Offices

All,

At approximately 1000 hours on 8/30/12, the footprints of the MO-100, MO-415 (1103-N), MO-425/426, and MO-427 including the demolition and staging pile areas were visually inspected for signs of staining or anomalous items. The areas were observed to be free of any stained soils or anomalies that would be indicative of chemical or petroleum contamination. The post-demolition GPERS survey(s) (Performed 7/26/2012 and 8/9/2012) didn't identify contamination, nor was any expected since the structures were not radiologically contaminated. Additionally, attached is the GPERS surveys of the staging pile area for MO-425/426 (Performed 6/27/2012) prior to demolition. Please see the attached word file for photographs that were taken during the inspection and the PDF files of the GPERS survey(s). I've also included Ecology approval to operate staging piles for demolition of the various trailers. 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



100-N Mobile  
Offices Visual In..



ESRFRM120116  
C.pdf (909 KB)



ESRFRM120120  
C.pdf (861 KB)



1103-N Ecology  
Approval of Sta...



MO-425.426  
aing Pile Approva



ESRFRM120108  
C.pdf (864 KB)

100-N Mobile Offices Removal Visual Inspection Photographs



MO-100 Footprint Looking Southwest



**MO-415 (1103-N) Footprint Looking North**



**MO-415 (1103-N) Footprint Looking South**



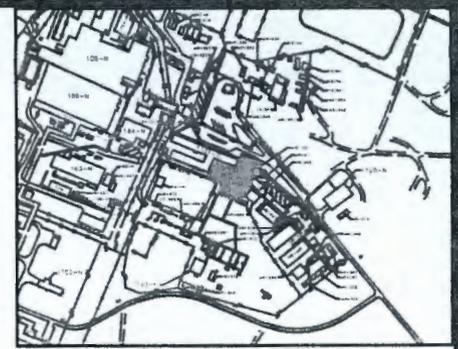
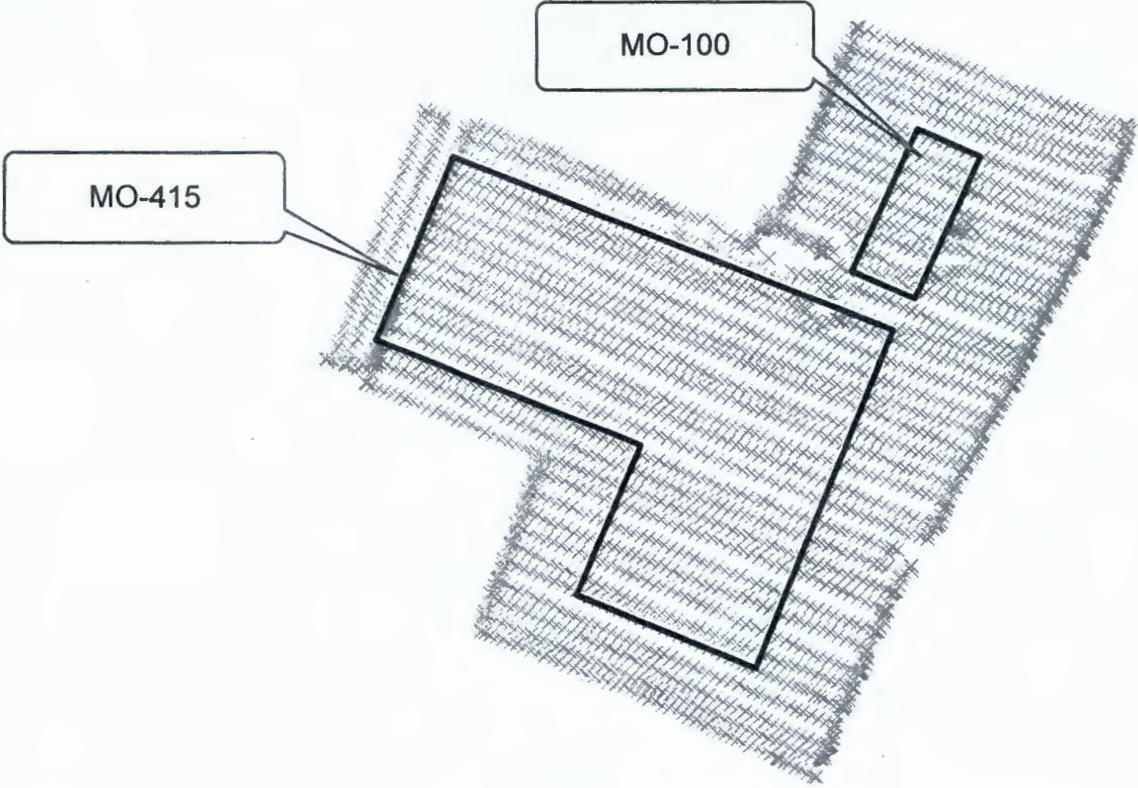
**MO-415 (1103-N) Footprint Looking North**



**MO-425/426 Footprint Looking Northeast**



**MO-427 Footprint Looking South**



Site View

Bkg Location  
240 meters SE  
1250 cpm →

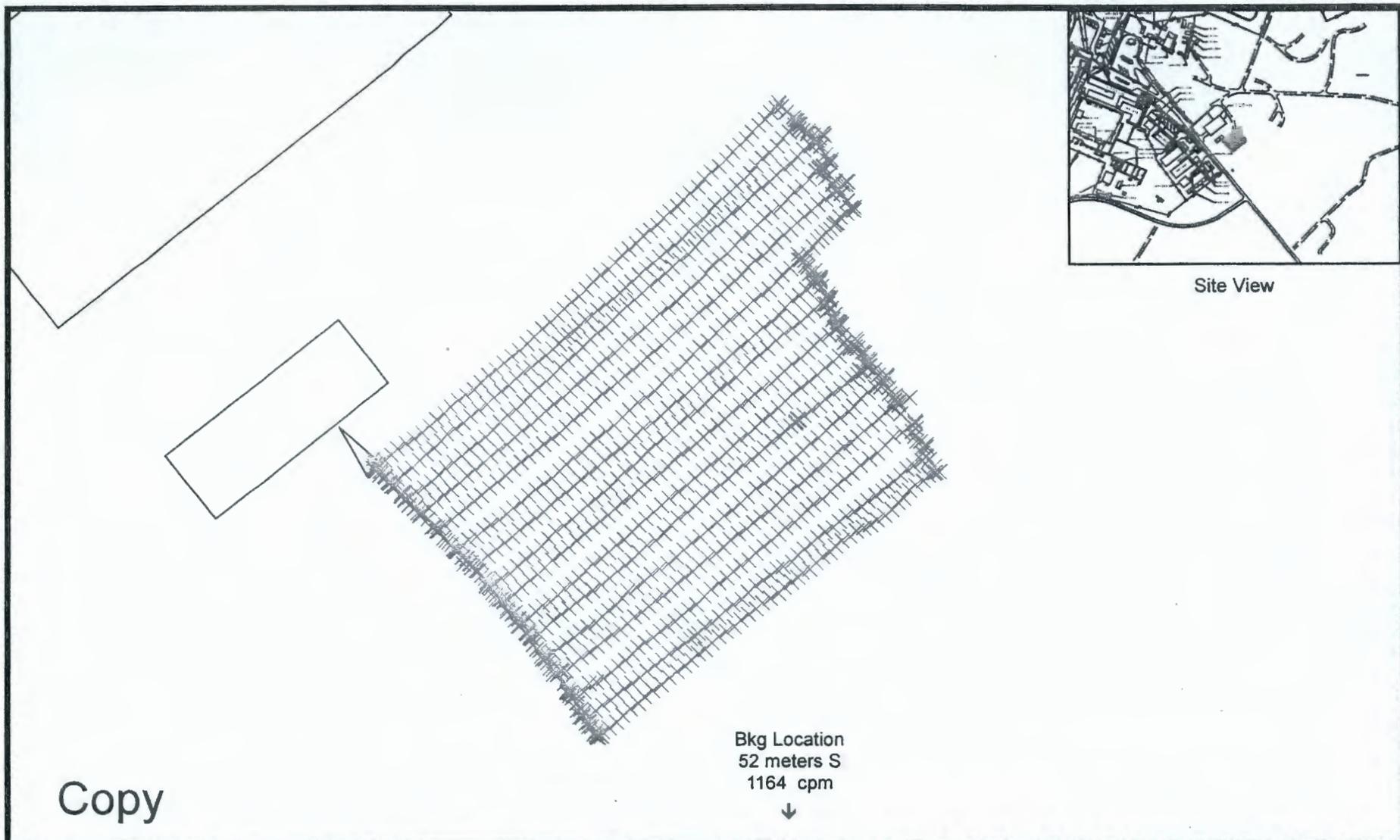
Copy

Legend	Summary Statistics
NET CPM	Coverage File: N208
× <1875	Number of Data Pnts: 2902
● 1875 - 5000	Type of Survey: gamma
● 5000 - 10000	Max GCPM: 1643
● 10000 - 25000	Avg Bkg CPM: 1250
● 25000	Survey Date: 7/26/2012
	Area Surveyed: 3,666 m <sup>2</sup>
	Project File: ESRFRM120116
	Pdf File: ESRFRM120116C

**100N D4  
1103-N  
GPERS Radiological Survey  
Gamma Track Map**

0 5 10 15 20 25  
Meters

Survey Map Prepared By Bruce Coomer, ESI



Copy

**Legend**

- NET CPM
- X <1746
  - 1746 - 5000
  - 5000 - 10000
  - 10000 - 25000
  - 25000

**Summary Statistics**

Coverage File: N222  
 Number of Data Pnts: 1125  
 Type of Survey: gamma  
 Max GCPM: 2100  
 Avg Bkg CPM: 1164  
 Survey Date: 8/9/2012  
 Area Surveyed: 1575 m<sup>2</sup>  
 Project File: ESRFRM120120  
 Pdf File: ESRFRM120120C

**100N D4  
 MO-425 / 426 Area  
 GPERs Radiological Survey  
 Gamma Track Map**



Survey Map Prepared By Bruce Coomer, ESI

## **^WCH Document Control**

---

**From:** McCurley, Clay D  
**Sent:** Thursday, June 07, 2012 7:45 AM  
**To:** ^WCH Document Control  
**Cc:** Trevino, Ruben A; Flannery, Michael (Mike) D; Bigby, Daniel A; Comer, John W; Warren, David J; Faust, Toni L  
**Subject:** MO-425 and MO-426 Demolition - Ecology Approval of Staging Pile Location  
**Attachments:** MO-425-426 Staging Pile.doc

Please print the attachment and chron it with this email per the subject. Also, please let me know which chron number is assigned. Thanks. Clay

---

**From:** Elliott, Wanda (ECY) [<mailto:wel461@ECY.WA.GOV>]  
**Sent:** Thursday, June 07, 2012 7:21 AM  
**To:** McCurley, Clay D  
**Cc:** Boyd, Alicia; Warren, David J; Trevino, Ruben A; Flannery, Michael (Mike) D; Bigby, Daniel A; Allen, Mark E; Guercia, Rudolph F; Faust, Toni L  
**Subject:** RE: MO-425-426 Demolition - Ecology Approval of Staging Pile Locations

I approve.

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

---

**From:** McCurley, Clay D [<mailto:cdmccurl@wch-rcc.com>]  
**Sent:** Wednesday, June 06, 2012 3:35 PM  
**To:** Elliott, Wanda (ECY)  
**Cc:** Boyd, Alicia (ECY); Warren, David J; Trevino, Ruben A; Flannery, Michael (Mike) D; Bigby, Daniel A; Allen, Mark E; Guercia, Rudolph F; Faust, Toni L  
**Subject:** MO-425-426 Demolition - Ecology Approval of Staging Pile Locations

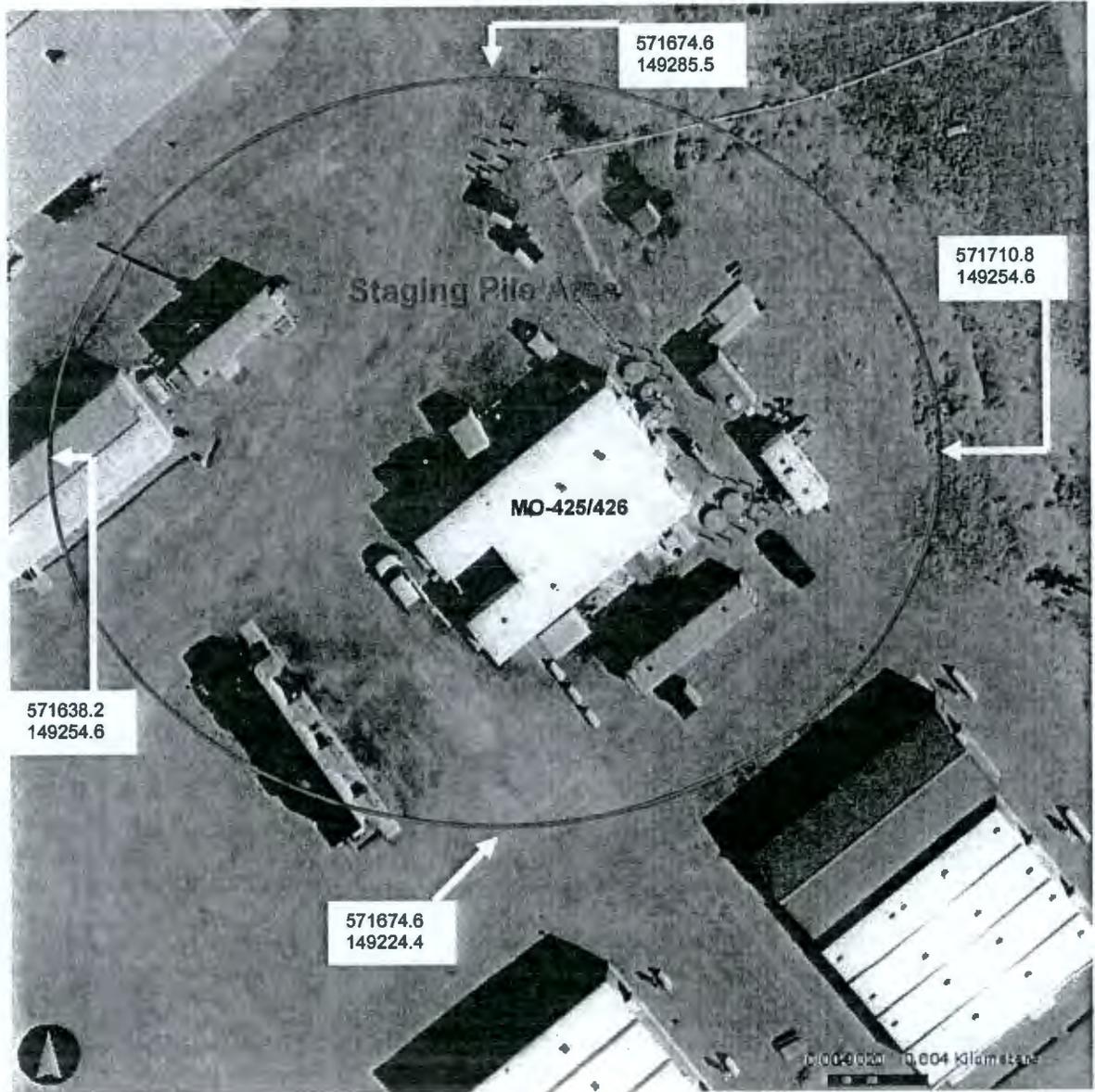
Wanda. We will soon be starting the demolition of the Industrial Hygiene Field Services Facility (MO-425/426) and other structures in its immediate vicinity. The size and number of structures we will be simultaneously demolishing is sufficiently large that maintaining the debris within the footprint of the buildings or direct loading during demolition may not be practical. These structures are also outside the 100-N AOC. We have identified an area surrounding and including these structures (see attachment) that we would like to reserve for a staging pile of demolition debris if needed. As specified in section 4.2.3.2 of the *Removal Action Work Plan for 100-N Area Ancillary Facilities* (DOE/RL-2002-70, Rev. 3), we are requesting Ecology's approval to use all or a portion of this area for staging piles. Please contact me if you have any questions.

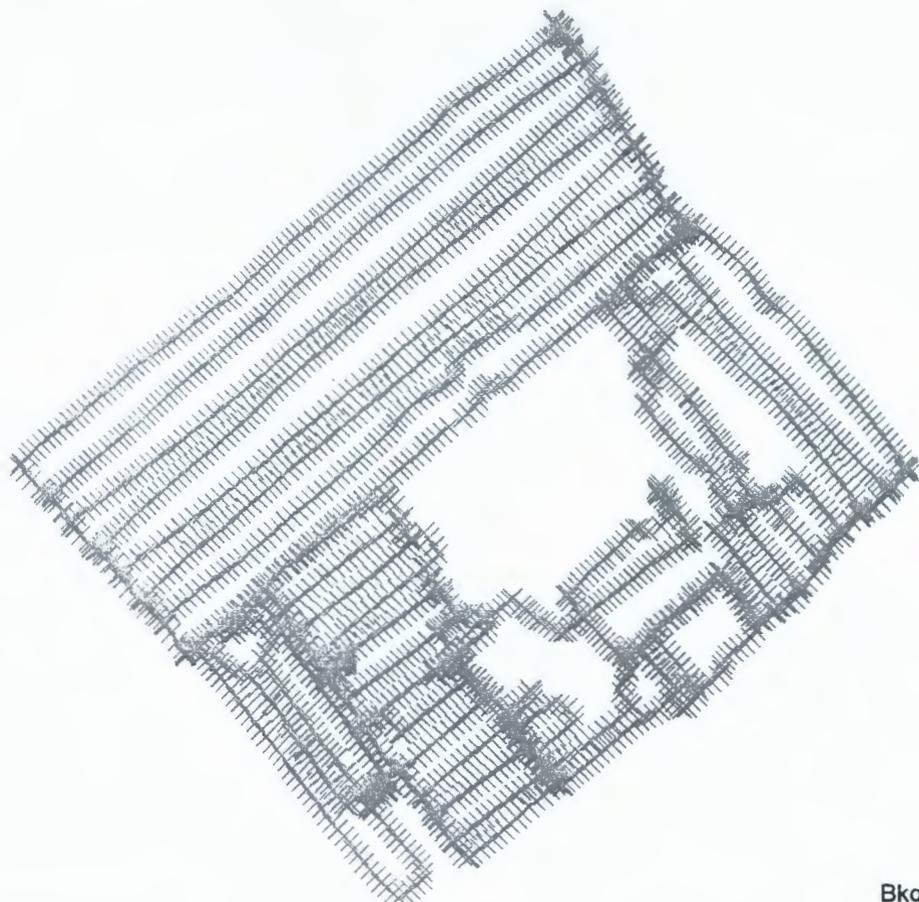
Thanks. Clay



MO-425-426  
aging Pile.doc (1

**Staging Pile Area for Demolition of MO-425, MO-426 and Other Nearby Structures**





Site View

Bkg Location  
40 meters S  
1166 cpm



Copy

Legend

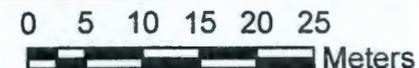
NET CPM

- × <1749
- 1749 - 5000
- 5000 - 10000
- 10000 - 25000
- 25000

Summary Statistics

Coverage File: N179  
 Number of Data Pnts: 2447  
 Type of Survey: gamma  
 Max GCPM: 1533  
 Avg Bkg CPM: 1166  
 Survey Date: 6/27/2012  
 Area Surveyed: 3,148 m<sup>2</sup>  
 Project File: ESRFRM120108  
 Pdf File: ESRFRM120108C

**100N D4**  
**MO-425 / 426 Area**  
**GPERS Radiological Survey**  
**Gamma Track Map**



Survey Map Prepared By Bruce Coomer, ESI

**^WCH Document Control**

---

**From:** McCurley, Clay D  
**Sent:** Thursday, May 31, 2012 7:34 AM  
**To:** ^WCH Document Control  
**Cc:** Trevino, Ruben A; Flannery, Michael (Mike) D; Bigby, Daniel A; Warren, David J; Faust, Toni L  
**Subject:** 1103-N (MO-415), MO-100 and MO-427 Demolition - Ecology Approval of Staging Pile Locations

**Attachments:** 100-N Mobile Offices Staging Piles.doc

Please print the attachment and chron with this email per the subject. Let me know which chron number has been applied.

Thanks. Clay

---

**From:** Elliott, Wanda (ECY) [<mailto:well461@ECY.WA.GOV>]  
**Sent:** Thursday, May 31, 2012 7:17 AM  
**To:** McCurley, Clay D  
**Subject:** RE: 1103-N (MO-415) Demolition - Ecology Approval of Staging Pile Locations

I approve.

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

---

**From:** McCurley, Clay D [<mailto:cdmccurl@wch-rcc.com>]  
**Sent:** Thursday, May 31, 2012 7:02 AM  
**To:** Elliott, Wanda (ECY)  
**Cc:** Boyd, Alicia (ECY); Warren, David J; Trevino, Ruben A; Flannery, Michael (Mike) D; Bigby, Daniel A; Allen, Mark E; Guercia, Rudolph F; Faust, Toni L  
**Subject:** 1103-N (MO-415) Demolition - Ecology Approval of Staging Pile Locations

Wanda. We will soon be starting the demolition of our 1103-N (MO-415) office building and other structures in its immediate vicinity (e.g., MO-100, MO-427). The size and number of structures we will be simultaneously demolishing is sufficiently large that maintaining the debris within the footprint of the buildings or direct loading during demolition may not be practical. These structures are also outside the 100-N AOC. We have identified areas adjacent these structures (see attachment) that we would like to reserve for staging piles of demolition debris if needed. As specified in section 4.2.3.2 of the *Removal Action Work Plan for 100-N Area Ancillary Facilities* (DOE/RL-2002-70, Rev. 3), we are requesting Ecology's approval to use all or portions of these areas for staging piles. Please contact me if you have any questions.

Thanks. Clay



100-N Mobile  
Offices Staging P...

## Staging Pile Area for MO-415 (1103-N) and Other Nearby Mobile Offices



## **Attachment 2**

**^WCH Document Control**

**From:** Warren, David J  
**Sent:** Monday, September 10, 2012 8:42 AM  
**To:** ^WCH Document Control  
**Subject:** FW: Visual Inspection of the MO-765 and HS-007/008 Mobile Trailers

**Attachments:** MO-765-HS-007.008 Visual Inspection.doc; MO-765 Evaluation.doc;  
 ESRFRM120036BC.pdf; ESRFRM120036GC.pdf

Please CHRON this e-mail and attachments as Visual Inspection of the MO-765 and HS-007/008 mobile trailer footprints. Please advise me of the CHRON #. Thanks.

Dave Warren  
 539-6040

---

**From:** Warren, David J  
**Sent:** Monday, September 10, 2012 8:14 AM  
**To:** Allen, Mark E  
**Subject:** Visual Inspection of the MO-765 and HS-007/008 Mobile Trailers

At approximately 1000 hours on 3/13/12, the footprints of the MO-765 and HS-007/008 mobile office trailers were visually inspected for signs of staining or anomalous items. One stained area, presumed to be darker colored soil, was observed in the footprint of the former location of the MO-765. That stain was sampled and the subsequent results indicated no constituents detected above the Remedial Action Goals (RAGs). Analysis of the sample results are attached in a white paper below below. All other areas were observed to be free of any stained soils or anomalies that would be indicative of chemical or petroleum contamination. The post demo GPERS survey for MO-765 (Performed 3/7/2012) didn't identify contamination, nor was any expected since the structure was not radiologically contaminated. It should be noted that both MO-765 and HS-007/008 were relocated to the 1143-N area for demolition following the removal of the 1143-N building. For this reason there are no post demo GPERS surveys for HS-007/008 as the facilities were not demolished in place. Please see the attached word file for photographs that were taken during the inspection and PDF file of the GPERS survey(s). 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



MO-765-HS-007.  
 008 Visual Inspe..



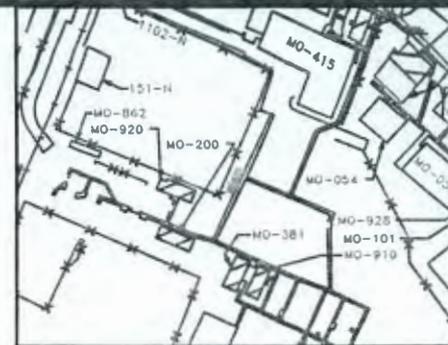
MO-765  
 ation.doc (851 K



ESRFRM120036  
 BC.pdf (810 KB)



ESRFRM120036  
 GC.pdf (811 KB)



Site View



Bkg Location  
287 meters ESE  
1266 cpm

Copy

Legend

- X <1899
- 1899 - 5000
- 5000 - 10000
- 10000 - 25000
- 25000

Summary Statistics

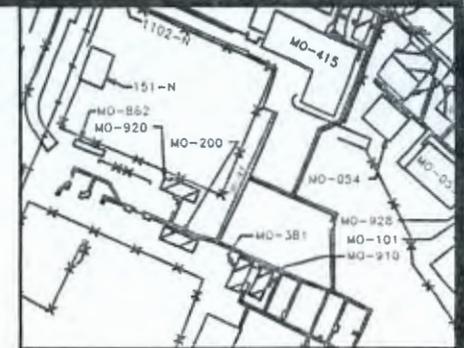
Coverage File: N067A  
Number of Data Pnts: 142  
Type of Survey: gamma  
Max GCPM: 1633  
Avg Bkg CPM: 1266  
Survey Date: 3/7/2012  
Area Surveyed: 48 m<sup>2</sup>  
Project File: ESRFRM120036G  
Pdf File: ESRFRM120036GC

100N D4  
MO-765

GPERS Radiological Survey  
Gamma Track Map



Survey Map Prepared By Bruce Coomer, ESI



Site View



Bkg Location  
287 meters ESE  
409 cpm



Copy

Legend

- x <613
- 613 - 5000
- 5000 - 10000
- 10000 - 25000
- 25000

Summary Statistics

Coverage File: N067A  
Number of Data Pnts: 13  
Type of Survey: beta  
Max GCPM: 567  
Avg Bkg CPM: 409  
Survey Date: 3/7/2012  
Area Surveyed: 48 m<sup>2</sup>  
Project File: ESRFRM120036B  
Pdf File: ESRFRM120036BC

100N D4  
MO-765

GPERS Radiological Survey  
Beta Track Map



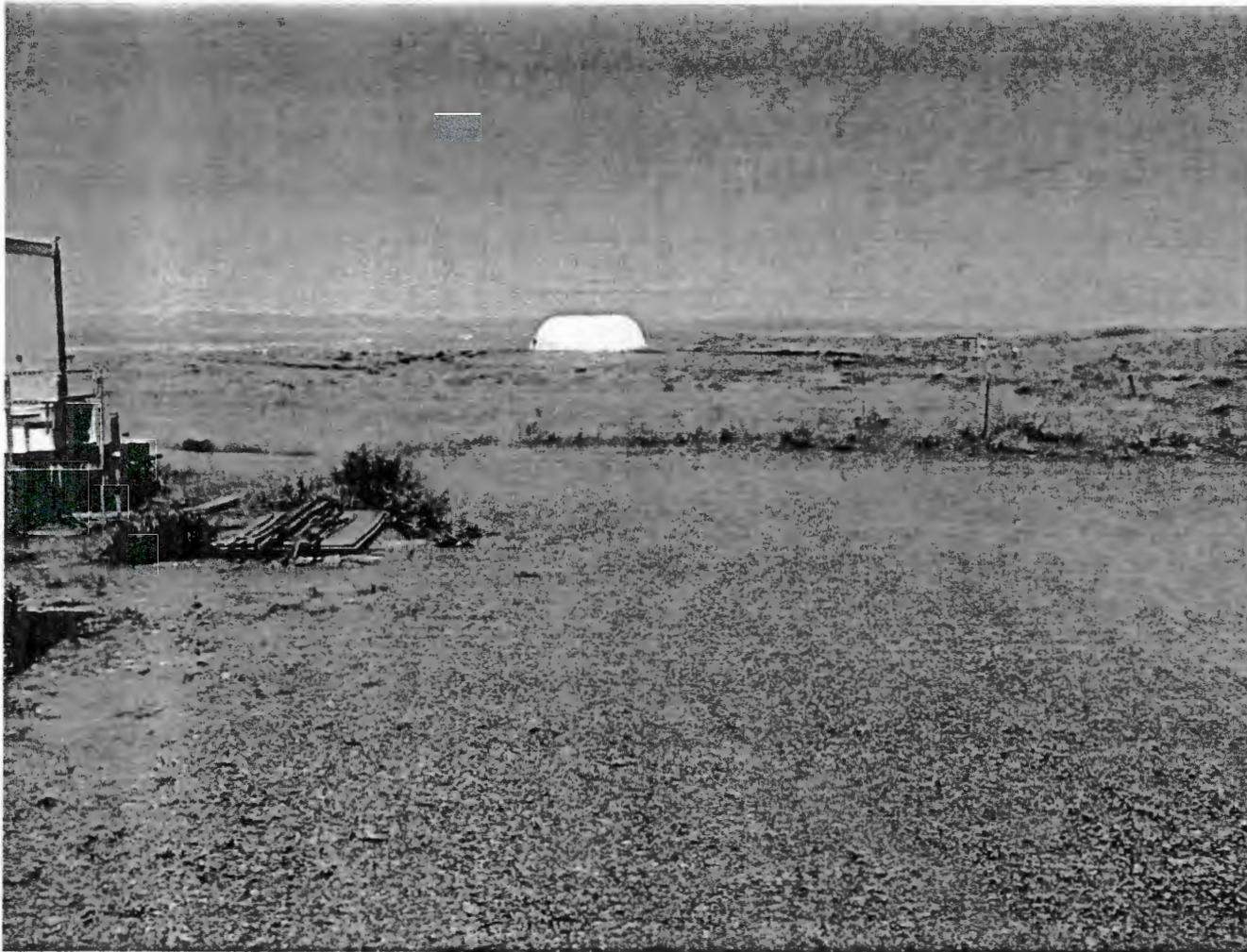
EBERLINE  
SERVICES  
HANFORD, INC.

Survey Map Prepared By Bruce Coomer, ESI

**MO-765 and HS-007/008 Removal Visual Inspection Photographs**



**MO-765 Footprint Looking North (Note darker colored soil in center of photo)**



**HS-007/008 Footprint Looking Northeast**

# Evaluation of MO-765 Footprint Soil Sample

## Introduction

On May 7, 2012, a soil sample was collected from a stained area that had been identified in the footprint of former MO-765 (Figure 1). The sample (J1P1X9) was submitted for metals, polychlorinated biphenyl and total petroleum hydrocarbon laboratory analyses to evaluate if the stained material contained contaminants above the remedial action goals for direct exposure and make a decision concerning whether or not this material may remain in place or require removal as specified in the *Removal Action Work Plan for 100-N Area Ancillary Facilities* (DOE-RL 2012).

## Data Evaluation

Analytical results for this soil sample (Tables 1 and 2) were conservatively compared against the applicable cleanup criteria for soil as presented in the *Remedial Design Report/Remedial Action Work Plan for the 100-N Area* (DOE-RL 2006). An evaluation of these results (Table 3) show that residual contaminant concentrations in the soil do not preclude any future uses (as bounded by the rural-residential scenario) and allow for unrestricted use of shallow zone soils (i.e., surface to 4.6 m [15 ft] deep). The results also demonstrate that residual contaminant concentrations are protective of groundwater and the Columbia River.

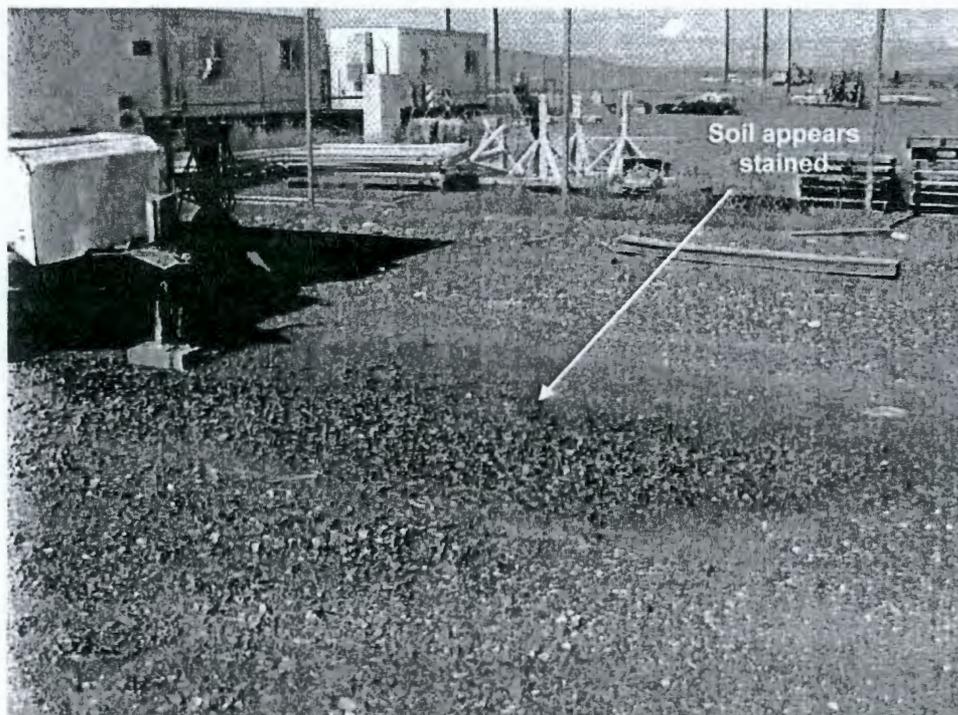


Figure 1. View of stained soil where MO-765 was formerly located (facing west).

## Evaluation of MO-765 Footprint Soil Sample

**Table 1. Inorganic Sample Summary Table.**

Sample Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1P1X9	5/7/12	4810		4.55	0.545	U	0.545	1.43		0.909	54.5		0.455	0.154	B	0.182	1.39	B	1.82

Sample Number	Sample Date	Cadmium			Calcium			Chromium			Cobalt			Copper			Iron		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1P1X9	5/7/12	0.104	B	0.182	8550		90.9	7.59		0.182	4.55		1.82	10.8		0.909	15300		18.2

Sample Number	Sample Date	Lead			Magnesium			Manganese			Mercury			Molybdenum			Nickel		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1P1X9	5/7/12	2.93		0.455	3700		68.2	203		4.55	0.024	U	0.024	0.526	B	1.82	5.77		3.64

Sample Number	Sample Date	Potassium			Selenium			Silicon			Silver			Sodium			Vanadium		
		mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
J1P1X9	5/7/12	939		364	0.273	U	0.273	365		1.82	0.182	U	0.182	2970		45.5	49		2.27

Sample Number	Sample Date	Zinc		
		mg/kg	Q	PQL
J1P1X9	5/7/12	37.6		9.09

B = Detected be low reporting limit  
 Q = qualifier  
 PQL = practical quantitation limit  
 U = undetected

**Table 2. Polychlorinated Biphenyl and Oil and Grease Sample Summary Table.**

Sample Number	Sample Date	Aroclor-1061			Aroclor-1221			Aroclor-1232			Aroclor-1242			Aroclor-1248			Aroclor-1254		
		ug/kg	Q	PQL															
J1P1X9	5/7/12	19.4	U	19.4	5.94	J	19.4												

Sample Number	Sample Date	Aroclor-1260			Aroclor-1262			Aroclor-1268			Oil and grease		
		ug/kg	Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL	mg/kg	Q	PQL
J1P1X9	5/7/12	19.4	U	19.4	19.4	U	19.4	19.4	U	19.4	87.7		21.4

# Evaluation of MO-765 Footprint Soil Sample

**Table 3. Comparison of the Stained Soil Sample Concentrations to Soil Action Levels**

COPC	Result (mg/kg)	Soil Cleanup Levels (mg/kg) <sup>a</sup>			Does the Result Exceed RAGs?
		Direct Exposure	Protective of Groundwater	River Protection	
Arsenic	1.43	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>	No
Barium	54.5	5,600	200	400	No
Beryllium	0.154 (<BG)	10.4 <sup>d</sup>	1.51 <sup>b</sup>	1.51 <sup>b</sup>	No
Boron <sup>e</sup>	1.39 (<BG)	7,200	320	-- <sup>f</sup>	No
Cadmium <sup>c</sup>	0.104 (<BG)	13.9 <sup>d</sup>	0.81 <sup>b</sup>	0.81 <sup>b</sup>	No
Chromium, total	7.59	80,000	18.5 <sup>b</sup>	18.5 <sup>b</sup>	No
Cobalt	4.55	24	15.7 <sup>b</sup>	-- <sup>f</sup>	No
Copper	10.8	2,960	59.2	22.0 <sup>b</sup>	No
Lead	2.93	353	10.2 <sup>b</sup>	10.2 <sup>b</sup>	No
Manganese	203	3,760	512 <sup>b</sup>	512 <sup>b</sup>	No
Molybdenum <sup>e</sup>	0.526 (<BG)	400	8	-- <sup>f</sup>	No
Nickel	5.77	1,600	19.1 <sup>b</sup>	27.4	No
Vanadium	49	560	85.1 <sup>b</sup>	-- <sup>f</sup>	No
Zinc	37.6	24,000	480	67.8 <sup>b</sup>	No
Oil and grease	87.7	200	200	200	No

<sup>a</sup> Lookup values and RAGs obtained from the 100 Area RDR/RAWP (DOE-RL 2006) unless otherwise noted.

<sup>b</sup> Where cleanup levels are less than background, cleanup levels default to background per WAC 173-340-700[4][d] (1996). The arsenic cleanup level of 20 mg/kg has been agreed to by the Tri-Party Agreement Project managers (DOE-RL 2006).

<sup>c</sup> Hanford Site-specific background value is not available; it was not evaluated during background study. Value used is from *Natural Background Soil Metals Concentrations in Washington State* (Ecology 1994).

<sup>d</sup> Carcinogenic cleanup level calculated based on the inhalation exposure pathway (WAC 173-340-750[3], 1996) using an airborne particulate mass-loading rate of 0.0001 g/m<sup>3</sup> (*Hanford Guidance for Radiological Cleanup* [WDOH 1997]).

<sup>e</sup> No Hanford Site-specific or Washington State background value is available.

<sup>f</sup> No parameters (bioconcentration factors or ambient water quality criteria values) are available from the Washington State Department of Ecology Cleanup Levels and Risk Calculations database or other databases to calculate cleanup levels (WAC 173-340-730(3)(a)(iii), 1996 [Method B for surface waters]).

-- = not applicable

BG = background

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

RAG = remedial action goal

RDL = required detection limit

RDR/RAWP = Remedial Design Report/Remedial Action Work Plan for the 100 Area

RESRAD = RESidual RADioactivity (dose assessment model)

WAC = Washington Administrative Code

## References

DOE-RL, 2006, *Remedial Design Report/Remedial Action Work Plan for the 100-N Area*, DOE/RL-2005-93, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2012, *Removal Action Work Plan for 100-N Area Ancillary Facilities*, DOE/RL-2002-70, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*, Publication No. 94-115, Washington State Department of Ecology, Olympia, Washington.

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

WDOH, 1997, *Hanford Guidance for Radiological Cleanup*, WDOH/320-015, Rev. 1, Washington State Department of Health, Olympia, Washington.

# Attachment 15

**^WCH Document Control**

---

**From:** Saueressig, Daniel G  
**Sent:** Thursday, January 10, 2013 9:09 AM  
**To:** ^WCH Document Control  
**Subject:** FW: RECONTOURING OF 100-N-33

**Attachments:** photo.JPG; RECONTOURING OF 100-N-33.htm; Picture (Device Independent Bitmap)

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

Thanks,

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



photo.JPG (2  
MB)



RECONTOURING  
= 100-N-33.htm (

---

**From:** Elliott, Wanda (ECY) [<mailto:well461@ECY.WA.GOV>]  
**Sent:** Tuesday, December 04, 2012 7:04 AM  
**To:** Saueressig, Daniel G; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Jakubek, Joshua E  
**Subject:** RE: RECONTOURING OF 100-N-33

It is acceptable to me.

*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:** Tuesday, December 04, 2012 6:50 AM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Jakubek, Joshua E

**Subject:** RECONTOURING OF 100-N-33

Wanda/Joanne, 100-N-33 was recently closed out and is ready for backfill/revegetation. Since the deepest portion of the excavation was only approximately 2', we'd like to propose just smoothing the edges of the excavation to blend it in with the surrounding terrain. See attached photo and let me know what you think? We've got the contractor out there now, so if you could let me know soon, I'd appreciate it.

Thanks and give me a call if you have any questions.

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

<< File: photo.JPG >>



**From:** Chance, Joanne C [joanne.chance@rl.doe.gov]  
**Sent:** Tuesday, December 04, 2012 1:13 PM  
**To:** Saueressig, Daniel G  
**Cc:** Elliott, Wanda  
**Subject:** RE: RECONTOURING OF 100-N-33  
Hi Dan,

Thanks for the clarification. The recontouring plan sounds fine to me, too.

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:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Tuesday, December 04, 2012 12:08 PM  
**To:** Chance, Joanne C  
**Subject:** RE: RECONTOURING OF 100-N-33

Actually it's very nice. Much better than what we would get from the borrow pit.

Thanks,

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

---

**From:** Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]  
**Sent:** Tuesday, December 04, 2012 7:54 AM  
**To:** Saueressig, Daniel G  
**Subject:** RE: RECONTOURING OF 100-N-33

Hi Dan,

Does the existing soil surface have enough fines to support good revegetation? Thanks for clarification.

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:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Tuesday, December 04, 2012 6:50 AM  
**To:** Elliott, Wanda; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Jakubek, Joshua E  
**Subject:** RECONTOURING OF 100-N-33

Wanda/Joanne, 100-N-33 was recently closed out and is ready for backfill/revegetation. Since the deepest portion of the excavation was only approximately 2', we'd like to propose just smoothing the edges of the excavation to blend it in with the surrounding terrain. See attached photo and let me know what you think? We've got the contractor out there now, so if you could let me know soon, I'd appreciate it.

Thanks and give me a call if you have any questions.

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

<<photo.JPG>>

# Attachment 16

169214
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**^WCH Document Control**

---

**From:** Saueressig, Daniel G  
**Sent:** Thursday, January 10, 2013 8:02 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 116-N-2 Plume Chase Agreement:  
**Attachments:** 116-N-2 additional remediation and resampling writeup.doc

Please provide a chron number (and include the attachment). 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, December 27, 2012 9:05 AM  
**To:** Elliott, Wanda; Jakubek, Joshua E  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Dobie, Chad H; Howell, Theresa Q  
**Subject:** RE: 116-N-2 Plume Chase Agreement:

All,

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:** Thursday, December 27, 2012 8:22 AM  
**To:** Jakubek, Joshua E; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Dobie, Chad H; Howell, Theresa Q  
**Subject:** RE: 116-N-2 Plume Chase Agreement:

The proposed approach is acceptable to me.

*Wanda Elliott*  
(509) 372-7904  
Environmental Scientist  
Nuclear Waste Program

1/10/2013

Washington State Department of Ecology



---

**From:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Friday, December 21, 2012 8:01 AM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Dobie, Chad H; Howell, Theresa Q  
**Subject:** 116-N-2 Plume Chase Agreement:

Wanda & Joanne-

I have attached a plume chase request for additional remediation and resampling at the 116-N-2 site. Would you please let me know if the proposed approach will be acceptable for this area? I hope you both have a very Merry Christmas holiday!

<< File: 116-N-2 additional remediation and resampling writeup.doc >>

Thanks,

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

## **116-N-2 Waste Site Additional Remediation and Resampling Request**

### **Background Information**

The 116-N-2 waste site consisted of piping, pumps, a transfer tank (or silo), and a large, spherical storage tank (golf ball). This waste site was used as a collection tank for N Reactor primary piping decontamination wastes. The waste site operated from 1968 to 1987, at which point the 105-N Reactor was placed on standby before being permanently shut down in 1991.

The UPR-100-N-5 waste site consisted of a leak that occurred in the piping at the Radioactive Chemical Waste Handling Facility between the pump and the 116-N-2 Tank. The leak occurred between June 16 and 27, 1972 and discharged 340,650 L (90,000 gal) of radioactive wastewater containing decontamination chemicals to the soil.

The UPR-100-N-25 waste site consisted of a release of primary loop water and decontamination solution containing phosphoric acid and diethylthiourea. The release occurred on May 15, 1975 and discharged between 378 to 1,900 L (100 to 500 gal) of contaminated water to the soil surface.

Remedial action at the 116-N-2 and associated waste sites was performed between March 1, 2011 and April 26, 2012. Approximately 11,144 bank cubic meters (BCM) (14,576 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 116-N-2 excavation.

Verification sampling was conducted on October 17 and 18, 2012 as per the approved verification work instruction. Three decision units were identified for the 116-N-2 waste site and includes the one deep zone excavation and two shallow zone excavation decision units. Twelve statistical samples plus quality assurance/quality control (QA/QC) samples were collected from each decision unit.

One sample location, SZ2-3, failed direct exposure remedial action goals (RAGs). This sample location failed direct exposure RAGs for benzo(a)pyrene.

### **Recommendation for Path Forward**

Washington Closure Hanford proposes additional soil to be removed from the 116-N-2 waste site excavation at the SZ2-3 location for disposal at the Environmental Restoration Disposal Facility. To be conservative, generally, half the distance between the failed verification sample location and the nearest passing verification sample location is used as the boundary for additional soil removal (Figure 1). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.).

Following additional soil removal, replacement samples will be collected at SZ2-3. The replacement samples will be analyzed for the failing analyte(s) only. A summary of replacement samples, including sample location and requested analyses, is provided in Table 1.

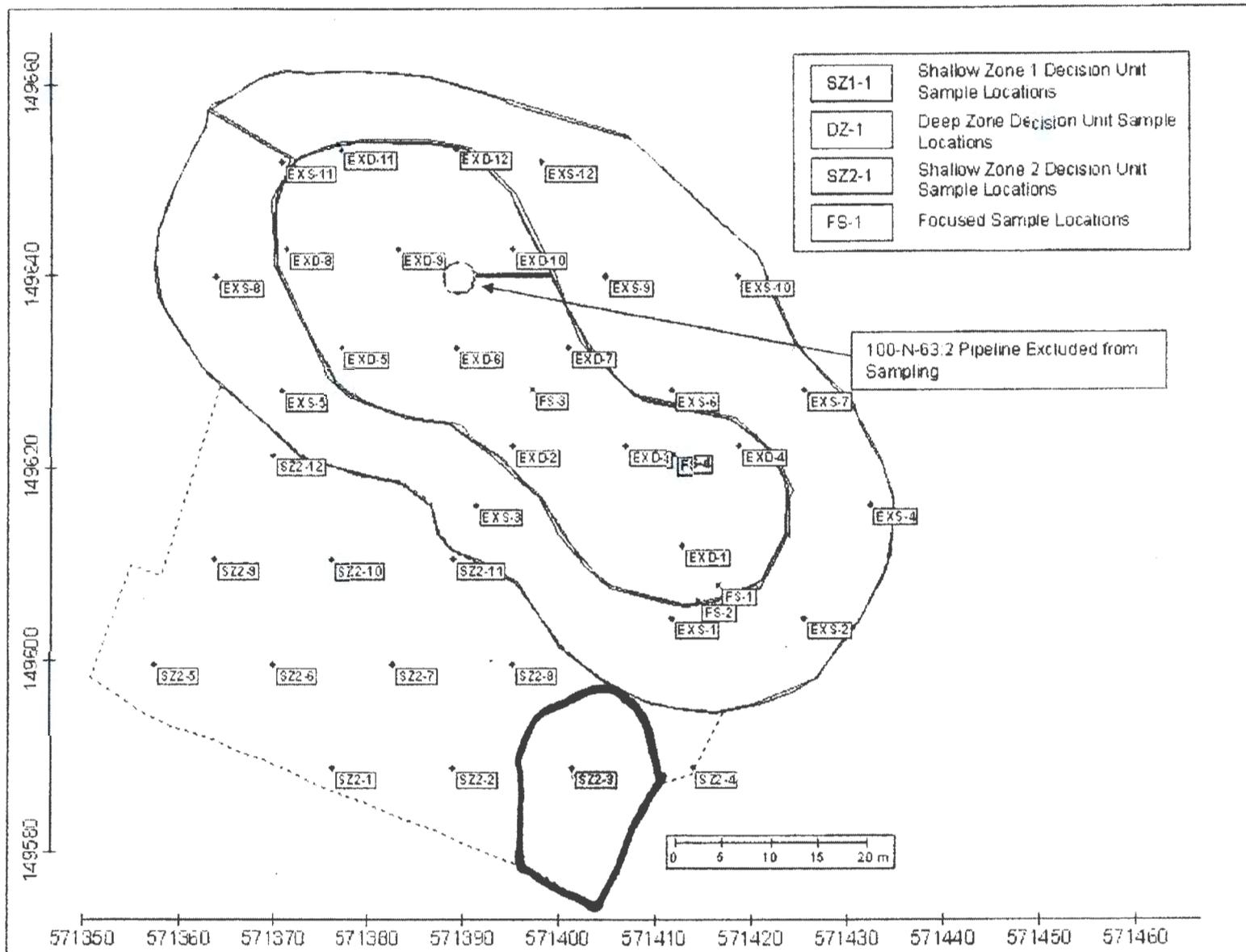


Figure 1. 116-N-2 Waste Site Additional Remediation Sketch.

**Table 1. 116-N-2 Replacement Sample Summary.**

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analysis
		Northing	Easting	
SZ2-3	TBD	149588.7	571401.4	SVOA

HEIS = Hanford Environmental Information System

SVOA = semivolatile organic analysis

TBD = to be determined

# Attachment 17

169216
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Thursday, January 10, 2013 8:45 AM  
**To:** ^WCH Document Control  
**Subject:** FAILED INFORMATIONAL SAMPLE IN 100-N-60  
**Attachments:** 100-N-60 additional remediation and resampling writeup.doc

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

Thanks,

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

---

**From:** Elliott, Wanda (ECY)  
**Sent:** Wednesday, December 19, 2012 3:56 PM  
**To:** 'Saueressig, Daniel G'; Chance, Joanne C  
**Subject:** RE: FAILED INFORMATIONAL SAMPLE IN 100-N-60

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:** Wednesday, December 19, 2012 2:26 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Subject:** FAILED INFORMATIONAL SAMPLE IN 100-N-60

Wanda/Joanne, per our discussion at the last interface meeting, we noted that an informational sample (FS-2 in the attached drawing) failed for TPH. We plan to take an additional scoop or two of material to try and remove the contamination. If removal of this additional material does not clean up the

1/10/2013

contamination, we'd like to propose leaving the contamination and including it as part of UPR-100-N-17 which has been identified for in-situ bioremediation. This informational sample doesn't affect closure of the 100-N-60 and this area is in the deep zone, so including as part of the in-situ bioremediation project seems logical if we find the contamination to be more widespread.

Let me know if you concur.

Thanks,

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

<< File: 100-N-60 additional remediation and resampling writeup.doc >>

## 100-N-60 Grouping of Waste Sites Additional Remediation and Resampling Request

### Background Information

The 100-N-60 grouping of waste sites includes the 100-N-60, UPR-100-N-13, and UPR-100-N-26. Remedial action at the 100-N-60 grouping of waste sites was performed between September 21 and November 14, 2011, continuing to an approximate maximum depth of 4.5 m (15 ft).

Verification sampling was conducted on August 13, 2012 as per the approved verification work instruction. One decision unit was identified for the 100-N-60 grouping of waste sites and includes the excavation only. Twelve statistical samples plus quality assurance/quality control (QA/QC) samples and two focused samples were collected from the decision unit.

Two sample locations within the 100-N-60 grouping of waste sites exceeded direct exposure remedial action goals (RAGs). Sample location FS-1 failed the direct exposure RAG for cobalt-60 and FS-2 failed the direct exposure RAGs for polycyclic aromatic hydrocarbons (PAH) and total petroleum hydrocarbons (TPH). However, FS-1 is the only location that will require additional remediation and resampling. The verification work instruction indicates that the sample collected at FS-2 will be collected for information purposes only and will not be used for site closure.

### Recommendation for Path Forward

Washington Closure Hanford proposes additional soil to be removed from the 100-N-60 grouping of waste sites excavation at FS-1 location for disposal at the Environmental Restoration Disposal Facility. To be conservative, generally, half the distance between the failed verification sample location and the nearest passing verification sample location is used as the boundary for additional soil removal (Figure 1). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.).

Following additional soil removal, a replacement sample will be collected at FS-1. The replacement sample will be analyzed for the failing analyte only. A sample summary including sample location and requested analyses is provided in Table 1.

**Table 1. 100-N-60, UPR-100-N-13, UPR-100-N-26  
Waste Site Replacement Sample Summary.**

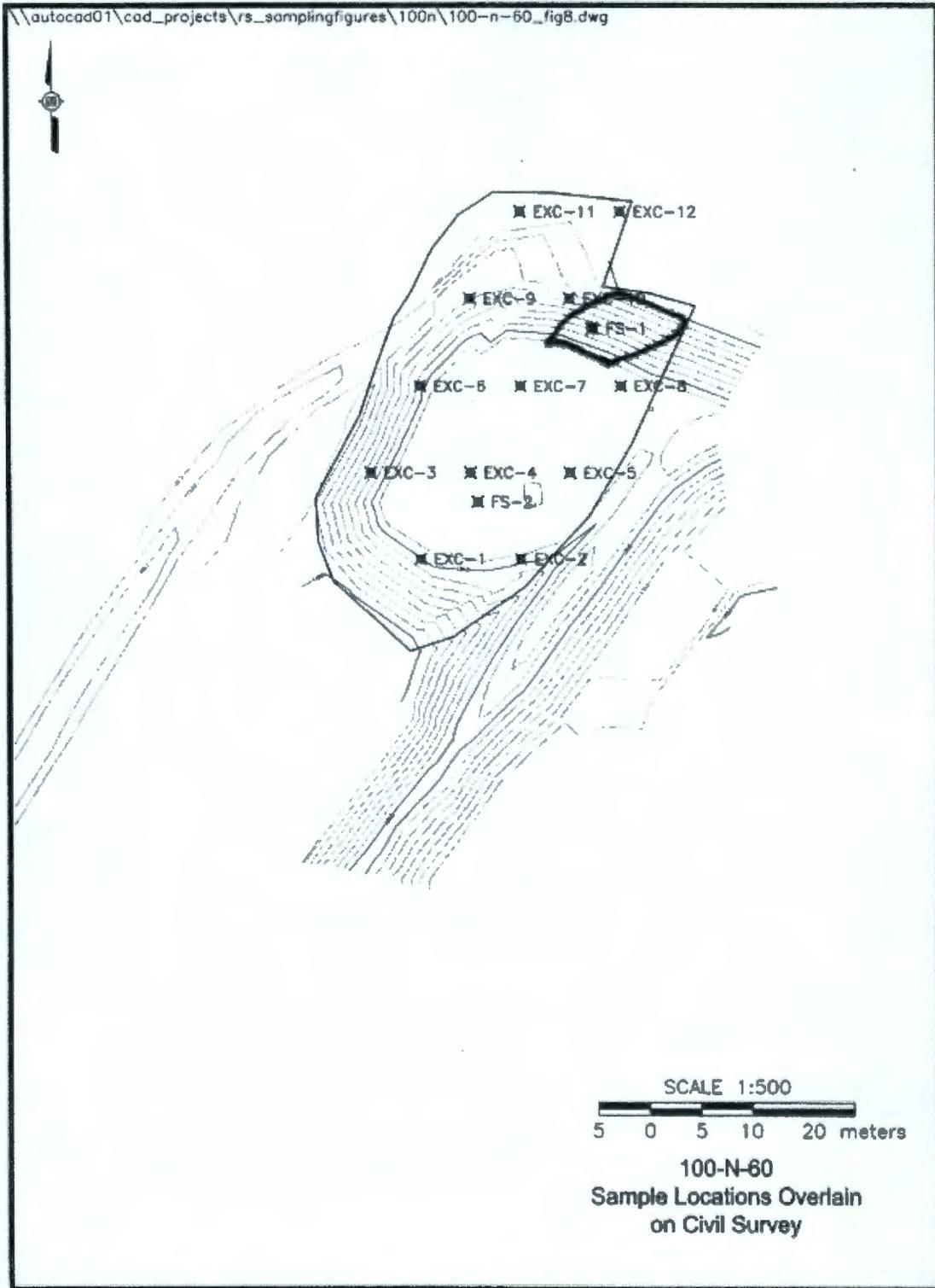
Sample Location	HEIS Sample Number	WSP Coordinates (m)		Sample Analysis
		Northing	Easting	
FS-1	TBD	149738.4	571248.9	Cobalt-60 (GEA)

GEA = gamma energy analysis

HEIS = Hanford Environmental Information System

WSP = Washington State Plane

Figure 1. 100-N-60 Group Additional Remediation Sketch.



# Attachment 18

169215
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Thursday, January 10, 2013 8:05 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 100-N-63:2 Plume Chase Agreement:  
**Attachments:** 100-N-63\_2 additional remediation and resampling writeup.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:** Wednesday, December 26, 2012 10:03 AM  
**To:** Jakubek, Joshua E; Elliott, Wanda  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Howell, Theresa Q  
**Subject:** RE: 100-N-63:2 Plume Chase Agreement:

Hi Josh and Wanda,

The proposed approach for 100-N-63:2 plume chasing is acceptable to me.  
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:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Friday, December 21, 2012 8:05 AM  
**To:** Elliott, Wanda; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Berezovskiy, Inna B; Howell, Theresa Q  
**Subject:** 100-N-63:2 Plume Chase Agreement:

Wanda & Joanne-

I have attached a plume chase request for additional remediation and resampling at the 100-N-

1/10/2013

63:2 Pipelines site. Additionally I have included the GPRS overlay for the area.

Would you please let me know if the proposed approach will be acceptable for this area?

<<100-N-63\_2 additional remediation and resampling writeup.doc>> <<63\_2 - Beta Surveys.pdf>> <<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**

### **Background Information**

One decision unit was identified for the 100-N-63:2 subsite consisting of 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.

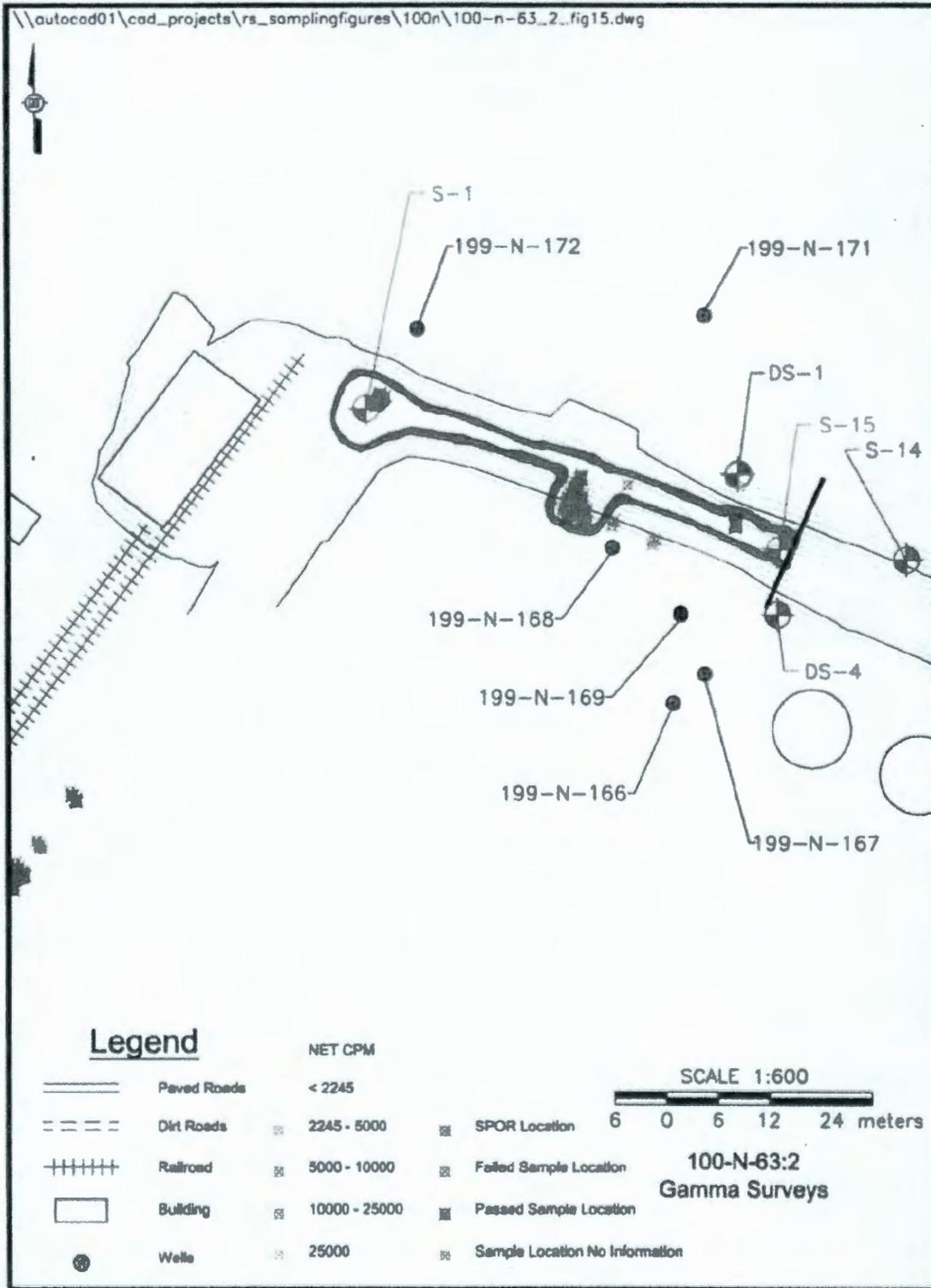
From the verification data results obtained from the 100-N-63:2 sampled locations, two locations (S-1 and S-15) failed direct exposure remedial action goals (RAGs) for cobalt-60.

### **Recommendation for Path Forward**

Washington Closure Hanford proposes additional soil to be removed 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). GEPRS surveys will be used to guide field excavations and focus on areas where contamination is most probable. 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, and well interferences.

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.

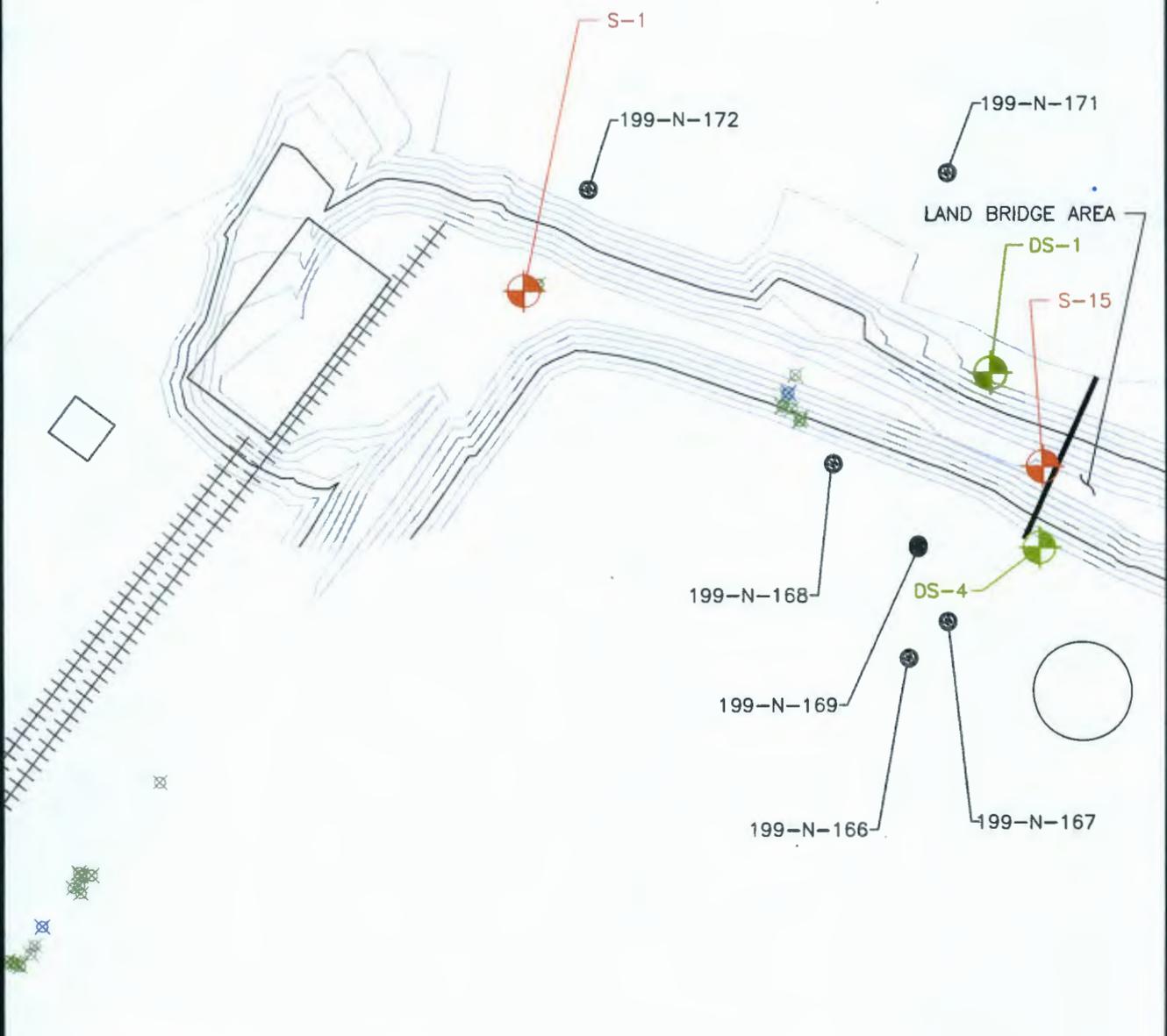
Figure 1. 100-N-63:2 Approximate Remediation Area Sketch.



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

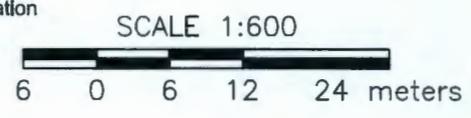
Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analysis
		Northing	Easting	
S-1	TBD	149729.1	571257.3	GEA
S-15	TBD	149712.8	571305.6	GEA

HEIS = Hanford Environmental Information System  
TBD = to be determined

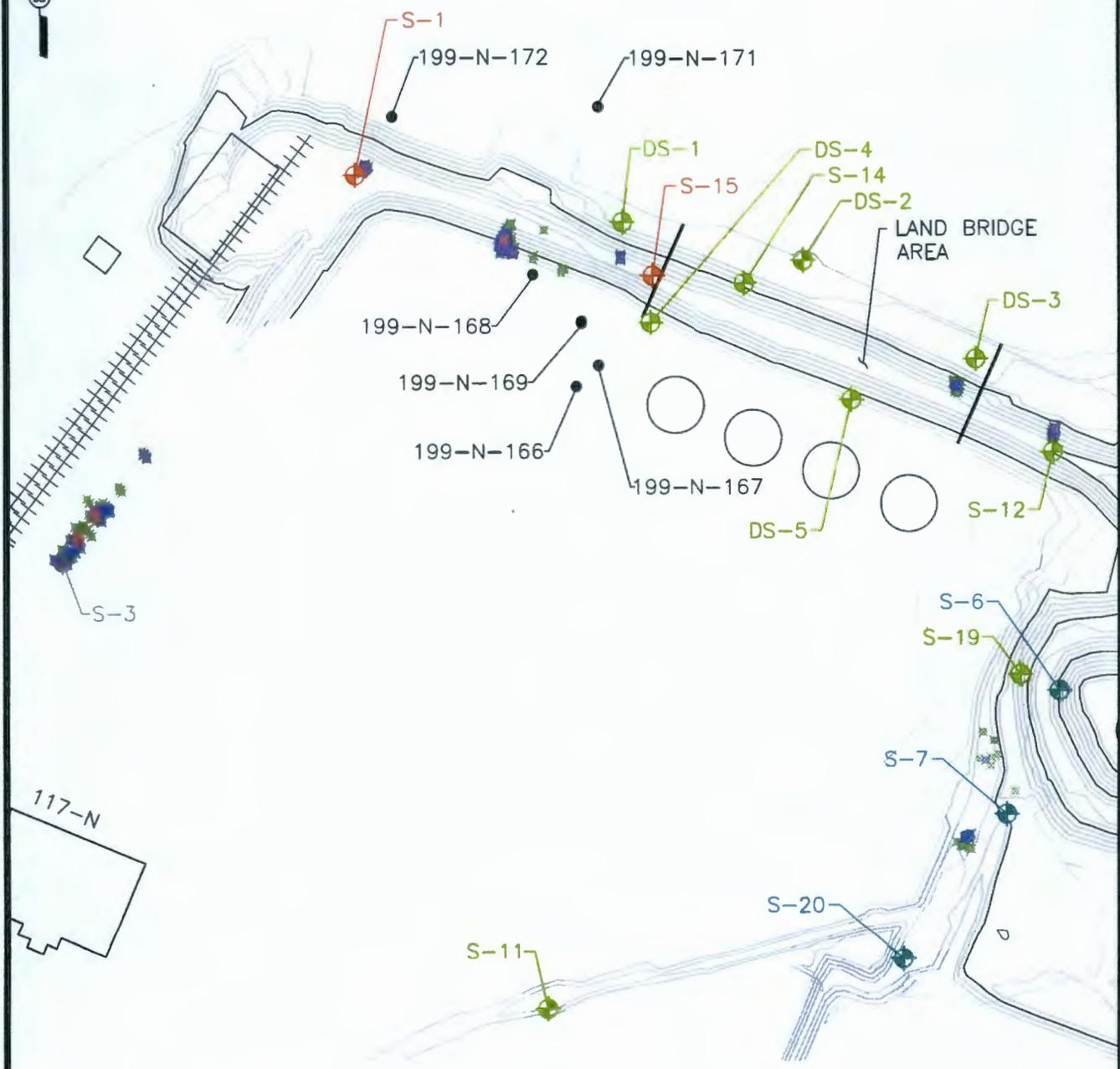


### Legend

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



100-N-63:2  
Beta Surveys



**Legend**

- Paved Roads
- Dirt Roads
- Railroad
- Building
- Wells

NET CPM

- < 2245
- 2245 - 5000
- 5000 - 10000
- 10000 - 25000
- 25000

- SPOR Location
- Failed Sample Location
- Passed Sample Location
- Sample Location No Information

SCALE 1:1000



**100-N-63:2  
Gamma Surveys**

# Attachment 19

169217
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**^WCH Document Control**

---

**From:** Saueressig, Daniel G  
**Sent:** Thursday, January 10, 2013 8:52 AM  
**To:** ^WCH Document Control  
**Subject:** FW: Spillways at 100-N

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

Thanks,

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

---

**From:** Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]  
**Sent:** Tuesday, November 13, 2012 2:20 PM  
**To:** Chance, Joanne C; Saueressig, Daniel G  
**Cc:** Boyd, Alicia  
**Subject:** RE: Spillways at 100-N

I agree as well. I will review the updated the D spillway agreement file that you sent over.

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

---

**From:** Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]  
**Sent:** Tuesday, November 13, 2012 1:38 PM  
**To:** Saueressig, Daniel G  
**Cc:** Elliott, Wanda (ECY); Boyd, Alicia (ECY)  
**Subject:** RE: Spillways at 100-N

Hi Dan,

Thanks for the clarification. Sounds like a good approach to me.

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

---

1/10/2013

**From:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Tuesday, November 13, 2012 12:28 PM  
**To:** Chance, Joanne C; Elliott, Wanda  
**Cc:** Boyd, Alicia; Thompson, K M (Mike); Thompson, Wendy S; Buckmaster, Mark A  
**Subject:** RE: Spillways at 100-N

The 100-N-79 was included as part of the 1908-N in the original D4 Action Memorandum. I believe the site was subsequently split into the outfall (1908-N), the spillway (100-N-79) and the river pipelines (100-N-77). Since the Action Memorandum originally included all of these sites, we plan to remove the spillway under that authority. Hopefully no one has any issues with this approach?

As for 100-N-104, I believe an ESD will be required to add this site to the 100-N ROD before remediation of this site can proceed. When the ESD is prepared, I may include 100-N-79 for completeness.

Also, Wendy provided an outdated agreement regarding spillway work at 100-D. See attached for an updated agreement on remediation near the shoreline at 100-D. This item will be on the agenda for tomorrow's interface.

Thanks,

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

---

**From:** Chance, Joanne C [mailto:joanne.chance@rl.doe.gov]  
**Sent:** Tuesday, November 13, 2012 11:35 AM  
**To:** Elliott, Wanda; Saueressig, Daniel G  
**Cc:** Boyd, Alicia; Thompson, Mike; Thompson, Wendy S  
**Subject:** RE: Spillways at 100-N

Hi Wanda,

Yes, they will be addressed in the RIFS. 100-N-79 is currently in the cultural review phase and a remediation design is done; 100-N-104 is in the cultural review phase and a decision has been made to remediate it (RTD memo issued).

Dan, can you address regulatory issue? 100-N-106, SPOR site will be addressed in RIFS also.

I hope this answers your question. If not, please let me know. 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

1/10/2013

(509) 376-0811

---

**From:** Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]  
**Sent:** Tuesday, November 13, 2012 9:57 AM  
**To:** Chance, Joanne C; Thompson, K M (Mike)  
**Cc:** Boyd, Alicia (ECY)  
**Subject:** FW: Spillways

Are these sites being addressed in the RIFS?

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

---

**From:** Thompson, Wendy S [mailto:WSTHOMPS@wch-rcc.com]  
**Sent:** Tuesday, November 13, 2012 9:51 AM  
**To:** Elliott, Wanda (ECY)  
**Cc:** Boyd, Alicia (ECY)  
**Subject:** RE: Spillways

The spillways are 100-N-79 and 100-N-104.

I'm not sure which documents include them.

Wendy

---

ida (ECY) [mailto:well461@ECY.WA.GOV]  
vember 13, 2012 9:40 AM  
/endy S

pillways

**Do the spillways have waste site designations? If so, what are they? I thought that you said one of them was 100-N-104- 105? And where are they covered (IROD, ESD, etc)? I have looked at a few different driving documents and do not see them listed.**

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

---

**From:** Thompson, Wendy S [mailto:WSTHOMPS@wch-rcc.com]  
**Sent:** Thursday, November 01, 2012 11:57 AM  
**To:** Chance, Joanne C; Elliott, Wanda (ECY)  
**Cc:** Saueressig, Daniel G; Buckmaster, Mark A; Jakubek, Joshua E  
**Subject:** Spillways

1/10/2013

FYI

Yesterday Dan mentioned the approach used for the spillways at 100-D, e.g., below the ordinary high water mark/above the ordinary high water mark. Attached is the agreement describing the approach used at 100-D.

Wendy

<< File: 1871138.pdf >>

# Attachment 20

168625

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Thursday, November 15, 2012 9:10 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 100-N AMP November 2012

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:** Thursday, November 15, 2012 8:08 AM  
**To:** Saueressig, Daniel G; Chance, Joanne C  
**Cc:** Boyd, Alicia  
**Subject:** FW: 100-N AMP November 2012

Here is a response approving air monitor move. Can you let me know when the move is complete and the draft November 2012 AMP is revised to reflect the change?

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

---

**From:** Danielson, Al (DOH)  
**Sent:** Thursday, November 15, 2012 7:54 AM  
**To:** Elliott, Wanda (ECY); Gent, Philip (ECY)  
**Cc:** Boyd, Alicia (ECY); Martell, P John (DOH); Boothe, Gabriel T (DOH)  
**Subject:** RE: 100-N AMP November 2012

Wanda:

I looked at some CAP 88 runs for the for the revised 100-N AMP and it projects the highest dose East or East South East of 100-N. RAES concurs with moving to the proposed location, it is not likely affect monitoring capability for the area. Can you let us know when the move is complete and revise the draft November 2012 AMP to reflect the change?

Thanks  
*Allan Danielson*

**Radioactive Air Emissions Section**

Yakima Office Phone - 509 574-0198

Richland Office Phone - 509 946-0192

Cell Phone - 509 727-0645

Public Health - Always Working for a Safer and Healthier Washington

---

**From:** Elliott, Wanda (ECY)  
**Sent:** Wednesday, November 14, 2012 4:42 PM  
**To:** Gent, Philip (ECY); Danielson, Al (DOH)  
**Cc:** Boyd, Alicia (ECY)  
**Subject:** FW: 100-N AMP November 2012

<< File: 20121114155252371.pdf >>

This is an "updated" figure 1. For the 100-N air monitoring plan. They need to move an air monitor so that it has permanent electricity. Do you have any issue with its placement?

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

---

**From:** Boyd, Alicia (ECY)  
**Sent:** Wednesday, November 14, 2012 4:39 PM  
**To:** Elliott, Wanda (ECY)  
**Subject:** FW: 100-N AMP November 2012

---

**From:** Danielson, Al (DOH)  
**Sent:** Wednesday, November 14, 2012 1:52 PM  
**To:** dgsauere@wch-rcc.com  
**Cc:** Martell, P John (DOH); Gent, Philip (ECY); Boyd, Alicia (ECY)  
**Subject:** 100-N AMP November 2012

Dan:

I'm starting my review of the 100-N AMP, apparently Calc No 0100N-CA-V0091 was not included in the material sent. Attachment 1 (page 6) uses data from V0091 and V0100 Rev. 1. Please send V0091 and the CAP 88 run if possible.

Thanks  
*Allan Danielson*  
Radioactive Air Emissions Section

*Yakima Office Phone - 509 574-0198*  
*Richland Office Phone - 509 946-0192*  
*Cell Phone - 509 727-0645*

*Public Health - Always Working for a Safer and Healthier Washington*

# Attachment 21

169057
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 11:03 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 128-N-1 Staging Pile Area Plume Chase Request  
**Attachments:** 128-N-1 grouping SPA additional remediation and resampling writeup.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, December 17, 2012 2:01 PM  
**To:** Elliott, Wanda; Jakubek, Joshua E  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovskiy, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: 128-N-1 Staging Pile Area Plume Chase Request

Acceptable to me, too! (Better late than never, I hope).

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, December 11, 2012 4:05 PM  
**To:** Jakubek, Joshua E; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovskiy, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: 128-N-1 Staging Pile Area Plume Chase Request

The proposed approach is acceptable to me.

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



---

**From:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Tuesday, December 11, 2012 3:58 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovski, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** 128-N-1 Staging Pile Area Plume Chase Request

Wanda & Joanne-

I have attached a plume chase request for additional remediation and resampling at the 128-N-1 Staging Pile Area. I hope to discuss this and requests to follow at tomorrow's interface meeting.

Would you please let me know if the proposed approach will be acceptable for this area?

<< File: 128-N-1 grouping SPA additional remediation and resampling writeup.doc >>

Thanks,

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

## **100-N-6, 100-N-16, 100-N-98 and 128-N-1 Waste Sites Additional Remediation and Resampling Request**

### **Background Information**

Verification sampling was performed on July 25, October 31 and November 13, 2012 as per the approved verification work instruction. Two decision units were identified for the 100-N-6, 100-N-16, 100-N-98 and 128-N-1 waste sites and included the excavation area and the staging pile area. Thirteen statistical samples were collected from the excavation area and twelve statistical samples were collected from the staging pile area. In addition, appropriate quality assurance/quality control (QA/QC) samples from two decision units and four focused samples were collected from the excavation area.

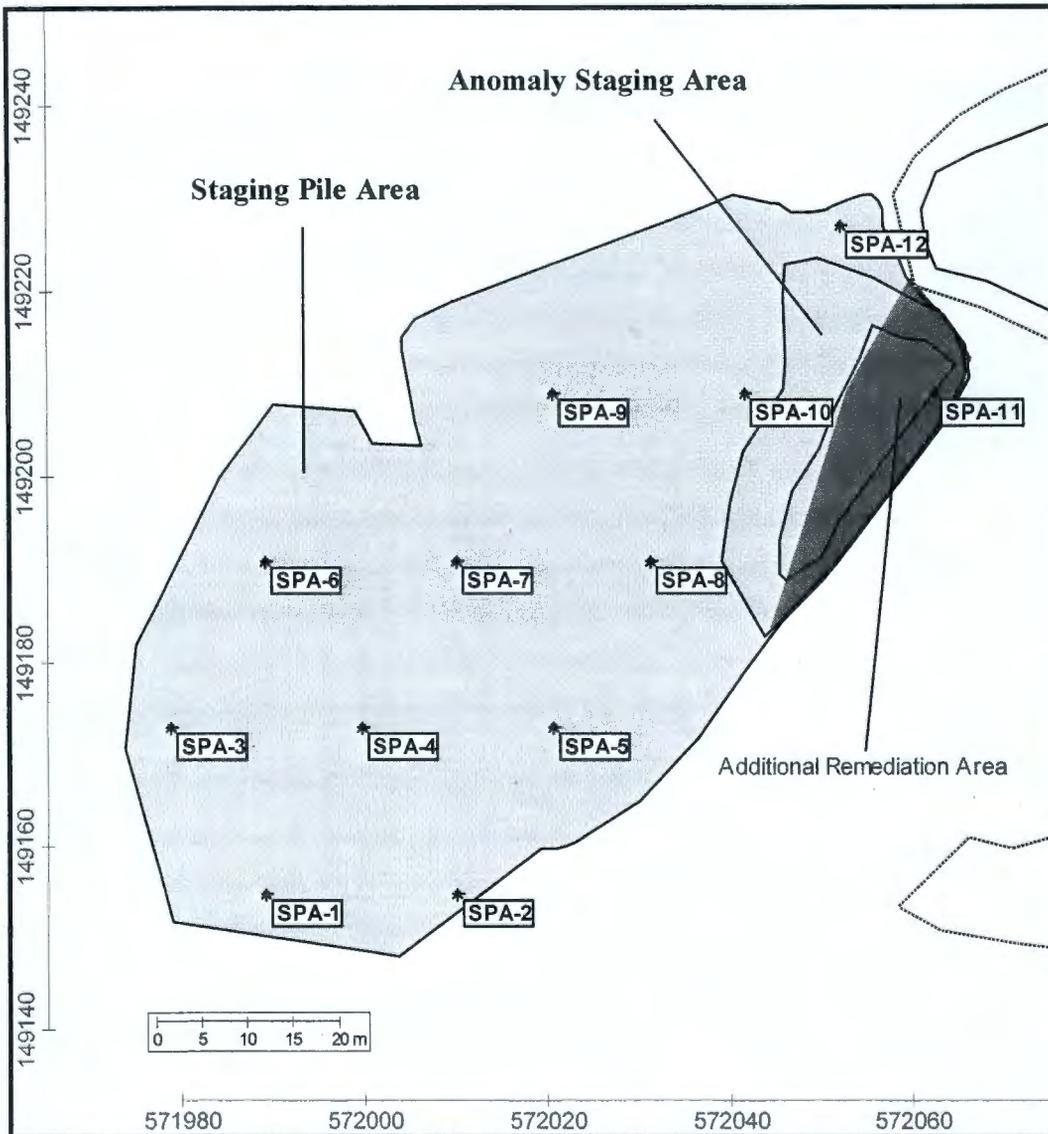
One sample location from the staging pile area, SPA-11 failed direct exposure remedial action goals (RAGs) for benzo(a)pyrene.

### **Recommendation for Path Forward**

Washington Closure Hanford proposes additional soil to be removed from the 100-N-6, 100-N-16, 100-N-98 and 128-N-1 waste sites staging pile area at the SPA-11 location for disposal at the Environmental Restoration Disposal Facility. To be conservative, generally, half the distance between the failed verification sample location and the nearest passing verification sample location is used as the boundary for additional soil removal (Figure 1). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.).

Following additional soil removal, replacement sample will be collected at SPA-11, and analyzed for the failing analyte only. A summary of replacement samples, including sample locations and requested analyses, is provided in Table 1.

**Figure 1. 100-N-6, 100-N-16, 100-N-98 and 128-N-1 Additional Remediation Sketch.**



**Table 1. 100-N-6, 100-N-16, 100-N-98 and 128-N-1 Waste Site Grouping Replacement Sample Summary.**

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analytical Methods
		Northing	Easting	
SPA-11	TBD	149209.1	572062.5	SVOA <sup>a</sup> – EPA Method 8270 PAH <sup>a</sup> – Method 8310

<sup>a</sup> Because method 8310 is specific to PAH analysis, data from this method will be used preferentially over the 8270 data for site evaluation of the PAH analytes.

HEIS = Hanford Environmental Information System  
TBD = to be determined

# Attachment 22

169056
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 11:02 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 100-N-87 Group Plume Chase Request:  
**Attachments:** 100-N-87 grouping additional remediation and resampling writeup.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, December 17, 2012 2:08 PM  
**To:** Elliott, Wanda; Jakubek, Joshua E  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovskiy, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: 100-N-87 Group Plume Chase Request:

It is acceptable to me, too. Thanks.

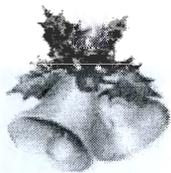
Joanne C. Chance  
U.S. Department of Energy  
Office of Assistant Manager for River and Plateau  
825 Jadwin Ave / MSIN A3-04  
Richland, WA 99352  
(509) 376-0811

---

**From:** Elliott, Wanda (ECY) [mailto:well461@ecy.wa.gov]  
**Sent:** Tuesday, December 11, 2012 4:06 PM  
**To:** Jakubek, Joshua E; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovskiy, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: 100-N-87 Group Plume Chase Request:

The proposed approach is acceptable to me.

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



---

**From:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Tuesday, December 11, 2012 4:01 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Berezovski, Inna B; Nielson, Renee J; Howell, Theresa Q  
**Subject:** 100-N-87 Group Plume Chase Request:

Wanda & Joanne-

I have attached a plume chase request for additional remediation and resampling at the 100-N-87 group of sites. I hope to discuss this request at tomorrow's interface meeting.

Would you please let me know if the proposed approach will be acceptable for this area?

<< File: 100-N-87 grouping additional remediation and resampling writeup.doc >>

Thanks,

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

## **100-N-87, UPR-100-N-9, UPR-100-N-14 and 100-N-102:1 Waste Sites Additional Remediation and Resampling Request**

### **Background Information**

Verification sampling was conducted on October 23, 2012 as per the approved verification work instruction. One decision unit was identified for the 100-N-87, UPR-100-N-9, UPR-100-N-14 and 100-N-102:1 Waste Sites and includes the excavation only. Twelve statistical samples plus quality assurance/quality control (QA/QC) samples and two focused samples were collected from the decision unit.

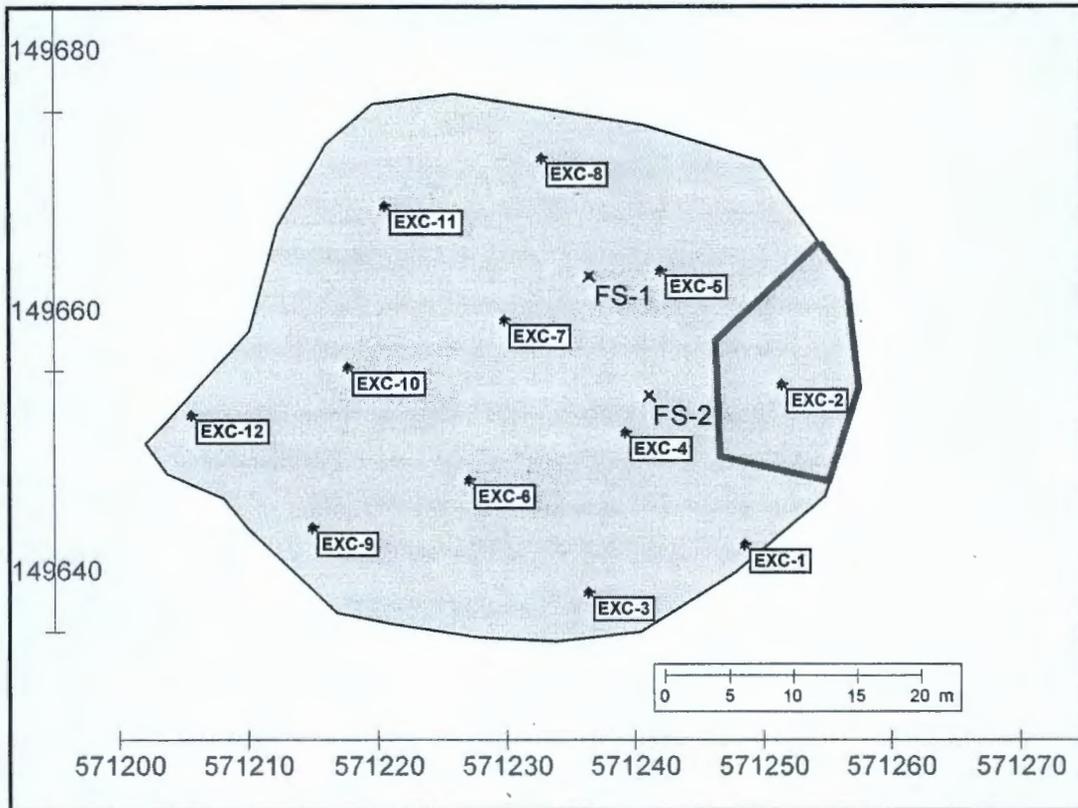
Sample location EXC-2 failed direct exposure remedial action goals (RAGs) for carbon-14.

### **Recommendation for Path Forward**

Washington Closure Hanford proposes additional soil to be removed from the 100-N-87, UPR-100-N-9, UPR-100-N-14 and 100-N-102:1 waste sites excavation at the EXC-2 location for disposal at the Environmental Restoration Disposal Facility. To be conservative, generally, half the distance between the failed verification sample location and the nearest passing verification sample location is used as the boundary for additional soil removal (Figure 1). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.).

Following additional soil removal, a replacement sample will be collected at EXC-2. Since the failed sample location included a duplicate sample, a replacement duplicate sample will also be collected. The replacement sample and the duplicate sample will be analyzed for the failing analyte only. A summary of replacement samples, including sample locations and requested analyses, is provided in Table 1.

**Figure 1. 100-N-87, UPR-100-N-9, UPR-100-N-14 and 100-N-102:1 Additional Remediation Sketch.**



**Table 1. 100-N-87, UPR-100-N-9, UPR-100-N-14 and 100-N-102:1 Waste Site Grouping Replacement Sample Summary.**

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analytical Method
		Northing	Easting	
EXC-2	TBD	149659.0	571251.4	Carbon-14 – Liquid scintillation
Duplicate	TBD			

HEIS = Hanford Environmental Information System  
 TBD = to be determined

# Attachment 23

169053
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 10:58 AM  
**To:** ^WCH Document Control  
**Subject:** FW: UPR-100-N-31 Group Plume Chase Agreement:  
**Attachments:** UPR-100-N-31 group additional remediation and resampling writeup.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, December 17, 2012 2:33 PM  
**To:** Elliott, Wanda; Jakubek, Joshua E  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: UPR-100-N-31 Group Plume Chase Agreement:

The plan is acceptable to me also.

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, December 11, 2012 4:48 PM  
**To:** Jakubek, Joshua E; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: UPR-100-N-31 Group Plume Chase Agreement:

The proposed approach is acceptable to me.

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



---

**From:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Tuesday, December 11, 2012 4:33 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** UPR-100-N-31 Group Plume Chase Agreement:

Wanda & Joanne-

I have attached a plume chase request for additional remediation and resampling at the UPR-100-N-31 group of sites. I hope to discuss this request at tomorrow's interface meeting.

Would you please let me know if the proposed approach will be acceptable for this area?

<< File: UPR-100-N-31 group additional remediation and resampling writeup.doc >>

Thanks,

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

## UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 Grouping of Waste Sites Additional Remediation and Resampling Request

### Background Information

Remedial action at the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 grouping of waste sites was performed between December 13, 2011, and March 19, 2012. The site was divided into deep zone and shallow zone decision units for waste site closure. Verification sampling was conducted on October 10, 2012 and November 5-6, 2012 as per the approved verification work instruction. Twelve statistical samples plus quality assurance/quality control (QA/QC) samples were specified for each of the two decision units. In addition, four focused sample locations were identified in the deep zone of the waste site. This paper addresses the shallow zone decision unit only.

Three sample locations within the shallow zone decision unit (SZ-6, SZ-8, and SZ-9) failed direct exposure remedial action goals (RAGs) for one or more radionuclides; specifically, SZ-6 failed for strontium-90, SZ-8 failed for cesium-137, and SZ-9 failed for strontium-90 and cesium-137.

### Recommendation for Path Forward

Washington Closure Hanford proposes additional soil to be removed from the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 grouping of waste sites at the SZ-6, SZ-8, and SZ-9 locations for disposal at the Environmental Restoration Disposal Facility. To be conservative, generally, half the distance between the failed verification sample location and the nearest passing verification sample location is used as the boundary for additional soil removal (Figure 1). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.). Additional soil removal is limited to the shallow zone only.

Following additional soil removal, replacement samples will be collected at SZ-6, SZ-8, and SZ-9. The replacement samples will be analyzed for the failing analyte(s) only. A summary of replacement samples, including sample location and requested analyses, is provided in Table 1.

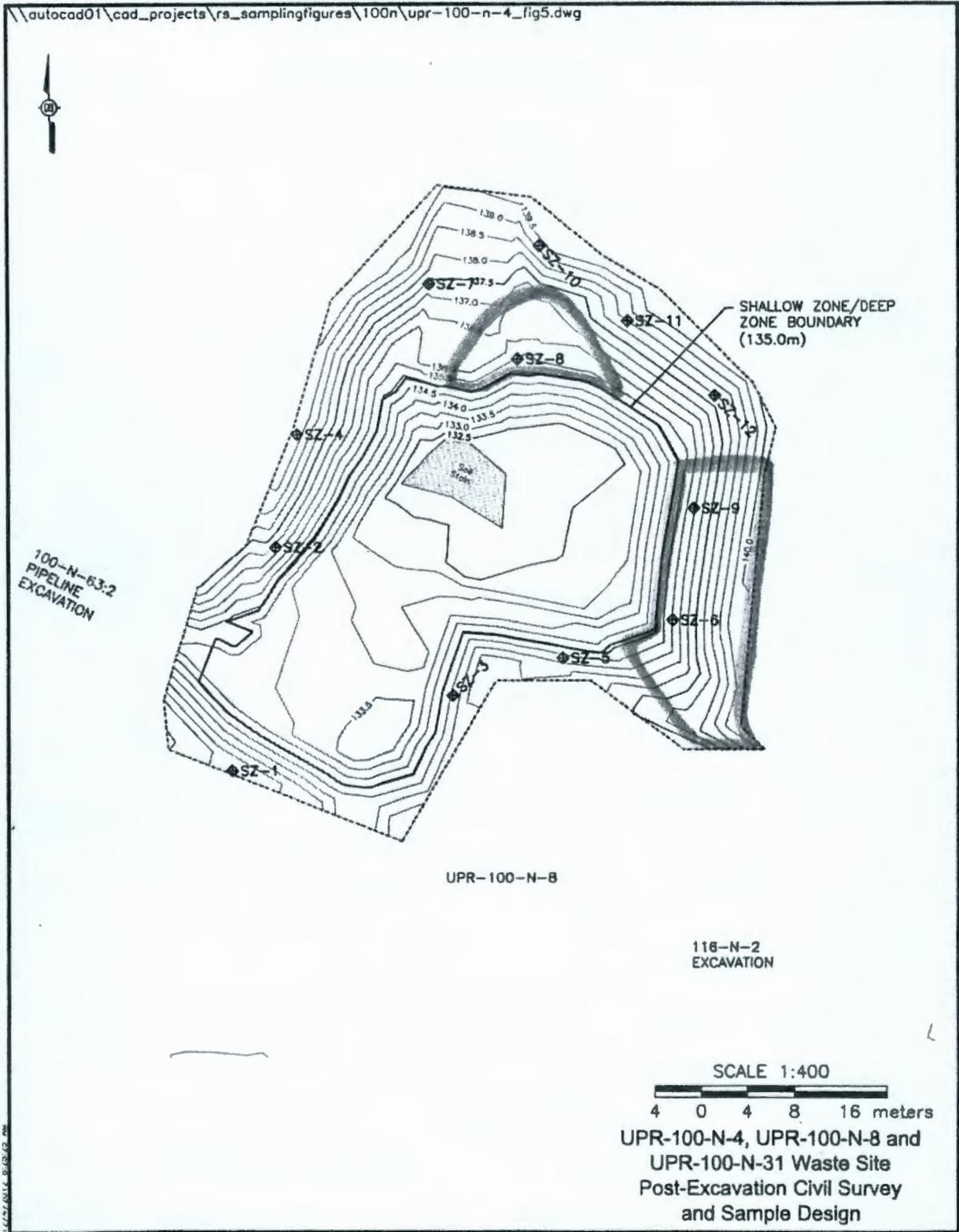
**Table 1. UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 Grouping of Waste Sites Replacement Sample Summary.**

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analysis
		Northing	Easting	
SZ-6	TBD	149682.3	571421.1	Strontium-90
SZ-8	TBD	149705.0	571407.8	Cesium-137
SZ-9	TBD	149692.0	571422.9	Strontium-90, cesium-137

HEIS = Hanford Environmental Information System

TBD = to be determined

**Figure 1. UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 Grouping of Waste Sites Shallow Zone Additional Remediation Sketch.**



# Attachment 24

169052

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 10:52 AM  
**To:** ^WCH Document Control  
**Subject:** FW: REVISED BIOVENTING WELL ISLAND AGREEMENT  
**Attachments:** Bioventing Well Island agreement 12\_11\_12.doc

Please provide a chron number (and include the attachment). 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:** Wednesday, December 19, 2012 10:30 AM  
**To:** Saueressig, Daniel G  
**Cc:** Elliott, Wanda  
**Subject:** RE: REVISED BIOVENTING WELL ISLAND AGREEMENT

Hi Dan,

That's because I hadn't sent it yet (I was a little slow in reviewing this version). I am fine with the change and concur that the Island Agreement is ready for UMM documentation. 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:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Wednesday, December 19, 2012 9:09 AM  
**To:** Chance, Joanne C  
**Subject:** FW: REVISED BIOVENTING WELL ISLAND AGREEMENT

Joanne, I thought you replied to this but I can't find the email, can you re-send?

12/19/2012

Thanks,

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

---

**From:** Elliott, Wanda (ECY) [mailto:well461@ECY.WA.GOV]  
**Sent:** Thursday, December 13, 2012 7:55 AM  
**To:** Saueressig, Daniel G; Chance, Joanne C  
**Cc:** Buckmaster, Mark A  
**Subject:** RE: REVISED BIOVENTING WELL ISLAND AGREEMENT

I concur with the agreement as is written. Only one comment- the second sentence seems out of place : Well 199-N-170 has been decommissioned. It's the only time the well is mentioned and does not have any bearing on the content of the agreement. You can either leave the sentence or remove....

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:** Wednesday, December 12, 2012 1:11 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A  
**Subject:** REVISED BIOVENTING WELL ISLAND AGREEMENT

Wanda/Joanne, attached is a revised bioventing well island agreement incorporating Wanda's comment regarding removing the 100-N-84:2 pipelines from being included in the SPOR waste site.

Let me know if you concur and we can document this agreement at the next UMM.

Thanks,

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

<< File: Bioventing Well Island agreement draft 12\_11\_12a.doc >>

## 100-N Bioventing Well Island Agreement

DOE and Ecology approve leaving in place an area of potentially contaminated soil (Bioventing Well Island) and sections of the 100-N-84:2, 100-N Area Fuel and Foam Pipelines waste site located around the 199-N-166, 199-N-167, 199-N-168 and 199-N-169 bioventing wells to maintain the integrity of these wells (Figure 1). The active 199-N-166, 199-N-167 and 199-N-169 wells have been identified for use in the in-situ bioventing treatment of UPR-100-N-17, 166-N Diesel Oil Supply Line Leak waste site. The Bioventing Well Island measures approximately 280 ft (64 m) long and 72 ft (22 m) wide at its widest point. The island shape allows staging and access for bioventing and groundwater sampling equipment and personnel and connects to the adjacent 100-N-63:2 land bridge.

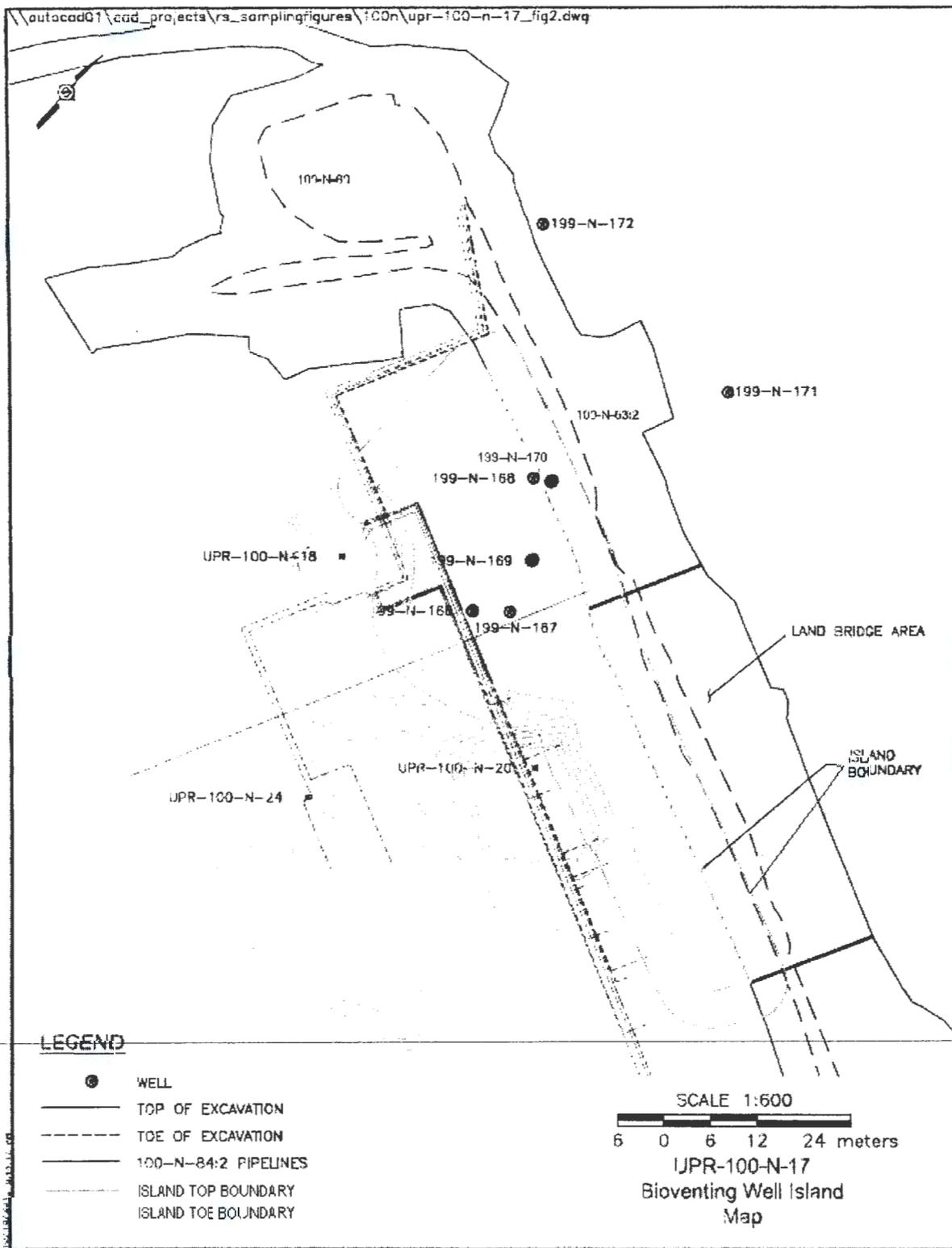
To ensure future remediation of the Bioventing Well Island the area will be added to the 100-N Shallow Petroleum-Only Releases (SPOR) waste site. The 100-N-84:2 piping remaining in the Bioventing Well Island will be re-designated as 100-N-84:10. If waste subsite 100-N-84:10 cannot be remediated before issuance of the final Record of Decision (ROD) for 100-N, it will then be evaluated in the Remedial Investigation/Feasibility Study and included in the Final ROD for 100-N. The contaminants of potential concern (COPCs) for the Bioventing Well Island are polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, metals, mercury, hexavalent chromium, americium-241, cobalt-60, cesium-137, europium-154, europium-155, nickel-63, strontium-90, plutonium-239, plutonium-240, thorium-228, thorium-232, uranium-233, uranium-234 uranium-238 and tritium. The radioisotope COPCs are listed due to the proximity of the Bioventing Well Island to other waste sites including the 100-N-63:2 pipeline excavation having radiological COPCs.

### Reference:

WCH, 2012, SPOR Agreement – Concurrence needed ASAP please, CCN 167464, Washington Hanford Closure, Richland, Washington.

---

Figure 1. UPR-100-N-17 Bioventing Well Island Map



# Attachment 25

**AIR MONITORING PLAN FOR THE 100-N AREA  
REMEDIAL ACTION  
NOVEMBER 2012**

**1.0 INTRODUCTION**

Remedial action (i.e., cleanup) of the waste sites located in the 100-N Area has the potential to emit radionuclides. These activities are being conducted under two *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) records of decision (EPA 1999, 2000). Quantification of radioactive emissions, implementation of Best Available Radionuclide Control Technology (BARCT), and air monitoring have been identified as substantive requirements (i.e., applicable or relevant and appropriate requirements) for the remedial action.

This air monitoring plan (AMP) is prepared to demonstrate compliance with these substantive requirements in accordance with *Washington Administrative Code* (WAC) 246-247, "Radiation Protection – Air Emissions."

**1.1 PLANNED ACTIVITIES**

This remedial action work scope is for the removal and disposal of waste material and associated soil and debris from waste sites located in the 100-NR-1 Operable Unit. 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 excavating, size reduction (e.g., shears, cutting torch), 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.

The work scope includes, but is not limited to, remediation of the following remaining sites in the 100-N Area: 100-N-25, 100-N-26, 100-N-28, 100-N-29, 100-N-30, 100-N-31, 100-N-32, 100-N-38, 100-N-57, 100-N-59, 100-N-60, 100-N-62, 100-N-63, 100-N-64, 100-N-68, 100-N-79, 100-N-82, 100-N-83, 100-N-84:2, 100-N-84:6, 100-N-88, 100-N-89, 116-N-2, 116-N-4, 118-N-1, UPR-100-N-1, UPR-100-N-2, UPR-100-N-3, UPR-100-N-4, UPR-100-N-5, UPR-100-N-6, UPR-100-N-7, UPR-100-N-8, UPR-100-N-9, UPR-100-N-10, UPR-100-N-12, UPR-100-N-13, UPR-100-N-14, UPR-100-N-25, UPR-100-N-26, UPR-100-N-29, UPR-100-N-30, UPR-100-N-31, UPR-100-N-32, UPR-100-N-35, and UPR-100-N-39. Waste sites 100-N-13, 100-N-14, 124-N-4, and UPR-100-N-11 were in the previous revision of this AMP but have been remediated and interim closed out.

The locations of the sites discussed in this AMP are shown in Figure 1. Confirmatory sampling at radiological 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 Washington State Department of Ecology (Ecology) will be notified of confirmatory sampling activities at 100-N via the confirmatory sampling work instruction approval process already in place. Additional sites may be added to this AMP through agreement in the Unit Managers' Meeting. Additionally, if any of the nonradioactive sites in the 100-N Area contain radioactive contamination based on additional information, this AMP 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-N 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 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 encountered during remedial actions.

### 2.1 INVENTORY

The radioactive inventory and subsequent potential emission calculations are summarized in Attachment 1. The complete inventory and dose calculation are contained in 0100N-CA-V0091, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites* (WCH 2008), and 0100N-CA-V0100, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area FCS* (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  $1.0 \times 10^{-3}$  is applied. For calculation purposes, it is conservatively assumed that hydrogen-3 is 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. Size reduction is usually achieved with the excavation equipment and cutting shears, and a release fraction of  $1.0 \times 10^{-3}$  is applied. Torch cutting was conservatively assumed for those sites with the potential to contain significant amount of steel (e.g., pipeline waste sites), and for calculation purposes a release fraction of 1 is assumed. Other waste sites consist primarily of unplanned releases or smaller diameter pipeline leaks; therefore, torch cutting is not considered for these sites and other standard methods are assumed.

It is assumed at this time that no scabbling will be performed, but it is an activity that may be necessary. Should this be required, concurrence from Ecology will be necessary. In addition, it is conservatively 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 CAP88-PC model (Version 2.0 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 wastes to calculate the potential-to-emit. The calculated potential-to-emit (curies 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 is 9,416 m west-northwest at the site boundary. The CAP88-PC model summary and synopsis are presented in 0100N-CA-V0091, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites*

(WCH 2008), and 0100N-CA-V0100, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area FCS* (WCH 2012). The calculated total unabated annual TEDE to the MEI is 5.48E-02 mrem/yr.

### 3.0 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY

The following is the BARCT to be implemented during the 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) shall be performed, as determined by the project, of contaminated soils and debris that remain inactive for greater than 1 month. Reapplication of fixatives or other control measures shall be performed if warranted by the periodic monitoring.
- If sustained wind speed is predicted to be greater than 32 km/hr (20 mph) overnight, fixatives will be applied at the end of work operations to contaminated soils and debris that will be inactive less than 24 hours. This will be based on the Hanford Meteorological Station morning forecast to 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 the work operations.
- Appropriate documentation on the application of fixatives to comply with BARCT shall be maintained (e.g., logbook or other project-specific documentation).
- Haul trucks will be covered to contain materials while in transit to ERDF.
- Vacuum cleaners used for radiological work are equipped with HEPA filters, which are considered BARCT for radioactive emissions at the Hanford Site. The HEPA filters will be efficiency tested.
- 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) apply 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 application; (3) apply a bonded fiber fixative; and (4) cover the area containing small debris that is easily resuspended with a tarp or other appropriate material.

### 4.0 AIR MONITORING

Monitoring activities will be performed using existing near-facility air monitoring stations N102, N103, and N106. The locations of these monitors, as identified in Figure 1, are based on the predominant wind directions.

Characterization (e.g., testing pitting and trenching or surface soil sampling) may be conducted prior to the start of remediation or as part of confirmatory sampling. If near-facility air monitoring is not being conducted during these characterization activities, or if the waste site is outside the air monitoring perimeter, then only routine radiological control surveys will be performed. One of the waste sites (100-N-82) that is to be remediated is outside the perimeter of the existing monitors. However, the radiological inventory is low and this waste site is not a significant contributor to the overall dose, which is less than 0.1 mrem/yr for this project. Therefore, additional near-facility air monitors will not be established for this waste site; however, routine radiological control surveys will be performed.

Near-facility air monitoring is the means/methods to measure emissions. These monitors will be operated in accordance with Hanford Site protocol established for near-facility monitors (DOE-RL 2008 as revised). The 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, plutonium-238, plutonium-239/240, americium-241, and isotopic uranium. The data from these activities will be included in the appropriate annual reports prepared for the Hanford Site.

Environmental soil samples will be collected before, during, and after remediation near each downwind air monitor and analyzed for the same constituents as the composite air samples. The soil samples will be taken to evaluate the long-term trends in the environmental accumulation of radioactivity.

As part of the site-wide evaluation of near-facility monitoring (NFM) data, the electronic release summary (ERS) database compares NFM composite air sample results to 10% of the Table 2 values, Appendix E, 40 CFR 61. The database identifies results that exceed these values. Results from the air monitors identified in this plan that are above these values will be investigated and the adequacy of the controls evaluated as appropriate.

Air monitor downtime will be minimized and all air monitors shall be operated as described below. 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 than two at a site) air monitors are out of operation during normal work operations, excavation and loading activities shall be temporarily suspended until operation of at least two air monitors is restored or backup equipment is deployed. Normal work operations are not allowed if two monitors are not operating. Air monitoring will no longer be required when excavation of the waste sites has been completed.

## 5.0 REFERENCES

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *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 United States Department of Energy Richland Operations Office*, DOE/RL-91-50, Rev. 4, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1999, *Interim Remedial Action Declaration of Record of Decision for 100-NR-1 and 100-NR-2 Operable Units of the Hanford 100-N Area*, U.S. Department of Energy, Hanford Site, Benton County, Washington, U.S. Environmental Protection Agency, Region 10, Seattle, Washington, September 30, 1999.

EPA, 2000, *Interim Remedial Action Declaration of Record of Decision for the U.S. Department of Energy 100 Area 100-NR-1 Operable Unit, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington, January 19, 2000.

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

WCH, 2008, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites*, Calculation 0100N-CA-V0091, Rev. 0, Washington Closure Hanford, Richland, Washington.



# Attachment 1

## Summary PTE/TEDE Data From 0100N-CA-V0091, Rev. 0 and 0100N-CA-V0100, Rev. 1

Isotope	TOTAL VALUES FOR 0100N-CA-V0091							Unabated TEDE to the MEI <sup>3</sup> (mrem/yr)
	Inventory <sup>1</sup> (Ci/yr)			Potential to Emit (Ci/yr)				
	Particulates	Torch Cutting	HEPA Vacuum	Particulates (1E-3 RF) <sup>2</sup>	Torch Cutting (1 RF)	HEPA Vacuum (1RF)	Total	
Am-241	4.09E-01	4.03E-06	4.09E-04	4.09E-04	4.03E-06	4.09E-04	8.21E-04	1.07E-02
Ba-137m	9.25E+01	3.07E-04	9.25E-02	9.25E-02	3.07E-04	9.25E-02	1.85E-01	1.47E-10
Ce-144	1.51E-08	0.00E+00	1.51E-11	1.51E-11	0.00E+00	1.51E-11	3.03E-11	3.77E-13
Co-58	2.31E-05	7.07E-24	2.31E-08	2.31E-08	7.07E-24	2.31E-08	4.62E-08	1.68E-10
Co-60	3.36E+01	5.31E-04	3.36E-02	3.36E-02	5.31E-04	3.36E-02	6.77E-02	1.01E-02
Cs-134	1.19E-04	0.00E+00	1.19E-07	1.19E-07	0.00E+00	1.19E-07	2.39E-07	1.95E-08
Cs-137	9.77E+01	3.24E-04	9.77E-02	9.77E-02	3.24E-04	9.77E-02	1.96E-01	7.00E-03
Eu-152	1.46E+00	2.82E-05	1.46E-03	1.46E-03	2.82E-05	1.46E-03	2.95E-03	4.22E-04
Eu-154	4.42E-01	4.03E-06	4.42E-04	4.42E-04	4.03E-06	4.42E-04	8.88E-04	1.02E-04
Eu-155	1.67E-02	3.44E-07	1.67E-05	1.67E-05	3.44E-07	1.67E-05	3.38E-05	1.73E-07
H-3	4.33E+01	3.41E-08	4.33E-02	4.33E+01	3.41E-08	4.33E-02	4.34E+01	1.60E-03
K-40	5.28E-02	0.00E+00	5.28E-05	5.28E-05	0.00E+00	5.28E-05	1.06E-04	1.25E-05
Mn-54	2.31E-02	4.85E-07	2.31E-05	2.31E-05	4.85E-07	2.31E-05	4.67E-05	4.44E-07
Ni-63	3.27E+00	0.00E+00	3.27E-03	3.27E-03	0.00E+00	3.27E-03	6.53E-03	1.99E-06
Np-237	5.50E-04	0.00E+00	5.50E-07	5.50E-07	0.00E+00	5.50E-07	1.10E-06	1.19E-05
Pu-238	1.21E-01	5.50E-07	1.21E-04	1.21E-04	5.50E-07	1.21E-04	2.43E-04	1.91E-03
Pu-239/240	8.67E-01	3.61E-06	8.67E-04	8.67E-04	3.61E-06	8.67E-04	1.74E-03	1.47E-02
Pu-240	9.49E-04	0.00E+00	9.49E-07	9.49E-07	0.00E+00	9.49E-07	1.90E-06	1.61E-05
Pu-241	6.87E+00	1.17E-04	6.87E-03	6.87E-03	1.17E-04	6.87E-03	1.39E-02	1.84E-03
Pu-242	1.39E-05	2.91E-10	1.39E-08	1.39E-08	2.91E-10	1.39E-08	2.80E-08	2.25E-07
Ra-226	1.80E-02	2.12E-07	1.80E-05	1.80E-05	2.12E-07	1.80E-05	3.62E-05	1.69E-05
Ra-228	3.13E-03	0.00E+00	3.13E-06	3.13E-06	0.00E+00	3.13E-06	6.27E-06	1.20E-06
Sb-125	4.05E-05	0.00E+00	4.05E-08	4.05E-08	0.00E+00	4.05E-08	8.10E-08	1.22E-09
Sr-90	8.25E+00	1.66E-05	8.25E-03	8.25E-03	1.66E-05	8.25E-03	1.65E-02	1.66E-03
Tc-99	1.20E+01	2.04E-04	1.20E-02	1.20E-02	2.04E-04	1.20E-02	2.42E-02	5.12E-04
Th-228	2.84E-03	1.85E-09	2.84E-06	2.84E-06	1.85E-09	2.84E-06	5.69E-06	3.27E-05
Th-232	2.73E-02	3.22E-07	2.73E-05	2.73E-05	3.22E-07	2.73E-05	5.50E-05	4.53E-04
U-232	3.46E-08	7.27E-13	3.46E-11	3.46E-11	7.27E-13	3.46E-11	7.00E-11	7.97E-10
U-233	1.73E-03	3.03E-14	1.73E-06	1.73E-06	3.03E-14	1.73E-06	3.47E-06	1.12E-05
U-234	1.66E-02	2.21E-07	1.66E-05	1.66E-05	2.21E-07	1.66E-05	3.34E-05	1.07E-04
U-235	1.37E-02	2.49E-07	1.37E-05	1.37E-05	2.49E-07	1.37E-05	2.77E-05	8.37E-05
U-238	1.87E-02	2.36E-07	1.87E-05	1.87E-05	2.36E-07	1.87E-05	3.77E-05	1.07E-04
Y-90	6.36E+00	1.71E-05	6.36E-03	6.36E-03	1.71E-05	6.36E-03	1.27E-02	2.77E-06
Total								5.14E-02

<sup>1</sup> Inventory taken from Determination of Material at Risk and Hazard Screening for 100-N Waste Sites (WCH 2008).

<sup>2</sup> Release fraction for H-3 is assumed to be 1 in all cases.

<sup>3</sup> The annual unabated total effective dose equivalent was determined using the CAP88-PC, Version 2 model. 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-N Area waste sites remedial action is 9,416 m west-northwest. The CAP88-PC model summary and synopsis are presented in WCH (2008).

<sup>4</sup> For some sites, the MAR calculations presented combined data (i.e., Pu-239/Pu-240, U-233/U-234). For this TEDE, 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

TEDE = total effective dose equivalent

RF = release fraction

Isotope	TOTAL VALUES FOR 0100N-CA-V0100							Unabated TEDE to the MEI <sup>3,5</sup> (mrem/yr)
	Inventory <sup>1</sup> , Ci/yr			Potential to Emit, Ci/yr				
	Particulates	Torch Cutting	HEPA Vacuum	Particulates (1E-3 RF) <sup>2</sup>	Torch Cutting (1 RF)	HEPA Vacuum (1RF)	Total	
Ac-228								3.61E-11
Am-241	6.79E-02	1.42E-06	6.79E-05	6.79E-05	1.42E-06	6.79E-05	1.37E-04	4.83E-04
At-218								4.01E-12
Ba-137m	1.61E-01	1.83E-06	1.61E-04	1.61E-04	1.83E-06	1.61E-04	3.23E-04	9.48E-07
Bi-210								2.84E-09
Bi-212								1.81E-24
Bi-214								8.95E-06
C-14	1.09E-03	0.00E+00	1.09E-06	1.09E-06	0.00E+00	1.09E-06	2.18E-06	1.45E-09
Cm-242	2.25E-12	0.00E+00	2.25E-15	2.25E-15	0.00E+00	2.25E-15	4.50E-15	0.00E+00
Cm-244	3.31E-07	0.00E+00	3.31E-10	3.31E-10	0.00E+00	3.31E-10	6.62E-10	0.00E+00
Co-58	6.77E-16	0.00E+00	6.77E-19	6.77E-19	0.00E+00	6.77E-19	1.35E-18	0.00E+00
Co-60	3.87E-01	7.91E-06	3.87E-04	3.87E-04	7.91E-06	3.87E-04	7.81E-04	1.74E-05
Cs-134	7.45E-06	0.00E+00	7.45E-09	7.45E-09	0.00E+00	7.45E-09	1.49E-08	8.65E-12
Cs-137	2.50E-01	3.61E-06	2.50E-04	2.50E-04	3.61E-06	2.50E-04	5.03E-04	3.75E-05
Eu-152	6.52E-01	1.09E-05	6.52E-04	6.52E-04	1.09E-05	6.52E-04	1.31E-03	4.59E-06
Eu-154	8.87E-02	1.54E-06	8.87E-05	8.87E-05	1.54E-06	8.87E-05	1.79E-04	7.91E-07
Eu-155	7.91E-03	1.50E-07	7.91E-06	7.91E-06	1.50E-07	7.91E-06	1.60E-05	1.37E-08
Fe-55	4.40E-06	0.00E+00	4.40E-09	4.40E-09	0.00E+00	4.40E-09	8.81E-09	2.85E-13
H-3	7.40E-01	0.00E+00	7.40E-04	7.40E-01	0.00E+00	7.40E-04	7.40E-01	8.42E-06
I-129	4.18E-05	0.00E+00	4.18E-08	4.18E-08	0.00E+00	4.18E-08	8.36E-08	3.82E-12
Ni-63	4.95E-04	0.00E+00	4.95E-07	4.95E-07	0.00E+00	4.95E-07	9.89E-07	4.21E-10
Np-237	1.31E-06	0.00E+00	1.31E-09	1.31E-09	0.00E+00	1.31E-09	2.61E-09	4.94E-09
Pa-234m								1.82E-09
Pb-210								2.36E-06
Pb-212								1.09E-24
Pb-214								1.49E-06
Po-210								1.83E-07
Po-214								4.92E-10
Po-216								1.40E-28
Po-218								5.37E-11
Pu-238	1.88E-02	3.94E-07	1.88E-05	1.88E-05	3.94E-07	1.88E-05	3.80E-05	1.48E-04
Pu-239/240	1.18E-01	2.46E-06	1.18E-04	1.18E-04	2.46E-06	1.18E-04	2.38E-04	1.01E-03
Pu-241	3.52E+00	7.38E-05	3.52E-03	3.52E-03	7.38E-05	3.52E-03	7.12E-03	5.43E-04
Ra-224								4.11E-24
Ra-226	9.28E-01	1.95E-05	9.28E-04	9.28E-04	1.95E-05	9.28E-04	1.88E-03	8.48E-04
Ra-228								4.48E-09
Rn-222								2.03E-14
Sb-125	3.70E-05	0.00E+00	3.70E-08	3.70E-08	0.00E+00	3.70E-08	7.40E-08	3.00E-11
Sr-90	3.30E-01	2.48E-06	3.30E-04	3.30E-04	2.48E-06	3.30E-04	6.63E-04	8.50E-05
Tc-99	4.81E+00	8.05E-05	4.81E-03	4.81E-03	8.05E-05	4.81E-03	9.69E-03	2.16E-04
Te-125m	9.03E-06	0.00E+00	9.03E-09	9.03E-09	0.00E+00	9.03E-09	1.81E-08	5.08E-12
Th-228	2.64E-07	0.00E+00	2.64E-10	2.64E-10	0.00E+00	2.64E-10	5.27E-10	6.35E-23
Th-231								3.54E-10
Th-232	2.57E-03	3.94E-08	2.57E-06	2.57E-06	3.94E-08	2.57E-06	5.18E-06	1.10E-05

Isotope	TOTAL VALUES FOR 0100N-CA-V0100							Unabated TEDE to the MEI <sup>3,5</sup> (mrem/yr)
	Inventory <sup>1</sup> , Ci/yr			Potential to Emit, Ci/yr				
	Particulates	Torch Cutting	HEPA Vacuum	Particulates (1E-3 RF) <sup>2</sup>	Torch Cutting (1 RF)	HEPA Vacuum (1RF)	Total	
Th-234								2.05E-09
Tl-208								1.20E-29
U-234	5.20E-03	9.91E-08	5.20E-06	5.20E-06	9.91E-08	5.20E-06	1.05E-05	3.19E-06
U-235	3.29E-03	4.42E-08	3.29E-06	3.29E-06	4.42E-08	3.29E-06	6.62E-06	1.79E-06
U-235m	4.62E-04	0.00E+00	4.62E-07	4.62E-07	0.00E+00	4.62E-07	9.23E-07	0.00E+00
U-236	2.73E-17	0.00E+00	2.73E-20	2.73E-20	0.00E+00	2.73E-20	5.46E-20	0.00E+00
U-238	3.23E-03	5.65E-08	3.23E-06	3.23E-06	5.65E-08	3.23E-06	6.52E-06	1.63E-06
Y-90	3.30E-01	2.48E-06	3.30E-04	3.30E-04	2.48E-06	3.30E-04	6.63E-04	3.30E-07
Total								3.43E-03

<sup>1</sup> Inventory taken from *Determination of Material at Risk for 100-N Area Failed Confirmatory Waste Sites*, 0100N-CA-N0082, Rev. 1 (WCH 2012).

<sup>2</sup> Release fraction for H-3 is assumed to be 1 in all cases.

<sup>3</sup> The annual unabated total effective dose equivalent was determined using the CAP88-PC, Version 3 model. 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-N Area Failed Confirmatory Waste Sites Remedial Action is 10,480 m east. The CAP88-PC model summary and synopsis are presented in Calculation 0100N-CA-V0100, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area FCS*, Rev. 1.

<sup>4</sup> For some sites, the MAR calcs presented combined data (i.e., Pu-239/Pu-240). For this TEDE, all Pu-239/Pu-240 combined values are assumed to be Pu-239.

<sup>5</sup> Daughter isotopes were generated for certain isotopes. For these daughter isotopes, a TEDE value was calculated by CAP88 even though there is no corresponding PTE value. U-235m is not available in the CAP88 nuclide tables; therefore, no TEDE has been calculated for this isotope.

MEI = maximally exposed individual

TEDE = total effective dose equivalent

RF = release fraction

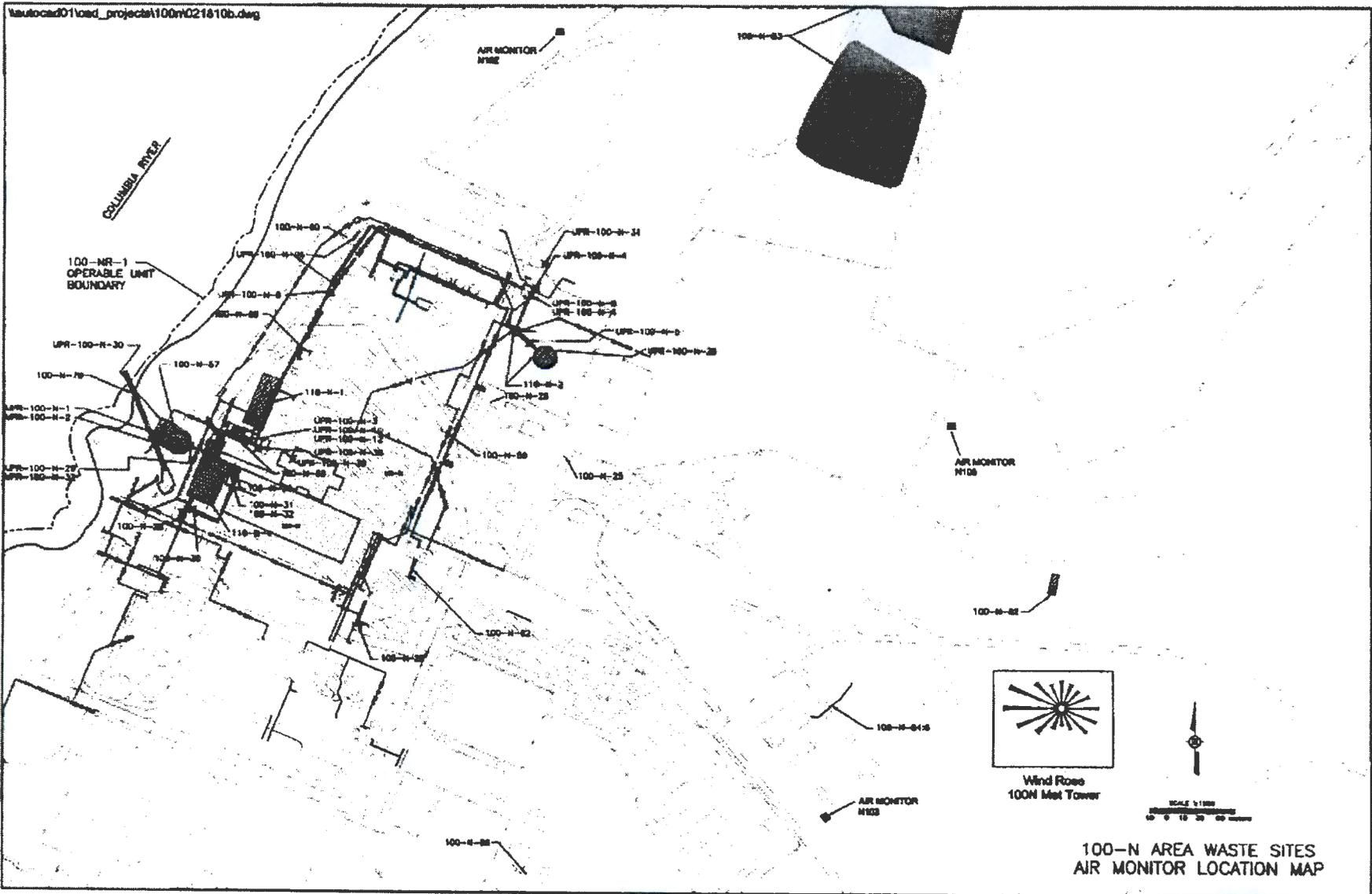
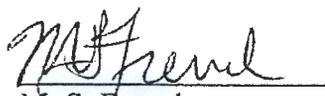


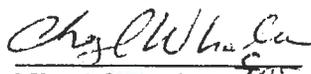
Figure 1. Proposed Locations of Air Monitors.

Concurrence:



M. S. French  
U.S. Department of Energy,  
Richland Operations Office

12/19/12  
Date



Nina Menard  
Washington State Department of Ecology

12/20/12  
Date

Distribution:

Administrative Record	H6-08
Alicia Boyd	H0-57
Mark Buckmaster	X2-02
Joanne Chance	A3-04
Wanda Elliott	H0-57
Nina Menard	H0-57
Dan Saueressig	N3-30
Steve Wilkinson	N3-30
Joan Woolard	H4-21

# Attachment 26

169055
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Wednesday, December 19, 2012 11:01 AM  
**To:** ^WCH Document Control  
**Subject:** FW: Revised 100-N-61:1 Plume Chase Agreement:  
**Attachments:** Revised 100-N-61\_1 grouping additional remediation and resampling writeup.doc; UPR-100-N-61\_1 crosstabs organized.xls; asbestos results.xls; RE Revised 100-N-611 Plume Chase Agreement.htm

Please provide a chron number (and include the attachments). 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:** Tuesday, December 18, 2012 8:22 AM  
**To:** Jakubek, Joshua E; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: Revised 100-N-61:1 Plume Chase Agreement:

The proposed approach is acceptable.

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



---

**From:** Jakubek, Joshua E [mailto:jejakuba@wch-rcc.com]  
**Sent:** Thursday, December 13, 2012 12:32 PM  
**To:** Elliott, Wanda (ECY); Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** Revised 100-N-61:1 Plume Chase Agreement:

Wanda & Joanne-

I have attached a revised plume chase request for additional remediation and resampling at the 100-N-61:1 group of sites as well as the sample data results cross tabs per Wanda's request.

Would you please let me know if the proposed approach will be acceptable for this area?

<< File: Revised 100-N-61\_1 grouping additional remediation and resampling writeup.doc >>

Thanks,

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

## 100-N-61:1 Grouping of Waste Sites Additional Remediation and Resampling Request

### Background Information

Remedial action at the 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites (referred to as the 100-N-61:1 grouping of waste sites) was completed in April 2012. Verification sampling was conducted August 14 – 16, and 21, 2012 as per the approved verification work instruction. Twelve statistical samples plus quality assurance/quality control (QA/QC) samples were specified for each of the four decision units. In addition, 15 focused sample locations were identified.

One sample location (SZ4-10) failed direct exposure remedial action goals (RAGs) for hexavalent chromium.

Asbestos greater than 1% was reported at five locations within the 100-N-61:1 grouping of waste sites excavation. Pieces of asbestos containing tar and/or tar paper are the source of the asbestos at four of these locations. There was no evidence of tar and/or tar paper at the fifth sample location (SZ3-7).

### Recommendation for Path Forward

Washington Closure Hanford proposes additional soil to be removed from the 100-N-61:1 grouping of waste sites at the SZ4-10 and SZ3-7 locations for disposal at the Environmental Restoration Disposal Facility. Figure 1 and 2 shows the areas where additional soil will be removed. The width of additional remediation at SZ4-10 will be approximately 1 m (3 ft) on each side of where the pipeline was located and the length will be half the distance between the failed verification sample location and the nearest passing sample location (Figure 1). The additional remediation at SZ3-7 will be an approximate 20-ft diameter area to cover where the valve pit was located (Figure 2). The depth of additional soil removal will be between 1 to 2 meters depending on observations in the field (e.g., discolored or stained soil, debris, etc.).

No additional soil will be removed from the locations where pieces of tar and/or tar paper containing asbestos were observed. Instead, a visual inspection will be conducted at those locations and the pieces of tar and/or tar paper will be removed and disposed.

Following additional soil removal, replacement samples will be collected at SZ4-10 and SZ3-7. The replacement samples will be analyzed for the failing analyte(s) only. A summary of replacement samples, including sample location and requested analyses, is provided in Table 1. No replacement samples will be collected at the locations where tar and/or tar paper were observed and removed.

**Table 1. 100-N-61:1 Grouping of Waste Sites Replacement Sample Summary.**

Sample Location	HEIS Sample Number	Washington State Plane Coordinates		Sample Analysis
		Northing	Easting	
SZ4-10	TBD	149454.4	571062.1	Hexavalent chromium
SZ3-7	TBD	149347.5	571227.6	Asbestos

HEIS = Hanford Environmental Information System

TBD = to be determined

Figure 1. 100-N-61:1 Grouping of Waste Sites Additional Remediation at SZ4-10 Sketch.

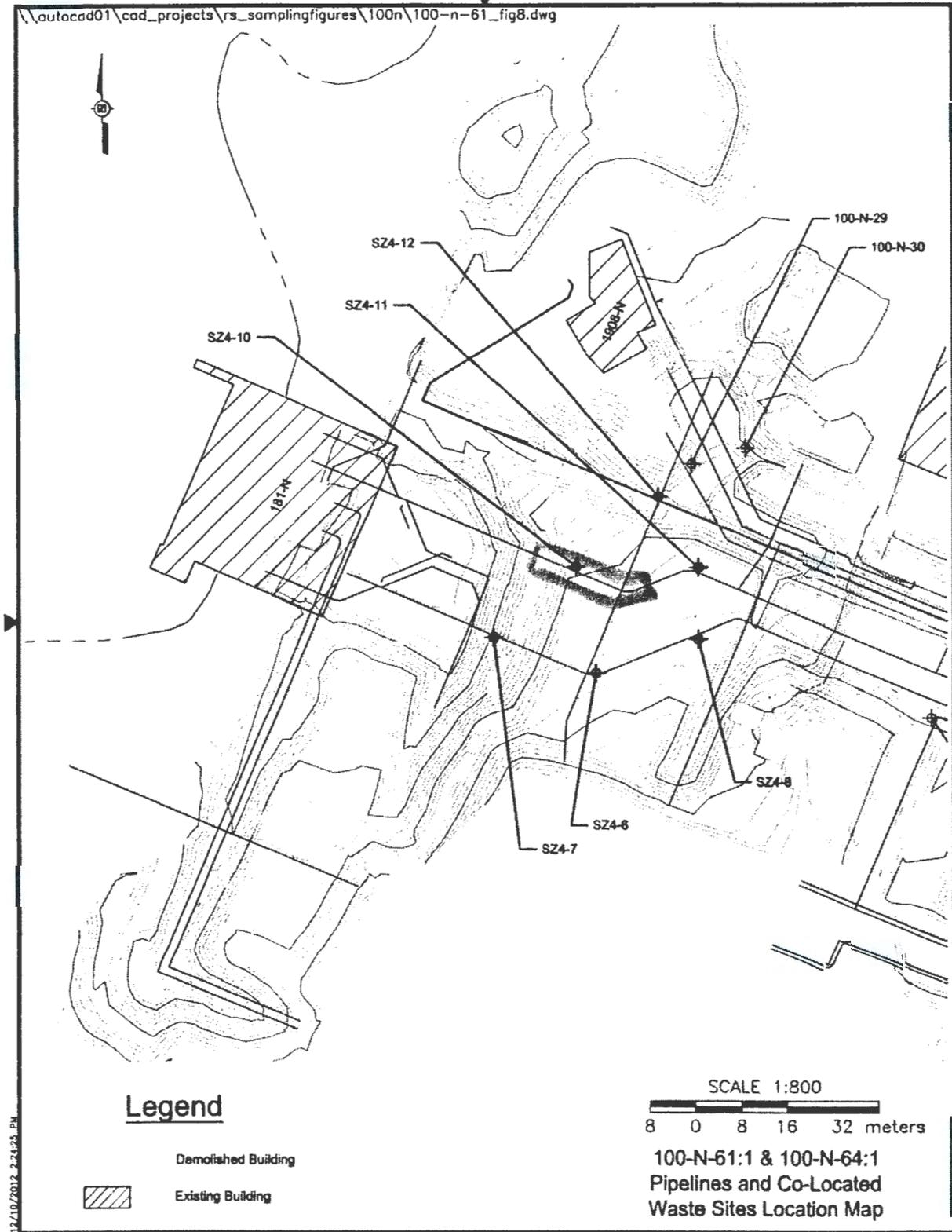
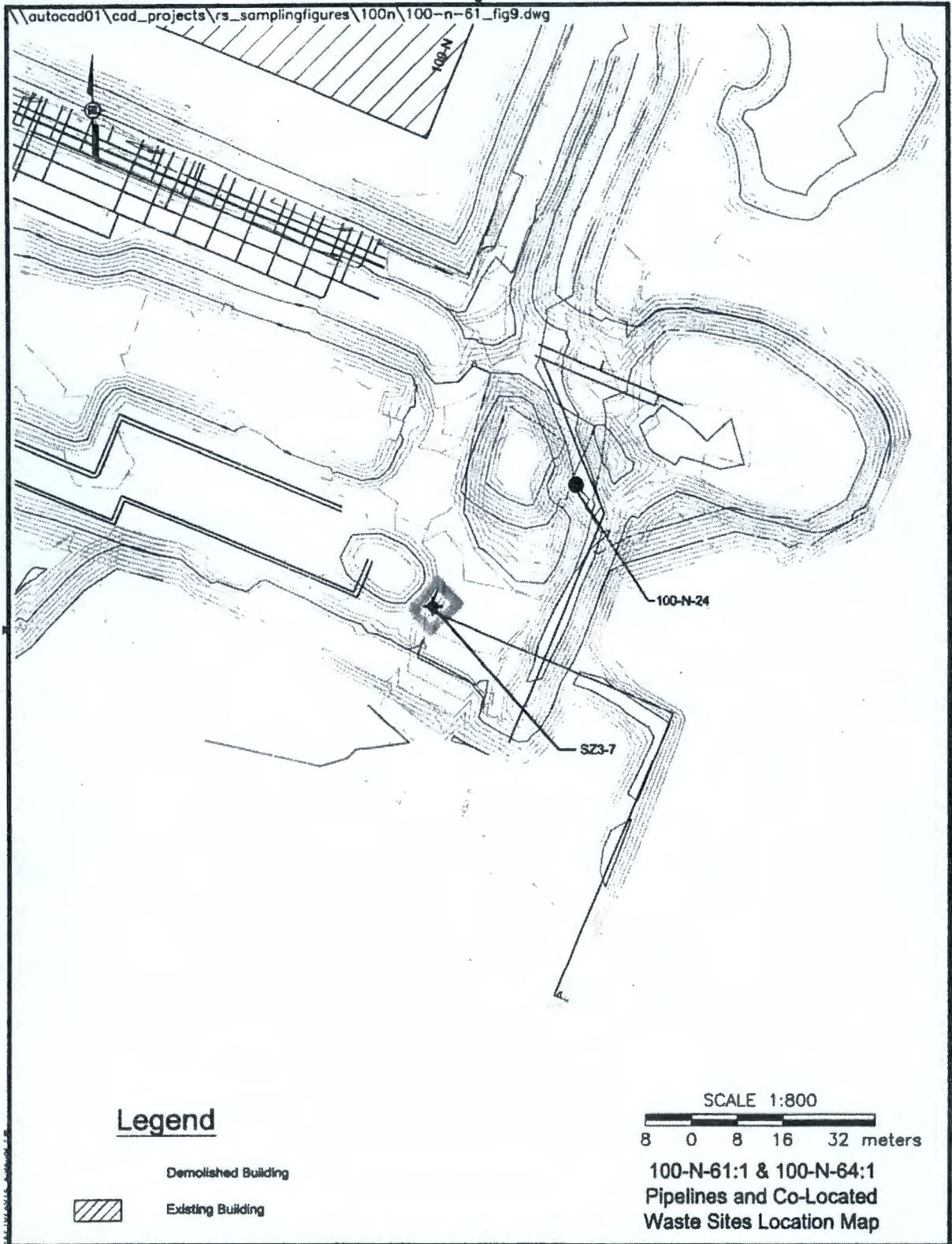


Figure 2. 100-N-61:1 Grouping of Waste Sites Additional Remediation at SZ3-7 Sketch.



HEIS Number	Sample Date	Location	Northing	Easting	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
J1PXF6	8/14/12 8:52	SZ1-1	149407.7	571190.3	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8						
J1PXF7	8/14/12 8:45	SZ1-2	149407.7	571206.6	0.37	U	0.37	2.1	B	1.9	0.78	U	0.78						
J1PXF8	8/14/12 8:18	SZ1-3	149421.8	571149.4	0.38	U	0.38	2	U	2	0.81	U	0.81						
J1PXH8	8/14/12 8:18	Replicate of SZ1-3 (J1PXF8)	149421.8	571149.4	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8						
J1PXN0	8/14/12 8:18	Split of SZ1-3 (J1PXF8)	149421.8	571149.4	1	U	1	1.3	B	1	1	U	1	1.6	B	1	1	U	1
J1PXF9	8/14/12 8:30	SZ1-4	149421.8	571165.8	0.38	U	0.38	2	B	1.9	0.8	U	0.8						
J1PXH0	8/14/12 8:40	SZ1-5	149421.8	571182.1	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8						
J1PXH1	8/14/12 7:55	SZ1-6	149436.0	571124.9	0.36	U	0.36	8.5		1.8	0.77	U	0.77						
J1PXH2	8/14/12 8:00	SZ1-7	149436.0	571141.3	0.38	U	0.38	3.2	B	1.9	0.81	U	0.81						
J1PXH3	8/14/12 8:10	SZ1-8	149434.0	571158.1	0.38	U	0.38	6.4		1.9	0.8	U	0.8						
J1PXH4	8/14/12 7:45	SZ1-9	149450.1	571100.4	0.38	U	0.38	1.9	U	1.9	0.81	U	0.81						
J1PXH5	8/14/12 7:40	SZ1-10	149450.1	571116.7	0.37	U	0.37	1.9	U	1.9	0.78	U	0.78						
J1PXH6	8/14/12 7:37	SZ1-11	149464.3	571092.2	0.37	U	0.37	4.1	B	1.9	0.79	U	0.79						
J1PXH7	8/14/12 7:35	SZ1-12	149478.4	571084.1	0.37	U	0.37	1.9	U	1.9	0.79	U	0.79						
J1PXV5	8/15/12 13:15	SZ2-1	149357.2	571198.2	0.39	U	0.39	36.8		2	0.82	U	0.82						
J1PXV6	8/15/12 13:25	SZ2-2	149357.2	571210.1	0.38	U	0.38	4.9		1.9	0.8	U	0.8						
J1PXV7	8/15/12 13:35	SZ2-3	149367.6	571168.2	0.36	U	0.36	4.7		1.9	0.77	U	0.77						
J1PXV8	8/15/12 13:45	SZ2-4	149367.6	571180.2	0.37	U	0.37	279		1.9	0.79	U	0.79						
J1PXV9	8/15/12 13:50	SZ2-5	149367.6	571192.2	0.39	U	0.39	7.8		2	0.82	U	0.82						
J1PXW0	8/15/12 14:10	SZ2-6	149367.6	571204.1	0.39	U	0.39	13.6		2	0.83	U	0.83						
J1PXW1	8/15/12 14:15	SZ2-7	149377.9	571138.3	0.6	B	0.38	69.2		1.9	0.81	U	0.81						
J1PXW2	8/15/12 14:25	SZ2-8	149377.9	571138.3	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8						
J1PXW3	8/15/12 14:38	SZ2-9	149377.9	571174.2	0.39	U	0.39	11.6		2	0.82	U	0.82						
J1PXW7	8/15/12 14:38	Replicate of SZ2-9 (J1PXW3)	149398.7	571102.4	0.39	U	0.39	9.5		2	0.82	U	0.82						
J1PXV3	8/15/12 14:38	Split of SZ2-9 (J1PXW3)	149377.9	571174.2	1	U	1	13.2		1	1	U	1	4.4	B	1	1	U	1
J1PXW5	8/15/12 14:50	SZ2-11	149388.3	571120.4	0.38	U	0.38	2	U	2	0.82	U	0.82						
J1R004	8/16/12 7:28	SZ3-1	149281.3	571248.1	0.37	U	0.37	7.9		1.9	0.79	UN	0.79						

J1R005	8/16/12 7:35	SZ3-2	149302.8	571258.9	0.38	U	0.38	92.1		1.9	0.81	U	0.81							
J1R006	8/16/12 7:42	SZ3-3	149309.3	571260.4	0.37	U	0.37	2.1	B	1.9	0.77	U	0.77							
J1R007	8/16/12 7:48	SZ3-4	149333.4	571259.9	0.38	U	0.38	25.2		1.9	0.81	U	0.81							
J1R008	8/16/12 8:05	SZ3-5	149340.4	571243.7	0.39	U	0.39	3.3	B	2	0.82	U	0.82							
J1R009	8/16/12 8:10	SZ3-6	149348.9	571251.6	0.39	U	0.39	2	U	2	0.82	U	0.82							
J1R010	8/16/12 8:30	SZ3-7	149347.5	571227.6	0.38	U	0.38	16.7		1.9	0.81	U	0.81							
J1R011	8/16/12 8:20	SZ3-8	149355.4	571253.1	0.38	U	0.38	1.9	U	1.9	0.81	U	0.81							
J1R016	8/16/12 8:20	Replicate of SZ3-8 (J1R011)	149355.4	571253.1	0.36	U	0.36	1.8	U	1.8	0.77	U	0.77							
J1R003	8/16/12 8:20	Split of SZ3-8 (J1R011)	149355.4	571253.1		1	U	1	2.1	B	1	1	U	1	1.7	B	1	1	U	1
J1R012	8/16/12 8:45	SZ3-9	149368.5	571256	0.38	U	0.38	4.4	B	1.9	0.8	U	0.8							
J1R013	8/16/12 8:55	SZ3-10	149383.4	571265.3	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8							
J1R014	8/16/12 9:05	SZ3-11	149386.0	571254.1	0.38	U	0.38	12.9		1.9	0.81	U	0.81							
J1R015	8/16/12 9:10	SZ3-12	149390.5	571249.2	0.38	U	0.38	4.4	B	2	0.82	U	0.82							
J1ROC1	8/21/12 12:30	SZ4-1	149343.9	570997.3	0.39	U	0.39	6		2	0.95	BN	0.82							
J1ROC2	8/21/12 12:20	SZ4-2	149350.2	570979.6	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8							
J1ROC3	8/21/12 12:12	SZ4-3	149356.4	570968.9	0.39	U	0.39	2	U	2	0.82	U	0.82							
J1ROC5	8/21/12 7:55	SZ4-5	149429.8	571061.9	0.37	U	0.37	1.9	U	1.9	0.78	U	0.78							
J1ROC6	8/21/12 7:52	SZ4-6	149435.9	571065.5	7.9		0.39	2.7	B	2	1.1	B	0.82							
J1ROC7	8/21/12 8:45	SZ4-7	149442.2	571047.8	0.38	U	0.38	1.9	U	1.9	0.81	U	0.81							
J1ROC8	8/21/12 8:15	SZ4-8	149441.9	571083.4	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8							
J1ROC9	8/21/12 8:18	SZ4-9	149441.9	571090.5	0.39	U	0.39	2	U	2	0.83	U	0.83							
J1R0D0	8/21/12 7:45	SZ4-10	149454.4	571062.1	0.39	U	0.39	4.6	B	2	1.4	B	0.82							
J1R0D1	8/21/12 8:25	SZ4-11	149454.3	571083.4	0.37	U	0.37	1.9	U	1.9	0.79	U	0.79							
J1R0D2	8/21/12 8:30	SZ4-12	149466.6	571076.4	0.38	U	0.38	1.9	U	1.9	0.81	U	0.81							
J1R0D3	8/21/12 8:30	Replicate of SZ4-12 (J1R0D2)	149466.6	571076.4	0.38	U	0.38	1.9	U	1.9	0.81	U	0.81							
J1ROC0	8/21/12 8:30	Split of SZ4-12 (J1R0D2)	149466.6	571076.4		1	U	1	1	U	1	1	U	1	3.9	B	1	1	U	1
J1ROF7	8/21/12 15:10	FS-1	149350.8	571226.1	0.38	U	0.38	1.9	U	1.9	0.8	UN	0.8							
J1ROF8	8/21/12 14:57	FS-2	149353.0	571191.0	0.39	U	0.39	5.1		2	0.83	U	0.83							
J1ROF9	8/21/12 15:20	FS-12	149368.5	571252.4	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8							
J1ROH0	8/21/12 13:10	FS-13	149472.3	571082.2	0.38	U	0.38	1.9	U	1.9	0.8	U	0.8							
J1ROH1	8/21/12 13:00	FS-14	149475.0	571091.6	0.39	U	0.39	2	U	2	0.83	U	0.83							
J1ROH2	8/21/12 13:25	FS-15	149428.0	571124.0	0.36	U	0.36	4.6	B	1.8	0.77	U	0.77							





0.82 B	0.31	0.33 U	0.33	0.57 B	0.3			1.2 U	1.2	12.2	1.7						0.88
0.65 B	0.3	0.32 U	0.32	0.46 B	0.3			1.2 U	1.2	3.5 B	1.6						0.72
3.5	0.31	0.33 U	0.33	3.8	0.3			1.2 U	1.2	14.7	1.7						0.6
0.6 B	0.31	0.34 U	0.34	0.3 U	0.3			1.2 U	1.2	7.1	1.7						0.72
0.45 B	0.31	0.34 U	0.34	0.3 U	0.3			1.2 U	1.2	1.8 B	1.7						0.95
1.6 B	0.31	0.33 U	0.33	1.8	0.3			1.2 U	1.2	171	1.7						0.78
0.53 B	0.31	0.33 U	0.33	0.3 U	0.3			1.2 U	1.2	8.9	1.7						0.98
0.54 B	0.29	0.31 U	0.31	0.3 UN	0.3			1.2 U	1.2	8.6	1.6						1.2
				0.16 B	0.1	2 U	2			11.3	1						
0.67 B	0.3	0.33 U	0.33	0.48 B	0.3			1.2 U	1.2	21.9	1.7						0.79
0.47 B	0.31	0.33 U	0.33	0.3 U	0.3			1.2 U	1.2	4.7 B	1.7						0.82
1.7 B	0.31	0.33 U	0.33	1.7	0.3			1.2 U	1.2	71.3	1.7						0.66
0.4 B	0.31	0.33 U	0.33	0.3 U	0.3			1.2 U	1.2	38.1	1.7						1.2
1.4 BN	0.31	0.33 U	0.33	0.98 M	0.3			1.2 UN	1.2	37.2 N	1.7						0.61
1.5 B	0.31	0.33 U	0.33	0.63 B	0.29			1.2 U	1.2	2.9 B	1.7						0.58
0.79 B	0.31	0.33 U	0.33	0.29 U	0.29			1.2 U	1.2	1.7 U	1.7						0.55
2.4	0.3	0.32 U	0.32	2	0.3			1.2 U	1.2	8.4	1.6						0.95
14.7	0.31	0.34 U	0.34	15.2	0.3			1.2 U	1.2	13.6	1.7						0.74
0.45 B	0.31	0.33 U	0.33	0.31 U	0.31			1.2 U	1.2	2.1 B	1.7						0.8
0.61 B	0.3	0.33 U	0.33	0.29 U	0.29			1.2 U	1.2	3.1 B	1.7						0.7
0.65 B	0.32	0.34 U	0.34	0.3 U	0.3			1.2 U	1.2	17.4	1.7						0.61
9	0.31	0.33 U	0.33	5.9	0.31			1.2 U	1.2	13.3	1.7						0.64
1.2 B	0.3	0.32 U	0.32	0.78	0.3			1.2 U	1.2	5.3	1.7						0.62
0.99 B	0.31	0.33 U	0.33	0.5 B	0.3			1.2 U	1.2	6.3	1.7						0.85
1.1 B	0.31	0.33 U	0.33	0.53 B	0.3			1.2 U	1.2	7.5	1.7						0.92
				0.75	0.1	3.2 B	1.9			12.5	1						
0.62 B	0.31	0.33 U	0.33	0.3 U	0.3			1.2 UN	1.2	10.4	1.7						1.4
0.74 B	0.32	0.34 U	0.34	0.3 U	0.3			1.2 U	1.2	19.2	1.7						0.55
0.55 B	0.3	0.33 U	0.33	0.3 U	0.3			1.2 U	1.2	6.7	1.7						0.64
1.3 B	0.31	0.33 U	0.33	0.8	0.3			1.2 U	1.2	4.4 B	1.7						1
2.5	0.32	0.34 U	0.34	2.7	0.3			1.2 U	1.2	7.6	1.7						0.73
1.1 B	0.29	0.31 U	0.31	0.82	0.3			1.2 U	1.2	17.6	1.6						0.66



Sample)	Percent Solids			pH Measurement		
AL	PHYSICAL			PHYSICAL		
PQL	%	Q	PQL	pH	Q	PQL
0				8.95		0.1
0				9.14		0.1
0				9.13		0.1
0				9.25		0.1
	100		0.1	9.07		0.1
0				9.11		0.1
0				9.17		0.1
0				9.02		0.1
0				9.13		0.1
0				8.89		0.1
0				9.25		0.1
0				9.05		0.1
0				9.19		0.1
0				9.27		0.1
0				8.77		0.1
0				9.01		0.1
0				8.88		0.1
0				8.38		0.1
0				9.06		0.1
0				8.99		0.1
0				8.48		0.1
0				9.04		0.1
0				8.96		0.1
0				8.97		0.1
	100		0.1	8.99		0.1
0				8.74		0.1
0				9.14		0.1

0			9.13	0.1
0			9.22	0.1
0			9.04	0.1
0			9.08	0.1
0			9.13	0.1
0			8.66	0.1
0			9.17	0.1
0			9.26	0.1
	100	0.1	9.3	0.1
0			9.18	0.1
0			9.19	0.1
0			8.9	0.1
0			9.16	0.1
0			8.86	0.1
0			9.21	0.1
0			9.24	0.1
0			9.24	0.1
0			8.82	0.1
0			9.02	0.1
0			9.32	0.1
0			9.26	0.1
0			8.65	0.1
0			9.31	0.1
0			9.37	0.1
0			9.38	0.1
	99	0.1	9.21	0.1
0			8.84	0.1
0			9.24	0.1
0			9.34	0.1
0			8.85	0.1
0			9.21	0.1
0			8.98	0.1

0				9.05	0.1
0				9.22	0.1
0				9.07	0.1
0				9.1	0.1
0				9.05	0.1
0				8.67	0.1
0				8.8	0.1
0				8.94	0.1
0				9.19	0.1
0					

HEIS Number	Sample Date	Location	Northing	Easting	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
J1PXF6	8/14/12 8:52	SZ1-1	149407.7	571190.3	5500	X	1.5	0.58		0.36	1.2		0.63	52.4	X	0.072	0.16	U
J1PXF7	8/14/12 8:45	SZ1-2	149407.7	571206.6	6040	X	1.4	0.49	B	0.35	1.7		0.61	52.3	X	0.07	0.039	B
J1PXF8	8/14/12 8:18	SZ1-3	149421.8	571149.4	5010	X	1.4	0.81		0.36	1.1		0.62	45.4	X	0.071	0.15	U
J1PXH8	8/14/12 8:18	Replicate of SZ1-3 (J1PXF8)	149421.8	571149.4	4800	X	1.4	0.72		0.34	0.84	B	0.59	40.5	X	0.067	0.15	U
J1PXN0	8/14/12 8:18	Split of SZ1-3 (J1PXF8)	149421.8	571149.4	6440		14.5	1.74	U	1.74	1.73	B	2.9	50.9		1.45	0.237	B
J1PXF9	8/14/12 8:30	SZ1-4	149421.8	571165.8	5910	X	1.4	0.73		0.33	1.3		0.58	54	X	0.067	0.15	U
J1PXH0	8/14/12 8:40	SZ1-5	149421.8	571182.1	5140	X	1.5	0.66		0.36	1.3		0.63	48.3	X	0.072	0.16	U
J1PXH1	8/14/12 7:55	SZ1-6	149436.0	571124.9	7090	X	1.4	0.6		0.35	2.2		0.61	70.2	X	0.07	0.087	B
J1PXH2	8/14/12 8:00	SZ1-7	149436.0	571141.3	4550	X	1.4	0.91		0.34	0.97		0.59	46	X	0.068	0.15	U
J1PXH3	8/14/12 8:10	SZ1-8	149434.0	571158.08	8620	X	1.4	0.49	B	0.35	3.7		0.62	85.6	X	0.071	0.17	B
J1PXH4	8/14/12 7:45	SZ1-9	149450.1	571100.4	5840	X	1.4	0.72		0.36	1.4		0.62	53.4	X	0.071	0.031	U
J1PXH5	8/14/12 7:40	SZ1-10	149450.1	571116.7	4690	X	1.4	0.55		0.34	0.99		0.58	46.8	X	0.067	0.15	U
J1PXH6	8/14/12 7:37	SZ1-11	149464.3	571092.2	4850	X	1.4	0.53		0.33	3.8		0.57	49.2	X	0.066	0.029	B
J1PXH7	8/14/12 7:35	SZ1-12	149478.4	571084.1	5270	X	1.4	0.79		0.35	0.83	B	0.61	42.7	X	0.07	0.031	U
J1PXV5	8/15/12 13:15	SZ2-1	149357.2	571198.2	8340		1.5	0.58		0.36	2.3		0.63	70		0.073	0.16	B
J1PXV6	8/15/12 13:25	SZ2-2	149357.2	571210.1	8390		1.4	0.46	B	0.35	2.9		0.6	73.6		0.07	0.14	B
J1PXV7	8/15/12 13:35	SZ2-3	149367.6	571168.2	6740		1.4	0.92		0.34	1.6		0.59	64.9		0.068	0.15	U
J1PXV8	8/15/12 13:45	SZ2-4	149367.6	571180.2	7930		1.5	0.8		0.36	2.6		0.62	76.8		0.071	0.11	B
J1PXV9	8/15/12 13:50	SZ2-5	149367.6	571192.2	6870		1.3	0.71		0.32	2.1		0.56	63.1		0.064	0.088	B
J1PXW0	8/15/12 14:10	SZ2-6	149367.6	571204.1	7780		1.5	0.68		0.38	2.2		0.66	65		0.076	0.14	B
J1PXW1	8/15/12 14:15	SZ2-7	149377.9	571138.3	8030		1.4	0.81		0.36	8.9		0.62	75.6		0.071	0.11	B
J1PXW2	8/15/12 14:25	SZ2-8	149377.9	571138.3	6780		1.5	0.8		0.38	2		0.65	50.9		0.075	0.16	U
J1PXW3	8/15/12 14:38	SZ2-9	149377.9	571174.2	6570		1.4	0.44	B	0.34	1.3		0.6	62.1		0.069	0.051	B
J1PXW7	8/15/12 14:38	Replicate of SZ2-9 (J1PXW3)	149398.7	571102.4	6600		1.5	0.78		0.36	1.5		0.63	66.5		0.072	0.031	U
J1PXV3	8/15/12 14:38	Split of SZ2-9 (J1PXW3)	149377.9	571174.2	7110		13	1.55	U	1.55	1.84	B	2.59	60.7		1.3	0.219	B
J1PXW5	8/15/12 14:50	SZ2-11	149388.3	571120.4	7880		1.5	0.37	U	0.37	3		0.64	57.5		0.074	0.17	B
J1R004	8/16/12 7:28	SZ3-1	149281.3	571248.1	6670	X	1.4	0.85		0.34	2.1		0.59	63.4	X	0.068	0.61	
J1R005	8/16/12 7:35	SZ3-2	149302.8	571258.9	7460	X	1.4	0.84		0.34	2.5		0.59	54.3	X	0.068	0.62	

J1R006	8/16/12 7:42	SZ3-3	149309.3	571260.4	6730 X	1.3	0.77	0.33	1.9	0.57	64.2 X	0.066	0.14	U		
J1R007	8/16/12 7:48	SZ3-4	149333.4	571259.9	8350 X	1.5	0.63	0.36	2.6	0.62	66.6 X	0.071	0.52			
J1R008	8/16/12 8:05	SZ3-5	149340.4	571243.7	8090 X	1.4	0.81	0.35	2.7	0.62	64 X	0.071	0.64			
J1R009	8/16/12 8:10	SZ3-6	149348.9	571251.6	7650 X	1.4	0.97	0.33	1.8	0.58	57.2 X	0.067	0.14	U		
J1R010	8/16/12 8:30	SZ3-7	149347.5	571227.6	8260 X	1.5	0.96	0.38	2.3	0.66	78.2 X	0.076	0.57			
J1R011	8/16/12 8:20	SZ3-8	149355.4	571253.1	7500 X	1.4	0.84	0.36	2.1	0.62	56.9 X	0.071	0.65			
J1R016	8/16/12 8:20	Replicate of SZ3-8 (J1R011)	149355.4	571253.1	6580 X	1.3	0.9	0.32	1.9	0.56	54.1 X	0.065	0.14	U		
J1R003	8/16/12 8:20	Split of SZ3-8 (J1R011)	149355.4	571253.1	7150	14.2	1.71	U	1.71	2.25	B	2.85	67	1.42	0.273	B
J1R012	8/16/12 8:45	SZ3-9	149368.5	571256.0	7590 X	1.5	0.94	0.36	2.1	0.62	60.7 X	0.072	0.66			
J1R013	8/16/12 8:55	SZ3-10	149383.4	571265.3	4920 X	1.3	0.77	0.32	1.4	0.55	50.3 X	0.064	0.14	U		
J1R014	8/16/12 9:05	SZ3-11	149386.0	571254.1	6770 X	1.4	0.76	0.34	1.8	0.6	57.1 X	0.069	0.15	U		
J1R015	8/16/12 9:10	SZ3-12	149390.5	571249.2	7710 X	1.5	0.68	0.37	2.5	0.64	62.6 X	0.074	0.63			
J1R0C1	8/21/12 12:30	SZ4-1	149343.9	570997.3	8540 X	1.4	0.63	0.33	2.6	0.58	63.2 X	0.066	0.2			
J1R0C2	8/21/12 12:20	SZ4-2	149350.2	570979.6	7700 X	1.5	0.52	B	0.36	2.9	0.63	57.3 X	0.072	0.16	B	
J1R0C3	8/21/12 12:12	SZ4-3	149356.4	570968.9	8120 X	1.4	0.45	B	0.34	3	0.59	64.9 X	0.068	0.19		
J1R0C5	8/21/12 7:55	SZ4-5	149429.8	571061.9	7940 X	1.5	0.36	U	0.36	2.8	0.62	68.1 X	0.072	0.15	B	
J1R0C6	8/21/12 7:52	SZ4-6	149435.9	571065.5	8260 X	1.5	0.49	B	0.36	4	0.63	68.7 X	0.072	0.19		
J1R0C7	8/21/12 8:45	SZ4-7	149442.2	571047.8	6060 X	1.5	0.48	B	0.36	1.7	0.63	60.7 X	0.073	0.1	B	
J1R0C8	8/21/12 8:15	SZ4-8	149441.9	571083.4	5960 X	1.4	0.57		0.35	2.4	0.6	54.8 X	0.07	0.097	B	
J1R0C9	8/21/12 8:18	SZ4-9	149441.9	571090.5	6250 X	1.5	0.61		0.36	2.4	0.62	59.1 X	0.071	0.12	B	
J1R0D0	8/21/12 7:45	SZ4-10	149454.4	571062.1	8470 X	1.4	0.48	B	0.35	3.7	0.62	79 X	0.071	0.17	B	
J1R0D1	8/21/12 8:25	SZ4-11	149454.3	571083.4	6980 X	1.5	0.5	B	0.36	2.5	0.62	66.5 X	0.071	0.14	B	
J1R0D2	8/21/12 8:30	SZ4-12	149466.6	571076.4	6050 X	1.4	0.53		0.34	1.6	0.58	65.6 X	0.067	0.09	B	
J1R0D3	8/21/12 8:30	Replicate of SZ4-12 (J1R0D2)	149466.6	571076.4	6400 X	1.4	0.54		0.34	1.8	0.58	58.9 X	0.067	0.12	B	
J1R0C0	8/21/12 8:30	Split of SZ4-12 (J1R0D2)	149466.6	571076.4	5680	4.75	0.57	U	0.57	1.72	0.95	65	0.475	0.252		
J1R0F7	8/21/12 15:10	FS-1	149350.8	571226.1	7890 X	1.4	0.89	0.34	2.6	0.58	69.2 X	0.067	0.55			
J1R0F8	8/21/12 14:57	FS-2	149353.0	571191.0	7680 X	1.4	0.92	0.34	2.5	0.58	52.9 X	0.067	0.15	U		
J1R0F9	8/21/12 15:20	FS-12	149368.5	571252.4	5580 X	1.5	0.81	0.37	2.1	0.64	56.2 X	0.074	0.16	U		
J1R0H0	8/21/12 13:10	FS-13	149472.3	571082.2	5520 X	1.4	0.95	0.36	1.6	0.62	49.4 X	0.071	0.15	U		
J1R0H1	8/21/12 13:00	FS-14	149475.0	571091.6	6300 X	1.3	0.91	0.33	2	0.57	60.4 X	0.065	0.56			
J1R0H2	8/21/12 13:25	FS-15	149428.0	571124.0	7290 X	1.3	0.68	0.33	2.5	0.57	68.4 X	0.065	0.46			
J1R0H9	8/21/12 13:50	FS-3	149417.0	571166.0	4630 X	1.4	1	0.35	1.1	0.61	45.5 X	0.071	0.15	U		

J1R0J0	8/21/12 13:20	FS-4	149435.0	571131.0	4710	X	1.3	0.91	0.33	1.4	0.56	48.5	X	0.065	0.14	U		
J1R0J1	8/21/12 14:00	FS-5	149427.0	571167.0	3500	X	1.3	0.63	0.33	0.96	0.57	39.6	X	0.066	0.52			
J1R0J2	8/21/12 13:15	FS-6	149445.0	571128.0	4160	X	1.6	0.82	0.38	1.2	0.66	48.7	X	0.077	0.17	U		
J1R0J3	8/21/12 13:35	FS-7	149411.0	571117.0	7060	X	1.4	0.72	0.33	2.7	0.58	67.5	X	0.067	0.48			
J1R0J4	8/21/12 14:30	FS-8	149368.0	571160.0	5590	X	1.4	1	0.35	1.1	0.6	48	X	0.069	0.15	U		
J1R0J5	8/21/12 14:37	FS-9	149364.0	571175.0	5750	X	1.5	1.2	0.38	1.5	0.65	68.9	X	0.075	0.16	U		
J1R0J6	8/21/12 14:45	FS-10	149373.0	571180.0	7420	X	1.4	0.56	0.34	2.8	0.58	63.6	X	0.067	0.49			
J1R0J7	8/21/12 14:52	FS-11	149362.0	571192.0	4120	X	1.3	0.8	0.33	1	0.57	48	X	0.065	0.14	U		
J1R017	8/16/12 7:25	Equipment Blank	NA	NA	234	X	1.4	0.35	U	0.35	0.61	U	0.61	2.1	X	0.07	0.049	B

um	Boron			Cadmium			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium			Iron		
LS	METALS			METALS			METALS			METALS			METALS			METALS			METALS			META		
	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
	0.16	0.93	U	0.93	0.098	B	0.039	6380	X	13.4	6.2	X	0.055	12	0.47	21.7		1	0.155	U	0.155	26000	X	
	0.031	0.91	U	0.91	0.12	B	0.038	7910	X	13.1	12.1		0.054	8.7	0.09	14.8	X	0.2	0.155	U	0.155	22900	X	
	0.15	0.92	U	0.92	0.069	B	0.038	6950	X	13.2	5.6	X	0.054	11.7	0.47	14.9		1	0.155	U	0.155	26500	X	
	0.15	0.87	U	0.87	0.085	B	0.036	5890	X	12.5	3.9	X	0.051	12	0.44	16.4		0.96	0.155	U	0.155	25700	X	
	0.58	5.8	U	5.8	0.58	U	0.58	7900		290	5.82		0.58	9.58	5.8	16.1		2.9	0.2	U	0.2	29500		
	0.15	0.86	U	0.86	0.091	B	0.036	7200	X	12.4	8.7	X	0.051	11.6	0.44	17.8		0.95	0.155	U	0.155	24700	X	
	0.16	0.93	U	0.93	0.092	B	0.039	5980	X	13.4	4.9	X	0.055	13.2	0.48	17.7		1	0.155	U	0.155	27500	X	
	0.031	0.94	B	0.91	0.16	B	0.038	8630	X	13	10.6		0.054	8.4	0.09	15.6	X	0.2	0.155	U	0.155	21900	X	
	0.15	0.88	U	0.88	0.075	B	0.037	6650	X	12.7	4.4	X	0.052	12.4	0.45	16.1		0.98	0.155	U	0.155	27500	X	
	0.031	1.5	B	0.92	0.17	B	0.038	16600	X	13.2	14.5		0.054	7.3	0.09	16.6	X	0.2	0.155	U	0.155	20100	X	
	0.031	0.92	U	0.92	0.095	B	0.038	7280	X	13.2	7.8		0.054	8.8	0.09	14.5	X	0.2	0.155	U	0.155	24200	X	
	0.15	0.87	U	0.87	0.082	B	0.036	5670	X	12.5	3.6	X	0.051	11.9	0.44	16.4		0.96	0.155	U	0.155	26800	X	
	0.029	0.85	U	0.85	0.082	B	0.036	6000	X	12.3	6.5		0.051	9.4	0.09	13.3	X	0.19	0.155	U	0.155	24800	X	
	0.031	0.91	U	0.91	0.094	B	0.038	6120	X	13.1	4.4		0.054	9.4	0.09	14	X	0.2	0.155	U	0.155	24800	X	
	0.032	1.5	B	0.94	0.11	B	0.039	8790		13.5	12.4		0.056	8.2	X	0.1	17.7		0.21	0.155	U	0.155	21400	X
	0.03	1.2	B	0.9	0.12	B	0.038	8650		12.9	13		0.053	8	X	0.09	15.7		0.2	0.155	U	0.155	20900	X
	0.15	0.88	U	0.88	0.14	B	0.037	5550		12.7	7.7		0.052	12.5	X	0.45	18.7		0.97	0.155	U	0.155	28100	X
	0.031	0.93	B	0.92	0.16	B	0.038	10100		13.2	14.3		0.054	8.9	X	0.09	17.5		0.2	0.155	U	0.155	23600	X
	0.028	0.83	U	0.83	0.12	B	0.035	7350		11.9	11.1		0.049	8.9	X	0.09	14.9		0.18	0.155	U	0.155	23200	X
	0.033	1.1	B	0.98	0.13	B	0.041	7190		14.1	13.5		0.058	7.5	X	0.1	17.4		0.22	0.155	U	0.155	20600	X
	0.031	0.92	U	0.92	0.17	B	0.038	8330		13.2	15.3		0.054	9.1	X	0.09	16.5		0.2	0.155	U	0.155	28000	X
	0.16	0.97	U	0.97	0.12	B	0.041	7310		13.9	9.1		0.057	12.1	X	0.49	18		1.1	0.155	U	0.155	27900	X
	0.03	0.89	U	0.89	0.1	B	0.037	5480		12.8	8.4		0.053	7.9	X	0.09	13.9		0.2	0.155	U	0.155	21600	X
	0.031	0.93	U	0.93	0.12	B	0.039	5550		13.4	9.5		0.055	9	X	0.1	15.8		0.21	0.155	U	0.155	23100	X
	0.518	1.3	B	5.18	0.518	U	0.518	6080		259	7.94		0.518	7.29	5.18	15.6		2.59	0.2	U	0.2	23200		
	0.032	0.95	U	0.95	0.087	B	0.04	3650		13.7	15		0.056	5.8	X	0.1	9.7		0.21	0.155	U	0.155	16200	X
	0.03	1.7	B	0.88	0.56		0.037	12000	X	12.6	12.3	X	0.052	10.2	X	0.09	35.6		0.19	0.374		0.155	24600	X
	0.029	1	B	0.87	0.14	BC	0.037	6580	X	12.6	9.4	X	0.052	9.3	X	0.09	31.5		0.19	0.155	U	0.155	23600	X

0.14	0.85 U	0.85	0.13 BC	0.036	5760 X	12.2	7.2 X	0.05	12.4 X	0.43	17.4	0.94	0.155 U	0.155	24600 X
0.031	1.4 B	0.92	0.16 BC	0.039	8180 X	13.3	13.7 X	0.055	8.1 X	0.09	27.4	0.2	0.155 U	0.155	21100 X
0.031	0.91 U	0.91	0.15 BC	0.038	6910 X	13.1	12.7 X	0.054	9.9 X	0.09	36.1	0.2	0.155 U	0.155	24700 X
0.14	0.86 U	0.86	0.12 BC	0.036	7220 X	12.4	7.3 X	0.051	14.2 X	0.44	18.6	0.95	0.155 U	0.155	28400 X
0.033	1.4 B	0.98	0.19 BC	0.041	9420 X	14.1	12.2 X	0.058	9.1 X	0.1	29.9	0.22	0.155 U	0.155	24400 X
0.031	0.92 U	0.92	0.17 BC	0.038	7720 X	13.2	9.3 X	0.054	10 X	0.09	35.6	0.2	0.155 U	0.155	27100 X
0.14	0.83 U	0.83	0.17 C	0.035	7150 X	12	7.9 X	0.049	12.1 X	0.43	18	0.92	0.155 U	0.155	24600 X
0.569	5.69 U	5.69	0.569 U	0.569	7370	285	8.49	0.569	9.01	5.69	17	2.85	0.2 U	0.2	27200
0.031	0.92 U	0.92	0.14 BC	0.039	8540 X	13.3	8.3 X	0.055	10.3 X	0.09	35.3	0.2	0.155 U	0.155	25900 X
0.14	0.82 U	0.82	0.12 BC	0.034	6110 X	11.8	4.2 X	0.049	13 X	0.42	14.7	0.91	0.155 U	0.155	27300 X
0.15	0.89 U	0.89	0.23	0.037	8520 X	12.8	7.4 X	0.053	12.7 X	0.45	23.8	0.98	0.155 U	0.155	25800 X
0.032	1 B	0.95	0.29	0.04	9290 X	13.7	10.2 X	0.056	9.4 X	0.1	35.9	0.21	0.155 U	0.155	24300 X
0.029	1.2 B	0.86	0.043 BM	0.036	7860 X	12.3	14.2 XM	0.051	8.7 X	0.09	18.6 X	0.19	0.155 U	0.155	23000 X
0.031	0.93 U	0.93	0.039 U	0.039	8930 X	13.4	8.9 X	0.055	10.8 X	0.1	21.3 X	0.21	0.155 U	0.155	28800 X
0.03	0.9 B	0.88	0.043 B	0.037	7020 X	12.7	11.2 X	0.052	8.1 X	0.09	16.9 X	0.19	0.155 U	0.155	21200 X
0.031	0.92 U	0.92	0.054 B	0.039	7000 X	13.3	9.9 X	0.055	10.8 X	0.09	19.6 X	0.2	0.315	0.155	24600 X
0.031	1.2 B	0.93	0.12 B	0.039	6320 X	13.4	11.4 X	0.055	8.5 X	0.1	18.5 X	0.21	0.155 U	0.155	23100 X
0.032	0.94 U	0.94	0.039 U	0.039	5160 X	13.5	4.9 X	0.056	10.3 X	0.1	18.6 X	0.21	0.184	0.155	25800 X
0.03	0.9 U	0.9	0.038 U	0.038	6600 X	12.9	10.4 X	0.053	9.1 X	0.09	19.2 X	0.2	0.204	0.155	25300 X
0.031	0.92 U	0.92	0.042 B	0.039	7650 X	13.3	9.4 X	0.055	9.7 X	0.09	22 X	0.2	0.155 U	0.155	26200 X
0.031	1 B	0.91	0.1 B	0.038	6830 X	13.1	11 X	0.054	9 X	0.09	19.5 X	0.2	4.07	0.155	24200 X
0.031	0.92 U	0.92	0.05 B	0.039	7320 X	13.3	9.5 X	0.055	8.4 X	0.09	17.6 X	0.2	0.155 U	0.155	22100 X
0.029	0.87 U	0.87	0.039 B	0.036	5970 X	12.5	7.2 X	0.051	9.7 X	0.09	17.3 X	0.19	0.155 U	0.155	24200 X
0.029	0.87 U	0.87	0.036 U	0.036	6290 X	12.5	7.8 X	0.051	9.4 X	0.09	17.6 X	0.19	0.155 U	0.155	24800 X
0.19	0.612 B	1.9	0.0647 B	0.19	7120	95	3.3	0.19	8.63	1.9	17.7	0.95	0.28 B	0.2	28400
0.029	0.86 U	0.86	0.12 B	0.036	6010 X	12.4	10.5 X	0.051	8.9 X	0.09	16.3 X	0.19	0.281	0.155	23300 X
0.15	0.86 U	0.86	0.098 B	0.036	7740 X	12.4	8.1 X	0.051	13.2 X	0.44	25 X	0.96	0.347	0.155	26800 X
0.16	0.95 U	0.95	0.11 B	0.04	6100 X	13.6	6 X	0.056	13.4 X	0.48	22.9 X	1.1	0.155 U	0.155	28000 X
0.15	0.92 U	0.92	0.086 B	0.038	6370 X	13.2	6.2 X	0.054	13.4 X	0.47	22.1 X	1	0.155 U	0.155	27300 X
0.028	0.84 U	0.84	0.11 B	0.035	7550 X	12.1	7.9 X	0.05	9.7 X	0.09	18.2 X	0.19	0.193	0.155	25300 X
0.028	0.84 U	0.84	0.18	0.035	7830 X	12.1	15.9 X	0.05	7.2 X	0.09	14.8 X	0.19	0.346	0.155	19500 X
0.15	0.91 U	0.91	0.093 B	0.038	6010 X	13.1	3.8 X	0.054	13.8	0.47	22.2	1	0.155 U	0.155	29300 X

0.14	0.84	U	0.84	0.12	B	0.035	7000	X	12.1	5	X	0.05	12.6	0.43	21.6	0.93	0.155	U	0.155	26500	X	
0.029	0.85	U	0.85	0.085	B	0.036	4890	X	12.3	3.5	X	0.051	9.9	0.09	15.2	0.19	0.155	U	0.155	25200	X	
0.17	0.99	U	0.99	0.099	B	0.041	6110	X	14.2	3.2	X	0.058	13.2	0.5	22.1	1.1	0.155	U	0.155	27200	X	
0.029	0.86	U	0.86	0.16	B	0.036	8970	X	12.4	13.2	X	0.051	8	0.09	17.2	0.19	0.155	U	0.155	21700	X	
0.15	0.89	U	0.89	0.1	B	0.037	4980	X	12.8	4.5	X	0.053	14.7	0.46	26.4	0.99	0.155	U	0.155	30800	X	
0.16	0.97	U	0.97	0.11	B	0.041	5090	X	14	8.3	X	0.057	15.1	0.5	22.3	1.1	0.268		0.155	35300	X	
0.029	0.87	U	0.87	0.13	B	0.036	6120	X	12.5	13.9	X	0.051	8	0.09	15.6	0.19	0.155	U	0.155	21200	X	
0.14	0.84	U	0.84	0.085	B	0.035	5920	X	12.1	3.6	X	0.05	12.2	0.43	22.5	0.93	0.155	U	0.155	26000	X	
0.03	0.9	U	0.9	0.049	BC	0.038	49.7	X	13	0.19	X	0.053	0.1	BX	0.09	0.43	B	0.2			726	X

	Lead			Magnesium			Manganese			Mercury			Molybdenum			Nickel			Potassium			Selenium			Si	
LS	METALS			METALS			METALS			METALS			METALS			METALS			METALS			METALS			ME	
	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
	3.6	9.1		1.3	4670	X	3.5	333	X	0.1	0.0099	B	0.005	0.31	B	0.25	9.3	X	0.12	737		38.9	0.82	U	0.82	203
	3.5	9.9		0.25	4790	X	3.4	309	X	0.09	0.035		0.006	0.33	B	0.24	12.2	X	0.11	871		38	0.8	U	0.8	240
	3.6	3		1.3	4920	X	3.5	337	X	0.09	0.0056	U	0.006	0.24	U	0.24	9.6	X	0.12	641		38.4	0.8	U	0.8	190
	3.4	2.7		1.2	4090	X	3.3	304	X	0.09	0.0058	U	0.006	0.23	U	0.23	8.3	X	0.11	541		36.4	0.76	U	0.76	152
	58	2.64		1.45	5150		217	369		14.5	0.0292	U	0.029	5.8	U	5.8	8.71	B	11.6	717	B	1160	0.87	U	0.87	279
	3.3	5.4		1.2	4780	X	3.3	308	X	0.09	0.0091	B	0.005	0.23	U	0.23	10.8	X	0.11	805		36	0.76	U	0.76	236
	3.6	4.4		1.3	4630	X	3.5	348	X	0.1	0.005	U	0.005	0.25	U	0.25	9.9	X	0.12	631		39	0.82	U	0.82	204
	3.5	18.3		0.25	4660	X	3.4	316	X	0.09	0.17		0.005	0.24	U	0.24	11.2	X	0.11	1060		37.9	0.8	U	0.8	305
	3.4	3.3		1.2	4460	X	3.3	320	X	0.09	0.0057	U	0.006	0.23	B	0.23	8.4	X	0.11	515		36.9	0.77	U	0.77	153
	3.5	6.4		0.25	5000	X	3.5	341	X	0.09	0.013	B	0.006	0.25	B	0.24	12.4	X	0.11	1430		38.3	0.8	U	0.8	295
	3.6	9.5		0.25	4460	X	3.5	311	X	0.09	0.0089	B	0.006	0.24	U	0.24	9.8	X	0.12	769		38.3	0.8	U	0.8	210
	3.4	2.9		1.2	4040	X	3.3	317	X	0.09	0.0055	U	0.006	0.23	U	0.23	6.8	X	0.11	525		36.3	0.76	U	0.76	165
	3.3	3.9		0.24	4190	X	3.2	290	X	0.09	0.006	U	0.006	0.23	U	0.23	8.9	X	0.11	607		35.7	0.75	U	0.75	182
	3.5	2.4		0.25	4320	X	3.4	284	X	0.09	0.0063	U	0.006	0.24	U	0.24	8.7	X	0.11	543		38	0.8	U	0.8	164
	3.6	5.9		0.26	5200	X	3.5	328		0.1	0.027	M	0.007	0.38	BM	0.25	12.5	X	0.12	1260		39.3	0.83	U	0.83	255
	3.5	5.6		0.25	4860	X	3.4	327		0.09	0.014	B	0.007	0.25	B	0.24	12.5	X	0.11	1360		37.5	0.79	U	0.79	293
	3.4	5.3		1.2	4930	X	3.3	417		0.09	0.025		0.005	0.27	B	0.23	10.3	X	0.11	862		36.8	0.77	U	0.77	230
	3.6	5		0.25	5430	X	3.5	330		0.09	0.015	B	0.005	0.39	B	0.24	13.1	X	0.12	1210		38.4	0.81	U	0.81	270
	3.2	4.4		0.23	4940	X	3.1	317		0.09	0.0078	B	0.005	0.22	U	0.22	11.2	X	0.1	964		34.7	0.73	U	0.73	212
	3.8	5.5		0.27	4710	X	3.7	293		0.1	0.013	B	0.007	0.26	U	0.26	12.6	X	0.12	1150		40.9	0.86	U	0.86	315
	3.6	7		0.25	5090	X	3.5	346		0.09	0.014	B	0.005	0.53	B	0.24	12.5	X	0.11	1250		38.3	0.8	U	0.8	240
	3.8	4.6		1.3	5700	X	3.7	367		0.1	0.0055	B	0.005	0.26	U	0.26	13.4	X	0.12	942		40.5	0.85	U	0.85	221
	3.4	3.6		0.25	3860	X	3.4	295		0.09	0.0058	B	0.005	0.24	U	0.24	9.4	X	0.11	948		37.2	0.78	U	0.78	240
	3.6	3.8		0.26	4140	X	3.5	311		0.1	0.007	B	0.006	0.25	U	0.25	10	X	0.12	940		39	0.82	U	0.82	248
	51.8	3.44		1.3	4090		194	309		13	0.0265	U	0.027	0.651	B	5.18	8.62	B	10.4	1070		1040	0.777	U	0.78	290
	3.7	4.4		0.26	4220	X	3.6	229		0.1	0.0063	U	0.006	0.25	U	0.25	13.3	X	0.12	1250		39.9	0.84	U	0.84	223
	3.4	19.3	X	0.24	4620	X	3.3	338	X	0.09	1.1		0.06	0.33	B	0.23	10.7	X	0.11	1000		36.7	0.77	U	0.77	155
	3.4	7.7	X	0.24	4870	X	3.3	333	X	0.09	0.011	B	0.005	0.32	B	0.23	11.3	X	0.11	1140		36.6	0.77	U	0.77	155

3.3	6.2	X	1.2	4750	X	3.2	364	X	0.09	0.0057	B	0.005	0.23	U	0.23	10.6	X	0.11	1010		35.6	0.75	U	0.75	137
3.6	4.9	X	0.25	5000	X	3.5	322	X	0.09	0.0086	B	0.005	0.24	U	0.24	12.7	X	0.12	1290		38.5	0.81	U	0.81	167
3.5	4.9	X	0.25	5000	X	3.5	348	X	0.09	0.0086	B	0.005	0.24	B	0.24	11	X	0.11	1220		38.2	0.8	U	0.8	185
3.3	5.8	X	1.2	5310	X	3.2	361	X	0.09	0.0052	U	0.005	0.23	U	0.23	11.1	X	0.11	1110		36	0.76	U	0.76	144
3.8	5.6	X	0.27	4860	X	3.7	343	X	0.1	0.035		0.006	0.32	B	0.26	12.1	X	0.12	1290		40.9	0.86	U	0.86	197
3.6	12.4	X	0.25	5240	X	3.5	356	X	0.09	0.016		0.005	0.28	B	0.24	11.4	X	0.12	950		38.3	0.8	U	0.8	127
3.2	19.6	X	1.1	4960	X	3.1	336	X	0.09	0.023		0.006	0.22	B	0.22	11	X	0.1	932		34.9	0.73	U	0.73	123
56.9	14.9		1.42	5030		213	358		14.2	0.0274	U	0.027	0.606	B	5.69	10.1	B	11.4	1180		1140	0.854	U	0.85	234
3.6	5.9	X	0.25	5400	X	3.5	348	X	0.09	0.0076	B	0.007	0.24	U	0.24	10.6	X	0.12	1100		38.6	0.81	U	0.81	144
3.2	4.1	X	1.1	4480	X	3.1	322	X	0.08	0.0055	B	0.006	0.22	U	0.22	7.3	X	0.1	656		34.4	0.72	U	0.72	86.1
3.4	18.5	X	1.2	4780	X	3.4	331	X	0.09	0.21		0.006	0.28	B	0.24	9.7	X	0.11	892		37.2	0.78	U	0.78	124
3.7	24.5	X	0.26	4920	X	3.6	355	X	0.1	0.46		0.005	0.25	B	0.25	12.1	X	0.12	1180		39.9	0.84	U	0.84	154
3.3	49.5	X	0.24	5170	X	3.2	337	X	0.09	0.0077	B	0.005	0.32	B	0.23	15.7	X	0.11	1510		35.9	0.75	U	0.75	317
3.6	4.7	X	0.26	5690	X	3.5	400	X	0.1	0.0063	U	0.006	0.26	B	0.25	12.2	X	0.12	1290		38.9	0.82	U	0.82	296
3.4	4.3	X	0.24	4890	X	3.3	322	X	0.09	0.0065	U	0.007	0.23	B	0.23	12.4	X	0.11	1480		36.8	0.77	U	0.77	310
3.6	7.3	X	0.25	5210	X	3.5	368	X	0.09	0.015	B	0.007	0.25	B	0.25	12.9	X	0.12	1360		38.7	0.81	U	0.81	320
3.6	16.3	X	0.26	4650	X	3.5	339	X	0.1	0.02		0.005	0.25	B	0.25	11.9	X	0.12	1540		39	0.82	U	0.82	342
3.6	3.6	X	0.26	4420	X	3.6	319	X	0.1	0.0063	U	0.006	0.25	U	0.25	8.4	X	0.12	924		39.4	0.83	U	0.83	282
3.5	3.9	X	0.25	4510	X	3.4	310	X	0.09	0.0053	U	0.005	0.36	B	0.24	10.2	X	0.11	973		37.5	0.79	U	0.79	294
3.6	12.6	X	0.25	4820	X	3.5	345	X	0.09	0.022		0.005	0.38	B	0.24	13.1	X	0.12	1000		38.6	0.81	U	0.81	271
3.5	14.3	X	0.25	5020	X	3.4	346	X	0.09	0.017		0.005	0.24	B	0.24	12.7	X	0.11	1550		38.2	0.8	U	0.8	325
3.6	5.4	X	0.25	4540	X	3.5	314	X	0.09	0.012	B	0.005	0.24	U	0.24	11.4	X	0.12	1100		38.6	0.81	U	0.81	272
3.4	3.1	X	0.24	4480	X	3.3	363	X	0.09	0.0052	U	0.005	0.23	U	0.23	9.7	X	0.11	969		36.3	0.76	U	0.76	238
3.4	3.3	X	0.24	4630	X	3.3	324	X	0.09	0.0055	B	0.005	0.23	U	0.23	10.5	X	0.11	1010		36.3	0.76	U	0.76	292
19	2.36		0.48	4320		71.2	319		4.75	0.0252	U	0.025	0.455	B	1.9	7.5		3.8	691		380	0.285	U	0.29	327
3.4	4.1		0.24	4510	X	3.3	340	X	0.09	0.013	B	0.006	0.33	B	0.23	11	X	0.11	1470		36.2	0.76	U	0.76	341
3.4	6.2		1.2	5350	X	3.3	365	X	0.09	0.006	U	0.006	0.34	B	0.23	10.9	X	0.11	1420		36.2	0.76	U	0.76	220
3.7	4.7		1.3	4620	X	3.6	348	X	0.1	0.0086	B	0.005	0.25	U	0.25	9.3	X	0.12	919		39.7	0.83	U	0.83	213
3.6	2.7		1.3	4790	X	3.5	380	X	0.09	0.014	B	0.006	0.24	U	0.24	10.6	X	0.12	892		38.4	0.8	U	0.8	217
3.3	3.3		0.23	4740	X	3.2	326	X	0.09	0.0051	U	0.005	0.22	U	0.22	9.9	X	0.11	990		35.3	0.74	U	0.74	237
3.3	4.1		0.23	4430	X	3.2	280	X	0.09	0.0073	B	0.006	0.22	U	0.22	12.2	X	0.11	1450		35.3	0.74	U	0.74	269
3.5	2.2	B	1.3	4490	X	3.4	330	X	0.09	0.0055	U	0.006	0.37	BM	0.24	7.7	X	0.11	705		38.2	0.8	U	0.8	175

3.3	8.2		1.2	4330 X	3.2	325 X	0.09	0.055		0.007	0.31 B	0.22	8.2 X	0.11	760	35.1	0.74 U	0.74	155
3.3	1.7		0.24	4120 X	3.2	273 X	0.09	0.0056 U		0.006	0.23 U	0.23	8.2 X	0.11	505	35.7	0.75 U	0.75	137
3.8	2.8		1.4	3790 X	3.7	297 X	0.1	0.0055 U		0.006	0.26 U	0.26	6.6 X	0.12	524	41.3	0.87 U	0.87	126
3.3	8.3		0.24	4690 X	3.3	296 X	0.09	0.074		0.005	0.28 B	0.23	12 X	0.11	1280	36.1	0.76 U	0.76	229
3.5	7.2		1.2	4160 X	3.4	337 X	0.09	0.036		0.005	0.3 B	0.24	7.5 X	0.11	474	37.3	0.78 U	0.78	157
3.8	6.9		1.3	3810 X	3.7	329 X	0.1	0.37		0.006	0.46 B	0.26	7.5 X	0.12	724	40.6	0.85 U	0.85	204
3.4	4.9		0.24	4740 X	3.3	297 X	0.09	0.0056 U		0.006	0.23 U	0.23	12.7 X	0.11	1410	36.2	0.76 U	0.76	316
3.3	2 B		1.2	3780 X	3.2	308 X	0.09	0.0075 B		0.005	0.22 U	0.22	7.3 X	0.11	616	35.3	0.74 U	0.74	165
3.5	0.5 X		0.25	26.7 X	3.4	6.5 X	0.09	0.0053 U		0.005	0.24 U	0.24	0.11 BX	0.11	37.7 U	37.7	0.93	0.79	101

Icon		Silver		Sodium		Vanadium		Zinc			
TALS		METALS		METALS		METALS		METALS			
Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	
N	5.4	0.15	U	0.15	351	56	80.3	0.45	48.6	X	0.38
	5.2	0.15	U	0.15	292	54.7	63.1	0.09	51.4	X	0.37
	5.3	0.15	U	0.15	271	55.2	81.6	0.44	45.9	X	0.37
	5	0.14	U	0.14	350	52.3	82.4	0.42	43.8	X	0.35
	5.8	0.58	U	0.58	593	145	81.1	7.25	51		29
	5	0.14	U	0.14	311	51.9	78.5	0.41	48.7	X	0.35
	5.4	0.15	U	0.15	296	56.1	87	0.45	47.8	X	0.38
	5.2	0.15	U	0.15	331	54.6	58	0.09	61.1	X	0.37
	5.1	0.14	U	0.14	305	53.1	89.2	0.42	48.1	X	0.36
	5.3	0.15	U	0.15	345	55.1	44.2	0.09	79.6	X	0.37
	5.3	0.15	U	0.15	324	55.2	69.2	0.09	45.4	X	0.37
	5	0.14	U	0.14	346	52.3	79.1	0.42	46.1	X	0.35
	4.9	0.14	U	0.14	307	51.4	67.1	0.08	44.6	X	0.35
	5.2	0.15	U	0.15	434	54.6	67	0.09	43.6	X	0.37
N	5.4	0.15	U	0.15	347	56.6	55.9	0.09	53.3	X	0.38
	5.2	0.15	U	0.15	339	54	53.1	0.09	46.6	X	0.36
	5.1	0.14	U	0.14	365	53	88.8	0.42	54.6	X	0.36
	5.3	0.15	U	0.15	399	55.2	63.4	0.09	78	X	0.37
	4.8	0.14	U	0.14	280	49.9	65.1	0.08	46.9	X	0.34
	5.7	0.16	U	0.16	317	58.9	51	0.09	42.6	X	0.4
	5.3	0.15	U	0.15	525	55.1	63.8	0.09	47.8	X	0.37
	5.6	0.16	U	0.16	294	58.3	84.4	0.46	52.4	X	0.39
	5.1	0.15	U	0.15	353	53.6	63.8	0.09	40.4	X	0.36
	5.4	0.15	U	0.15	371	56.2	65.3	0.09	42.9	X	0.38
	5.18	0.518	U	0.52	477	130	67.2	6.48	42.4		25.9
	5.5	0.16	U	0.16	195	57.4	37.1	0.09	35.2	X	0.39
N	5.1	0.14	UN	0.14	453	52.8	60.8	0.08	105	XN	0.36
	5.1	0.14	U	0.14	469	52.7	59.8	0.08	48.5	X	0.36

	4.9	0.14	U	0.14	360	51.2	75.1	0.41	46.3	X	0.35
	5.3	0.15	U	0.15	301	55.5	50	0.09	42.1	X	0.37
	5.3	0.15	U	0.15	392	55	61.4	0.09	51.1	X	0.37
	5	0.14	U	0.14	441	51.8	90.7	0.41	52	X	0.35
	5.6	0.16	U	0.16	412	58.9	53.6	0.09	49	X	0.4
	5.3	0.15	U	0.15	445	55.2	63.6	0.09	51.9	X	0.37
	4.8	0.14	U	0.14	327	50.2	72.5	0.4	56.3	X	0.34
	5.69	0.569	U	0.57	467	142	74.9	7.11	65.8		28.5
	5.3	0.15	U	0.15	370	55.6	62.9	0.09	49	X	0.37
	4.8	0.13	U	0.13	303	49.6	79.8	0.39	44.7	X	0.33
	5.1	0.15	U	0.15	462	53.5	78.1	0.43	68	X	0.36
	5.5	0.16	U	0.16	365	57.4	60.9	0.09	89.2	X	0.39
X	5	0.14	U	0.14	398	51.6	52	X 0.08	46.8	X	0.35
X	5.4	0.15	U	0.15	402	56	65.3	X 0.09	50.4	X	0.38
X	5.1	0.14	U	0.14	322	53	46.9	X 0.08	40.7	X	0.36
X	5.3	0.15	U	0.15	434	55.7	58.9	X 0.09	51.9	X	0.38
X	5.4	0.15	U	0.15	388	56.1	55.3	X 0.09	53.8	X	0.38
X	5.4	0.15	U	0.15	456	56.6	60.6	X 0.09	45.5	X	0.38
X	5.2	0.15	U	0.15	353	54	59.4	X 0.09	42.6	X	0.36
X	5.3	0.15	U	0.15	392	55.5	52.1	X 0.09	46.1	X	0.37
X	5.3	0.15	U	0.15	403	55	54.2	X 0.09	82.1	X	0.37
X	5.3	0.15	U	0.15	371	55.5	51.2	X 0.09	41.5	X	0.37
X	5	0.14	U	0.14	359	52.2	56.9	X 0.08	44.1	X	0.35
X	5	0.14	U	0.14	375	52.2	57.9	X 0.08	43.8	X	0.35
	1.9	0.19	U	0.19	569	47.5	80	2.37	52.3		9.5
XN	5	0.14	UN	0.14	316	52	56.4	X 0.08	43.5	X	0.35
X	5	0.14	U	0.14	393	52	76.1	X 0.41	54	X	0.35
X	5.5	0.15	U	0.15	409	57.1	84.9	X 0.45	51.2	X	0.39
X	5.3	0.15	U	0.15	404	55.2	80.7	X 0.44	47.1	X	0.37
X	4.9	0.14	U	0.14	395	50.8	65.7	X 0.08	45.2	X	0.34
X	4.9	0.14	U	0.14	270	50.8	47	X 0.08	55.5	X	0.34
N	5.3	0.15	UN	0.15	495	54.9	85.1	0.44	48.6	X	0.37

	4.8	0.14	U	0.14	358	50.5	78.7	0.4	50.5	X	0.34
	4.9	0.14	U	0.14	286	51.4	65.6	0.08	40.8	X	0.35
	5.7	0.16	U	0.16	388	59.4	86.2	0.47	46.5	X	0.4
	5	0.14	U	0.14	305	51.9	51.1	0.08	50.3	X	0.35
	5.2	0.15	U	0.15	416	53.7	91.3	0.43	52.4	X	0.36
	5.6	0.16	U	0.16	501	58.4	105	0.47	55.3	X	0.39
	5	0.14	U	0.14	338	52.1	50.1	0.08	48.2	X	0.35
	4.9	0.14	U	0.14	389	50.8	71.3	0.4	45.2	X	0.34
	5.2	0.15	U	0.15	54.2	U 54.2	0.4	B 0.09	1.8	XC	0.37

HEIS Number	Sample Date	Location	Northing	Easting	Americium-241			Cesium-137			Cobalt-60		
					GEA			GEA			GEA		
					pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
J1PXF6	8/14/12 8:52	SZ1-1	149407.7	571190.3	-0.0147	U	0.0355	0.109	0.0236	0.00373	U	0.0255	
J1PXF7	8/14/12 8:45	SZ1-2	149407.7	571206.6	-0.00235	U	0.0252	0.213	0.0223	0.011	U	0.0298	
J1PXF8	8/14/12 8:18	SZ1-3	149421.8	571149.4	0.0048	U	0.0228	0.0291	U	0.0271	0.00383	U	0.0238
J1PXH8	8/14/12 8:18	Replicate of SZ1-3 (J1PXF8)	149421.8	571149.4	-0.0705	U	0.061	0.023	U	0.043	0.00277	U	0.0377
J1PXN0	8/14/12 8:18	Split of SZ1-3 (J1PXF8)	149421.8	571149.4	0.084	U	0.084	0.034	0.023	0.017	U	0.017	
J1PXF9	8/14/12 8:30	SZ1-4	149421.8	571165.8	-0.00595	U	0.0265	0.224	0.021	0.000487	U	0.0208	
J1PXH0	8/14/12 8:40	SZ1-5	149421.8	571182.1	0.00156	U	0.0215	0.252	0.019	0.00644	U	0.0237	
J1PXH1	8/14/12 7:55	SZ1-6	149436.0	571124.9	-0.0708	U	0.239	0.417	0.0254	-0.0024	U	0.0289	
J1PXH2	8/14/12 8:00	SZ1-7	149436.0	571141.3	0.0505	U	0.109	0.0302	U	0.0356	0.0172	U	0.0383
J1PXH3	8/14/12 8:10	SZ1-8	149434.0	571158.08	0.0166	U	0.0808	0.187	0.0507	0.154	0.0402		
J1PXH4	8/14/12 7:45	SZ1-9	149450.1	571100.4	-0.00733	U	0.021	0.0691	0.0181	-0.00562	U	0.0201	
J1PXH5	8/14/12 7:40	SZ1-10	149450.1	571116.7	-0.0106	U	0.0345	0.0786	0.0261	0.00453	U	0.027	
J1PXH6	8/14/12 7:37	SZ1-11	149464.3	571092.2	0.0179	U	0.225	0.0547	0.0237	0.0205	U	0.031	
J1PXH7	8/14/12 7:35	SZ1-12	149478.4	571084.1	0.00743	U	0.104	0.00875	U	0.0332	0.00734	U	0.0343
J1P XV5	8/15/12 13:15	SZ2-1	149357.2	571198.2	-0.0067	U	0.0262	0.0944	0.0233	0.00291	U	0.0271	
J1P XV6	8/15/12 13:25	SZ2-2	149357.2	571210.1	0.0149	U	0.0343	0.101	0.0223	-0.00458	U	0.0262	
J1P XV7	8/15/12 13:35	SZ2-3	149367.6	571168.2	0.0131	U	0.0224	0.0543	0.019	0.0143	U	0.0265	
J1P XV8	8/15/12 13:45	SZ2-4	149367.6	571180.2	-0.0223	U	0.0393	0.181	0.0279	0.0784	0.0285		
J1P XV9	8/15/12 13:50	SZ2-5	149367.6	571192.2	0.00727	U	0.0285	0.0605	0.0217	0.00051	U	0.0254	
J1P XW0	8/15/12 14:10	SZ2-6	149367.6	571204.1	-0.00969	U	0.0719	0.0406	U	0.0492	0.0154	U	0.0423
J1P XW1	8/15/12 14:15	SZ2-7	149377.9	571138.3	-0.00637	U	0.0307	0.0619	0.0222	0.117	0.0256		
J1P XW2	8/15/12 14:25	SZ2-8	149377.9	571138.3	0.00715	U	0.11	0.122	0.0345	-0.00195	U	0.0345	
J1P XW3	8/15/12 14:38	SZ2-9	149377.9	571174.2	0.00462	U	0.0326	0.0248	U	0.0284	0.00911	U	0.0264
J1P XW7	8/15/12 14:38	Replicate of SZ2-9 (J1P XW3)	149398.7	571102.4	-0.0138	U	0.262	0.00077	U	0.0269	-0.00701	U	0.0261
J1P XV3	8/15/12 14:38	Split of SZ2-9 (J1P XW3)	149377.9	571174.2	0.044	U	0.044	0.032	U	0.032	0.024	U	0.024
J1P XW5	8/15/12 14:50	SZ2-11	149388.3	571120.4	0.00684	U	0.0765	0.00326	U	0.0441	-0.00192	U	0.038
J1R004	8/16/12 7:28	SZ3-1	149281.3	571248.1	-0.0137	U	0.0265	0.042	0.0209	0.0221	U	0.0291	
J1R005	8/16/12 7:35	SZ3-2	149302.8	571258.9	-0.0423	U	0.106	0.036	U	0.0412	0.00562	U	0.035
J1R006	8/16/12 7:42	SZ3-3	149309.3	571260.4	0.0197	U	0.0309	0.0185	U	0.0256	-0.00351	U	0.0245

J1R007	8/16/12 7:48	SZ3-4	149333.4	571259.9	0.0432	U	0.0641	0.0122	U	0.0385	-0.00035	U	0.0336
J1R008	8/16/12 8:05	SZ3-5	149340.4	571243.7	0.00838	U	0.0246	0.0513		0.0175	0.00212	U	0.0242
J1R009	8/16/12 8:10	SZ3-6	149348.9	571251.6	0.00746	U	0.246	0.0572		0.023	0.000753	U	0.0272
J1R010	8/16/12 8:30	SZ3-7	149347.5	571227.6	0.00425	U	0.0262	0.128		0.0189	0.0137	U	0.0245
J1R011	8/16/12 8:20	SZ3-8	149355.4	571253.1	0.0373	U	0.235	0.0332	U	0.0291	0.00702	U	0.0275
J1R016	8/16/12 8:20	Replicate of SZ3-8 (J1R011)	149355.4	571253.1	0.0044	U	0.0249	0.0809		0.0196	0.00236	U	0.024
J1R003	8/16/12 8:20	Split of SZ3-8 (J1R011)	149355.4	571253.1	0.093	U	0.093	0.052		0.026	0.034		0.022
J1R012	8/16/12 8:45	SZ3-9	149368.5	571256.0	-0.000875	U	0.03	0.0928		0.0228	0.02	U	0.0304
J1R013	8/16/12 8:55	SZ3-10	149383.4	571265.3	0.0031	U	0.113	0.207		0.0369	-0.00254	U	0.033
J1R014	8/16/12 9:05	SZ3-11	149386.0	571254.1	0.0044	U	0.0288	0.431		0.022	0.0648	U	0.0394
J1R015	8/16/12 9:10	SZ3-12	149390.5	571249.2	-0.00893	U	0.0657	0.0356	U	0.0427	0.0122	U	0.0416
J1R0C1	8/21/12 12:30	SZ4-1	149343.9	570997.3	0.0298	U	0.064	0.0214	U	0.0392	-0.00284	U	0.0309
J1R0C2	8/21/12 12:20	SZ4-2	149350.2	570979.6	-0.0131	U	0.0368	0.00316	U	0.0259	0.0161	U	0.0265
J1R0C3	8/21/12 12:12	SZ4-3	149356.4	570968.9	0.00421	U	0.0242	0.0207	U	0.0228	0.00274	U	0.022
J1R0C5	8/21/12 7:55	SZ4-5	149429.8	571061.9	0.00222	U	0.0301	0.562		0.025	0.00369	U	0.0283
J1R0C6	8/21/12 7:52	SZ4-6	149435.9	571065.5	-0.00576	U	0.0729	0.0543	U	0.0511	-0.0102	U	0.0392
J1R0C7	8/21/12 8:45	SZ4-7	149442.2	571047.8	0.00216	U	0.025	0.0137	U	0.0205	0.00143	U	0.0234
J1R0C8	8/21/12 8:15	SZ4-8	149441.9	571083.4	-0.0334	U	0.0991	0.23		0.034	-0.00039	U	0.0348
J1R0C9	8/21/12 8:18	SZ4-9	149441.9	571090.5	-0.0231	U	0.0896	0.108		0.0222	0.0376	U	0.0314
J1R0D0	8/21/12 7:45	SZ4-10	149454.4	571062.1	-0.0756	U	0.221	0.182		0.0249	0.0162	U	0.0281
J1R0D1	8/21/12 8:25	SZ4-11	149454.3	571083.4	0.00689	U	0.04	0.0708		0.0249	0.00598	U	0.0265
J1R0D2	8/21/12 8:30	SZ4-12	149466.6	571076.4	0.00442	U	0.0254	-0.0101	U	0.0192	0.00314	U	0.0252
J1R0D3	8/21/12 8:30	Replicate of SZ4-12 (J1R0D2)	149466.6	571076.4	0.00135	U	0.0259	0.02	U	0.0245	-0.00941	U	0.0201
J1R0C0	8/21/12 8:30	Split of SZ4-12 (J1R0D2)	149466.6	571076.4	0.126	U	0.126	0.028	U	0.028	0.02	U	0.02
J1R0F7	8/21/12 15:10	FS-1	149350.8	571226.1	-0.00814	U	0.029	0.0368		0.0218	-0.00526	U	0.0251
J1R0F8	8/21/12 14:57	FS-2	149353.0	571191.0	-0.0276	U	0.0659	0.0837		0.0421	0.00416	U	0.038
J1R0F9	8/21/12 15:20	FS-12	149368.5	571252.4	-0.0124	U	0.0256	0.0567		0.0199	0.00891	U	0.0242
J1R0H0	8/21/12 13:10	FS-13	149472.3	571082.2	0.0162	U	0.106	-0.00249	U	0.0335	-0.00698	U	0.0332
J1R0H1	8/21/12 13:00	FS-14	149475.0	571091.6	0.0163	U	0.0901	0.1		0.0216	0.0386	U	0.0329
J1R0H2	8/21/12 13:25	FS-15	149428.0	571124.0	0.00209	U	0.0323	0.0655		0.025	0.0178	U	0.0283
J1R0H9	8/21/12 13:50	FS-3	149417.0	571166.0	0.000522	U	0.0861	0.0665		0.0223	0.0102	U	0.0262
J1R0J0	8/21/12 13:20	FS-4	149435.0	571131.0	-0.00254	U	0.0256	0.0657		0.0217	0.00799	U	0.0249



Europium-152			Europium-154			Europium-155			Potassium-40			Radium-226			Radium-228			Thorium-228		
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
0.0283	U	0.0599	0.00957	U	0.0721	0.022	U	0.0554				0.332		0.0409						
0.0122	U	0.046	0.0112	U	0.0773	0.0317	U	0.0413				0.385		0.0373						
-0.00805	U	0.0416	-0.0118	U	0.0737	0.0176	U	0.0371				0.302		0.0367						
0.0124	U	0.0981	-0.0189	U	0.117	0.0612	U	0.095				0.335	U	0.128						
0.053	U	0.053	0.059	U	0.059	0.067	U	0.067	9.62		0.13	0.325		0.034	0.54		0.084	0.473		0.025
0.00405	U	0.0448	0.0284	U	0.0753	0.0374	U	0.0435				0.34		0.033						
0.00301	U	0.0421	-0.0078	U	0.0645	0.0116	U	0.0345				0.31		0.03						
0.00901	U	0.0626	-0.00495	U	0.0872	0.0514	U	0.0807				0.398		0.0424						
-0.028	U	0.083	0.048	U	0.118	0.0449	U	0.0852				0.358	U	0.122						
-0.023	U	0.11	-0.034	U	0.121	0.0653	U	0.114				0.653		0.0764						
-0.00943	U	0.0403	-0.000742	U	0.0723	0.0141	U	0.0363				0.357		0.033						
-0.0257	U	0.0556	-0.023	U	0.077	0.03	U	0.0563				0.355		0.0452						
0.00344	U	0.0563	-0.00771	U	0.0821	0.0569	U	0.0756				0.4		0.0418						
-0.0164	U	0.0805	0.0335	U	0.112	0.0145	U	0.082				0.346		0.0588						
-0.0038	U	0.0471	0.0106	U	0.0837	0.0344	U	0.0433				0.454		0.0398						
-0.021	U	0.0469	0.00255	U	0.0796	0.0217	U	0.0479				0.47		0.0372						
-0.02	U	0.0412	0.000415	U	0.0725	0.0219	U	0.0387				0.404		0.0348						
0.0324	U	0.0668	-0.0522	U	0.0729	0.0739	U	0.0658				0.484		0.045						
-0.0144	U	0.0473	0.00413	U	0.0828	0.0319	U	0.0432				0.487		0.0383						
0.0175	U	0.102	-0.0332	U	0.124	0.0143	U	0.102				0.511		0.0716						
0.00877	U	0.0483	-0.0305	U	0.0743	0.0236	U	0.0462				0.475		0.0389						
-0.0292	U	0.0873	-0.00835	U	0.112	0.035	U	0.0864				0.449		0.0664						
0.0165	U	0.053	0.021	U	0.0916	0.0273	U	0.0494				0.46		0.0411						
0.000647	U	0.0634	0.0129	U	0.0935	0.0419	U	0.0803				0.458		0.051						
0.063	U	0.063	0.075	U	0.075	0.063	U	0.063	12.2		0.264	0.464		0.038	0.616		0.091	0.649		0.028
-0.0266	U	0.0983	0.0406	U	0.137	0.00074	U	0.103				0.601		0.0681						
-0.000817	U	0.0425	-0.0451	U	0.0687	0.0171	U	0.043				0.385		0.033						
-0.0126	U	0.0832	-0.0116	U	0.104	0.0147	U	0.0851				0.427		0.0651						
0.0121	U	0.05	-0.00324	U	0.0741	0.0473	U	0.0483				0.381		0.0394						

-0.0402 U	0.0893	-0.0389 U	0.111	0.0188 U	0.093			0.487	0.0671				
-0.00132 U	0.042	-0.00000648 U	0.0718	0.0168 U	0.0375			0.426	0.0332				
0.00417 U	0.0602	0.0152 U	0.0892	0.00301 U	0.0723			0.377 U	0.0893				
0.0104 U	0.0456	-0.0135 U	0.0721	0.0249 U	0.0395			0.497	0.0336				
-0.0056 U	0.0592	-0.00928 U	0.0834	0.00632 U	0.0758			0.416	0.0407				
-0.0204 U	0.0431	0.0232 U	0.0807	0.0272 U	0.0389			0.409	0.0328				
0.054 U	0.054	0.071 U	0.071	0.074 U	0.074	10.8	0.195	0.408	0.041	0.63	0.091	0.69	0.048
0.012 U	0.0495	-0.0414 U	0.0702	0.0307 U	0.0477			0.422	0.0361				
0.0076 U	0.0929	-0.0323 U	0.105	-0.0101 U	0.0812			0.466 U	0.132				
0.0131 U	0.0479	-0.0151 U	0.0681	0.0247 U	0.0424			0.409	0.0375				
0.0274 U	0.0945	-0.00341 U	0.115	0.0695 U	0.095			0.419	0.0678				
0.0424 U	0.09	0.0319 U	0.108	0.0244 U	0.0898			0.504	0.0591				
-0.0186 U	0.0562	0.0184 U	0.084	0.0315 U	0.0571			0.435	0.0409				
-0.0089 U	0.0419	-0.0132 U	0.0721	0.0352 U	0.0397			0.404	0.0343				
-0.0153 U	0.05	-0.000546 U	0.0829	0.0313 U	0.0448			0.503	0.037				
0.0131 U	0.107	-0.102 U	0.099	0.00382 U	0.105			0.56	0.0738				
-0.00472 U	0.043	-0.00335 U	0.0725	0.0332 U	0.0406			0.396	0.034				
0.0162 U	0.0828	0.0258 U	0.115	0.0209 U	0.0819			0.422	0.0618				
-0.0111 U	0.0606	-0.02 U	0.0731	0.0464 U	0.0724			0.393	0.0407				
0.0257 U	0.0617	0.0251 U	0.0868	0.0462 U	0.0764			0.433	0.04				
0.0185 U	0.0619	-0.0178 U	0.0782	0.0147 U	0.0585			0.388	0.0446				
-0.0121 U	0.0438	-0.0121 U	0.0787	0.0188 U	0.0378			0.363	0.0356				
0.0115 U	0.0439	0.00852 U	0.0768	0.0307 U	0.0408			0.377	0.0339				
0.056 U	0.056	0.068 U	0.068	0.071 U	0.071	10.6	0.216	0.4	0.038	0.682	0.087	0.582	0.03
0.0018 U	0.047	0.00605 U	0.0821	0.023 U	0.044			0.512	0.0376				
-0.0183 U	0.0948	0.00173 U	0.119	0.02 U	0.0973			0.489	0.0702				
-0.0152 U	0.0452	0.0197 U	0.0771	0.00793 U	0.0406			0.336	0.0358				
-0.0265 U	0.0793	-0.00297 U	0.109	-0.00746 U	0.0804			0.414	0.0565				
-0.0108 U	0.0575	-0.023 U	0.0651	0.021 U	0.0712			0.369	0.0389				
0.00831 U	0.0517	0.0236 U	0.082	0.0357 U	0.0487			0.501	0.0399				
0.000752 U	0.0596	-0.0207 U	0.0674	-0.0144 U	0.0949			0.349	0.0447				
-0.00443 U	0.0421	-0.00775 U	0.0724	0.019 U	0.0388			0.371	0.0336				







HEIS Number	Sample Date	Location	Northing	Easting	Plutonium-238			Plutonium-239/240			Total beta radiostrontium		
					AEA			AEA			GPC		
					pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
J1PXF6	8/14/12 8:52	SZ1-1	149407.7	571190.3	0 U	0.0525	-0.00116 U	0.0581	0.27		0.158		
J1PXF7	8/14/12 8:45	SZ1-2	149407.7	571206.6	0.0407 U	0.0755	-0.00415 U	0.0994	0.0669 U		0.143		
J1PXF8	8/14/12 8:18	SZ1-3	149421.8	571149.4	0 U	0.0571	0.0283 U	0.0752	0.0735 U		0.135		
J1PXH8	8/14/12 8:18	Replicate of SZ1-3 (J1PXF8)	149421.8	571149.4	-0.0011 U	0.0554	0.011 U	0.0658	0.202		0.148		
J1PXN0	8/14/12 8:18	Split of SZ1-3 (J1PXF8)	149421.8	571149.4	0 U	0.046	0.007 U	0.042	0.199 U		0.242		
J1PXF9	8/14/12 8:30	SZ1-4	149421.8	571165.8	-0.00162 U	0.0582	0.0199 U	0.0816	0.22 U		0.232		
J1PXH0	8/14/12 8:40	SZ1-5	149421.8	571182.1	-0.00068 U	0.0619	0.0306 U	0.0814	0.111 U		0.151		
J1PXH1	8/14/12 7:55	SZ1-6	149436.0	571124.9	-0.000604 U	0.055	0.0121 U	0.0723	-0.0173 U		0.145		
J1PXH2	8/14/12 8:00	SZ1-7	149436.0	571141.3	-0.00112 U	0.032	0.0322 U	0.0396	0.0947 U		0.153		
J1PXH3	8/14/12 8:10	SZ1-8	149434.0	571158.08	-0.000687 U	0.0345	-0.00343 U	0.0485	0.0463 U		0.149		
J1PXH4	8/14/12 7:45	SZ1-9	149450.1	571100.4	0.00865 U	0.0348	-0.00346 U	0.0489	0.0124 U		0.146		
J1PXH5	8/14/12 7:40	SZ1-10	149450.1	571116.7	0.00512 U	0.0336	-0.00754 U	0.0514	0.0511 U		0.175		
J1PXH6	8/14/12 7:37	SZ1-11	149464.3	571092.2	-0.00114 U	0.058	0.0145 U	0.0525	0.119 U		0.147		
J1PXH7	8/14/12 7:35	SZ1-12	149478.4	571084.1	0 U	0.0635	0.0335 U	0.0702	0.0656 U		0.151		
J1PXV5	8/15/12 13:15	SZ2-1	149357.2	571198.2	-0.00336 U	0.121	0.0146 U	0.166	0.0619 U		0.17		
J1PXV6	8/15/12 13:25	SZ2-2	149357.2	571210.1	0 U	0.133	-0.00587 U	0.168	0.122 U		0.153		
J1PXV7	8/15/12 13:35	SZ2-3	149367.6	571168.2	-0.00205 U	0.0738	-0.00205 U	0.0738	0.0286 U		0.181		
J1PXV8	8/15/12 13:45	SZ2-4	149367.6	571180.2	-0.000561 U	0.051	-0.00112 U	0.0564	0.0756 U		0.157		
J1PXV9	8/15/12 13:50	SZ2-5	149367.6	571192.2	0 U	0.0629	-0.00138 U	0.0695	0.0349 U		0.162		
J1PXW0	8/15/12 14:10	SZ2-6	149367.6	571204.1	-0.000721 U	0.0655	-0.000721 U	0.0655	0.0986 U		0.176		
J1PXW1	8/15/12 14:15	SZ2-7	149377.9	571138.3	-0.00125 U	0.0631	0.0157 U	0.057	0.0611 U		0.176		
J1PXW2	8/15/12 14:25	SZ2-8	149377.9	571138.3	-0.0011 U	0.0554	-0.0033 U	0.0686	0.0748 U		0.172		
J1PXW3	8/15/12 14:38	SZ2-9	149377.9	571174.2	-0.000926 U	0.0842	-0.0037 U	0.106	0.0763 U		0.143		
J1PXW7	8/15/12 14:38	Replicate of SZ2-9 (J1PXW3)	149398.7	571102.4	-0.000802 U	0.0729	-0.00481 U	0.0999	0.0143 U		0.151		
J1PXV3	8/15/12 14:38	Split of SZ2-9 (J1PXW3)	149377.9	571174.2	0 U	0.189	0.025 U	0.189	0.043 U		0.239		
J1PXW5	8/15/12 14:50	SZ2-11	149388.3	571120.4	0.0165 U	0.0602	-0.00397 U	0.0825	-0.009 U		0.159		
J1R004	8/16/12 7:28	SZ3-1	149281.3	571248.1	-0.000646 U	0.0588	-0.000646 U	0.0588	0.0872 U		0.14		
J1R005	8/16/12 7:35	SZ3-2	149302.8	571258.9	-0.000866 U	0.0788	0.0182 U	0.0989	0.0399 U		0.147		

J1R006	8/16/12 7:42	SZ3-3	149309.3	571260.4	0 U	0.0653	-0.00431 U	0.0895	0.0305 U	0.153
J1R007	8/16/12 7:48	SZ3-4	149333.4	571259.9	0.0117 U	0.0576	0.00639 U	0.0808	-0.0124 U	0.276
J1R008	8/16/12 8:05	SZ3-5	149340.4	571243.7	0.0156 U	0.0591	-0.00325 U	0.0778	-0.0644 U	0.155
J1R009	8/16/12 8:10	SZ3-6	149348.9	571251.6	-0.00339 U	0.0705	0.0254 U	0.0677	0.0299 U	0.16
J1R010	8/16/12 8:30	SZ3-7	149347.5	571227.6	-0.00197 U	0.0709	-0.00197 U	0.0708	-0.0169 U	0.163
J1R011	8/16/12 8:20	SZ3-8	149355.4	571253.1	-0.000585 U	0.0533	-0.00117 U	0.0589	0.0541 U	0.169
J1R016	8/16/12 8:20	Replicate of SZ3-8 (J1R011)	149355.4	571253.1	-0.00111 U	0.0559	-0.00278 U	0.0665	0.0351 U	0.159
J1R003	8/16/12 8:20	Split of SZ3-8 (J1R011)	149355.4	571253.1	-0.029 U	0.222	0 U	0.222	0.035 U	0.273
J1R012	8/16/12 8:45	SZ3-9	149368.5	571256.0	0 U	0.0646	-0.00142 U	0.0714	0.0545 U	0.155
J1R013	8/16/12 8:55	SZ3-10	149383.4	571265.3	-0.000708 U	0.0643	0.0523 U	0.0643	0.269	0.164
J1R014	8/16/12 9:05	SZ3-11	149386.0	571254.1	0.0146 U	0.064	0.0477 U	0.0579	-0.0491 U	0.187
J1R015	8/16/12 9:10	SZ3-12	149390.5	571249.2	0 U	0.0581	-0.00511 U	0.0852	0.0494 U	0.162
J1R0C1	8/21/12 12:30	SZ4-1	149343.9	570997.3	-0.00306 U	0.11	-0.0122 U	0.151	-0.0171 U	0.17
J1R0C2	8/21/12 12:20	SZ4-2	149350.2	570979.6	-0.00347 U	0.072	-0.00173 U	0.0624	-0.0172 U	0.155
J1R0C3	8/21/12 12:12	SZ4-3	149356.4	570968.9	-0.0013 U	0.0654	-0.00195 U	0.0701	0.0964 U	0.152
J1R0C5	8/21/12 7:55	SZ4-5	149429.8	571061.9	-0.000572 U	0.052	0.0131 U	0.0575	0.213	0.141
J1R0C6	8/21/12 7:52	SZ4-6	149435.9	571065.5	0 U	0.0702	-0.00154 U	0.0776	0.0853 U	0.146
J1R0C7	8/21/12 8:45	SZ4-7	149442.2	571047.8	0.0162 U	0.0615	-0.000677 U	0.0615	0.0352 U	0.187
J1R0C8	8/21/12 8:15	SZ4-8	149441.9	571083.4	-0.00127 U	0.0638	0.0317 U	0.0576	0.157	0.15
J1R0C9	8/21/12 8:18	SZ4-9	149441.9	571090.5	-0.00165 U	0.0593	-0.00659 U	0.0814	0.108 U	0.156
J1R0D0	8/21/12 7:45	SZ4-10	149454.4	571062.1	-0.0007 U	0.0636	0.014 U	0.0837	0.0758 U	0.179
J1R0D1	8/21/12 8:25	SZ4-11	149454.3	571083.4	-0.00352 U	0.0731	-0.00117 U	0.059	0.0515 U	0.146
J1R0D2	8/21/12 8:30	SZ4-12	149466.6	571076.4	-0.00227 U	0.0819	0.0167 U	0.0819	0.0174 U	0.156
J1R0D3	8/21/12 8:30	Replicate of SZ4-12 (J1R0D2)	149466.6	571076.4	0.0144 U	0.0526	-0.00116 U	0.0581	0.0305 U	0.162
J1R0C0	8/21/12 8:30	Split of SZ4-12 (J1R0D2)	149466.6	571076.4	0.004 U	0.057	0.018 U	0.027	0.006 U	0.219
J1R0F7	8/21/12 15:10	FS-1	149350.8	571226.1	-0.000622 U	0.0567	0.0125 U	0.0745	-0.0149 U	0.287
J1R0F8	8/21/12 14:57	FS-2	149353	571191	0.0119 U	0.0582	0.0194 U	0.0834	-0.0041 U	0.192
J1R0F9	8/21/12 15:20	FS-12	149368.5	571252.4	-0.000679 U	0.0619	0.0136 U	0.0814	0.0638 U	0.173
J1R0H0	8/21/12 13:10	FS-13	149472.3	571082.2	-0.00358 U	0.0748	-0.00119 U	0.0604	0.0461 U	0.192
J1R0H1	8/21/12 13:00	FS-14	149475.0	571091.6	-0.00197 U	0.0713	0.0146 U	0.0713	0.128 U	0.17
J1R0H2	8/21/12 13:25	FS-15	149428.0	571124.0	-0.00111 U	0.0559	0 U	0.0505	0.0314 U	0.157
J1R0H9	8/21/12 13:50	FS-3	149417.0	571166.0	0.0152 U	0.0575	-0.00127 U	0.0636	0.0187 U	0.329



Tritium		
LSC		
pCi/g	Q	MDA
-0.00747	U	0.0239
0.0105	U	0.0259
-0.000133	U	0.0248
0.00272	U	0.0226
-0.638	U	3.31
0.00279	U	0.0248
-0.00047	U	0.0243
-0.00222	U	0.0264
-0.000215	U	0.0224
0.00962	U	0.0231
0.00906	U	0.0226
0.00542	U	0.0235
0.000586	U	0.0237
0.0132	U	0.0223
-0.00697	U	0.0296
-0.00523	U	0.0305
-0.00541	U	0.0254
0.0193	U	0.0304
-0.00145	U	0.0253
-0.00186	U	0.0254
0.0262		0.0227
-0.00226	U	0.0296
-0.000285	U	0.0416
-0.0096	U	0.0362
0.379	U	3.16
0.00356	U	0.0328
-0.00355	U	0.0386
-0.00196	U	0.0323

0.0141	U	0.0315
0.00441	U	0.0334
0.00483	U	0.0341
0.00422	U	0.0306
0.00076	U	0.0369
0.00208	U	0.0343
0.00701	U	0.0327
0.88	U	2.86
0.0000546	U	0.032
0.00736	U	0.0329
0.00856	U	0.0368
0.00174	U	0.0379
-0.0166	U	0.0324
-0.00862	U	0.0293
-0.00721	U	0.0343
-0.00235	U	0.0333
-0.00862	U	0.0329
0.00699	U	0.0283
0.0246	U	0.0275
0.011	U	0.028
0.0113	U	0.0299
0.0259	U	0.027
0.0167	U	0.0273
0.0191	U	0.0278
0.441	U	3.15
-0.00345	U	0.0397
0.00706	U	0.0261
-0.000356	U	0.0258
0.0208	U	0.0261
0.0219	U	0.0281
0.00317	U	0.0255
-0.00674	U	0.023

0.0024	U	0.0223
0.0132	U	0.0211
0.0062	U	0.0221
0.00621	U	0.0249
0.0057	U	0.0241
0.0133	U	0.0263
0.00971	U	0.0272
0.0227	U	0.0244

CONSTITUENT	CLASS	J1R0H9			J1R0J0			J1R0J1			J1R0J2			J1R0J3			J1R0J4			8/2
		N149417 E571166			N149435 E571131			N149427 E571167			N149445 E571128			N149411 E571117			N149368 E571160			
		FS-3			FS-4			FS-5			FS-6			FS-7			FS-8			
		8/21/12 13:50			8/21/12 13:20			8/21/12 14:00			8/21/12 13:15			8/21/12 13:35			8/21/12 14:30			
	ug/kg	Q	PQL	ug/kg																
Acenaphthene	PAH	9.4	U	9.4	9.2	U	9.2	10	U	10	9.9	U	9.9	590	X	10	9.8	U	9.8	50
Acenaphthylene	PAH	8.4	U	8.4	8.3	U	8.3	9	U	9	8.9	U	8.9	66	JX	9	8.8	U	8.8	45
Anthracene	PAH	2.9	U	2.9	25		2.8	3.1	U	3.1	3	U	3	3.1	U	3.1	3	U	3	2400
Benzo(a)anthracene	PAH	3	U	3	120		2.9	3.2	U	3.2	3.2	U	3.2	3300		3.2	3.1	U	3.1	3800
Benzo(a)pyrene	PAH	6	U	6	82		5.9	6.4	U	6.4	6.3	U	6.3	1700		6.4	6.3	U	6.3	1500
Benzo(b)fluoranthene	PAH	3.9	U	3.9	110		3.9	4.2	U	4.2	4.2	U	4.2	2200		4.2	4.1	U	4.1	1900
Benzo(ghi)perylene	PAH	6.7	U	6.7	45		6.7	7.2	U	7.2	7.1	U	7.1	840		7.2	7	U	7	410
Benzo(k)fluoranthene	PAH	3.7	U	3.7	38		3.6	3.9	U	3.9	3.9	U	3.9	1000		3.9	3.8	U	3.8	930
Chrysene	PAH	5.7	J	4.5	120		4.5	4.8	U	4.8	4.8	U	4.8	2800		4.8	4.7	U	4.7	3100
Dibenz[a,h]anthracene	PAH	10	U	10	10	U	10	11	U	11	11	U	11	240	X	11	11	U	11	170
Fluoranthene	PAH	12	J	12	170		12	13	U	13	13	U	13	6500		13	13	U	13	8400
Fluorene	PAH	4.9	U	4.9	17	J	4.9	5.3	U	5.3	5.2	U	5.2	460	X	5.3	5.1	U	5.1	980
Indeno(1,2,3-cd)pyrene	PAH	11	U	11	40		11	12	U	12	12	U	12	710		12	12	U	12	790
Naphthalene	PAH	11	U	11	11	U	11	12	U	12	60									
Phenanthrene	PAH	11	U	11	66		11	12	U	12	12	U	12	3600		12	12	U	12	7500
Pyrene	PAH	11	J	11	200		11	12	U	12	12	U	12	6400		12	12	U	12	7500
Aroclor-1016	PCB	2.8	U	2.8	2.7	U	2.7	2.8	U	2.8	2.7	U	2.7	2.7	U	2.7	2.8	U	2.8	2.6
Aroclor-1221	PCB	8	U	8	7.9	U	7.9	8	U	8	7.9	U	7.9	7.7	U	7.7	8	U	8	7.6
Aroclor-1232	PCB	2	U	2	2	U	2	2	U	2	2	U	2	1.9	U	1.9	2	U	2	1.9
Aroclor-1242	PCB	4.6	U	4.6	4.5	U	4.5	4.6	U	4.6	4.4									
Aroclor-1248	PCB	4.6	U	4.6	4.5	U	4.5	4.6	U	4.6	4.4									
Aroclor-1254	PCB	2.6	U	2.6	32		2.5	2.6	U	2.6	2.5									
Aroclor-1260	PCB	2.6	U	2.6	26	P	2.5	2.6	U	2.6	2.5									

J1R0J5			J1R0J6			J1R0J7		
364 E571175 FS-9			N149373 E571180 FS-10			N149362 E571192 FS-11		
1/12 14:37			8/21/12 14:45			8/21/12 14:52		
Q	PQL	ug/kg	Q	PQL	ug/kg	Q	PQL	
UD	50	9.4	U	9.4	9.7	U	9.7	
UD	45	52	JX	8.5	8.7	U	8.7	
D	15	2000		2.9	3	U	3	
D	16	2700		3	1400		3.1	
D	32	1400		6.1	760		6.2	
D	21	1700		4	920		4.1	
XD	36	670		6.8	450		7	
D	20	650		3.7	330		3.8	
D	24	2300		4.6	1300		4.7	
XD	55	200	X	10	160	X	11	
D	65	5700		12	3500		13	
D	26	630	X	5	650		5.1	
D	60	570		11	450		12	
UD	60	11	U	11	12	U	12	
D	60	3900		11	3700		12	
D	60	5500		11	3300		12	
U	2.6	2.8	U	2.8	2.6	U	2.6	
U	7.6	8	U	8	7.6	U	7.6	
U	1.9	2	U	2	1.9	U	1.9	
U	4.4	4.6	U	4.6	4.4	U	4.4	
U	4.4	4.6	U	4.6	4.4	U	4.4	
JP	2.5	35		2.6	5.8	JP	2.5	
U	2.5	22	P	2.6	3.5	J	2.5	

HEIS Number	Sample Date	Location	Sample Description	Layer	Northing	Easting	Chrysotile	Amosite	Crocidolite	Tremolite	Actinolite	Anthophyllite
							%	%	%	%	%	%
J1PXL7	8/14/12 8:52	SZ1-1	Gravel	1	149407.7	571190.3	ND	ND	ND	ND	ND	ND
J1PXL8	8/14/12 8:45	SZ1-2	Gravel	1	149407.7	571206.6	ND	ND	ND	ND	ND	ND
J1PXL9	8/14/12 8:18	SZ1-3	Gravel	1	149421.8	571149.4	ND	ND	ND	ND	ND	ND
J1PXM0	8/14/12 8:30	SZ1-4	Gravel	1	149421.8	571165.8	ND	ND	ND	ND	ND	ND
J1PXM1	8/14/12 8:40	SZ1-5	Gravel	1	149421.8	571182.1	ND	ND	ND	ND	ND	ND
J1PXM2	8/14/12 7:55	SZ1-6	Gravel/soil	1	149436.0	571124.9	ND	ND	ND	ND	ND	ND
J1PXM3	8/14/12 8:00	SZ1-7	Gravel	1	149436.0	571141.3	ND	ND	ND	ND	ND	ND
J1PXM4	8/14/12 8:10	SZ1-8	Soil and gravel	1	149434.0	571158.1	ND	ND	ND	ND	ND	ND
J1PXM5	8/14/12 7:45	SZ1-9	Gravel	1	149450.1	571100.4	ND	ND	ND	ND	ND	ND
J1PXM6	8/14/12 7:40	SZ1-10	Gravel	1	149450.1	571116.7	ND	ND	ND	ND	ND	ND
J1PXM7	8/14/12 7:37	SZ1-11	Gravel/soil	1	149464.3	571092.2	ND	ND	ND	ND	ND	ND
J1PXM8	8/14/12 7:35	SZ1-12	Gravel	1	149478.4	571084.1	ND	ND	ND	ND	ND	ND
J1PXM9	8/14/12 8:18	Replicate of SZ1-3 (J1PXF8)	Gravel	1	149421.8	571149.4	ND	ND	ND	ND	ND	ND
J1PXN1	8/14/12 8:18	Split of SZ1-3 (J1PXF8)	Soil	1	149421.8	571149.4	ND	ND	ND	ND	ND	ND
J1PXW8	8/15/12 13:15	SZ2-1	Soil and stones	1	149357.2	571198.2	ND	ND	ND	ND	ND	ND
J1PXW9	8/15/12 13:25	SZ2-2	Soil and stones	1	149357.2	571210.1	ND	ND	ND	ND	ND	ND
J1PXX0	8/15/12 13:35	SZ2-3	Soil and stones	1	149367.6	571168.2	Trace	ND	ND	ND	ND	ND
J1PXX1	8/15/12 13:45	SZ2-4	Soil and stones	1	149367.6	571180.2	ND	ND	ND	ND	ND	ND
J1PXX2	8/15/12 13:50	SZ2-5	Soil and stones	1	149367.6	571192.2	ND	ND	ND	ND	ND	ND
J1PXX3	8/15/12 14:10	SZ2-6	Tar	1	149367.6	571204.1	8	ND	ND	ND	ND	ND
J1PXX4	8/15/12 14:15	SZ2-7	Soil and stones	2	149377.9	571138.3	ND	ND	ND	ND	ND	ND
J1PXX5	8/15/12 14:25	SZ2-8	Soil and stones	1	149377.9	571138.3	ND	ND	ND	ND	ND	ND
J1PXX6	8/15/12 14:38	SZ2-9	Sand and stone	1	149377.9	571174.2	ND	ND	ND	ND	ND	ND
J1PXX8	8/15/12 14:50	SZ2-11	Sand and stone	1	149388.3	571120.4	ND	ND	ND	ND	ND	ND
J1R000	8/15/12 14:38	Replicate of SZ2-9 (J1PXW3)	Sand and stone	1	149398.7	571102.4	ND	ND	ND	ND	ND	ND
J1PXX4	8/15/12 14:38	Split of SZ2-9 (J1PXW3)		1	149377.9	571174.2	ND	ND	ND	ND	ND	ND
J1R018	8/16/12 7:28	SZ3-1	Soil and stones	1	149281.3	571248.1	ND	ND	ND	ND	ND	ND
J1R019	8/16/12 7:35	SZ3-2	Soil and stones	1	149302.8	571258.9	ND	ND	ND	ND	ND	ND
J1R020	8/16/12 7:42	SZ3-3	Soil and stones	1	149309.3	571260.4	ND	ND	ND	ND	ND	ND
J1R021	8/16/12 7:48	SZ3-4	Soil and stones	1	149333.4	571259.9	ND	ND	ND	ND	ND	ND
J1R022	8/16/12 8:05	SZ3-5	Soil and stones	1	149340.4	571243.7	ND	ND	ND	ND	ND	ND
J1R023	8/16/12 8:10	SZ3-6	Soil and stones	1	149348.9	571251.6	ND	ND	ND	ND	ND	ND
J1R024	8/16/12 8:30	SZ3-7	Soil and stones	1	149347.5	571227.6	6	ND	ND	ND	ND	ND
J1R025	8/16/12 8:20	SZ3-8	Soil and stones	1	149355.4	571253.1	ND	ND	ND	ND	ND	ND
J1R026	8/16/12 8:45	SZ3-9	Soil and stones	1	149368.5	571256	ND	ND	ND	ND	ND	ND
J1R027	8/16/12 8:55	SZ3-10	Soil and stones	1	149383.4	571265.3	ND	ND	ND	ND	ND	ND
J1R028	8/16/12 9:05	SZ3-11	Soil and stones	1	149386.0	571254.1	ND	ND	ND	ND	ND	ND
J1R029	8/16/12 9:10	SZ3-12	Soil and stones	1	149390.5	571249.2	ND	ND	ND	ND	ND	ND
J1R030	8/16/12 8:20	Replicate of SZ3-8 (J1R011)	Soil and stones	1	149355.4	571253.1	ND	ND	ND	ND	ND	ND
J1R002	8/16/12 8:20	Split of SZ3-8 (J1R011)		1	149355.4	571253.1	ND	ND	ND	ND	ND	ND
J1R0D4	8/21/12 12:30	SZ4-1	Soil and stones	1	149343.9	570997.3	ND	ND	ND	ND	ND	ND
J1R0D5	8/21/12 12:20	SZ4-2	Soil and stones	1	149350.2	570979.6	ND	ND	ND	ND	ND	ND
J1R0D6	8/21/12 12:12	SZ4-3	Soil and stones	1	149356.4	570968.9	ND	ND	ND	ND	ND	ND
J1R0D8	8/21/12 7:55	SZ4-5	Soil and stones	1	149429.8	571061.9	ND	ND	ND	ND	ND	ND
J1R0D9	8/21/12 7:52	SZ4-6	Soil and stones	1	149435.9	571065.5	ND	ND	ND	ND	ND	ND
J1R0F0	8/21/12 8:45	SZ4-7	Soil and stones	1	149442.2	571047.8	ND	ND	ND	ND	ND	ND
J1R0F1	8/21/12 8:15	SZ4-8	Soil and stones	1	149441.9	571083.4	ND	ND	ND	ND	ND	ND
J1R0F1		Tar	2				7	ND	ND	ND	ND	ND
J1R0F1		Tar paper	3				70	ND	ND	ND	ND	ND
J1R0F2	8/21/12 8:18	SZ4-9	Soil and stones	1	149441.9	571090.5	ND	ND	ND	ND	ND	ND
J1R0F2		Tar	2				ND	ND	ND	ND	ND	ND
J1R0F2		Tar paper	3				60	ND	ND	ND	ND	ND
J1R0F3	8/21/12 7:45	SZ4-10	Soil and stones	1	149454.4	571062.1	ND	ND	ND	ND	ND	ND
J1R0F4	8/21/12 8:25	SZ4-11	Soil and stones	1	149454.3	571083.4	ND	ND	ND	ND	ND	ND
J1R0F5	8/21/12 8:30	SZ4-12	Soil and stones	1	149466.6	571076.4	ND	ND	ND	ND	ND	ND
J1R0F6	8/21/12 8:30	Replicate of SZ4-12 (J1R0D2)	Soil and stones	1	149466.6	571076.4	ND	ND	ND	ND	ND	ND
J1R099	8/21/12 8:30	Split of SZ4-12 (J1R0D2)		1	149466.6	571076.4	ND	ND	ND	ND	ND	ND
J1R0H3	8/21/12 15:10	FS-1	Soil and stones	1	149350.8	571226.1	ND	ND	ND	ND	ND	ND
J1R0H4	8/21/12 14:57	FS-2	Soil and stones	1	149353.0	571191.0	ND	ND	ND	ND	ND	ND
J1R0J8	8/21/12 13:50	FS-3	Gravel	1	149417.0	571166.0	ND	ND	ND	ND	ND	ND
J1R0J9	8/21/12 13:20	FS-4	Gravel	1	149435.0	571131.0	ND	ND	ND	ND	ND	ND
J1R0K0	8/21/12 14:00	FS-5	Gravel	1	149427.0	571167.0	ND	ND	ND	ND	ND	ND
J1R0K1	8/21/12 13:15	FS-6	Gravel	1	149445.0	571128.0	ND	ND	ND	ND	ND	ND
J1R0K2	8/21/12 13:35	FS-7	Soil and stones	1	149411.0	571117.0	ND	ND	ND	ND	ND	ND
J1R0K2		Rubber	2				ND	ND	ND	ND	ND	ND
J1R0K3	8/21/12 14:30	FS-8	Soil and stones	1	149368.0	571160.0	ND	ND	ND	ND	ND	ND
J1R0K4	8/21/12 14:37	FS-9	Soil and stones	1	149364.0	571175.0	ND	ND	ND	ND	ND	ND

J1R0K5	8/21/12 14:45	FS-10	Soil and stones	1	149373.0	571180.0	ND	ND	ND	ND	ND	ND
			Tar	2			60	ND	ND	ND	ND	ND
J1R0K6	8/21/12 14:52	FS-11	Soil and stones	1	149362.0	571192.0	ND	ND	ND	ND	ND	ND

Revised 100-N-61:1 Plume Chase Agreement:

**From:** Chance, Joanne C [joanne.chance@rl.doe.gov]  
**Sent:** Monday, December 17, 2012 2:26 PM  
**To:** Jakubek, Joshua E; Elliott, Wanda  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** RE: Revised 100-N-61:1 Plume Chase Agreement:  
Hi Wanda and Josh,

This plan is acceptable to me. 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

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**From:** Jakubek, Joshua E [mailto:jejakube@wch-rcc.com]  
**Sent:** Thursday, December 13, 2012 12:32 PM  
**To:** Elliott, Wanda; Chance, Joanne C  
**Cc:** Buckmaster, Mark A; Saueressig, Daniel G; Nielson, Renee J; Howell, Theresa Q  
**Subject:** Revised 100-N-61:1 Plume Chase Agreement:

Wanda & Joanne-

I have attached a revised plume chase request for additional remediation and resampling at the 100-N-61:1 group of sites as well as the sample data results cross tabs per Wanda's request.

Would you please let me know if the proposed approach will be acceptable for this area?

<<Revised 100-N-61\_1 grouping additional remediation and resampling writeup.doc>>

Thanks,

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

# Attachment 27

Activity ID	Activity Name	TPA	% Cmpl	RD	Start	Finish	J	F	M	A	M	J	J
							3	1	2	3	1	2	3
<b>100-C-7 Waste Site Remediation</b>													
<b>Excavation</b>													
BC502A71	100-C-7:1 West Wall Add Excav (125,000 BCM)	Y	65%	18	03-Oct-12 A	05-Feb-13							
<b>Loadout</b>													
BC502B91	100-C-7:1 Continued Stockpile Loadout (50,000 UST)	Y	70%	30	03-Oct-12 A	27-Feb-13							
BC502B41	100-C-7:1 West Wall Loadout (95,000 UST)	Y	20%	18	06-Nov-12 A	05-Feb-13							
<b>Backfill</b>													
BC502C11	100-C-7:1 Backfill (110,000 BCMs)	Y	45%	18	03-Oct-12 A	05-Feb-13							
BC502C1	100-C-7 Backfill (352,000 BCMs)	Y	77%	18	25-Oct-12 A	05-Feb-13							
BC502C31	100-C-7:1 Post C-7 Work Remaining Material (475,000 BCMs)	Y	0%	92	06-Feb-13	17-Jun-13							
BC502C21	100-C-7:1 West Wall Backfill (125,000 BCMs)	Y	0%	25	02-May-13*	17-Jun-13							
<b>Revegetation</b>													
BC502E2	100-C-7 Perform Revegetation (30 acres)	Y	0%	18	16-Jan-13*	14-Feb-13							
<b>Closeout Sampling &amp; Docs</b>													
BC502D111	Closure Sampling & Analysis for 100-C-7:1 West Sidewall	Y	20%	35	18-Dec-12 A	07-Mar-13							
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	11-Mar-13	14-Aug-13							
BC524G76	RL/Regulator Review Draft A Closure Document for 100-C-7:1 West Sidewall	Y	0%	26	14-May-13	27-Jun-13							
<b>Final Project Closeout</b>													
BC502H61	C71W RL/Regulator Approve Backfill Concurrence for 100-C-7:1	Y	0%	8	07-Jan-13	17-Jan-13							
BC524G6	C71Z Issue Rev. 0 Closure Document 100-C-7:1	Y	0%	2	07-Jan-13*	08-Jan-13							
BC524G96	Backfill Concurrence for 100-C-7:1 and West Wall Plume	Y	0%	8	15-Apr-13*	25-Apr-13							

# Attachment 28

169185

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Tuesday, January 08, 2013 9:29 AM  
**To:** ^WCH Document Control  
**Subject:** FW: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1  
Please provide a chron number. This email documents a regulatory approval.

Thanks,

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

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**From:** Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]  
**Sent:** Tuesday, January 08, 2013 8:33 AM  
**To:** Saueressig, Daniel G  
**Cc:** Post, Thomas C  
**Subject:** RE: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1

I concur with the proposed 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

"Saueressig, Daniel G" ---01/08/2013 06:59:22 AM---Hi Laura, have you had a chance to review this request yet?

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: 01/08/2013 06:59 AM  
Subject: RE: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1

---

Hi Laura, have you had a chance to review this request yet?

Thanks,

Dan Saueressig

FR Environmental Project Lead  
Washington Closure Hanford  
521-5326

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**From:** Saueressig, Daniel G  
**Sent:** Monday, December 31, 2012 7:45 AM  
**To:** 'Laura Buelow'  
**Cc:** Post, Thomas C  
**Subject:** RE: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1

Hi Laura, the 180 day extension you approved below expires on 1/8/13. I'd like to propose closing the staging piles that needed the extension (SPAs 100-C-9, 100-C-10 and 100-C-11) from a 40 CFR 264 perspective as discussed in section 4.5.2 of the 100 Area RDR/RAWP (DOE/RL-96-17, Rev. 6) per the attached backfill concurrence that addressed these piles and demonstrated that the areas met the remedial action goals of the interim ROD and RDR/RAWP.

Let me know if you concur with the administrative closure of the staging piles areas. The areas addressed in the attached backfill concurrence will be included in the final RSVP for the 100-C-7:1.

FYI, one other SPA set to expire in February (100-C-14) was included in the attached backfill concurrence, so I plan to consider that SPA closed as well.

Thanks,

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

---

**From:** Laura Buelow [<mailto:Buelow.Laura@epamail.epa.gov>]  
**Sent:** Wednesday, June 27, 2012 3:16 PM  
**To:** Saueressig, Daniel G  
**Cc:** Post, Thomas C  
**Subject:** Re: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1

I concur with a 180 day extension to the staging pile.

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](mailto:buelow.laura@epa.gov)

"Saueressig, Daniel G" ---06/27/2012 05:36:12 AM---Hi Laura, I'd like to request a 6 month extension to a couple staging pile areas supporting 100-C-7:

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: 06/27/2012 05:36 AM  
Subject: REQUEST FOR STAGING PILE EXTENSION AT 100-C-7:1

---

Hi Laura, I'd like to request a 6 month extension to a couple staging pile areas supporting 100-C-7:1 that are set to expire in July 2012. The increased scope associated with remediation of 100-C-7:1 has necessitated the need for this extension.

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 29

168946

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Thursday, December 06, 2012 3:07 PM  
**To:** ^WCH Document Control  
**Subject:** FW: REQUEST FOR STAGING PILE APPROVAL  
**Attachments:** spaforfill.PDF

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

Thanks,

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

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**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

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Dan,

I concur. Thanks for the maps.

Tom

12/10/2012

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.

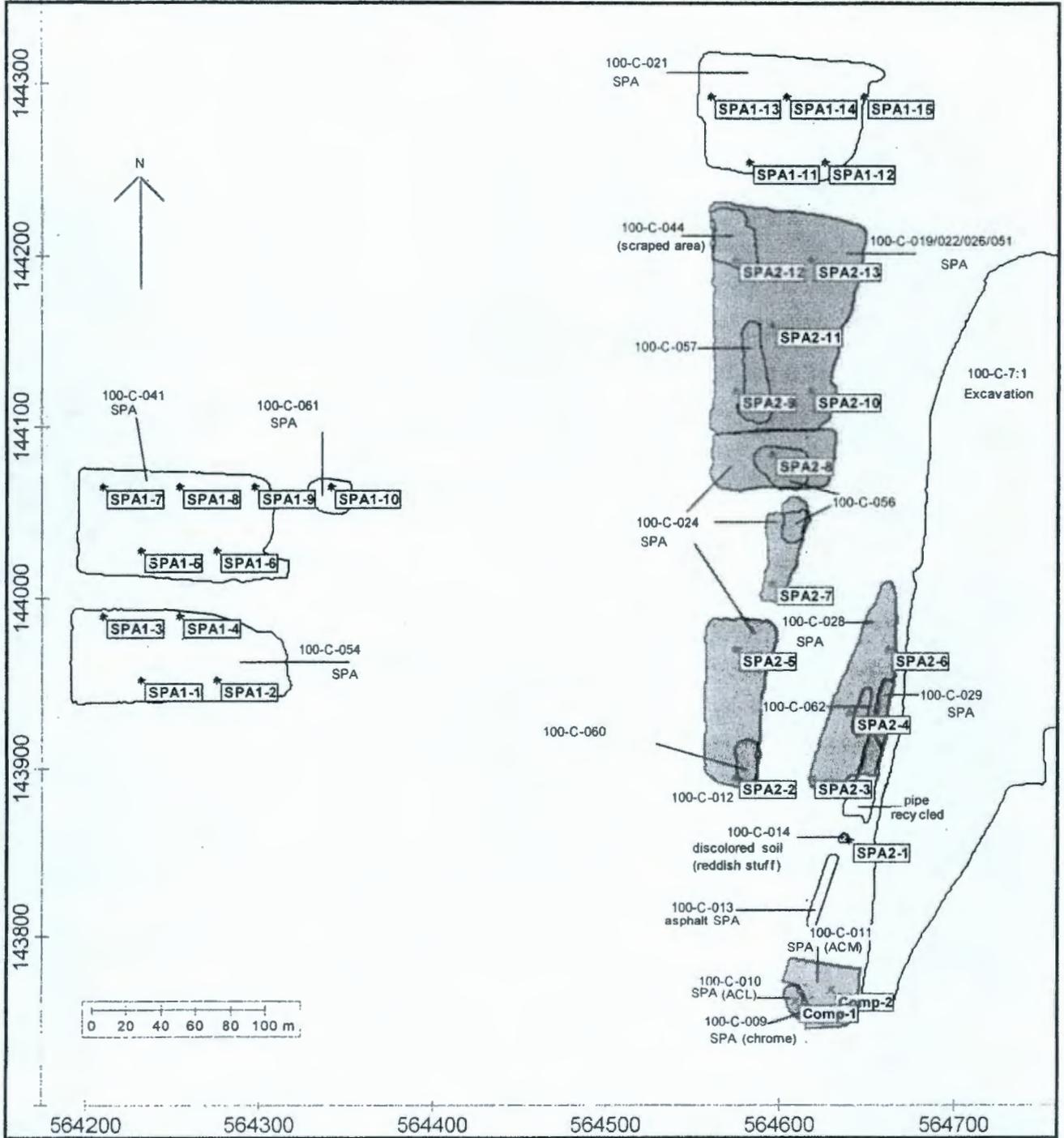
Thanks,

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]

### 100-C-7:1 Staging Pile Areas - Verification Sample Locations.



# Attachment 30

300 Area Closure Project Status  
January 10, 2013  
100/300 Area Combined Unit Manager Meeting

**Ongoing Activities**

- 300-15 – Process sewer remediation and verification sampling north of Apple complete, backfill and revegetation pending.
- 300-274 – Final remediation and verification sampling complete, backfill and revegetation pending.
- 300-46 – Verification sampling complete, backfill and revegetation pending.
- 309 Reactor – Core drilling and lower reactor space interference removal ongoing.
- 340 Complex – Preparations for vault removal ongoing.
- 3730 – Hazardous material removal and hot-cell stabilization preparations complete, building is demolition ready.
- 308A – TRIGA reactor lifted and transported to ERDF, backfill initiated.
- 323 – Below-grade demolition and tank removal completed.
- 321 – Remediation of UPR-300-4 plume complete, verification sampling pending.
- 329 – Above-grade demolition completed.
- 310 – Demolition and backfill completed,.
- 382 Complex – Demolition and backfill completed.
- 324 – Steam coil replacement and backfill of geo-probe excavation on north side of building completed..

**Demolition & Remediation Preparation Activities**

- 326 Building – Hazardous material and asbestos abatement initiated.
- 309 Below-Grade & Remaining 300 Area Waste Sites – Awarded subcontract, mobilization preparations initiated.
- Preparing to backfill north of Apple waste sites and complete revegetation.
- RRLWS & RLWS Piping – Characterization sampling initiated.

**60-Day Project Look Ahead**

- Complete 340 Vault removal preparations, prepare for lift and transport.
- Complete north of Apple process sewer (300-15) backfill.
- Revegetate all north of Apple waste sites.
- Initiate 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 31

## ESH&QA Mission Completion Project

January 10, 2013

### Long-Term Stewardship

- The consolidated 100-F Area turnover and transition package was submitted to RL for review on December 19, 2012.
- Continue drafting of the 100-FR-1 Operable Unit Interim Remedial Action Report.

### Remedial Investigation of Hanford Site Releases to the Columbia River

- The *Columbia River Component Risk Assessment: Volume II: Baseline Human Health Risk Assessment* (DOE/RL-2010-117, Rev. 0) was distributed in December 2012.

### Document Review Look-Ahead

Document	Regulator Review Start	Duration
100-FR-1 Operable Unit Interim Remedial Action Report	March 2013	30 days