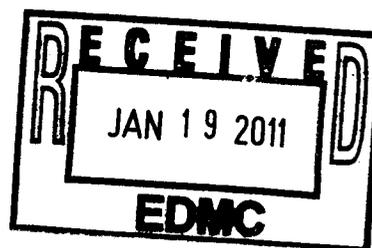


Please distribute to the following:

100/300 AREA UNIT MANAGER MEETING ATTENDANCE AND DISTRIBUTION

NAME	E-MAIL ADDRESS	MSIN	COMP
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Long, Heather	halong@wch-rcc.com	H4-10	WCH

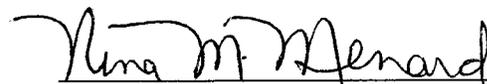


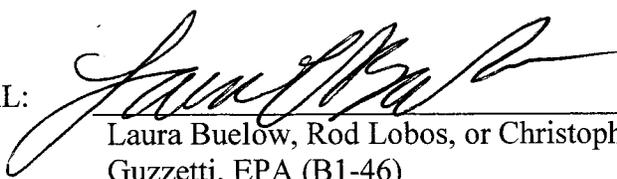
100/300 AREA UNIT MANAGERS MEETING
APPROVAL OF MEETING MINUTES

November 4, 2010

APPROVAL:  Date 1/13/2011
Mark French, DOE/RL (A3-04)
River Corridor Project Manager

APPROVAL:  Date 1/13/2011
Brian Charboneau, DOE/RL (A6-33)
Groundwater Project Manager

APPROVAL:  Date 1-13-2011
Nina Menard, Ecology (H0-57)
Environmental Restoration Project
Manager

APPROVAL:  Date 1-13-2011
Laura Buelow, Rod Lobos, or Christopher
Guzzetti, EPA (B1-46)
100 Area Project Manager

APPROVAL:  Date 1-13-2011
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); and Mission Completion****November 4, 2010****ADMINISTRATIVE**

- Next Unit Manager Meeting (UMM) – The next meeting will be held December 9, 2010, 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. Attachment B documents any delegations received from the agencies.
- Approval of Minutes – The October 14, 2010, 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 C).
- Agenda – Attachment D is the meeting agenda.

EXECUTIVE SESSION (Tri-Parties Only)

Executive Session: An Executive Session was held by RL, EPA, and Ecology prior to the November 4, 2010, UMM. The parties discussed the wording in a draft TPA change notice regarding a protocol for interim site closure for waste sites determined to be co-located with orchard affected land. Proposed revisions are being incorporated by John Neath for additional discussion in the near future. Attachment D is the meeting agenda.

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

Attachment 1 provides status and information for groundwater. Attachment 2 provides a schedule and map showing the status of remediation at 100-IU-2 and 100-IU-6. No issues were identified and no action items were documented.

Agreement 1: Attachment 3 documents EPA approval for removing a fire water line to finish excavation activities at 100-F-48.

Agreement 2: Attachment 4 documents EPA approval for removing rebar from the stockpile area East of 100-F-48, removal of debris below the design depth at 100-F-47, removal of pipe cradles at 100-F-57, and excavation and stockpiling of pipe at 100-F-62.

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

Attachment 1 provides status and information for groundwater. No issues were identified and no action items were documented.

Agreement 1: Attachment 5 documents Ecology approval to extend the ramp at 132-H-3.

Agreement 2: Attachment 6 documents Ecology approval for additional staging pile areas for the 132-H-3 waste site and the location and placement of ramps for 132-H-1 and 132-H-3.

Agreement 3: Attachment 7 documents Ecology approval for revised design drawings and comment response packet for the 100-D-8, 100-D-65, and 100-D-66 spillways.

Agreement 4: Attachment 8 documents Ecology approval for the revised Air Monitoring Plan for the 100-H Area Remaining Sites and Burial Grounds Remedial Action (October 2010).

Agreement 5: Attachment 9 documents Ecology approval for the revised Air Monitoring Plan for the 100-D/DR Area Remaining Sites and Burial Grounds Remedial Action (October 2010).

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

Attachment 1 provides status and information for groundwater. Attachment 10 provides status and information for D4/ISS at 100-N. No issues were identified and no action items were documented.

Agreement 1: Attachment 11 documents Ecology approval for the revised Air Monitoring Plan for the 100-N Area Remedial Action (July 2010).

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

Attachment 1 provides status and information for groundwater. Attachment 12 provides a photo of the 118-K-1 Burial Ground. Attachment 13 provides a photo of a new excavator with an extension arm. No issues were identified and no agreements or action items were documented.

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

Attachment 1 provides status and information for groundwater. Attachment 14 provides a schedule and map showing the status of remediation at 100-C-7. No issues were identified and no action items were documented.

Agreement 1: Attachment 15 documents EPA approval for TPA-CN-392 that replaces pages 3-19 and 3-20 in DOE/RL-2009-44, *Sampling and Analysis Plan for the 100-BC-1, 100-BC-2, and 100-BC-5 Operable Units Remedial Investigation/Feasibility Study*, Rev. 0. The change allows for Well #6 to be completed as a 4-inch well screened in the uppermost water-bearing unit of the Ringold Formation Upper Mud Unit.

Agreement 2: Attachment 16 documents EPA approval for conducting confirmatory sampling work at 118-B-8:3 under the existing air monitoring plan.

300 AREA – 618-10/11 (GROUNDWATER, SOILS, D4/ISS)

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

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

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

REGULATORY CLOSEOUT DOCUMENTS OVERALL SCHEDULE

No issues were identified and no agreements or action items were documented.

MISSION COMPLETION PROJECT

Attachment 17 provides status or information regarding the Orphan Sites Evaluations, Long-Term Stewardship, River Corridor Baseline Risk Assessment, 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 issues were identified and no agreements or action items were documented.

Attachment A

100/300 AREA UNIT MANAGER MEETING
ATTENDANCE AND DISTRIBUTION
November 4, 2010

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Attachment B

Attachment C

100/300 Area UMM
Action List
November 4, 2011

Open (O)/ Closed (X)	Action No.	Co.	Actionee	Project	Action Description	Status
O	100-177	RL	J. Neath	100-D and 100-H	Based on the July 2009 100/300 Area Unit Manager Meeting, Agreement 1, DOE-RL will include notation flags in WIDS to identify which waste sites exceed WAC 173-340 (2007) cleanup levels where so evaluated by Ecology.	Open: 4/8/10; Action:
O	100-179	RL	J. Neath	All	DOE will develop in coordination with EPA and Ecology an agreed protocol for interim site closure for waste sites determined to be co-located with orchard affected land.	Open: 8/12/10; Action:

Attachment D

100/300 Area Unit Manager Meeting
November 4, 2010
Washington Closure Hanford Building
2620 Fermi Avenue, Richland, WA 99354
Room C209; 1:30-4:30 p.m.

1:30 - 1:45 p.m.

Administrative:

- Approval and signing of previous meeting minutes (October 2010)
- Update to Action Items List
- Next UMM (12/9/2010, Room C209)

1:45 - 4:00 p.m.

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

Note: Each session is estimated at 5 to 15 minutes.

- 100-F & 100-IU-2/6 Areas (Mike Thompson/Jamie Zeisloft)
- 100-D & 100-H Areas (Jim Hanson/Tom Post/Joanne Chance)
- 100-N Area (Joanne Chance, Rudy Guercia, Mike Thompson)
- 100-K Area (Jim Hanson, Jamie Zeisloft, Ellen Dagon, Steve Balone)
- 100-B/C Area (Greg Sinton, Tom Post)
- 300 Area - 618-10/11 exclusively (Chris Smith)
- 300 Area (Mike Thompson/Chris Smith/Rudy Guercia)
- Regulatory Closeout Documents Overall Schedule (John Neath, Mike Thompson)
- Mission Completion Project (John Sands)

4:00 - 4:15 p.m.

Special Topics/Other

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

4:15 - 4:30 p.m.

Adjourn

Attachment E

100/300 Area Executive Session
Tri-Parties Only
November 4, 2010
Washington Closure Hanford Building
2620 Fermi Avenue, Richland, WA 99354
Room C209; 1:00-1:30 p.m.

1:00 - 1:30 p.m.

Executive Session (Tri-Parties Only):

- Lead arsenate levels in the 100 Area soils that are associated with the application of pesticides in the orchards

1:00 - 1:30 p.m.

Administrative:

- Next Executive Session (12/9/2010, Room C209)

Attachment 1

**100/300 Areas Unit Managers Meeting
November 4, 2010**

100-FR-3 Operable Unit—Nathan Bowles / Mary Hartman

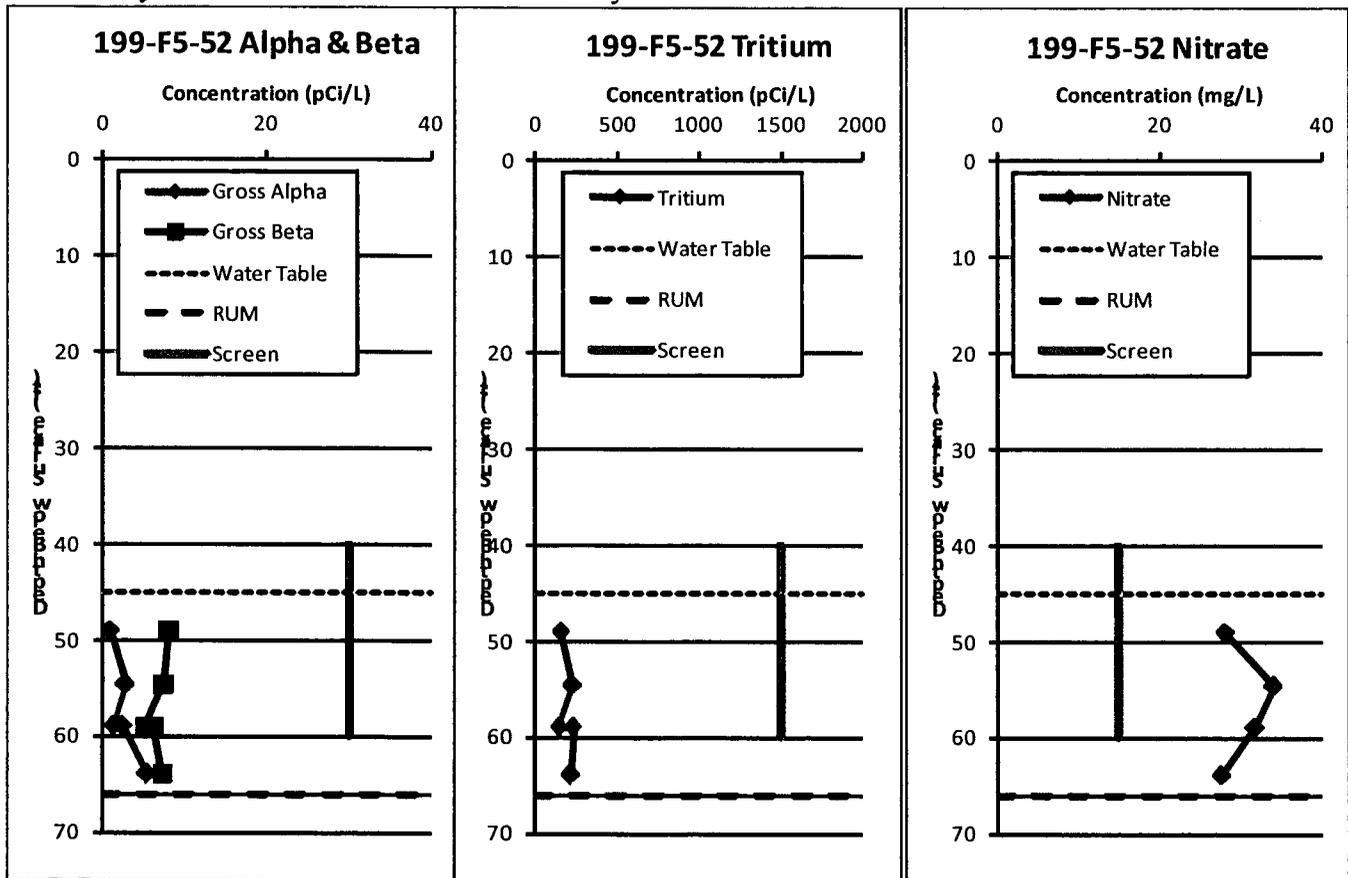
(M-015-64-T01, 11/30/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units for groundwater and soil.)

Schedule Status - On schedule to meet TPA milestone. Field investigations are underway.

As reported last month, the third round of RI/FS spatial and temporal groundwater sampling for IU2/IU6 was scheduled for October. The third round for 100-F was initiated in September, with 12 of the 19 wells sampled. No groundwater sampling was conducted in October.

Most of the groundwater characterization data for new RI wells 199-F5-52 (C7790) and 199-F5-54 (C7791) have been received. Selected constituents are graphed below. Cr(VI), Sr-90 and TCE were undetected in all samples.

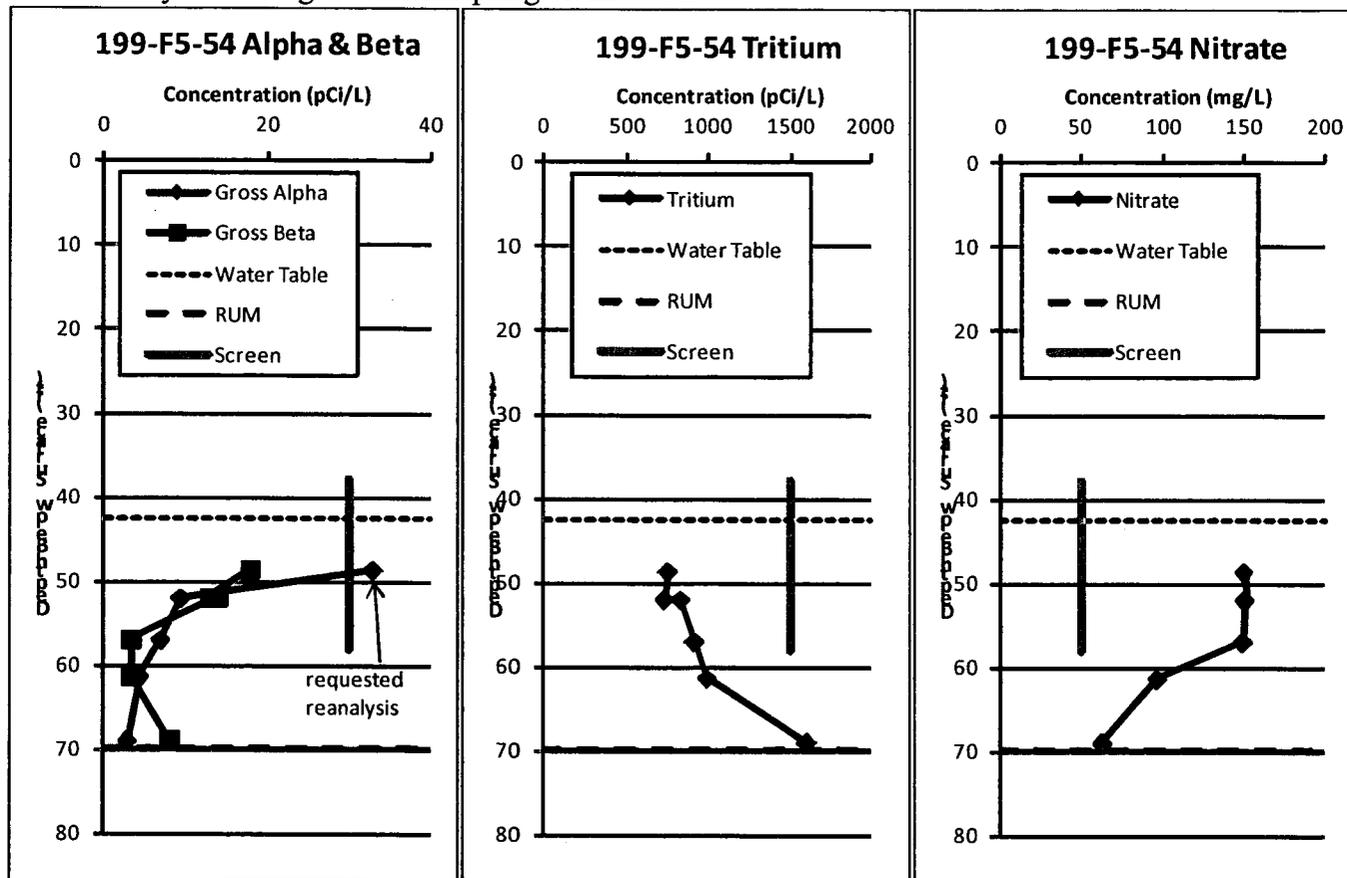
199-F5-52 is located in northern 100-F. Sampling results were as expected, comparable to other wells in the vicinity. There was little vertical variability.



Well 199-F5-54 is located in eastern 100-F, south of the Cr(VI) and Sr-90 plumes. Tritium concentrations were comparable to other wells in the region, and increased with depth. This well has higher nitrate concentrations than nearby wells (near the river), especially in the upper part of the aquifer. The main 100-F nitrate plume was thought to be slightly farther west.

**100/300 Areas Unit Managers Meeting
November 4, 2010**

The shallowest sample had a relatively high gross alpha concentration (33 pCi/L; DWS = 15 pCi/L). We do not know what radionuclide caused the high alpha; characterization samples were not analyzed for uranium because it is not a groundwater COPC. The only alpha-emitter on the groundwater COPC list is Am-241 (undetected in this sample). U-238 is on the master soil target analyte list. We are requesting the sample be reanalyzed to confirm the alpha result, and if possible, be analyzed for uranium. Uranium will be analyzed during routine sampling of this well.



Drilling resumed at well C7791 (199-F5-53) on November 1, 2010, after the stop work was lifted for sampling during drilling. Expected water table is at ~37 ft and the well will be drilled and screened in the RUM (expected depth ~110 ft, depending on water production in the RUM).

Development of a draft EE/CA is continuing for potentially allowing expedited remedial actions to be implemented for meeting TPA Target Date M-016-110-T01 due December 31, 2012. Collection of additional upwelling (river-porewater) sampling is being proposed to support this EE/CA and the RI/FS report. Following consultation with RL and EPA, a TPA-CN was drafted to capture this proposed work scope. This TPA-CN is currently under RL review.

100-HR-3 Groundwater OU – Fred Biebesheimer / John Smoot

(M-016-111B, 12/31/2010, Expand current pump-and-treat system at 100-HR-3 operable unit utilizing ex situ treatment, in situ treatment or a combination of both to a total 500 gpm capacity or as specified in the work plan).

Schedule Status - On schedule to meet TPA milestone. The new DX pump-and-treat system will provide a capacity of 600 gpm to augment the existing HR3 operable unit treatment capacity of

**100/300 Areas Unit Managers Meeting
November 4, 2010**

350 gpm, and will be operational in the fourth quarter of this calendar year. Acceptance testing is underway at the DX facility.

(M-15-70-T01, 07/30/2011, 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).

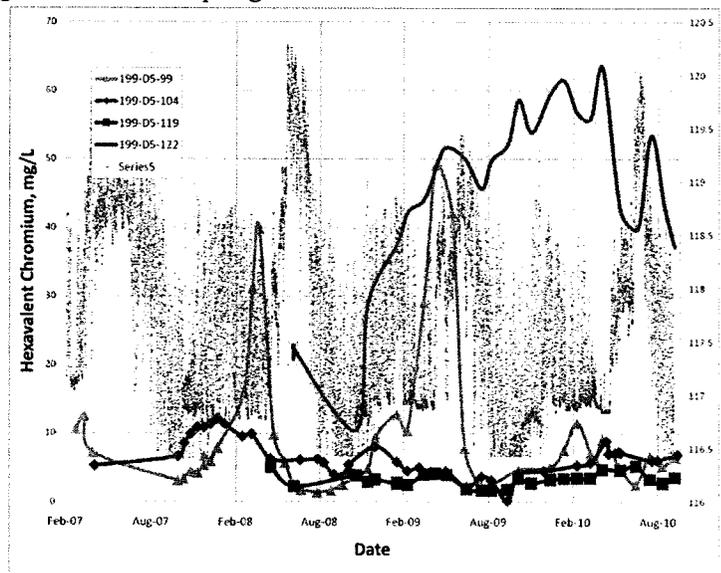
Schedule Status - On schedule to meet TPA milestone. Field investigations were initiated following approval of the Rev. 0 RI/FS work plan documents. Drilling and sampling delayed to resolve safety issues.

- HR-3 Treatment System
 - For the period October 1 through 31, 2010:
 - The system is pumping with four wells from the 100-D North plume (199-D8-53, 199-D854, 199-D8-68, and 199-D8-72), two RUM wells in 100 H Area (199-H3-2C & 199-H4-12C), and three wells in H Area along the river (unconfined; 199-H4-15A, 199-H4-3, and 199-H4-63)
 - Total average flow through the system was 183 gpm.
 - Average influent hexavalent chromium concentration for H Area was 34 ug/L
 - Average influent hexavalent chromium concentration for D Area was 191 ug/L
- DR-5 Treatment System
 - For the period October 1 through 31, 2010:
 - The DR-5 is running with two wells downgradient of the North plume (199-D5-20 and 199-D5-92) and two wells slightly downgradient of the "hot spot" in the South plume (199-D5-39 and 199-D5-104).
 - Total average flow through the system was 32 gpm
 - The average influent hexavalent chromium concentration was 1615 ug/L.
- ISRM Pond Sealing.
 - Waiting for ISRM pond liquids to finish evaporation.
 - CHPRC is evaluating decommissioning path forward, upon completion of the evaluation, a meeting will be held to present recommendations.
- DX construction is in the acceptance testing phase. Contaminated groundwater has been introduced in the system at this point, and the system is performing well.
- Planned treatment capacity at the 100-HX facility is 800 gpm. The formal HX design has reached 90%. Construction is underway on road maintenance, HDPE pipe runs (>4000 ft), and road crossings. Building construction is underway. The process building walls is being insulated, and site preparation is underway at the transfer building.
- Deep Chromium Investigation
 - August 18, 2009: Several Aquifer Tests were conducted on three RUM wells to address the CERCLA 5-year Review Action Item 12-1. A report is in issuance.
- RPO Well Sampling

Nine RPO wells (C7581, 7584, C7585, C7587, C7597, C7598, C7604, C7605, C7606) are scheduled for December sampling, which were not sampled due to the work stoppage in September.

**100/300 Areas Unit Managers Meeting
November 4, 2010**

- RD/RA Work Plan and IAMP. Both documents are being revised to make them stand-alone for 100-HR-3 and bring them up to date (i.e. include DX and HX expansions). The RD/RA Work Plan and IAMP have comments back from DOE and are being revised.
- EM-22 Technology Projects
 - Investigation for mending ISRM Barrier: Laboratory studies into alternative ZVI amendments and dispersants were completed, and the results are being documented, a report is expected to be issued in December, 2010.
- RI/FS Activities
 - All three spatial and temporal uncertainty groundwater sampling events have been conducted. Data are still being received from the laboratories.
 - New aquifer tube installation was completed in the D and H Areas and two sampling rounds are complete.
 - Drilling of RI Wells started and then halted at the end of September. Drilling and sampling was restarted on Nov. 1 in H Area (C7626, C7628, and C7629)..
 - One borehole has been completed. Borehole drilling will resume around Thanksgiving.
 - The ramifications of the work stoppage on the RI/FS report schedule is currently under evaluation.
 - Monitoring results from the south plume “hot-spot” are presented on the above. Well D5-122 is up gradient of the new 199-D5-104 “hot-spot” extraction well that is now pumping to the DR-5 extraction system. Cr⁺⁶ concentrations continue to fluctuate. Recently, concentrations appear to increase at high water stage and decrease at low river stage, which is opposite of what trends we see in wells near the river.



100-NR-2 Groundwater OU – Nathan Bowles / Deb Alexander

(M-015-61, 12/31/2009, Submit RI/FS Work Plan for the 100-NR-1 and 100-NR-2 Operable Units.)
Schedule Status- TPA milestone met by DOE/RL submittal of Draft A document to Ecology on December 22, 2009. Ecology comments on the Draft B version of the document were received on June 21, 2010, and responses are being resolved and incorporated into a Rev. 0 document. Until the work plan is finalized and to expedite the well drilling work, the RI/FS SAP will be finalized to a Rev. 0 for approval to include 8 agreed-upon wells prior to final approval of the work plan addendum. The SAP will then be revised to a Rev. 1 alongside the finalization of the Rev. 0 work plan addendum.

(M-015-60, six months after the ROD amendment [03/29/2011], if an amendment to the 100-NR-1/2 Record of Decision for Interim Action is issued, DOE shall submit an RD/RA Work Plan.)
Schedule Status - The revision to the NR-1/2 OU Interim Action Remedial Design/Remedial Action Work Plan has continued. In order to meet TPA Milestone M-015-60, this draft revision is due to the regulators within six months of the IROD Amendment issue date, resulting in a March 29, 2011 due date.

**100/300 Areas Unit Managers Meeting
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(M-015-62-T01, 12/31/2011, 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. The FS Report and PP will evaluate the permeable reactive barrier technology and other alternatives and will identify a preferred alternative in accordance with CERCLA requirements.)

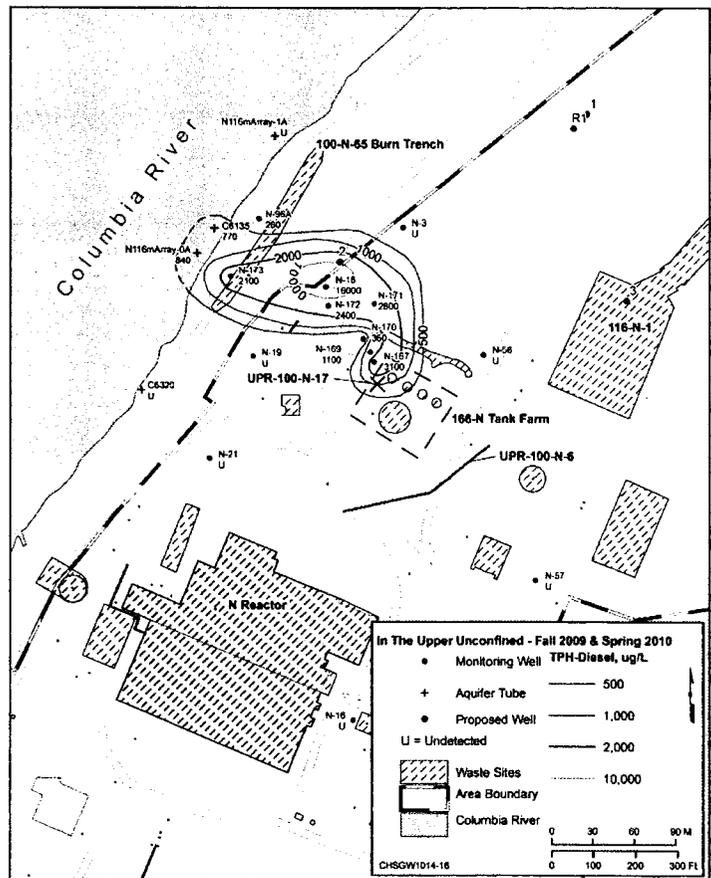
Schedule Status - Future schedule status will depend on approval of RI/FS work plan documents.

- 100-N Integrated Sampling and Analysis Plan – The Draft A document was submitted to Ecology by RL on June 2, 2010, and is still under Ecology review. Comments have not yet been received.

- RI/FS Activities

- Planning is near finalization for collecting upwelling (river-porewater) samples from the bottom of the Columbia River as proposed in the Draft B RI/FS Work Plan Addendum. The proposed Rev. 0 SAP developed for this sampling was provided to Ecology for their final concurrence on October 26, 2010. The sampling subcontract was awarded, but approval of the SAP is required to initiate sampling. A kickoff meeting was held on November 1, 2010. If the SAP is approved in time, sampling is expected to begin early to mid November following work at 100-BC.

- As reported last month, a TPA Change Notice (TPA-CN-370) was approved by RL and Ecology for a second round of spatial-and-temporal groundwater well sampling in September prior to approval of the RI/FS Work Plan Addendum and SAP. The associated sampling was initiated in September with 18 of the 26 wells sampled. No groundwater sampling was conducted in October.



- Six of the proposed eight RI/FS well drilling locations have been determined and are in the process of being staked and surveyed. These include four boreholes/wells (#s 1, 3, 4, and R1) in the area of the 1301-N crib/trench, one borehole/well (#5) in the area of the 1325-N crib, and one well (#R2) along the 100-N shoreline. The map above shows the final proposed location for well #2, which is a replacement for well N-18. In addition, this map shows the approximate location of the diesel plume at 100-N, with reference to data from surrounding wells. The eighth well (#6) also has a proposed location, immediately east of 199-K-182 and south of the 130-N-1 (183-N Filter Backwash Pond) WIDS site. The need for this well was identified as a result of unanticipated Cr(VI) detections in well 199-N-74 (at ~27 ppb). No wells nearby to N-74 have Cr(VI) detections near that value (where detections are present, they are just above the detection limit). Well 199-K-182, to the southwest of N-74, has levels at ~ 80 ppb, and there are no wells currently bounding the KR-4 plume east-northeast of K-182 towards N-74. This proposed well #6 would be installed to

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further define the Cr(VI) extent in the southern portion of 100-N between K-182 and N-74. A final proposed location will be determined this month.

- Phytoextraction
 - The Draft A TTP for conducting a “hot” demonstration-scale treatability test of phytoextraction at the NR-2 site was transmitted to Ecology for review on September 27, 2010. No comments have been received from Ecology.

- Apatite PRB
 - Preparations are continuing for the 600-foot Barrier Expansion Design Optimization Study (DOS) in the saturated zone. Plans are currently set to initiate injections in November.
 - The Draft A demonstration-scale (300 ft) Jet Injection TTP was transmitted by RL to Ecology on September 16, 2010 for Ecology review. No comments have been received from Ecology.
 - Field pilot testing of the NR-2 infiltration gallery continued in October. This pilot testing is being conducted by PNNL using water with a bromide tracer.
 - Data packages for the 171 new well installations continue to come in and are being evaluated as they are available. To date, the data from the upriver end of the expansion was reviewed and shared with PNNL, and half the data from the downriver barrier expansion wells are in and being processed. A final package of data will be prepared when all the reports are finalized. The final performance monitoring required for the original apatite barrier injections (performed in 2006, 2007, and 2008) was performed on August 15 and 16. Results from that sampling event are in, and are being prepared for presentation to the UMM at a future date.

100-KR-4 Groundwater OU – Art Lee

- **Monthly Cultural Monitoring:** The monthly monitoring of cultural resources for the KR-4 Pump-and-Treat Project was conducted on Friday October 22, 2010. During the monitoring off road vehicle tracks were observed at four locations near wells 199-K-119, 199-K-120, 199-K-127 and 199-K-162. The following recommendations have been identified to address areas that have continued to have problems with vehicles driving off road
 - Place railroad ties along both sides of the road on the lower terrace from well 199-K-120 to well 199-K-162.
 - Project managers remind personnel to read signage and to remain on the gravel roads. It is important to note that although no vegetation may be growing along the edges of the graveled roads; all personnel are required to remain on the graveled roads.

- The updated KR4 Pump-and-Treat System cultural resource treatment plan was sent to the Tribes on June 17 with a request for comments by July 23, 2010. Comments have been incorporated and the *Updated Treatment Plan for the Protection of Cultural Resources for the 100-KR-4 Pump-and-Treat Project - Formerly DOE/RL-96-44, Revision 0*, SGW-46017, Revision 1 was transmitted to RL for distribution on October 12, 2010.

- **RI/FS Activities:**
 - The K DU data from the first round of risk assessment sampling has been delivered, reviewed, and loaded into HEIS. The second round of sampling has been completed and data loaded into HEIS. The third round of sampling for high river stage has been completed and data loaded into HEIS and data is being evaluated.
 - Drilling to total depth completed on 100-KR-4 RI wells C7683, C7687, C7691, C7685, C7690, and C7689. Well construction and development has been completed for wells C7683, C7687,

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C7691, C7685, C7690, and C7689. Slug tests has been completed for wells C7683, C7689, and C7690. Drilling is continuing at wells C7692 and C7693. Drilling initiated at well C7695 which is the RUM well at the KW head house area.

- Drilling of RI borehole C7831 and C7832 have been completed. Attempts to collect pumped water sample unsuccessful at the two boreholes. The boreholes are planned to be completed as temporary wells with the lower portion below the water table screened to collect a water sample. TPA-CN-384 to complete the boreholes as temporary wells to collect a water sample was approved on October 6, 2010.
 - Preliminary groundwater sample results from well C7683 indicate hexavalent chromium contamination in groundwater range from 11 ppb to 30 ppb in the bottom 10 feet of the well (187 – 197 ft bgs).
 - Preliminary groundwater sample results from well C7691 indicate 35 ppb hexavalent chromium contamination in groundwater at sample collected at the 83 ft bgs interval. Subsequent groundwater samples have been less than detectable.
 - Preliminary groundwater sample results from well C7692 indicate 11.9-70.8 ppb hexavalent chromium contamination in groundwater at sample collected at 60 to 80 ft bgs. Subsequent groundwater samples have been less than 10 ppb down to 104.7 ft bgs. Expected total depth is 184 ft bgs.
 - August sampling completed on new aquifer tubes installed as part of the KR-4 remedial investigation. Paperwork has been prepared for low river stage sampling.
 - Preparation of the RI/FS Report that will lead to a final record of decision is in progress.
- Interim Action Monitoring Plan: The decisional draft of the plan, which summarizes existing KR-4 Operable Unit interim action monitoring requirements into one updated document. Draft is being updated to incorporate comments received.
 - Resin Testing with KX Groundwater:
 - Issued documents SGW-46221, *100 Area Groundwater Chromium Resin Management Strategy for Ion Exchange Systems*, and SGW-46687, *K Area Resin Alternatives Analysis Report*, documenting results of resin testing and recommending use of SIR-700 single use resins at the 100 K Area pump and treat systems.
 - Resin testing using KX groundwater indicated the ion exchange system capacity using SIR-700 is >80,000 bed volumes (BVs) at an influent pH of 5. The estimated capacity at an influent pH of 6.5 is 34,000 BVs for the K Area pump and treat systems. A draft Process Test Plan for Implementation of ResinTech SIR-700 in the KW pump and Treat Facility is out for internal review. The process test will determine lowest operating pH at the KW pump and treat system using SIR-700 resin to achieve processing at least 34,000 BVs without extensive facility modifications. Planned start date for test is December 2010. Test duration to process 34,000 BVs at 100 gpm is 136 days
 - KR-4 OU Pump-and-Treat Systems Expansions/Modifications:
 - Phase 3 detailed design for KW, KR-4, and KX is complete.
 - Well locations have been staked and Area of Potential Affect notification was sent on March 25, 2010. Cultural Resources Review transmitted to SHPO and Tribes on July 27, 2010. SHPO did not concur with determination of no adverse effect. Telephone conference was held on September 8 to address SHPO comments and response transmitted to SHPO on September 30 including additional information requested.
 - Following integration discussions with 100K remediation of the 100-K-63 waste site, the new Phase 3 well for the KW P&T (199-K-196) will be relocated up gradient out of the

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contamination/excavation area to a location between existing extraction wells 199-K-132 and 199-K-138. 199-K-132 and 199-K-138 are shallow wells and installing a fully penetrating well between the two will help provide capture along this line of extraction wells.

- Phase 3 procurement has been initiated for long lead items and to begin non-field related construction activities. Shop fabrication completed on well racks.
- The KR-4 P&T system is currently shut down for PLC upgrades and extraction well head modifications. Upgrades associated with transfer building #2 are complete and construction walk will be conducted to allow power to be turned back on to the transfer building. Upgrades to the KR-4 treatment building are about 80% complete. Progressing to complete work in the treatment building by end of next week to start up the treatment building to start acceptance testing at the treatment building and transfer building #2. PLC and well head modifications are about 65% complete at transfer building #1. Software logic for new HMI with new PLC is complete and ready for testing after construction is complete.
- Construction work initiated at KR-4 transfer building #1 for building modifications associated with Phase 3 design. This work is being coordinated with the KR-4 PLC upgrade and well head modification projects. New electrical subpanel is being installed at transfer building #1 for tie-in of new KR-4 extraction wells.
- Procurement and shop fabrication for new well landing plates and electrical/mechanical racks to older KR-4 wells is in progress.

- Remedial Process Optimization (RPO):

- Update to the 100-KR-4 RPO Conceptual Design Document is in review and comment. The document calls for taking a three-phased approach to meeting the 2012 and 2020 goals. The K-Area RPO Conceptual Design document was reviewed with RL on May 6 to discuss approach and groundwater modeling results. The document will be revised and updated in the coming months.
- Implementation (initiation of detailed design) of the first of the three RPO phases is underway as Phase 3 KR4 OU pump-and-treat systems realignment.
- TPA-CN-359 approved for inclusion of the Phase 3 RPO changes to the KR-4 and KX RDR/RAWP documents, DOE/RL-2006-75 and DOE/RL-2006-52, respectively.
- RPO Phases 4 and 5 call for implementation of bioremediation actions in KW, KE, and the area around the 116-K-2 Trench, as well as additional well drilling and realignment of the pump-and-treat systems. Planning for implementation of a bio-infiltration treatability test at 100-KW is underway.
- Preparation of a sampling and analysis plan, to support drilling of KR-4 OU RPO and compliance monitoring wells in FY 2011, is underway.

- 100-KR-4 System for the period of October 1 through October 31:

- The system was shut down October 5 to complete the PLC upgrades and well head modifications.
- Total average flow through the system was approximately 216 gpm prior to shutdown. Average influent hexavalent chromium concentration was approximately 23 µg/L prior to shut down.

- KX System for the period of October 1 through October 31:

- The facility operated normally.
- Hexavalent chromium concentration remains <10 ppb at extraction wells 199-K-149 and 199-K-150 and the extraction wells have been turned off to evaluate rebound. Hexavalent chromium concentration at well 199-K-150 has been below 10ppb since October 2009, and at well 199-K-149 the concentration has been <10 ppb since June. TPA-CN-359 has been approved to convert

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the two extraction wells to monitoring wells and convert monitoring wells 199-K-152 and 199-K-182, where hexavalent chromium contamination is >60 ppb, to extraction wells connected to the KX pump and treat system. Work package is being prepared and long lead equipment is being procured..

- Total average flow through the system was approximately 474 gpm in October.
- Average influent hexavalent chromium concentration was 45 µg/L in October.
- Sand has been observed in groundwater extracted from well 199-K-178. Extraction rate has been reduced from this well to minimize filter plugging. This will impact the planned aquifer test at well 199-K-178. Work package is being prepared to redevelop the well.

- KW System for the period of October 1 through October 31:

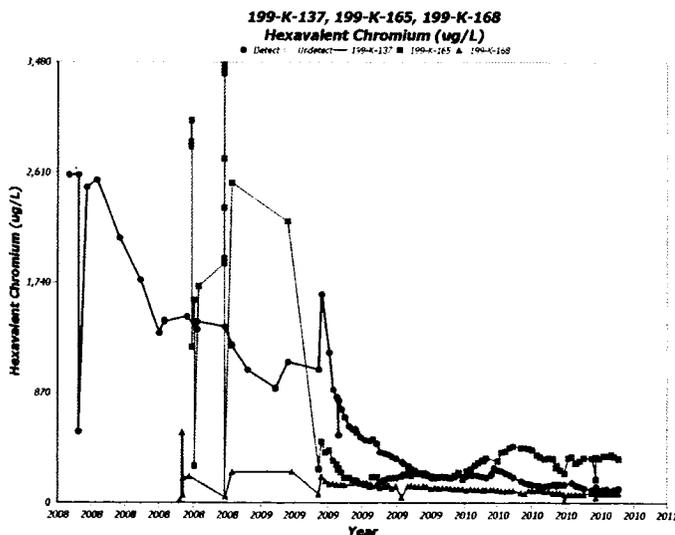
- The KW system operated normally.
- Total average flow through the system was approximately 199 gpm for October.
- Average influent hexavalent chromium concentration was 136 µg/L for October.
- 10 totes of resin from KW planned to be shipped for regeneration were above the authorization limit for C-14 (based on Sr-90 values) and could not be shipped. The Authorized Limit Application for the resin is currently undergoing revision to add C-14 as a COC and allow for our increased production as the authorization limit for C-14 will increase based on dose modeling calculations. Also, the Waste Management Plan is also undergoing revision to allow for composite sampling of the two totes representing one vessel of similar material. The composite analysis may result in some failed totes meeting the authorization limit.
- Planning has been initiated to convert well 199-K-173 into an extraction well connected to the KW pump and treat system to treat the high hexavalent chromium at this well (~960 µg/L in sample taken August 12).

- October Monitoring Activities:

Routine Monitoring: During October, no groundwater samples were collected. Sampling will resume in November.

- KW extraction wells: Based on operational field sampling, average monthly values for all extraction wells were at or above the 20 µg/L aquatic standard in October. Cr6+ levels in the 2 wells closest to the river, K-132 and K-138, remained at or just above the RAO, at monthly averages of 20 µg/L and 22 µg/L, respectively. Key wells farther inland (K-137, K-165) experienced different trends.

Well 199-K-137's average was up slightly to 109 µg/L in October while well 199-K-165's average dropped to 341 µg/L. The extraction well pair of 199-K-168 and 199-K-139 dropped slightly to averages of 68 and 34 µg/L, respectively. Well 199-K-139, located within 30 ft of 199-K-168 is screened across the upper 25 ft of the 84 ft thick aquifer, while well 199-K-168 is screened across the lower 60 ft. A potential response to increases at 199-K-173, downgradient extraction well Well 199-K-166 averaged 48 µg/L for the month, down from September's 62 µg/L average value.



Extraction Wells, High Cr6+ Plume Segment, KW P&T

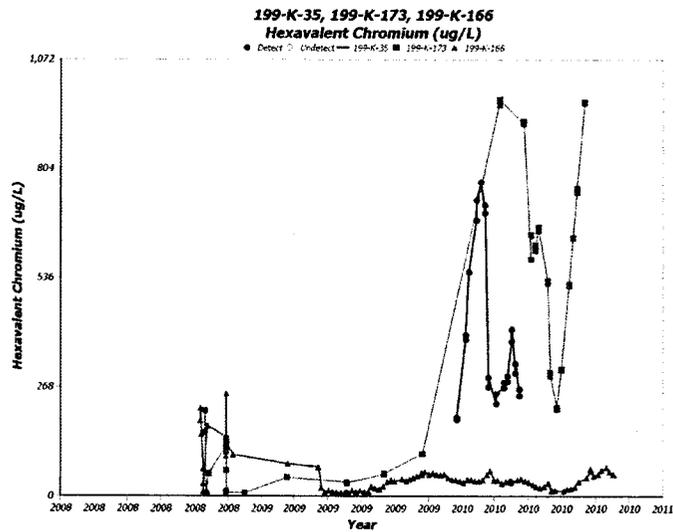
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KW Monitoring Wells: No sampling results to report

KR4 Extraction Wells: Based on monthly operational sampling, Cr6+ levels for wells at the NE end of the 116-K-2 trench and along the central section were generally below 20 µg/L at all wells (only K-116A and K-127 reported sampled as the system was shut down for upgrades early in the month) in October field results. The highest concentration detected at these wells was 20 µg/L at 199-K-116A. Limited well sampling at the SW end of the K-2 trench ranged between 9 to 25 µg/L, at 199-K-120A and 199-K-144, to 62 µg/L at well 199-K-145. Well 199-K-145 (59 µg/L, avg.) is downgradient of monitoring well 199-K-18 (175 µg/L, in August). All extraction wells were shut down after October 4, 2010.

KR4 Monitoring Wells: No wells were sampled in October.

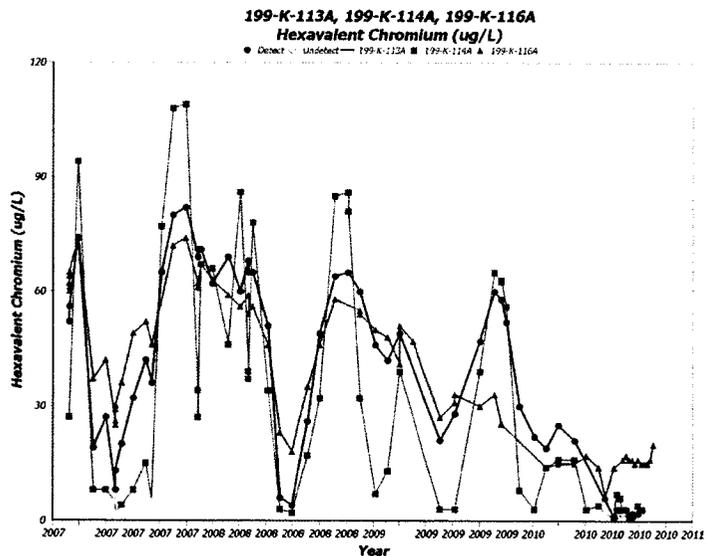
Monitoring Wells KW P&T



KX Extraction Wells:

Northern plume: October operational field results were relatively constant in overall Cr6+ trends. Well 199-K-130 remained constant, at 39 µg/L, with September data as did well 199-K-131 at 35 µg/L. Values ranged from 48 µg/L (K-148) to near non-detect at wells 199-K-149 (6 µg/L) and 199-K-150 (3 µg/L), both of which remain shut down except to sample. These wells are planned to be converted to monitoring or injection wells. Data from wells 199-K-150, K-149 and K-131 suggest this end of the plume is being remediated. Well 199-K-147, downgradient of the Calcium Polysulfide test facility dropped slightly from 35 µg/L Cr6+ in September to 29 µg/L in October..

KR-4 SW Extraction Wells 116-K-2 Trench



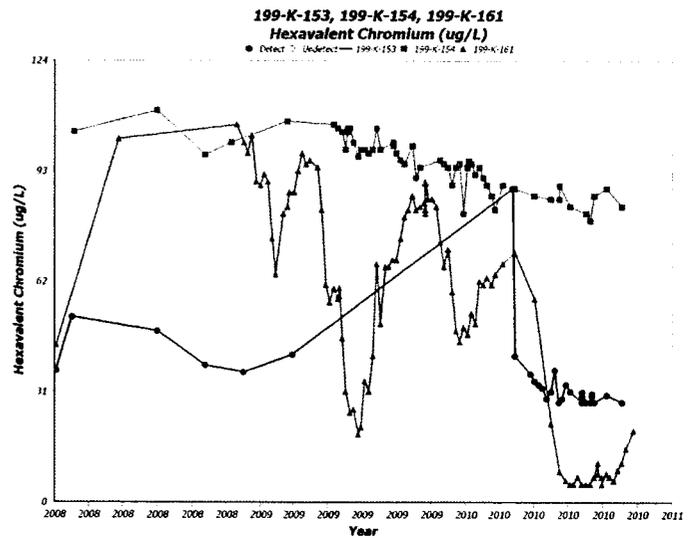
Plume at Northeast End of K-2 Trench: September field results indicated generally long-term decreases in overall Cr6+ levels. For wells downgradient of the 116-K-2 trench, Cr6+ concentrations were constant at 21 µg/L at 199-K-146 but increased to an average of 15 µg/L at well 199-K-161.

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KX Plume, Northeast End of 116-K-2 Trench

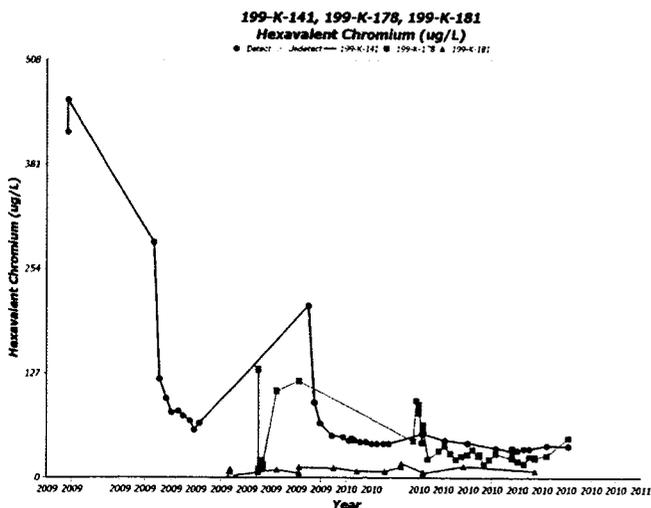
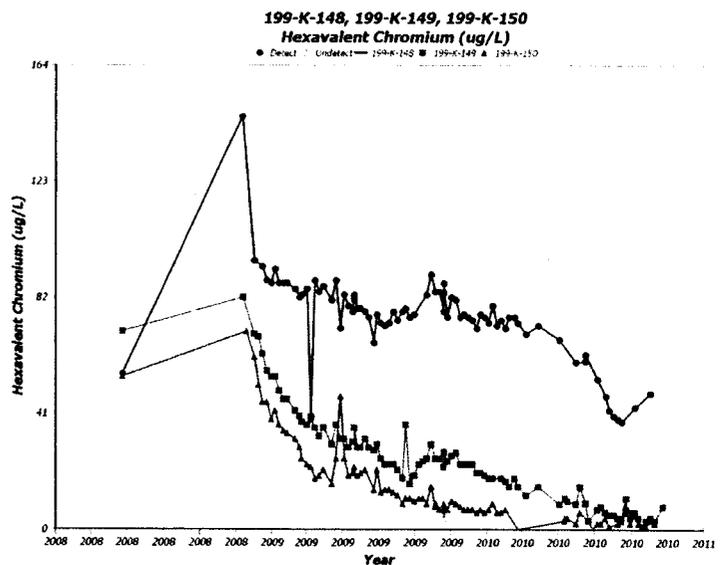
- For wells upgradient of the trench, but downgradient of the plume at 199-K-171, average Cr6+ concentrations of 28, 83 and 54 µg/L were detected at respective wells 199-K-153, 199-K-154 and 199-K-163 for October, down slightly from September values. These wells averaged a combined extraction rate of 180 - 190 gpm.

Hexavalent chromium concentrations well 199-K-171 was 49 µg/L in mid October, up from 25 µg/L in early October. This well lays 800 m upgradient of wells 199-K-163 and 199-K-154 and operated an average pumping rate of 60 gpm.



- KE Reactor Plume: Cr6+ at well K-141 was 38 µg/L in October. At K-178, Cr6+ increased to 48 µg/L. The two wells extracted at a combined rate of 70-80 gpm.

- KE Monitoring Wells: Wells 199-K-29 and K-30 are located within a demolition zone where building 115-KE and 117-KE have been torn down. These wells will be geophysically logged and water samples collected when the area is down-posted, prior to the wells being decommissioned in support of subsurface remediation.



KX Extraction Wells, Northernmost plume

KX Extraction and Monitoring Wells, 105-KE Reactor

KX Monitoring Wells: No monitoring wells were sampled in October.

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100-BC-5 Operable Units—Nathan Bowles / 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 - On Schedule to meet TPA milestone. Field investigations are underway.

As reported last month, all three rounds of RI/FS spatial and temporal groundwater sampling for 100-BC have been completed.

Drilling resumed at RI/FS well 2 (C7784; 199-B2-16) on November 1, 2010, after the stop work was lifted for sampling during drilling. The well is located near the water intake structure.

Final planning and preparations are complete for collecting upwelling (river-porewater) samples from the bottom of the Columbia River along the 100-BC Area as proposed in the RI/FS Work Plan Addendum and SAP. The sampling subcontract was awarded, and sampling is expected to begin early November. A kickoff meeting was held on November 1, 2010.

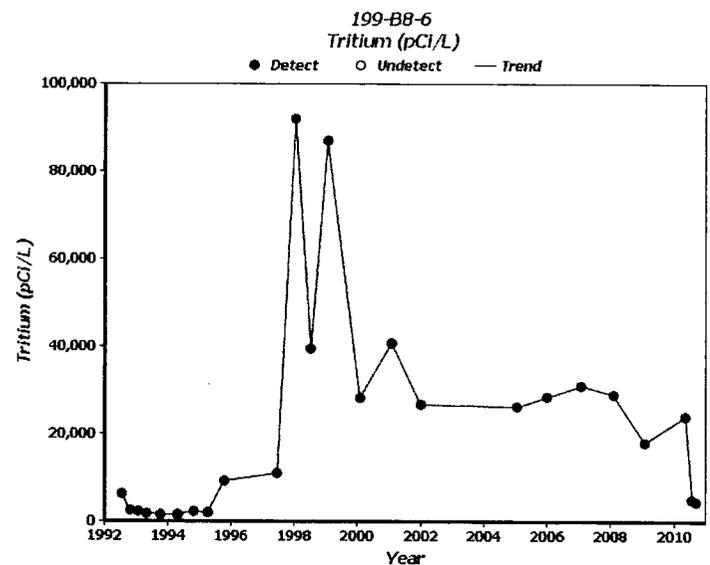
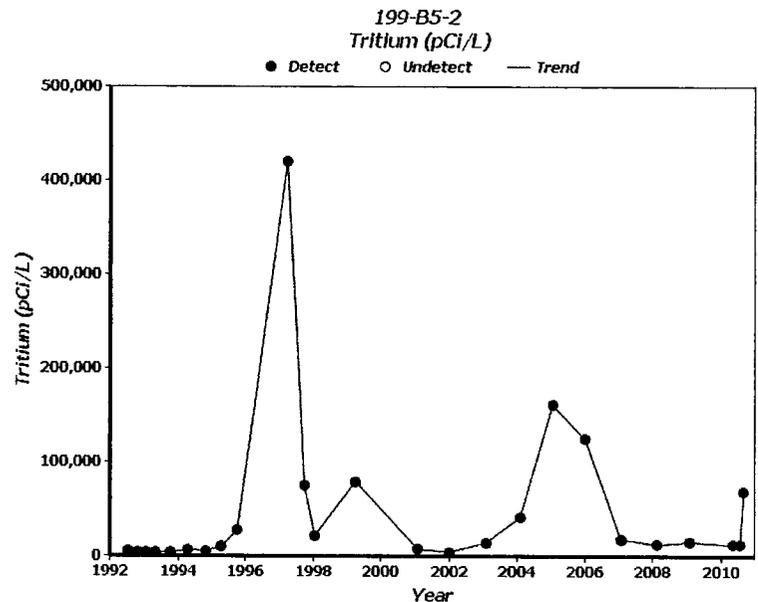
Some of the data from groundwater samples collected in September have been loaded into HEIS. The tritium concentration increased sharply in well 199-B5-2 in September. The concentration (69,000 pCi/L) is above the DWS for the first time since 2006, but is lower than previous tritium spikes.

The tritium concentration dropped sharply in well 199-B8-6 in July and September (4,900 and 4,600 pCi/L, respectively). The well is located in southwestern 100-BC near the 118-B-1 burial ground.

Development of a draft EE/CA is continuing for potentially allowing expedited remedial actions to be implemented for meeting TPA Target Date M-016-110-T01 due December 31, 2012.

300-FF-5 Operable Unit—Mark Kemner/Bob Peterson

- (M-015-72-T01, 11/30/2011, Submit CERCLA RI/FS Report and Proposed Plan for the FF-5 Operable Units for groundwater and soil *Schedule Status - On Schedule to meet TPA milestone. Field investigations are underway, with drilling and sampling scheduled to begin on November 2.*
- Two of the three rounds of RI/FS spatial and temporal groundwater sampling for 300-FF-5 have been completed. The final round of DURA sampling is prioritized for low water collection at near-river wells.



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- Replanned infiltration testing of tracer and polyphosphate is underway, with candidate sites in cultural and ecological review.
- Alternative emplacement testing field scale work is underway, with a candidate site identified and in cultural and ecological review.

- 300-FF-5 Operations and Maintenance Plan Activities (DOE/RL-95-73, Rev. 1, 2002)
 - *300 Area Subregion*: The most recent results for uranium are for samples collected from wells in August and September. Results are consistent with historical trends and expectations, and continue to show evidence that this year's high water table conditions extended into the zone where mobile uranium still remains at some locations. The maximum concentrations observed this summer were located southeast of the former South Process Pond, near the river (peak value 142 µg/L). The most recent samples were collected in early September.
 - *Special sampling downgradient of the 618-7 Burial Ground remediation site*: (no change since October UMM). Samples collected in June and July reveal slow passage of a plume created earlier during remedial actions at the former burial ground.
 - *Special sampling near the 618-1 Burial Ground remediation site*: (no change since October UMM). Samples collected during the summer high water table conditions showed elevated uranium concentrations, which dropped to lower levels following a return to lower water table conditions.
 - *618-11 Burial Ground Subregion*: (no change since October UMM). The most recent results are for samples collected in early September. Tritium values have remained relatively constant at the well closest to the likely area of release in the burial ground.
 - *618-10 Burial Ground Subregion*: (no change since October UMM). Results for samples collected in August reveal no evidence for impacts to groundwater because of current remedial actions in the burial ground. COPC concentrations are lower than their respective drinking water standards (tributyl phosphate is not detected).

- Other Activities:
 - *Uranium Analyzer Field Test*: Plans have been approved to install a field analyzer for continuous uranium monitoring in water samples. Work in progress. The installation is part of a DOE technology development research grant.

Attachment 2

Attachment 3

^WCH Document Control

From: Saueressig, Daniel G
Sent: Wednesday, October 20, 2010 9:30 AM
To: ^WCH Document Control
Subject: FW: POTENTIAL WATER IN FIRE LINE INTERSECTING 100-F-48

Please provide a chron number, this email documents a regulatory approval.

Dan
521-5326

-----Original Message-----

From: Post, Thomas [mailto:Thomas.Post@rl.doe.gov]
Sent: Wednesday, October 20, 2010 8:41 AM
To: Guzzetti.Christopher@epamail.epa.gov; Saueressig, Daniel G
Subject: RE: POTENTIAL WATER IN FIRE LINE INTERSECTING 100-F-48

Dan,

I concur. Thanks.

Tom Post

-----Original Message-----

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
Sent: Wednesday, October 20, 2010 8:13 AM
To: Saueressig, Daniel G
Cc: Post, Thomas
Subject: Re: POTENTIAL WATER IN FIRE LINE INTERSECTING 100-F-48

Dan,

Sounds like a plan to me, I don't have a problem with it.

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

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Christopher Guzzetti/R10/USEPA/US@EPA, "Post, Thomas C" <thomas.post@rl.doe.gov>
Date: 10/20/2010 08:05 AM
Subject: POTENTIAL WATER IN FIRE LINE INTERSECTING 100-F-48

Chris/Tom, a fire water line is in the way of 100-F-48 and it needs to be removed to finish excavation activities at the site. A portion of the fire line was removed during a previous waste site remediation (100-F-26:12), approximately 80 feet to the south. We believe the line is empty, but we plan to tap the line, check for water, and if encountered, we plan to take a pH of the water, and analyze the water for hex chrome. If

- the pH confirms the liquid, if any, is water and no hex chrome is identified, we'd like to use the water for dust suppression at 100-F-48.

Let me know if you concur and we'll move forward with tapping the line and checking for water.

Thanks,

Dan
521-5326

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

Attachment 4

^WCH Document Control

From: Saueressig, Daniel G
Sent: Thursday, November 04, 2010 1:31 PM
To: ^WCH Document Control
Subject: FW: 100F WASTE SITE STATUS AGREEMENT

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

-----Original Message-----

From: Post, Thomas [mailto:Thomas.Post@rl.doe.gov]
 Sent: Thursday, November 04, 2010 1:25 PM
 To: Guzzetti.Christopher@epamail.epa.gov; Saueressig, Daniel G
 Cc: Fancher, Jonathan D (Jon); Landon, Roger J; Wilkinson, Stephen G
 Subject: RE: 100F WASTE SITE STATUS AGREEMENT

Dan,

I concur. Looks good.

Tom Post

-----Original Message-----

From: Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]
 Sent: Thursday, November 04, 2010 7:36 AM
 To: Saueressig, Daniel G
 Cc: Fancher, Jonathan D (Jon); Landon, Roger J; Wilkinson, Stephen G; Post, Thomas
 Subject: Re: 100F WASTE SITE STATUS AGREEMENT

Dan - I think you have captured everything we discussed. Looks good to me.

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

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Christopher Guzzetti/R10/USEPA/US@EPA, "Post, Thomas C" <thomas.post@rl.doe.gov>
Cc: "Fancher, Jonathan D (Jon)" <JDFANCHE@wch-rcc.com>, "Wilkinson, Stephen G" <sgwilkin@wch-rcc.com>, "Landon, Roger J" <RJLANDON@wch-rcc.com>
Date: 11/03/2010 06:35 AM
Subject: 100F WASTE SITE STATUS AGREEMENT

Chris/Tom, below is a summary of our walkdown last week and the agreements that were made. If you're comfortable with the summary, I'd let to get it documented in tomorrow's UMM. Let me know if this reflects what was discussed/agreed to during the walkdown.

100F Site Walk down October 28, 2010

During a site walk down at 100F on October 28, 2010 the following decisions were agreed to:

100-F-48 has small amounts of debris present east of F-48 in the graded stockpile area. Rebar that is readily visible and sticking out of the ground will be removed or cut flush with no further action required in the stockpile area. This area will be included in the closure sample design work instructions under existing processes.

100-F-47 has debris present below the design depth in at least two areas. We will remove debris to whatever depth it remains, but concrete pedestals and concrete lined cable trenches that are present below the design depth will remain. Wire will be cut at the excavation limit.

100-F-57 design calls for removal of pipe cradles that contain a mastic containing asbestos and phthalates. Existing concrete trench sides, concrete floor etc. are present and will remain. Site closeout will not require sampling. Once pipe cradles are removed the site will be closed out via documentation of removal (photos, etc).

100-F-62 pipe is in 2 separate areas. During a campaign to locate the pipe the eastern pipe was not found. The remaining portion of the eastern pipe design will be excavated and stockpiled (the southern portion that was excavated in the search for pipe does not need to be stockpiled). The normal site closeout process will be used to determine if the stockpiled material can be used for backfill or needs to be sent to ERDF.

> Thanks,

>

> Dan Saueressig

> FR Environmental Project Lead

> Washington Closure Hanford

> 521-5326

>

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>

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>

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

Attachment 5

^WCH Document Control

151173

From: Saueressig, Daniel G
Sent: Thursday, November 04, 2010 8:55 AM
To: ^WCH Document Control
Subject: FW: APPROVAL REQUEST TO EXTEND RAMP INTO 132-H-3
Attachments: ENW01000.PDF

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

Thanks,

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

From: Jones, Mandy (ECY) [mailto:mjon461@ECY.WA.GOV]
Sent: Saturday, October 30, 2010 10:14 AM
To: Saueressig, Daniel G
Cc: Post, Thomas C; Landon, Roger J; Wilkinson, Stephen G; Menard, Nina
Subject: RE: APPROVAL REQUEST TO EXTEND RAMP INTO 132-H-3

Dan, thank you for the information. Based on the map you have provided and the information I currently have on 118-H-4 this does not appear to be a problem. Ecology approves the extension of the ramp for 132-H-3.

I do appreciate the fact that you will try to avoid interference with the 118-H-4 until we have formally completed the review and approval of the CVP.

Please let me know if you have any questions or concerns.

Thanks,
Mandy

From: Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]
Sent: Thu 10/28/2010 4:38 PM
To: Jones, Mandy (ECY)
Cc: Post, Thomas C; Landon, Roger J; Wilkinson, Stephen G
Subject: APPROVAL REQUEST TO EXTEND RAMP INTO 132-H-3

Hi Mandy, we need to modify the drawing for the 132-H-3 to increase the grade for the entry ramp from 6% to 10% to allow rock trucks to get deeper into the excavation to load out material, see attached drawing. It looks like a small portion of the layback to the south of 118-H-4 may be impacted. We will make every attempt to avoid taking any material associated with the upper portion of the south layback of 118-H-4 if I can convince operations that a 1.5 to 1 slope isn't necessary since personnel shouldn't be accessing any portion of the site near that area. I believe the CVP for 118-H-4 has already been reviewed by Ecology and you and Megan's group are finalizing

11/4/2010

151173

comments in support of approval of that CVP.

Let me know if you have any questions, per our phone conversation earlier, operations would like to start extending the ramp next week.

Thanks,

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

<<reqreading_20101028075716.PDF>>

DESIGN CHANGE REQUEST/ DESIGN CHANGE NOTICE

Washington Closure Hanford

Job No. 14655

Page 1 of 1

FAC 100-H

OU

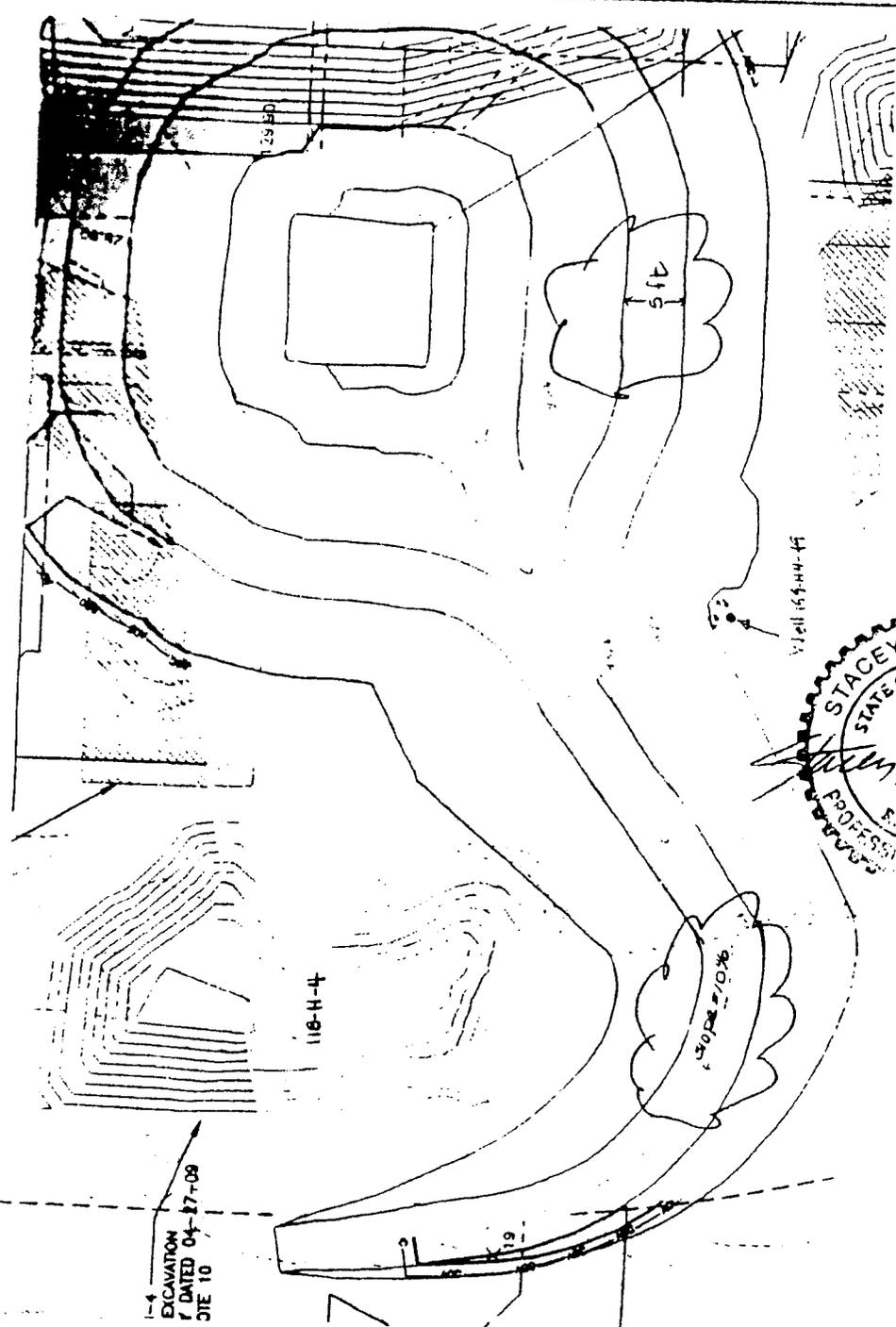
TSD

DCN- 0100H-DD-C0243-01-01

DESIGN DOCUMENT

REV.

CONTINUATION SHEET



1-4
EXCAVATION
7 DATED 04-27-08
DIE 10

Attachment 6

^WCH Document Control

154174

From: Saueressig, Daniel G
Sent: Thursday, November 04, 2010 8:59 AM
To: ^WCH Document Control
Subject: FW: Proposed staging areas and ramps for 132-H-3 and 132-H-1
Attachments: 100-H Proposed Ramps and Stack Remediation - 1_01.PNG; 100-H Proposed Staging Area Expansion.PNG

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

Thanks,

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

From: Jones, Mandy (ECY) [mailto:mjon461@ECY.WA.GOV]
Sent: Wednesday, October 13, 2010 7:30 AM
To: Gonsalves, Edward; Chance, Joanne C
Cc: Saueressig, Daniel G; Curcio, Joseph P; Martin, David W; Laurenz, Julian E; Menard, Nina
Subject: RE: Proposed staging areas and ramps for 132-H-3 and 132-H-1

Edward,

If DOE is in agreement; based on the information provided, Ecology is approving the request for additional staging pile areas for the 132-H-3 waste site, as identified on the drawing provided October 7th, 2010.

Please ensure that these staging piles are operated in accordance with the Section 4.5.2 in the RDR/RAWP for the 100 Area, DOE/RL-96-17, Rev 6. Additionally, please ensure that all contaminants of concern (COCs) for 132-H-3 are carried forward into the verification sampling plan for these staging pile locations.

It is unclear from your e-mail if you intend to use these staging pile areas for soil from 132-H-1 waste site also. If these staging pile areas are also used to stage soil for 132-H-1, the COCs for 132-H-1 will also need to be carried forward into the verification sampling plan for these staging pile locations.

Please have this agreement captured in the 100/300 Area UMM minutes along with the updated civil drawing, which clearly identifies the staging pile locations.

Additionally, the location and placement of your ramps for 132-H-1 and 132-H-3 are acceptable to Ecology.

Let me know if you have any questions.

Thanks,

Mandy

11/4/2010

154174

From: Gonsalves, Edward [mailto:egonsalv@wch-rcc.com]
Sent: Thu 10/7/2010 4:52 PM
To: Jones, Mandy (ECY); Chance, Joanne C
Cc: Saueressig, Daniel G; Curcio, Joseph P; Martin, David W; Laurenz, Julian E
Subject: Proposed staging areas and ramps for 132-H-3 and 132-H-1

Mandy and Joanne,

I am taking over the RE position at 100-H. I have talked with John Marthini, the subcontractor's site supervisor, and he has concerns that the ACL volume in the 132-H-3 will be greater than expected. He would like to be able to extend the stockpile staging areas if necessary. The north stockpile is an extension of the stockpile approved last month. Attached is a sketch of the areas. To let you know, we inadvertently staged waste (BCL) in the requested north stockpile shown on the attached sketch. Once the error was identified, we immediately requested the subcontractor to cease stockpiling in this area until we received concurrence from DOE and Ecology.

In addition to the stockpile areas, the subcontractor also needs to build two more ramps. One on the southeast side to facilitate the remediation of the 132-H-3 site. The other is on the north to facilitate the remediation of the 132-H-1, 116-H Reactor Exhaust Stack Burial Site.

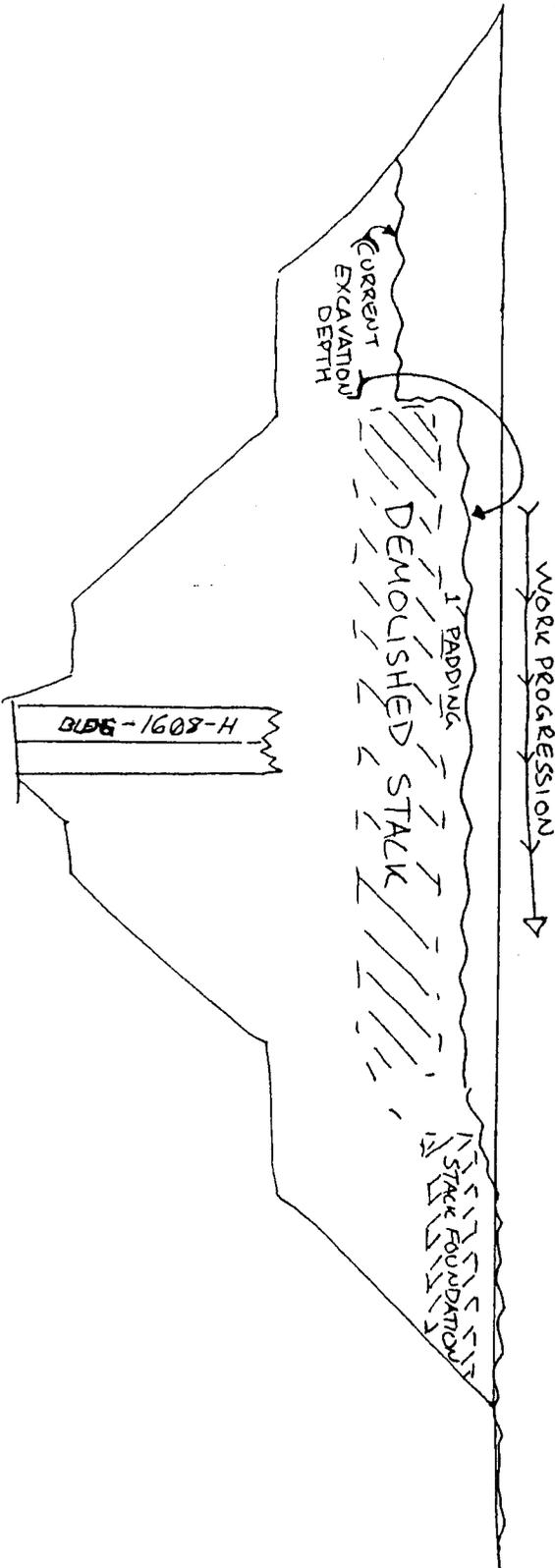
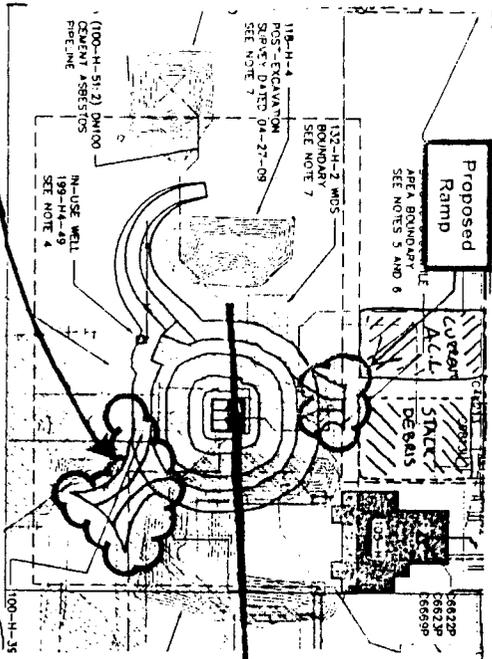
If acceptable, WCH would appreciate your concurrence to develop the additional stockpile areas and ramps. Your prompt attention by October 13 to these matters will be appreciated.

Thanks,

Edward Gonsalves
100-H Resident Engineer
539-2296

<<100-H Proposed Ramps and Stack Remediation - 1_01.png>> <<100-H Proposed Staging Area Expansion.PNG>>

2ND RAMP TO
CONTINUE B.C.L.
LOAD-OUT TO STOCKPILE



Attachment 7

^WCH Document Control

154169

From: Saueressig, Daniel G
Sent: Thursday, November 04, 2010 6:34 AM
To: ^WCH Document Control
Subject: FW: Design 100-D-65, -66, -8
Attachments: 1DDC0493_102010.pdf; 1DDC0472_102010.pdf; 1DDC0473_102010.pdf; 1DDC0475.pdf; 1DDC0385.pdf; 1DDC0496.pdf; 100D8 D65 and D66.PDF

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: "Seiple, Jacqueline (ECY)" <jash461@ecy.wa.gov>
Date: November 3, 2010 7:12:18 PM PDT
To: "Callison, Stacey W" <swcallis@wch-rcc.com>, "Proctor, Megan L" <miprocto@wch-rcc.com>
Cc: "Jones, Mandy (ECY)" <mjon461@ECY.WA.GOV>, "Menard, Nina (ECY)" <nmen461@ECY.WA.GOV>
Subject: Remedial Designs for 100-D-8, 100-D-65, and 100-D-66

Stacey,

I reviewed the revised design package you sent over on October 21 for the 100-D-8, 100-D-65, and 100-D-66 spillways. The comments and drawings are ready to enter into the UMM minutes.

Thanks,
Jacqui

From: Callison, Stacey W
Sent: Thursday, October 21, 2010 4:03 PM
To: Seiple, Jacqueline
Cc: Post, Thomas C; Wilkinson, Stephen G; Jones, Mandy; Saueressig, Daniel G
Subject: Design 100-D-65, -66, -8

Jacqui -

Attached are the revised drawings and the comment response packet for the 100-D-8, 100-D-65,

and 100-D-66 sites. When the sampling work instructions for the areas between the OHWM and OLWM are approved I believe that all comments will be resolved. Please take a look and let me know if there are needed changes or questions. If there are no changes the attached will be entered into the next UMM indicating Ecology approval.

Also I will be getting back to you regarding a meeting for 100-D-14. Thanks.

Stacey

From: Seiple, Jacqueline (ECY) [mailto:jash461@ecy.wa.gov]
Sent: Tuesday, October 05, 2010 12:52 PM
To: Callison, Stacey W
Cc: Post, Thomas C; Wilkinson, Stephen G; Jones, Mandy; Saueressig, Daniel G
Subject: RE: Design 100-D-14, -65, -66, -8

Stacey,

Attached are our responses. I think we need additional discussion on exactly what will be done at 100-D-14, so I suggest we separate the design from the spillway sites and meet on 100-D-14. Can you schedule a meeting?

For the spillway sites, we need some revisions to drawings:

100-D-66 Drawing updates -

- Add note per comment #1
- Remove project limit and add note per comment #2
- Revise drawing label per comment #3
- Add note per comment #6

100-D-8 – Per the comments provide the final drawings when completed.

Once the drawings are revised, please send us the complete package (including all drawings, comments, and previous comments and responses on 100-D-8) that you plan to submit to the UMM. We will then approve the designs for submittal at the next UMM.

Thanks,
Jacqui

From: Callison, Stacey W [mailto:swcallis@wch-rcc.com]
Sent: Monday, October 04, 2010 3:45 PM
To: Seiple, Jacqueline (ECY)
Cc: Post, Thomas C; Wilkinson, Stephen G; Jones, Mandy (ECY); Saueressig, Daniel G
Subject: RE: Design 100-D-14, -65, -66, -8

Jacqui - Attached are the subject responses with indicated attachments. Our current priority is 100-D-8. Thanks.

Stacey

From: Seiple, Jacqueline (ECY) [mailto:jash461@ecy.wa.gov]
Sent: Monday, August 30, 2010 9:00 AM
To: Callison, Stacey W
Cc: Post, Thomas C; Wilkinson, Stephen G; Jones, Mandy; Saueressig, Daniel G
Subject: Design 100-D-14, -65, -66, -8

Stacey,

Please find Ecology's comments on the designs for 100-D-14, 100-D-65, 100-D-66, and 100-D-8 attached. Please let me know if you have any questions.

Thanks,
Jacqui

01000-DD-00493 REV. 04 3

NOTES

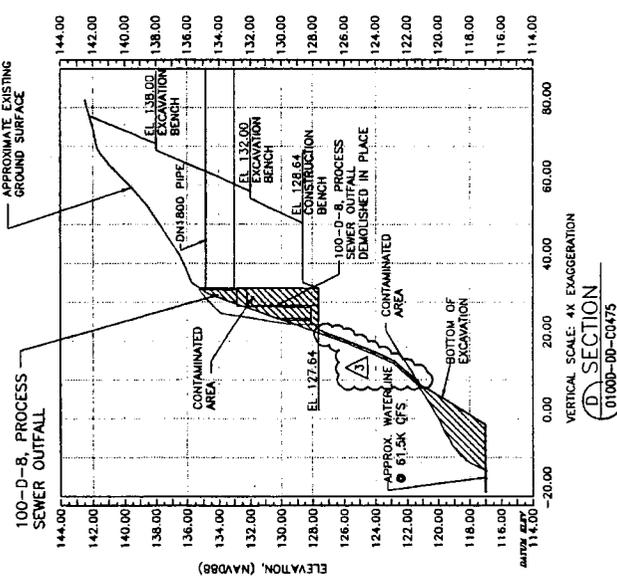
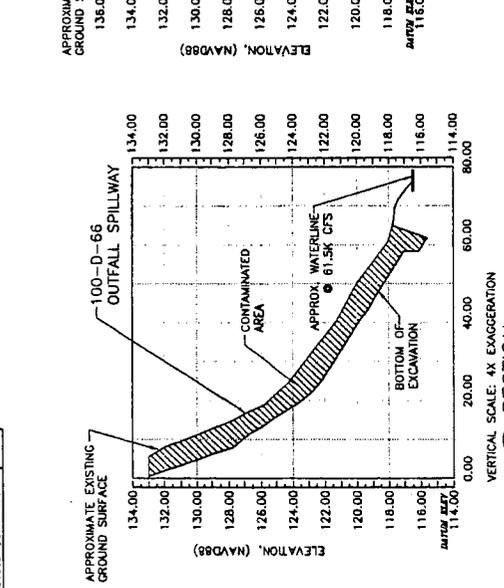
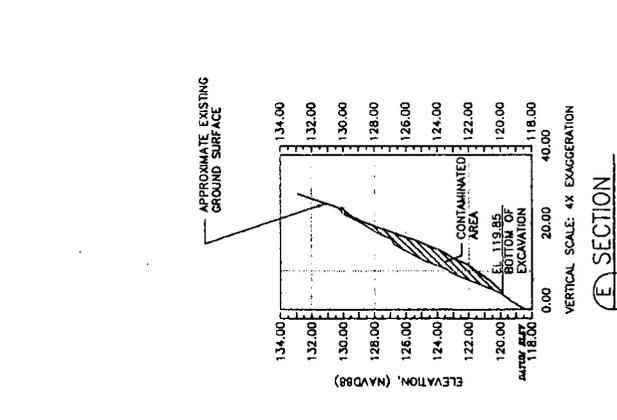
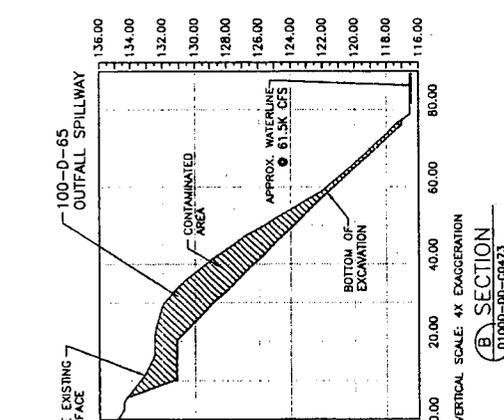
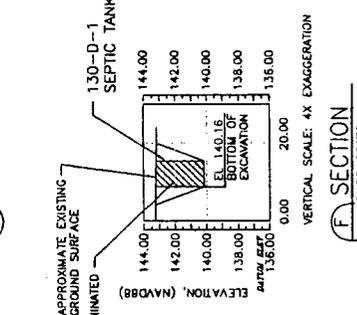
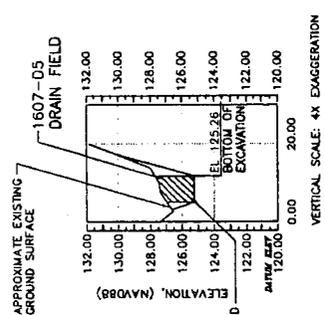
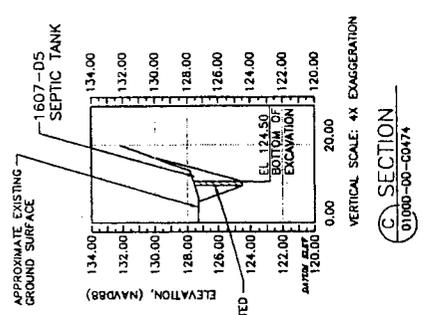
1. SEE DRAWING 01000-DD-00352 FOR GENERAL ABBREVIATIONS AND SYMBOLS LIST.
2. LOCATION, GROUND SURFACE AND DIMENSIONS PROVIDED WERE DERIVED FROM HANFORD SITE RECORDS. ACTUAL LOCATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED BY SUBCONTRACTOR.
3. ALL DISTANCES AND ELEVATIONS ARE IN METERS EXCEPT AS SPECIFICALLY SHOWN.
4. LIMITS OF EXCAVATION ARE BASED ON A 1.5 HORIZONTAL TO 1.0 VERTICAL CUT SLOPE. THE ACTUAL EXCAVATION LIMITS SHALL BE ESTABLISHED IN ACCORDANCE WITH THE SUBCONTRACT DOCUMENTS.

REVISION 2 OF THIS DRAWING IS BEING ISSUED FOR AWARD BY WASHINGTON CLOSURE HANFORD (WCH). THIS "ISSUED FOR AWARD" DRAWING REPRESENTS THE ENGINEER'S BEST UNDERSTANDING OF THE BASIS OF DESIGN AND THE INFORMATION FURNISHED BY WASHINGTON CLOSURE HANFORD (WCH).

NO.	DATE	DESCRIPTION	BY	CHKD	APP'D
1	12/26/16	ISSUED FOR AWARD (WCH) CHANGES	WCH		
2	07/13/16	ISSUED FOR AWARD	WCH		
3	07/17/16	ISSUED FOR CHANGE ORDER	WCH		
4	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
5	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
6	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
7	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
8	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
9	07/21/16	ISSUED FOR CHANGE ORDER	WCH		
10	07/21/16	ISSUED FOR CHANGE ORDER	WCH		

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT
WASHINGTON CLOSURE HANFORD LLC.
PROJECT INFORMATION

WCH JOB NO.	14655	DOE CONTRACT NO.	DE-AC06-05R-14655	CAO FILENAME	100C0493.DWG
TASK	1000	DRAWING NO.	01000-DD-00493	REV. NO.	3



SCALE: 1:600
0 0 6 12 24 meters

RECORD INFORMATION
H-1--90419 SHT 01 TOODR 0111

01000-DD-C0472

LOW WATER MARK AT 61.5K CFS
AS MEASURED AT PRIEST
RAPIDS DAM ON APRIL 5, 2010
APPROXIMATE ELEVATION: 116.50m

REMOVE 1.5" VERTICAL PIPE

STRAW BALE BARRIER DETAIL
01000-DD-C0352
SEE NOTE 12

CONTROL POINT TYP.
SEE NOTE 6

EXCAVATION LIMITS
TYP. SEE NOTE 5

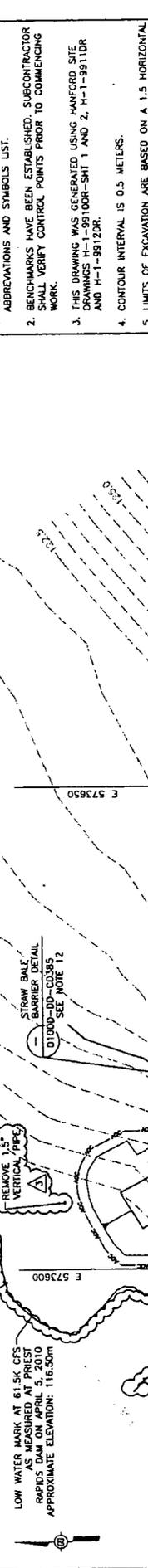
REMOVE AS DIRECTED BY CONTRACTOR
PIPE, REMOVE AS DIRECTED BY CONTRACTOR

POTENTIAL STAGING AREA
SEE NOTE 7

ACE BOUNDARY
SEE NOTE 7

OVERHEAD POWER LINES
SEE NOTE 10

POWER POLE



- NOTES**
- SEE DRAWING 01000-DD-C0352 FOR GENERAL ABBREVIATIONS AND SYMBOLS LIST.
 - BENCHMARKS HAVE BEEN ESTABLISHED. SUBCONTRACTOR SHALL VERIFY CONTROL POINTS PRIOR TO COMMENCING WORK.
 - THIS DRAWING WAS GENERATED USING HANFORD SITE DRAWINGS H-1-9910DR-SHT 1 AND 2, H-1-9911DR AND H-1-9912DR.
 - CONTOUR INTERVAL IS 0.5 METERS.
 - LIMITS OF EXCAVATION ARE BASED ON A 1.5 HORIZONTAL TO 1.0 VERTICAL SETBACK FROM THE ACTUAL EXCAVATION LIMITS ESTABLISHED IN ACCORDANCE WITH CIVIL SPECIFICATION 01000-SP-C0005.
 - SEE DRAWING NO. 01000-DD-C0490 FOR REMAINING DESIGN TABLES.
 - STAGING OF WASTE SHALL OCCUR WITHIN THE AOC/ TYP. STAGING OUTSIDE THE AOC/WASTE SITE BOUNDARY, SHALL HAVE PRIOR APPROVAL BY THE CONTRACTOR BEFORE PROCEEDING.
 - SUBCONTRACTOR IS RESPONSIBLE FOR VERIFICATION AND PROTECTION OF ALL ABOVE AND BELOW GRADE INTERFERENCES INCLUDING WELLS, BENCHMARKS, AND EXISTING UTILITIES.
 - RUNOFF/ROUTE CONTROL BERM, CONSTRUCT AS PER DETAIL ON DRAWING NO. 01000-DD-C0385.
 - SUBCONTRACTOR SHALL REMOVE OR RE-LOCATE POWER POLES IF NECESSARY AS PER DIRECTION OF CONTRACTOR AND UTILITY OWNER.
 - EXCAVATION BELOW THE ORDINARY HIGH WATER MARK RATES BE PERFORMED AT COLUMBIA RIVER FLOW RATES BELOW PRIEST RAPIDS DAM OF 62 THOUSAND CUBIC FEET PER SECOND OR LESS, OR AS DIRECTED BY CONTRACTOR.
 - STRAW BALE BARRIER SHALL BE PLACED AS DIRECTED BY CONTRACTOR.
 - AS DIRECTED BY CONTRACTOR, THE ENTIRETY OF THE SPILLWAY, INCLUDING ALL CONCRETE STRUCTURES, RIP-RAP, AND GRASS, SHALL BE REMOVED TO THE DOWNSTREAM END OF THE ORDINARY LOW WATER MARK.

REVISION 2 OF THIS DRAWING IS BEING ISSUED FOR "AWARD" BY WASHINGTON CLOSURE HANFORD (WCH), THIS "ISSUED FOR AWARD" DRAWING REPRESENTS THE ENGINEER'S BEST UNDERSTANDING OF THE CURRENT INFORMATION AVAILABLE ON THE BASIS OF INFORMATION FURNISHED BY WASHINGTON CLOSURE HANFORD (WCH).

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE	BY	CHECKED
1	10/27/10	ISSUED FOR AWARD WITH CHANGES	WCH	WCH	10/27/10	WCH	WCH
2	11/12/10	ISSUED FOR AWARD	WCH	WCH	11/12/10	WCH	WCH
3	11/12/10	ISSUED FOR CHANGE ORDER	WCH	WCH	11/12/10	WCH	WCH
4	11/12/10	ISSUED FOR CHANGE ORDER	WCH	WCH	11/12/10	WCH	WCH
5	11/12/10	ISSUED FOR CHANGE ORDER	WCH	WCH	11/12/10	WCH	WCH

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

WASHINGTON CLOSURE HANFORD LLC.
RICHLAND, WASHINGTON

100 D/DR AREA
FY08 REMAINING SITES REMEDIAL ACTION
CIVIL PLOT PLAN - 1: 100-D-66

WCH JOB NO. 14655
DOE CONTRACT NO. DE-AC06-05OR-14655
CADD RELEASE
10000472.DWG

TASK 1000
DRAWING NO. 01000-DD-C0472
REV. NO. 3

RECORD INFORMATION NO. H-1-9039B-SHT 01 100DR 0111

Scale: 1:200
0 2 4 6 8 meters

Fig. C-472
Dedicated To Safety Excellence

01000-DD-C0473 3

NOTES

- SEE DRAWING 01000-DD-C0352 FOR GENERAL ABBREVIATIONS AND SYMBOLS LIST.
- BENCHMARKS HAVE BEEN ESTABLISHED. SUBCONTRACTOR SHALL VERIFY CONTROL POINTS PRIOR TO COMMENCING WORK.
- THIS DRAWING WAS GENERATED USING HANFORD SITE DRAWINGS W72092, H-1-85810R AND H-1-86270R.
- CONTOUR INTERVAL IS 0.5 METERS.
- LIMITS OF EXCAVATION ARE BASED ON A 1.5 HORIZONTAL TO 1.0 VERTICAL CUT SLOPE. THE ACTUAL EXCAVATION LIMITS SHALL BE ESTABLISHED IN ACCORDANCE WITH CIVIL SPECIFICATION 01000-SP-00005.
- SEE DRAWING NO. 01000-DD-C0490 FOR REMAINING DESIGN TABLES.
- STAGING OF WASTE SHALL OCCUR WITHIN THE AOC/WASTE SITE BOUNDARY UNLESS DIRECTED BY CONTRACTOR. ANY STAGING SHALL BE APPROVED BY THE CONTRACTOR BEFORE PROCEEDING.
- SUBCONTRACTOR IS RESPONSIBLE FOR VERIFICATION AND PROTECTION OF ALL ABOVE AND BELOW GROUND UTILITIES INCLUDING WELLS, BENCHMARKS, AND EXISTING UTILITIES.
- RUNOFF/RUNOFF CONTROL BERM, CONSTRUCT AS REQUIRED. SEE DETAIL ON DRAWING NO. 01000-DD-C0385.
- THESE DESIGN DRAWINGS ARE BASED ON UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN. SUBCONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND ADJUST AS NECESSARY.
- EXCAVATION BELOW THE ORDINARY HIGH WATER MARK OF THE COLUMBIA RIVER FLOW RATES BELOW PREST RAPIDS DAM OF 62 THOUSAND CUBIC FEET PER SECOND OR LESS, OR AS DIRECTED BY CONTRACTOR.
- STRAW BALE BARRIER SHALL BE PLACED AS DIRECTED BY CONTRACTOR.

REVISION 2 OF THIS DRAWING IS BEING ISSUED FOR "AWARD" BY WASHINGTON CLOSURE HANFORD (WCH). THIS "ISSUED FOR AWARD" DRAWING REPRESENTS THE PRESENT ENGINEER'S BEST UNDERSTANDING OF THE CURRENT DESIGN. ANY INFORMATION FURNISHED BY WASHINGTON CLOSURE HANFORD (WCH).

NO.	DATE	DESCRIPTION	BY	CHKD	APP'D
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5	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
6	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
7	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
8	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
9	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
10	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
11	11/17/16	ISSUED FOR CHANGES	SC	DC	DC
12	11/17/16	ISSUED FOR CHANGES	SC	DC	DC

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RYER CORRIDOR CLOSURE CONTRACT

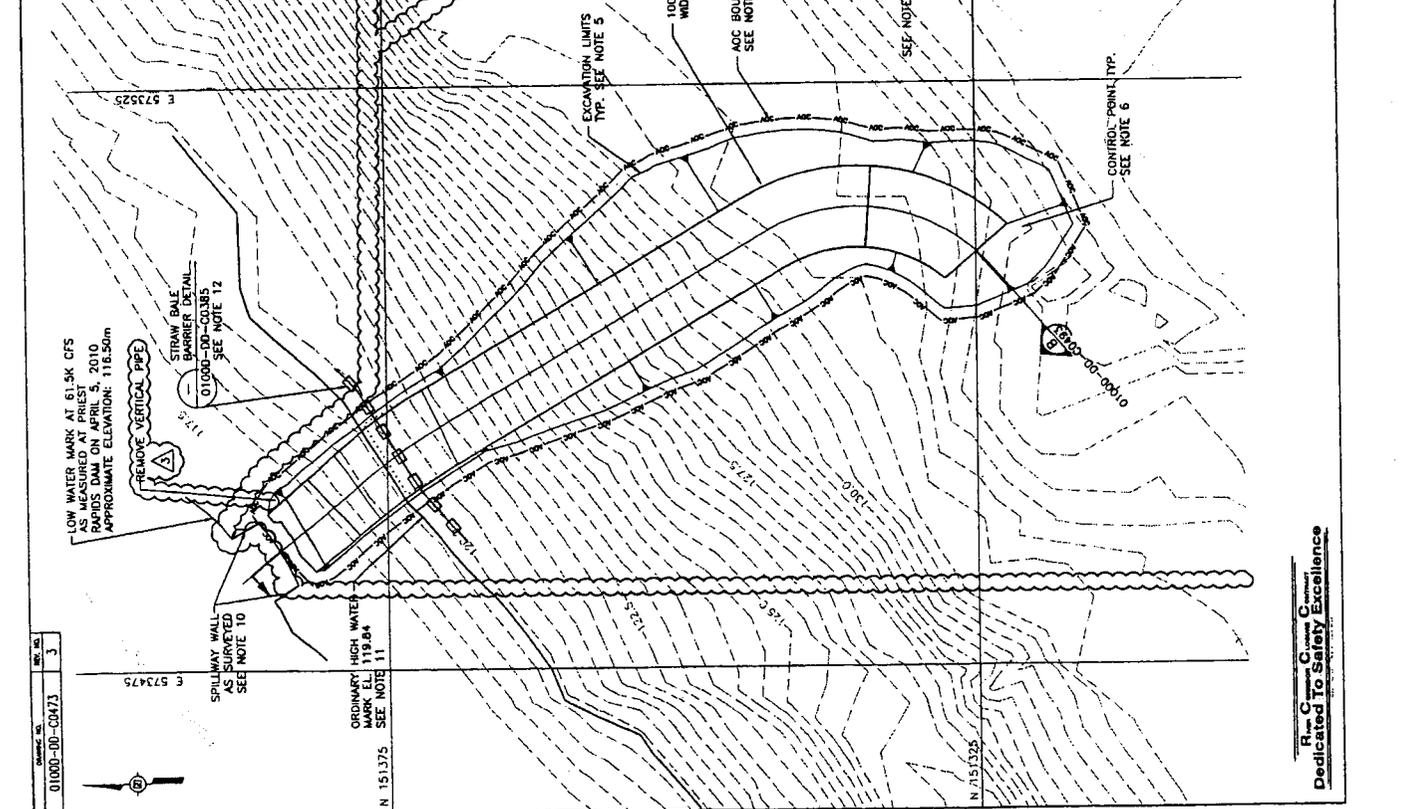
WASHINGTON CLOSURE HANFORD LLC.
RICHLAND, WASHINGTON

100 D/OR AREA
FY08 REMAINING SITES REMEDIAL ACTION
CIVIL PILOT PLAN - 2: 100-D-65

WCH JOB NO. 14655
DOE CONTRACT NO. 10000473.DWG
TASK 1000
DRAWING NO. 01000-DD-C0473
REV. NO. 3

SCALE 1:200
2 0 2 4 8 METERS

RECORD INFORMATION
RECORD NO. H-1-90399 SHIT 01 1000R 0111



NOTES

1. THE SUBCONTRACTOR SHALL MAINTAIN ALL ROADS USED BY THE PROJECT THAT FALL WITHIN THE PROJECT LIMITS BOUNDARY. THIS INCLUDES PERSONNEL ACCESS ROADS, MAINTENANCE SHEDS, TRUCK TRAILS, AND LOADING AREAS. MAINTENANCE SHALL BE PERFORMED AS NECESSARY AND REPLACEMENT WITH APPROVED ASPHALT PAVING CONTROL, AND SNOW REMOVAL.
2. SUBCONTRACTOR IS RESPONSIBLE FOR VERIFICATION AND PROTECTION OF ALL ABOVE AND BELOW GRADE INTERFERENCES INCLUDING WELLS, BENCHMARKS, AND EXISTING UTILITIES.
3. MISCELLANEOUS DEBRIS IN AND AROUND SITES WITHIN PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE CONTRACTOR.
4. EXCAVATION LIMITS BASED ON REFERENCE DRAWING NO. 01000-DD-00385 REV. 0.
5. THE BOTTOM OF EXCAVATION ELEVATIONS HAVE BEEN DETERMINED USING REFERENCE DRAWING NO. 01000-DD-00385 REV. 0, AND REFERENCES PROVIDED BY THE CONTRACTOR.
6. MAXIMUM EXCAVATION DEPTH NOT TO EXCEED LIMITS SHOWN ON CROSS SECTIONS UNLESS DIRECTED OTHERWISE BY THE CONTRACTOR.
7. SEE DRAWING 01000-DD-00382 FOR GENERAL ABBREVIATIONS AND SYMBOLS LIST.
8. WHERE BENCHMARKS HAVE BEEN ESTABLISHED, SUBCONTRACTOR SHALL VERIFY CONTROL POINTS PRIOR TO COMMENCING WORK.
9. CONTOUR INTERVAL IS 0.5 METERS.
10. LIMITS OF EXCAVATION ARE BASED ON A 1:3 HORIZONTAL TO 1.0 VERTICAL CUT SLOPE.

DOCUMENT CONTROL 11/16/21



JUB
Engineers • Surveyors • Planners

J-U-B ENGINEERS, INC.
2810 Chesapeake Avenue
Kempville, Washington 99236
Phone 206-238-2878

NO.	DATE	DESCRIPTION	BY	CHK	APP
1	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
2	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
3	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
4	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
5	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
6	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
7	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
8	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
9	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A
10	11/16/21	ISSUE FOR CONSTRUCTION	JK	JK	N/A

U.S. DEPARTMENT OF ENERGY
000 RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

WASHINGTON CLOSURE
HANFORD ILL.
RECHLAND, WASH.

1000/DR AREA
FIELD REMEDIATION PROJECT
1607-D-2 CIVIL SECTIONS, COORDINATE TABLE & DETAILS

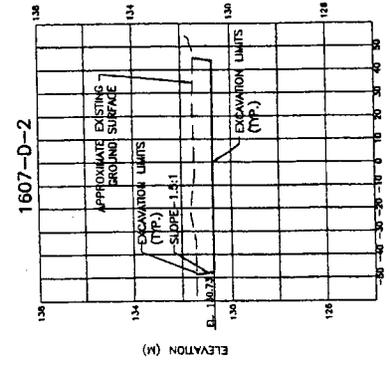
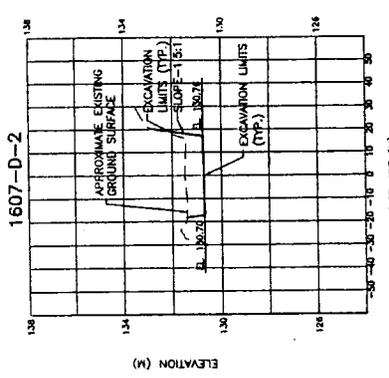
WCH JOB NO. 14655
DC-AC06-06RL-14655
100C0385.DWG

TASK 1000
DRAWING NO. 01000-DD-C0385
REV. NO. 1

SURVEY CONTROL POINT DATA

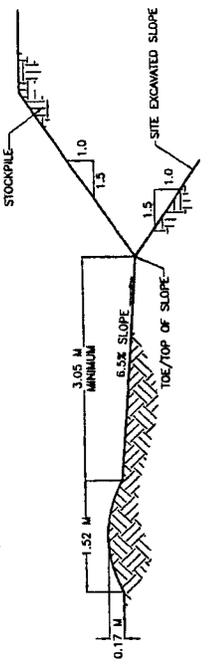
POINT #	NORTHING	EASTING	ELEVATION
1	152482.56	1573857.28	130.70
2	152482.56	1573857.73	130.70
3	152448.39	1573857.73	130.76
4	152448.39	1573857.28	130.76

RECEIVED
AUG 04 2008
WCH-DOCUMENT CONTROL
SUBMITTED BY: JUB
DATE: 01/05/08



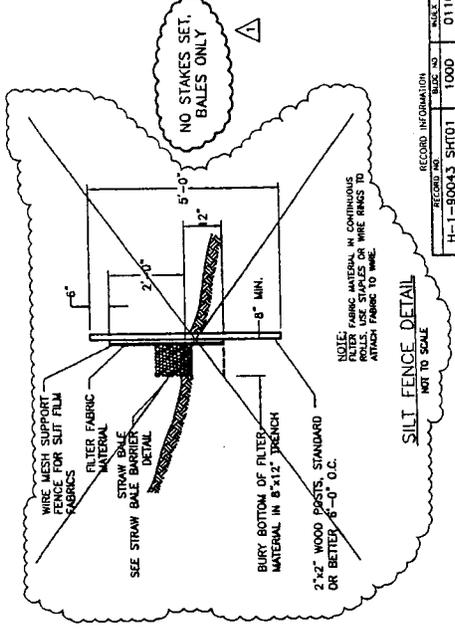
A SECTION
01000-DD-00384
HORIZONTAL SCALE 1:1000
VERTICAL EXAGGERATION 10X

B SECTION
01000-DD-00384
HORIZONTAL SCALE 1:1000
VERTICAL EXAGGERATION 10X



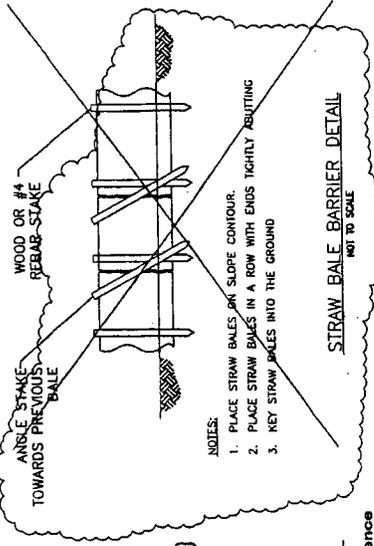
RUNOFF/RUNOFF CONTROL BERM DETAIL
NOT TO SCALE

NOTE:
BERM TO BE CONSTRUCTED
AROUND PERIMETER OF STOCKPILE, AND
EXCAVATION, REGARDLESS OF SIZE.



SILT FENCE DETAIL
NOT TO SCALE

RECORD INFORMATION
H-1-80043 SHT01 1000 0110



STRAW BALE BARRIER DETAIL
NOT TO SCALE

NOTES:
1. PLACE STRAW BALES ON SLOPE CONTOUR.
2. PLACE STRAW BALES IN A ROW WITH ENDS TIGHTLY BUTTING
3. KEY STRAW BALES INTO THE GROUND

Fluor
Dedicated to Excellence

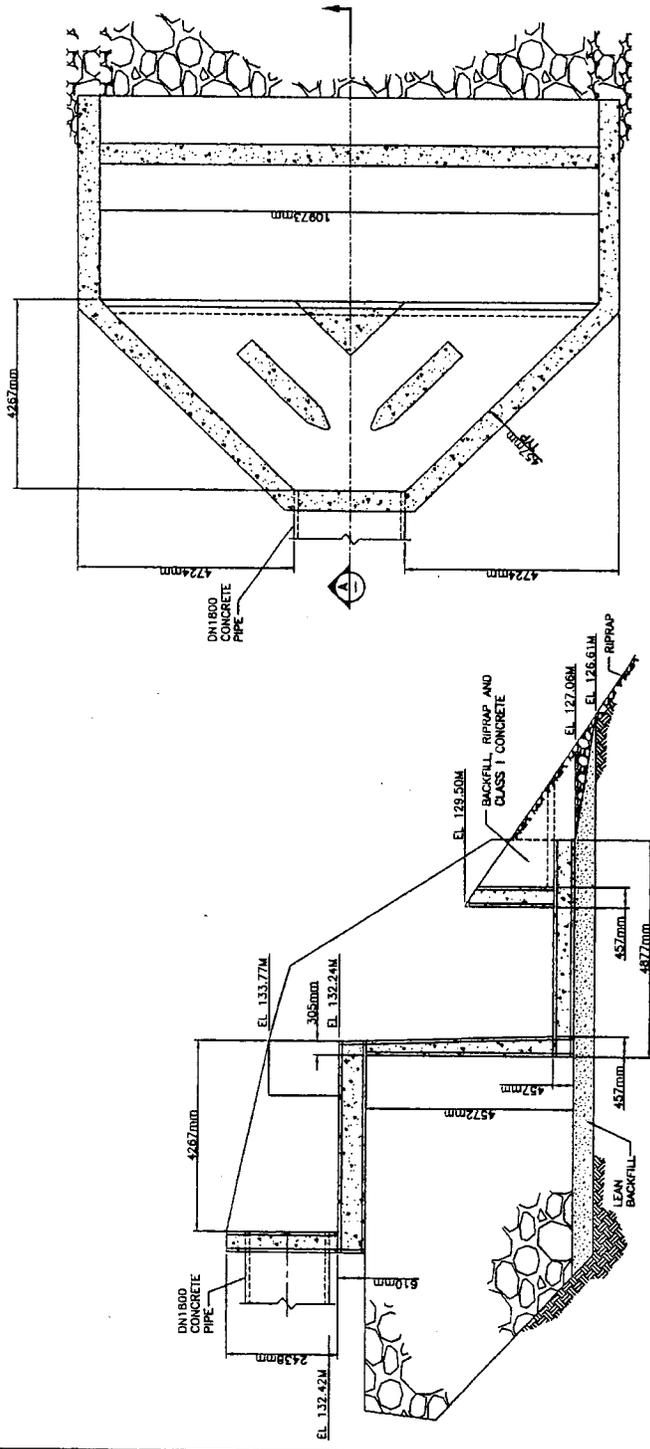
01000-DD-C0496

NOTES

1. SEE DRAWING 01000-DD-C0352 FOR GENERAL ABBREVIATIONS AND SYMBOLS LIST.
2. LOCATION, GROUND SURFACE AND DIMENSIONS PROVIDED WERE DERIVED FROM HANFORD SITE RECORDS. ACTUAL LOCATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED BY SUBCONTRACTOR.
3. ALL DIMENSIONS ARE IN MILLIMETERS, ELEVATIONS ARE IN METERS EXCEPT AS SPECIFICALLY SHOWN.
4. THIS DRAWING WAS GENERATED USING HANFORD HISTORIC DRAWINGS 0409-038-018. ACTUAL LOCATION, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED BY SUB-CONTRACTOR.
5. CONSTRUCTION MATERIAL (i.e., BRICK AND/OR REINFORCED CONCRETE) REINFORCING BAR SIZE VARIES FROM NO.10M BAR TO NO. 36M OR GREATER. REINFORCING SPACING VARIES FROM LESS THAN .152M TO GREATER THAN .304M.
6. IN 1978, THE OUTFALL STRUCTURE WAS DEMOLISHED, LEVELLED, AND COVERED TO BLEND WITH THE RIVER BANK APPEARANCE AS PER WHIC-EP-0478 DOCUMENT, 08/01/1991.

REVISION 1 OF THIS DRAWING IS BEING ISSUED FOR THE PURPOSE OF CORRECTING THE MISTAKE OF THE ORIGINAL DRAWING. THIS REVISION IS BEING ISSUED FOR THE PURPOSE OF CORRECTING THE MISTAKE OF THE ORIGINAL DESIGNER'S BEST UNDERSTANDING OF THE CURRENT DESIGN, AND HAS BEEN PREPARED ON THE BASIS OF INFORMATION FURNISHED BY WASHINGTON CLOSURE HANFORD (WCH).

DOCUMENT CONTROL NO. 711212



100-D-8 PROCESS SEWER OUTFALL
NOT TO SCALE, SEE NOTE 6

SECTION A
NOT TO SCALE

NO.	DATE	BY	CHKD.	APP'D.	REVISION
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

WASHINGTON CLOSURE HANFORD LLC.
RICHLAND, WASHINGTON

100 D/DR AREA
FY08 REMAINING SITES REMEDIAL ACTION
DEMOLITION DETAILS AND SECTIONS - 1

WCH JOB NO.	14655	DOE CONTRACT NO.	DE-AC06-05RL-14655	CADD FILENAME	10000496.DWG
TASK	1000	DRAWING NO.	01000-DD-C0496	REV. NO.	1

RECORD INFORMATION

RECORD NO.	1000R	0901
RECORD NO.	H-1-90422	SHT 01

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Document Review: Ecology Comments on Remedial Design for 100-D-8 (Drawings 0100D-DD-C0475, 0100D-DD-C0493, 0100D-DD-C0385, 0100D-DD-C0496)

Reviewers: Jacqueline Seiple and Mandy Jones

Date: August 26, 2010

Note: These comments are on remediation of 100-D-8 to the OHWM. Comments on remediation below the OHWM will be submitted shortly.

Previous comments and WCH response (in blue):

1. Regarding Note #8, please confirm that the only well that will be decommissioned is 199-D4-23. Decommissioning should be avoided if possible. However, if it is necessary, decommissioning must be coordinated with the groundwater project and be performed in compliance with WAC 173-160.

Response – Agreed. Depending on conditions encountered during actual remediation of the 100-D-8 site there is the potential that well 199-D4-23 may not require decommissioning for the 100-D-8 remediation activity.

Accepted via attached email

2. The PRSVP for 100-D-8, Figure 2, shows a large magnetic anomaly. Please clarify whether it is anticipated that this anomaly will be encountered during excavation and/or how it will be addressed in the remediation strategy.

Response – The large magnetic anomaly is anticipated to be the large diameter 100-D-50:1 pipeline that fed the 100-D-8 outfall. We anticipate encountering the pipe during remediation of the 100-D-8 outfall. The 100-D-50:1 pipeline is currently in remediation design. Ecology will be consulted regarding the 100-D-50:1 remediation scope as the design progresses.

Accepted via attached email.

New Comments:

3. Cross section "D" on drawing 0100D-DD-C0493 shows contaminated areas at the top and bottom of the outfall. The area in between is not shown as contaminated. The basis for this is not clear. The area in-between should be noted as contaminated and removed to ERDF.

Response – Agreed. The intent is to remove the area in between as contaminated with disposal to ERDF. However, because of the drawing scale used for the cross-section, we agree that the cross-section is not clear in that regard. The cross-section is being revised

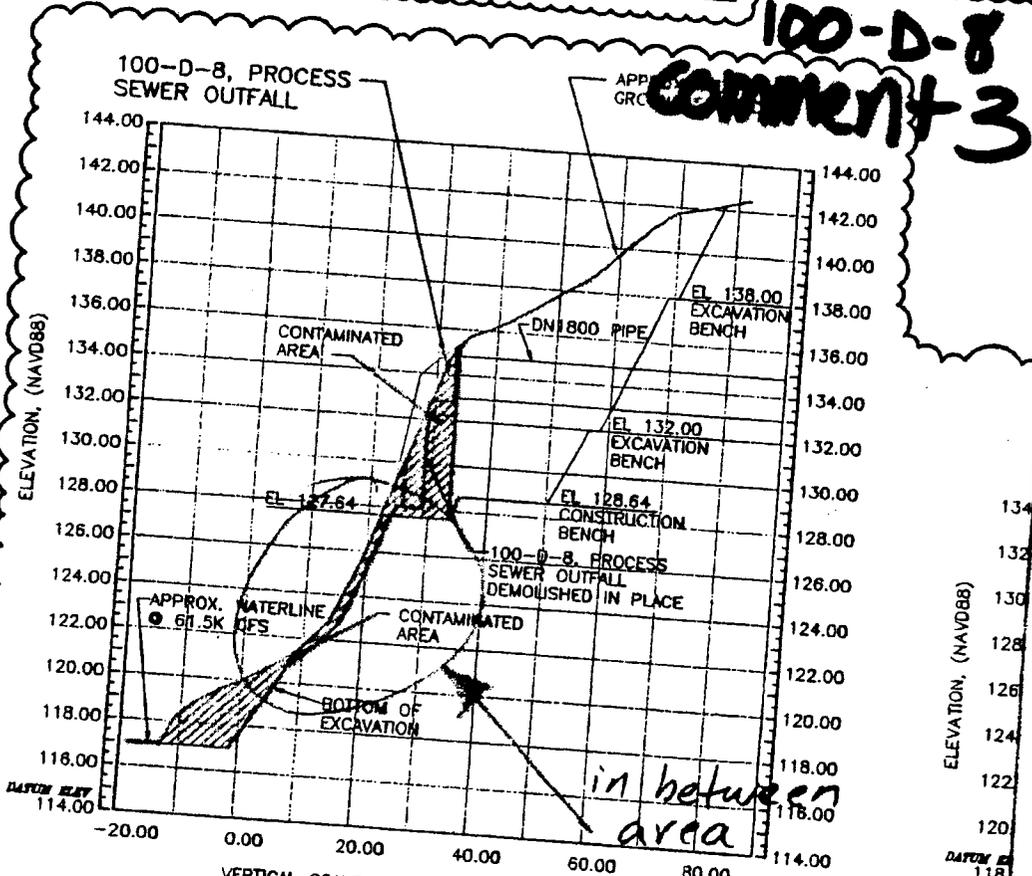
as indicated on the attached scan to more clearly indicate that the in between material is to be excavated as contaminated material.

Accepted via attached email.

0.00 20.00 40.00 60.00 80.00
VERTICAL SCALE: 4X EXAGGERATION

(A) SECTION
0100D-DD-C0472

100-D-8
Comment 3



VERTICAL SCALE: 4X EXAGGERATION
(D) SECTION
0100D-DD-C0475

FLORIAN CLAYTON
Dedicated to Excellence

DRAWING NO.	100C0493.DWG
REV. NO.	

Callison, Stacey W

From: Seiple, Jacqueline (ECY) [jash461@ecy.wa.gov]
Sent: Thursday, August 26, 2010 2:24 PM
To: Callison, Stacey W
Cc: Post, Thomas C; Wilkinson, Stephen G; Saueressig, Daniel G; Martin, David W; Menard, Nina; Jones, Mandy
Subject: RE: 100-D-8 Remediation above OHWM

Thanks Stacey. You have our approval to move forward with remediation of 100-D-8 above the ordinary high water mark. Please revise the cross-section according to the scan and send us a copy of the entire drawing when it is done.

Lets hold these comments for incorporation into the UMM minutes until the rest of the design package comments are submitted and resolved.

Thanks,
Jacqui

From: Callison, Stacey W [mailto:swcallis@wch-rcc.com]
Sent: Thursday, August 26, 2010 2:06 PM
To: Seiple, Jacqueline (ECY)
Cc: Post, Thomas C; Wilkinson, Stephen G; Saueressig, Daniel G; Martin, David W; Menard, Nina (ECY); Jones, Mandy (ECY)
Subject: RE: 100-D-8 Remediation above OHWM

Jacqui -

The previous responses remain the same. Attached is the response to the new comment including the referenced scan. Thanks.

Stacey

From: Seiple, Jacqueline (ECY) [mailto:jash461@ecy.wa.gov]
Sent: Thursday, August 26, 2010 12:25 PM
To: Callison, Stacey W
Cc: Post, Thomas C; Wilkinson, Stephen G; Saueressig, Daniel G; Martin, David W; Menard, Nina; Jones, Mandy
Subject: 100-D-8 Remediation above OHWM

Stacey,

Attached are our comments on 100-D-8 above the OHWM. There are two comments that we made on the previous design that apply here. You previously responded to those comments (in blue). We are ok with your responses, so can close these comments if you still have the same responses.

There is one new comment. We would appreciate a response on that comment. Once that is closed, we can grant approval to proceed forward with remediation above the OHWM.

10/13/2010

Let me know if you have any questions. Thanks,
Jacqui

From: Jones, Mandy (ECY)
Sent: Monday, August 09, 2010 4:18 PM
To: Callison, Stacey W
Cc: Post, Thomas C; Wilkinson, Stephen G; Saueressig, Daniel G; Seiple, Jacqueline (ECY); Martin, David W; Menard, Nina (ECY)
Subject: RE: SUMMARY OF 7/19/10 MEETING ON REMEDIATION OF 100-D-8, 100-D-65 AND 100-D-66

Stacey,

We will have our comments to you as soon as possible for the 100-D-8 design; in order to support a conditional approval of the design for the area above the OHWM.

Thank you,
Mandy

From: Callison, Stacey W [mailto:swcallis@wch-rcc.com]
Sent: Monday, August 09, 2010 3:35 PM
To: Jones, Mandy (ECY)
Cc: Post, Thomas C; Wilkinson, Stephen G; Saueressig, Daniel G; Seiple, Jacqueline (ECY); Martin, David W
Subject: RE: SUMMARY OF 7/19/10 MEETING ON REMEDIATION OF 100-D-8, 100-D-65 AND 100-D-66

Mandy -

There is an interest in getting the new 100-D Area subcontractor started on the 100-D-8 site as one of the subcontractor's first sites. While we understand that there will likely be additional discussions regarding the area between the OHWM and the OLWM, if possible we would like the option to begin the dry land portion (area above the OHWM) of the 100-D-8 site as soon as feasible. Our tentative and aggressive schedule has the new subcontractor starting on 100-D-8 as early as the end of August or very beginning of September. If possible, we'd like conditional approval of the design in order to begin the area above the OHWM with the understanding that the area below the OHWM may require additional time for design approval. Let me know if you need any additional information that would help the review of the portion above the OHWM.

Thanks.

Stacey

From: Jones, Mandy (ECY) [mailto:mjon461@ECY.WA.GOV]
Sent: Monday, August 09, 2010 2:37 PM
To: Saueressig, Daniel G; Seiple, Jacqueline; Varljen, Robin
Cc: Neath, John P; Post, Thomas C; Callison, Stacey W; Landon, Roger J; Wilkinson, Stephen G; Menard, Nina; Whalen, Cheryl
Subject: RE: SUMMARY OF 7/19/10 MEETING ON REMEDIATION OF 100-D-8, 100-D-65 AND 100-D-66

Dan, thank you for writing up the summary from our July 19th meeting.

10/13/2010

Document Review: Remedial Design Drawings for 100-D-14 (Figure 4 from CCN 1391870), 100-D-66 (Drawing 0100D-DD-C0472 and 0100D-DD-C0493), 100-D-65 (Drawing 0100D-DD-C0473 and 0100D-DD-C0493), and 100-D-8 (Drawing 0100D-DD-C0475, 0100D-DD-C0493, 0100D-DD-C0496)

Reviewers: Mandy Jones and Jacqueline Seiple

Date: August 30, 2010

WCH Response: October 4, 2010

ECY Response: October 5, 2010

General:

1. Once these comments are resolved, please incorporate all comments (including those previously submitted on 100-D-8) and all drawings into the UMM Minutes.

Response – Agreed.

ECY Response: Comment closed.

2. We fully expect the project and DOE to perform all necessary consultations with other agencies (US Fish and Wildlife, USEPA, USACE, etc.) as required by law for activities below the OHWM.

Response – Agreed.

ECY Response: Comment closed.

100-D-14 (Figure 4 from CCN 1391870):

1. Given the high nitrate concentrations in the vertical concrete pipe, we support removal and excavation of the entire concrete pipeline to its end.

Response – Agreed. If the pipe length becomes excessive, Ecology will be consulted.

ECY Response: Accept, comment closed.

2. Sufficient information is not available to make a determination that the remainder of the site does not require remediation. Phase II confirmatory sampling was performed at this site at risk, as the work instruction was not approved by Ecology. In addition, the RSVP was rejected and general comments made at that time (March 6, 2008) on the actual extent of the site have not been addressed to date.

We note the following:

- It has been stated (CCN 1391870, WSRF 2006-032 (not approved)), based on historical documentation (GE 1957) and field observations of the VCP, that a septic site existed at this location.

- Nitrate concentrations exceeded remedial action goals and failed RESRAD modeling at the vertical concrete pipe. Nitrate data did not fail at the suspect location of the septic tank (e.g. soil underlying the tank). Nitrate data are not documented for the vitrified clay pipeline.
- The location of the drain field was not investigated or sampled.
- A number of data quality issues were identified for the confirmatory sampling, which were not addressed.

Based on the above, we require additional investigation and sampling of the VCP and suspect drain field location in order to make a determination on the remedial status of the rest of the site.

Response – The vertical pipe is anticipated to be a vent pipe for the drainfield. We propose excavating at the vertical pipe location and excavating to the extent of the drainfield based on visual indicators (e.g. piping and drainfield gravels). We propose excavating the anticipated influent pipe east of the former septic tank location to its termination point or to a point suitable for additional characterization of the pipeline.

ECY Response: The response proposes excavating to the extent of the drain field. It is unclear whether this includes remediation and/or sampling. The above response may be acceptable, but additional discussion is needed.

100-D-66 (Drawing 0100D-DD-C0472 and 0100D-DD-C0493):

1. The drawing shows a 1.5" vertical pipe; please confirm that this pipe will be removed during the excavation.

Response – The referenced vertical pipe will be removed. A note will be added to the drawing indicating removal of the vertical pipe.

ECY Response: Accept, comment closed.

2. Drawing 0100D-DD-C0472 needs to clearly document that all of the spillway will be removed, including the area northwest of the "project limits" identified on this drawing. Add a note stating, "The entirety of the spillway, including all concrete structures, rip-rap, and grout will be removed to a maximum extent of the ordinary low water mark." Also, it is not clear what the line identifying the "project limits" identifies, please clarify.

Response – The project limit line isn't relevant and will be removed. The note will be added as indicated.

ECY Response: Accept, comment closed.

3. Drawing 0100D-DD-C0472 identifies the 116-DR-5 WIDS Boundary. Is this truly the 116-DR-5 outfall boundary or the 100-D-66 spillway boundary? Please clarify and correct.

Response – At one time the 100-D-66 spillway was a part of the 116-DR-5 outfall. The boundary shown is the 116-DR-5 outfall and the 100-D-66 spillway. The label will be revised to indicate that the boundary shown is the combined 116-DR-5 outfall and 100-D-66 spillway boundary.

ECY Response: Accept, comment closed.

4. It is not apparent how deep this excavation will go below the structure. Please clarify the estimated thickness of the structure itself and state how much soil beneath the structure will be removed.

Response – The end of the spillway is anticipated to be approximately 2 feet thick including the spillway walls. The spillway floor is anticipated to be approximately 1 foot thick. One foot of soil is anticipated to be removed from beneath the spillway structure.

ECY Response: Accept, comment closed.

5. Per discussions, the area between the ordinary high water mark (OHWM) and ordinary low water mark (OLWM) will be excavated and backfilled in the same day. Prior to excavation, an Ecology approved verification sampling design for sampling between the OHWM and OLWM must be in place. In addition, sufficient time for regulator review of the sampling design must be provided.

Response – Agreed. Depending on the circumstances, excavation, sampling, and backfilling may not all occur in a single day, nonetheless these activities will occur in a relatively short time period anticipated to range from a single day to a few days.

ECY Response: Accept, comment closed.

6. The PRSVP for 100-D-66 (April, 2006) states that an 8 inch corrugated pipe located at N152433 E573621 was discovered during remediation activities for 116-DR-5 and that additional investigation will be performed during remediation of 100-D-66 to remove this pipe. Please state how this will be performed.

Response – The referenced pipe is within the design excavation and will be removed if not previously removed during remediation activities for the 116-DR-5 outfall. Note the 116-DR-5 outfall was remediated following preparation of the 100-D-66 PRSVP.

ECY Response: Accept, but note that the recently reviewed RSVP for 116-DR-5 indicates that the 8 inch pipeline was found during remedial activities for 116-DR-5,

but not removed, deferring the pipeline to 100-D-66. Therefore, this pipe should be investigated and removed during remedial activities for 100-D-66. Please add a note to the drawing.

100-D-65 (Drawing 0100D-DD-C0473 and 0100D-DD-C0493):

1. The excavation boundary is not shown as reaching all the way to the OLWM. Please provide justification as to why the OLWM and the end of the excavation do not match up. The end of the excavation should reach all the way to the OLWM.

Response –The OLWM was estimated at 116.5 m in elevation. The design excavation was reflects excavation to 117.0 m in elevation. The difference is 0.5 m or 1.6 ft. This was intentional to provide the minimum buffer to minimize the potential for creating a large turbid sediment plume in the river during excavation.

ECY Response: Accept; however, should water level be low enough so that conditions allow for a buffer and excavation to the OLWM, this should occur.

2. Drawing 0100D-DD-C0473 refers to a vertical pipe. Please confirm that this pipe will be removed.

Response –The pipe will be removed.

ECY Response: Accept, comment closed.

3. It is not apparent how deep this excavation will go below the structure. Please clarify the estimated thickness of the structure itself and state how much soil beneath the structure will be removed.

Response – The end of the spillway is anticipated to be approximately 2 feet thick including the spillway walls. The spillway floor is anticipated to be approximately 1 foot thick. One foot of soil is anticipated to be removed from beneath the spillway structure.

ECY Response: Accept, comment closed.

4. Please incorporate the drawing showing the portion of the spillway anticipated to remain into the UMM minutes with the rest of the drawings.

Response –Agreed.

ECY Response: Comment closed.

5. Per discussions, any remaining parts of the waste site will be addressed as a new waste site to be addressed in the Final ROD. Please confirm.

Response – Agreed.

ECY Response: Accept, comment closed.

6. Per discussions, the area between the ordinary high water mark (OHWM) and ordinary low water mark (OLWM) will be excavated and backfilled in the same day. Prior to excavation, an Ecology approved verification sampling design for sampling between the OHWM and OLWM must be in place. In addition, sufficient time for regulator review of the sampling design must be provided.

Response – Agreed. Depending on the circumstances, excavation, sampling, and backfilling may not all occur in a single day, nonetheless these activities will occur in a relatively short time period anticipated to range from a single day to a few days.

ECY Response: Accept, comment closed.

100-D-8 (Drawing 0100D-DD-C0475, 0100D-DD-C0493, 0100D-DD-C0496):

1. Please refer to comments submitted 8/26/2010 on remediation above OHWM.
2. Approximately 45 feet of grout and rip rap extend into the river beyond the OLWM. Please identify this on a drawing as this is anticipated to remain for future evaluation (similar to drawing provided for 100-D-65).

Response – Drawing attached.

ECY Response: Accept, comment closed.

3. Drawing 0100D-DD-C0493 needs to be updated to include the revised D cross section that was provided in response to Ecology comment by WCH on 8/26/10. Please provide this.

Response – Agreed. A sketch is attached, the drawing update is in progress.

ECY Response: Accept, but provide the updated drawing when complete.

4. In the design briefing, it was stated that a portion of 100-D-50:1 will be removed with this excavation. Please identify this on the drawing.

Response – The anticipated extent of removal of 100-D-50:1 is indicated on the attached drawing.

ECY Response: Accept, comment closed.

5. Per discussions, any remaining parts of the waste site will be addressed as a new waste site to be addressed in the Final ROD. Please confirm.

Response – Agreed.

ECY Response: Accept, comment closed.

6. Per discussions, the area between the ordinary high water mark (OHWM) and ordinary low water mark (OLWM) will be excavated and backfilled in the same day. Prior to excavation, an Ecology approved verification sampling design for sampling between the OHWM and OLWM must be in place. In addition, sufficient time for regulator review of the sampling design must be provided.

Response – Agreed. Depending on the circumstances, excavation, sampling, and backfilling may not all occur in a single day, nonetheless these activities will occur in a relatively short time period anticipated to range from a single day to a few days.

ECY Response: Accept, comment closed.

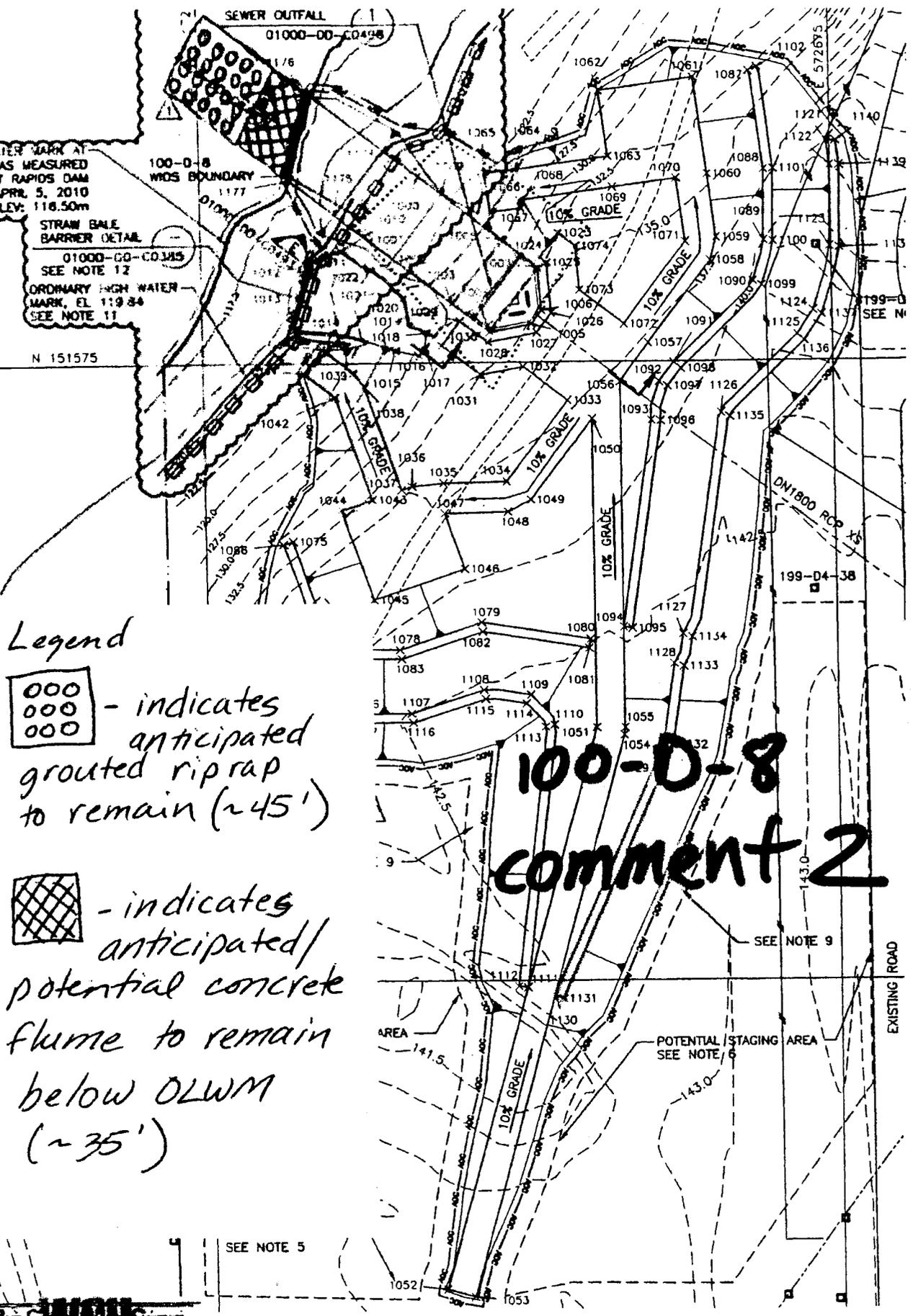
SEW WATER MARK AT
61.5K CFS AS MEASURED
AT PRIEST RAPIDS DAM
ON APRIL 5, 2010
APPROX. ELEV: 118.50m

STRAM BALE
BARRIER DETAIL
01000-C0-C0.125
SEE NOTE 12
ORDINARY HIGH WATER
MARK, EL 119.84
SEE NOTE 11

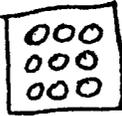
N 151575

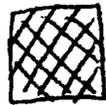
SEWER OUTFALL
01000-DD-C0.498

100-D-8
WHOS BOUNDARY



Legend

 - indicates anticipated grouted riprap to remain (~45')

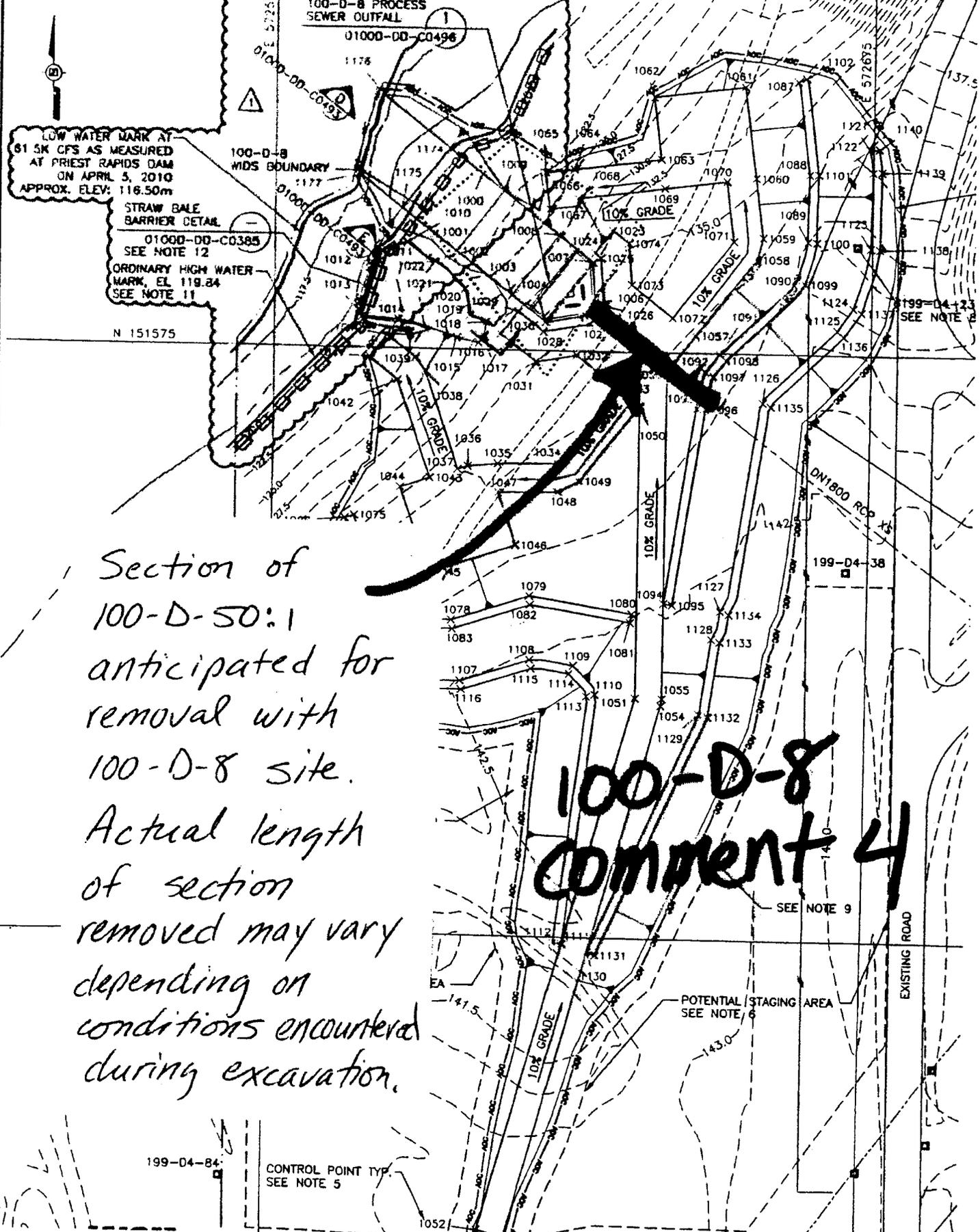
 - indicates anticipated/potential concrete flume to remain below OLWM (~35')

**100-D-8
comment 2**

SEE NOTE 5

SEE NOTE 9

POTENTIAL STAGING AREA
SEE NOTE 6



Section of 100-D-50:1 anticipated for removal with 100-D-8 site. Actual length of section removed may vary depending on conditions encountered during excavation.

100-D-8 COMMENT 4

LOW WATER MARK AT 61 SK CFS AS MEASURED AT PRIEST RAPIDS DAM ON APRIL 5, 2010 APPROX. ELEV. 116.50m

STRAW BALE BARRIER DETAIL
01000-00-C0385
SEE NOTE 12
ORDINARY HIGH WATER MARK, EL 119.84
SEE NOTE 11

100-D-8 PROCESS SEWER OUTFALL
01000-00-C0496

N 151575

SEE NOTE 9

POTENTIAL STAGING AREA
SEE NOTE 6

CONTROL POINT TYP.
SEE NOTE 5

199-D4-84

EXISTING ROAD

199-D4-38

199-D4-23
SEE NOTE 2

10% GRADE

DN1800 RCP



Attachment 8

**AIR MONITORING PLAN FOR THE 100-H AREA
REMAINING SITES AND BURIAL GROUNDS REMEDIAL ACTION
OCTOBER 2010**

1.0 INTRODUCTION

Remedial action (i.e., cleanup) of the remaining sites and burial grounds located in the 100-H Area has the potential to emit radionuclides. These activities are being conducted under two *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) Record of Decisions (EPA 1999, 2000).

Quantification of radioactive emissions, implementation of best available radionuclide control technology (BARCT) pursuant to *Washington Administrative Code* (WAC) 246-247-040(3) and air monitoring pursuant to WAC 246-247-075(3) and (8) have been identified as substantive requirements (i.e., applicable or relevant and appropriate requirements) for the remedial action.

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

1.1 PLANNED ACTIVITIES

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

The loading of contaminated soil and debris into waste containers may result in soil spilled on the waste containers and/or haul trucks. Haul trucks with loaded containers will be surveyed to detect exterior contamination. A decontamination station may be established to decontaminate containers, haul trucks, and equipment, as required. Waste containers, haul trucks, and/or equipment will be decontaminated by conventional means such as 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 if the other decontamination methods fail. Decontaminated trucks and containers will then proceed to the container staging area where the transportation subcontractor will pick up the containers for transport to the Environmental Restoration Disposal Facility (ERDF) or other approved disposal location. Portable HEPA filtered enclosures may be used in the characterization of anomalies.

The work scope includes, but is not limited to, remediation of the following burial grounds in the 100-H Area: 118-H-1, 118-H-2, 118-H-3, 118-H-4, and 118-H-5. The workscope includes, but is not limited to, remediation of the following remaining sites in the 100-H Area: 600-152, 116-H-9, 116-H-5, 118-H-6:4, 118-H-6:5, 100-H-4, 100-H-28:2, 100-H-35, 100-H-37, 100-H-41, 126-H-2, and 132-H-3. Additionally, 100-H-33 is being added to this AMP, but it is currently believed to be a nonradiological site. If radiological contamination is discovered during the remediation of the site, the monitoring and BARCT requirements of this AMP will be applied.

The locations of the sites discussed in this AMP are shown in Figure 1, with the exception of 100-H-37. 100-H-37 covers multiple locations where radiological contamination was spread through biological transport (mud daubers/wasps). It is currently believed that this contamination exists within a 25-acre area around the 105-H Interim Safe Storage (ISS) reactor building.

Characterization sampling (e.g., confirmatory sampling, remedial investigation 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-H 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-H 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-H 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 found 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 *Total Effective Dose Equivalent for the Remedial Action of the 100-H Area Burial Grounds and Remaining Sites*, Calculation 0100H-CA-V0088, Rev. 1 (WCH 2007); *Total Effective Dose Equivalent for the Remedial Action of the 118-H-6:4 and :5 Waste Sites*, Calculation 0100H-CA-V0096, Rev. 0 (WCH 2009b); *Total Effective Dose Equivalent for the Remedial Action of the 100-H Area FY 2009 Remaining Waste Sites*, Calculation 0100H-CA-V0100, Rev. 0 (WCH 2009a); and *Total Effective Dose Equivalent for the Remedial Action of the 132-H-3 Waste Site*, Calculation 0100H-CA-V0117, Rev. 0 (WCH 2009c).

The waste sites are likely to contain contaminated soil or soil mixed with piping and other debris. For conservatism, it was assumed that the inventory for this material is generally in the form of particulates (soil, debris, oxides). The particulate form of the inventory, for calculation purposes,

is assumed to have rubbed off into the soil and a release fraction of 1.0×10^{-3} is applied. For calculation purposes, it is conservatively assumed that hydrogen-3 and krypton-85 are present as a gas and a release fraction of 1 is applied. There is the potential that objects may need to be size-reduced prior to transportation to ERDF. For calculation purposes, it is conservatively assumed that all size reduction will be accomplished with cutting torch or shears, and a release fraction of 1 is applied for torch cutting for the sites identified in WCH (2007).

It is assumed at this time that no scabbling will be performed, but it is an activity that may be necessary. Should this be necessary, concurrence from Ecology will be necessary. In addition, it is assumed that 0.1% of the particulate inventory will be picked up through a HEPA-filtered vacuum for the sites identified in WCH (2007). A release fraction of 1 is applied to the HEPA vacuum inventory.

The potential for spent nuclear fuel elements is possible. An inventory and associated release fraction has been calculated that assumes 99.9% of the fuel element is metal with a release fraction of 1.0×10^{-6} and 0.1% is an oxide with a release fraction of 1×10^{-3} .

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 10,480 m east at the site boundary. The CAP88-PC model summary and synopsis are presented in WCH (2007) and WCH (2009a, 2009b, 2009c). The calculated total unabated annual TEDE to the MEI is $1.21\text{E-}01$ mrem/yr. This dose estimate is conservative because it assumes all the waste sites will be remediated in 1 year. Additionally, some of the waste sites have already been remediated.

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 fixative or other control measure shall be performed if warranted by the periodic monitoring.
- Fixatives will be applied to contaminated soils and debris that will be inactive less than 24 hours at the end of the work operations if the sustained wind speed is predicted overnight to be greater than 32 km/hr (20 mph) based on the Hanford Meteorological Station morning forecast; this will allow the project enough time (if necessary) to prepare for the application of dust control measures. If a soil fixative has already been applied and the soil will remain undisturbed, further use of fixatives will not be needed. The fixatives or other controls will not be applied when the contaminated soils are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of 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 and ventilated enclosures used for radiological work will be used when needed and are equipped with HEPA filters, which are considered BARCT for radioactive emissions at the Hanford Site. The HEPA filters will be efficiency tested upon installation and on an annual basis thereafter, and must be demonstrated to have a 99.95% removal efficiency.
- Additional measures for controlling small debris in waste piles may be prudent based on waste site conditions as determined by project personnel. Additional measures that may be used are as follows: (1) 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 new and existing near-facility monitoring (NFM) stations upwind and downwind of the 100-H Area. The air monitoring configuration for the entire remediation scope is four downwind and one upwind particulate air monitors. The locations of these monitors (Figure 1) are based on the predominant wind directions. The minimum number of monitors used during remediation of any particular site will be three, which consists of the one upwind at the Yakima Barricade (not shown in Figure 1) and two downwind. At this point it is believed that the monitor located near 100-H-33, 116-H-5, and 126-H-1 will only be operated during remediation of these three waste sites. In all cases, the existing air monitoring station at the Yakima Barricade (not shown in Figure 1) will be used as the upwind air monitoring station.

NFM 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). 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), americium-241, strontium-90, plutonium-238, plutonium 239/240, and isotopic uranium. Environmental soil samples will be collected before, during, and after remediation near each downwind air monitor and analyzed for GEA, strontium-90, isotopic plutonium, and isotopic uranium. The soil samples will be taken to evaluate the long-term trends in the environmental accumulation of radioactivity. The data from these activities will be included in the appropriate annual reports prepared for the Hanford Site.

Tritium (H^3) monitoring will be performed, when excavation activities are being conducted on the following sites: 118-H-1, 118-H-2, 118-H-3, and 118-H-4. These are the only sites addressed within this AMP that have an estimated tritium inventory of 10% or greater of the TEDE to the MEI. One downwind tritium monitor will be used when excavation activities are

occurring at 118-H-1, 118-H-2, 118-H-3, and 118-H-4. Tritium samples shall be collected and analyzed monthly.

As part of the site-wide evaluation of NFM data, the electronic release summary (ERS) database compares NFM composite air sample results to 10% of the values in 40 CFR 61, Appendix E, Table 2. 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.

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

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

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

5.0 REFERENCES

40 CFR 61, "Protection of Environment," *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, as revised, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1999, *Interim Action Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6 and 200-CW-3*, U.S. Environmental Protection Agency, July 13, 1999.

EPA, 2000, *Declaration of the Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2 and 100-KR-2*, U.S. Environmental Protection Agency, September 25, 2000.

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

WCH, 2007, *Total Effective Dose Equivalent Calculation for the Remedial Action of the 100-H Area Burial Grounds and Remaining Sites*, Calculation 0100H-CA-V0088, Rev. 1, Washington Closure Hanford, Richland, Washington.

WCH, 2009a, *Total Effective Dose Equivalent for the Remedial Action of the 100-H Area FY 2009 Remaining Waste Sites*, Calculation 0100H-CA-V0100, Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH, 2009b, *Total Effective Dose Equivalent for the Remedial Action of the 118-H-6:4 and :5 Waste Sites*, Calculation 0100H-CA-V0096, Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH, 2009c, *Total Effective Does Equivalent for the Remedial Action of the 132-H-3 Waste Site*, Calculation 0100H-CA-V0117, Rev. 0, Washington Closure Hanford, Richland, Washington.

ATTACHMENT 1

Summary of the Total Effective Dose Equivalent for the 100-H Area Waste Sties. (2 Pages)

Isotope	0100H-CA-V0088, Rev. 1	0100H-CA-V0096, Rev. 0	0100H-CA-V0100, Rev. 0	0100H-CA-V0117, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr) ¹				
Ac-228		3.13E-08			3.13E-08
Ag-108					0.00E+00
Am-241	3.96E-02	1.28E-05	9.68E-06	1.51E-04	3.98E-02
Ba-133	3.98E-05				3.98E-05
Ba-137m	2.50E-10	3.77E-07	4.72E-07	5.69E-07	1.42E-06
Bi-214		3.19E-08			3.19E-08
C-14	1.29E-05	2.71E-08	1.34E-07	1.27E-06	1.43E-05
Cm-244				1.61E-05	1.61E-05
Cd-113m	0.00E+00				0.00E+00
Ca-41	6.85E-10				6.85E-10
Co-60	3.31E-02	1.45E-07	2.12E-07	7.54E-07	3.31E-02
Cs-137	1.37E-02	1.49E-05	1.87E-05	2.24E-05	1.38E-02
Eu-152	1.16E-03	1.76E-07	1.46E-07	1.58E-07	1.16E-03
Eu-154	4.42E-04	6.26E-08	1.59E-07		4.42E-04
Eu-155	2.58E-06	3.55E-09	5.70E-07		3.15E-06
H-3 ²	1.09E-02		7.51E-05	3.67E-06	1.10E-02
Kr-85 ²	1.56E-06				1.56E-06
Nb-94	5.73E-05				5.73E-05
Ni-59	7.14E-06				7.14E-06
Ni-63	5.83E-04	1.20E-07			5.83E-04
Np-237	2.90E-07	5.76E-07			8.66E-07
Pa-233		2.37E-10			2.37E-10
Pa-234m		5.38E-09	2.07E-09		7.45E-09
Pb-214		5.32E-09			5.32E-09
K-40	3.79E-06	6.39E-06			1.02E-05
Pd-107	4.62E-13				4.62E-13
Po-214		1.75E-12			1.75E-12
Po-216		1.40E-12			1.40E-12
Po-218		1.92E-13			1.92E-13
Pu-238	1.61E-03	1.71E-06	6.95E-04		2.31E-03
Pu-239 ³	1.23E-02	5.66E-05	7.01E-04	1.24E-03	1.43E-02
Pu-240 ³	1.50E-04				1.50E-04
Pu-241	1.74E-04				1.74E-04
Ra-224		4.69E-08			4.69E-08

**Summary of the Total Effective Dose Equivalent
for the 100-H Area Waste Sties. (2 Pages)**

Isotope	0100H-CA-V0088, Rev. 1	0100H-CA-V0096, Rev. 0	0100H-CA-V0100, Rev. 0	0100H-CA-V0117, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr) ¹				
Ra-226	1.47E-06	2.56E-06			4.03E-06
Ra-228	1.25E-06	5.42E-06			6.67E-06
Rn-220		2.11E-16			2.11E-16
Rn-222		5.94E-17			5.94E-17
Se-79	0.00E+00				0.00E+00
Sm-151	1.60E-08				1.60E-08
Sr-90	1.67E-03	1.35E-05	3.65E-06	2.32E-05	1.71E-03
Tc-99	7.16E-06		3.45E-05		4.17E-05
Th-228	9.86E-06	7.08E-05			8.07E-05
Th-230	7.27E-06	1.52E-05			2.25E-05
Th-231		7.32E-11			7.32E-11
Th-232	1.39E-05	2.66E-05			4.05E-05
Th-234		6.08E-09	2.34E-09		8.42E-09
U-233/234 ³	4.38E-05	4.98E-06			4.88E-05
U-235	6.60E-04	2.85E-07			6.60E-04
U-238	1.70E-03	3.51E-06	1.35E-06		1.70E-03
Y-90	2.99E-06	4.96E-08	1.34E-08	8.54E-08	3.14E-06
Zr-93	1.09E-10				1.09E-10
TOTAL	1.18E-01	2.37E-04	1.54E-03	1.46E-03	1.21E-01

¹ The annual unabated total effective dose equivalent was determined using the CAP88-PC. The potential to emit (Ci/yr) was input to the model, and the model generated the annual unabated dose. The distance to the MEI for the 100-H Area is 10,480 m east.

² Release fraction for H-3 and Kr-85 is assumed to be 1 in all cases.

³ For some sites, the MAR calculations presented combined data (i.e., Pu-239/Pu-240); all Pu-239/Pu-240 and U-233/U-234 combined values are assumed to be Pu-239 and U-233 respectively.

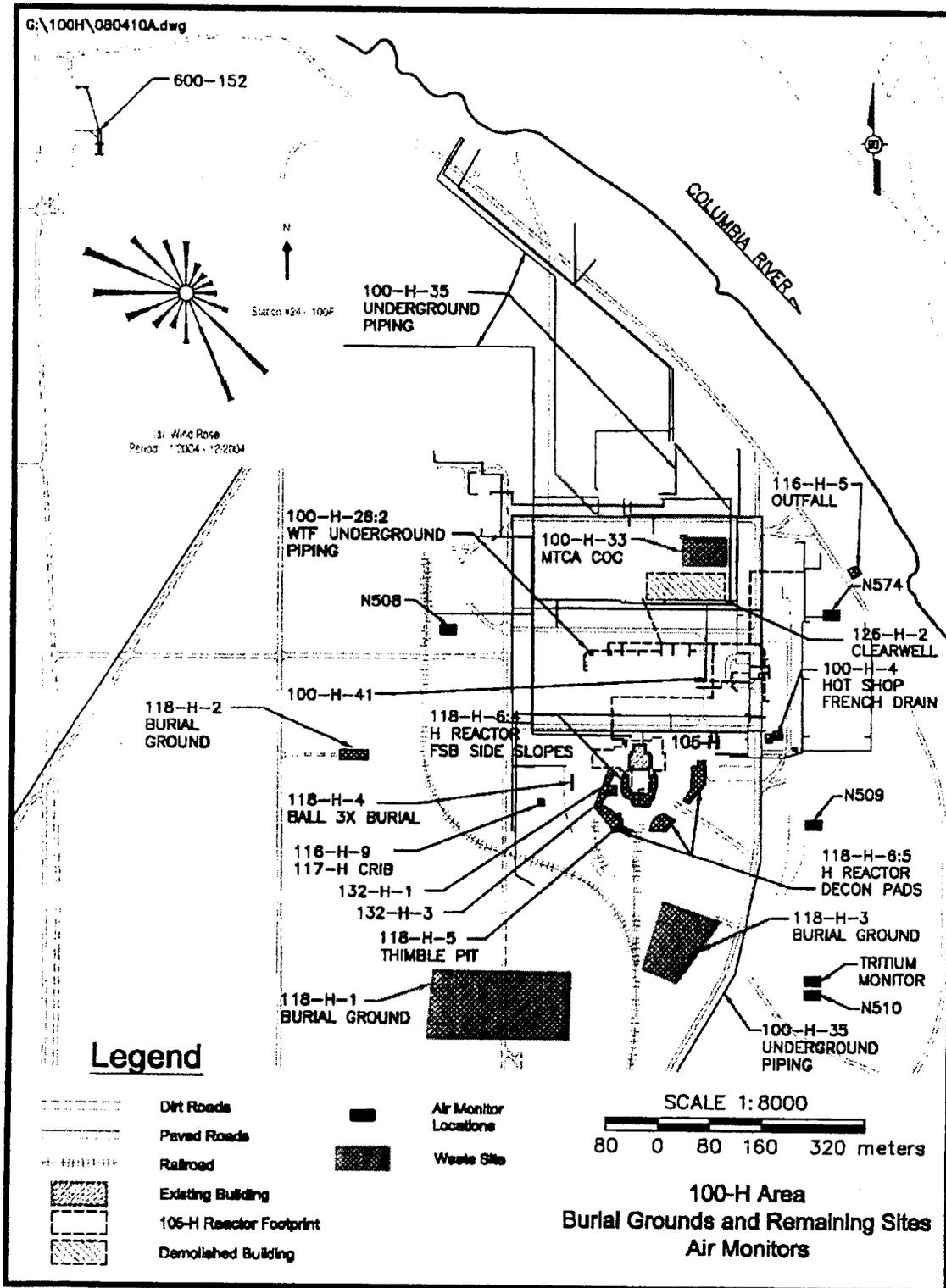
MAR = Material at Risk

MEI = Maximally Exposed Individual

RF = Release Fraction

TEDE = Total Effective Dose Equivalent

Figure 1. Proposed Locations of Air Monitors.

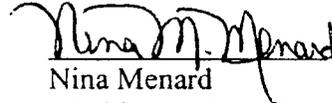


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10/21/10
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10-25-10
Date

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Attachment 9

**AIR MONITORING PLAN FOR THE 100-D/DR AREA
REMAINING SITES AND BURIAL GROUNDS REMEDIAL ACTION
OCTOBER 2010**

1.0 INTRODUCTION

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

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

1.1 PLANNED ACTIVITIES

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

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

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

The work scope includes, but is not limited to, remediation of the following waste sites in the 100-D Area: 100-D-1, 100-D-3, 100-D-8, 100-D-14, 100-D-29, 100-D-31, 100-D-32, 100-D-33, 100-D-35, 100-D-40, 100-D-41, 100-D-42, 100-D-43, 100-D-45, 100-D-47, 100-D-50:1, 100-D-50:2, 100-D-50:3, 100-D-50:4, 100-D-50:6 and 100-D-50:9, 100-D-63, 100-D-65, 100-D-66, 100-D-73, 100-D-76, 100-D-85:1, 116-D-5, 116-DR-3, 116-DR-5, 116-D-8, 116-DR-8, 116-D-10, 116-DR-3, 116-DR-10, 118-D-1, 118-D-2, 118-D-3, 118-D-4, 118-D-5, 118-DR-1, 118-D-6:4, 126-D-2, 128-D-2, 132-D-1, 1607-D2, 126-DR-1, 128-D-2, UPR-100-D-5, and 628-3. The locations of the sites discussed in this AMP are shown in Figure 1.

Characterization sampling (e.g., confirmatory sampling, remedial investigation 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-D via the confirmatory sampling work instruction approval process already in place. Additional sites may be added to this air monitoring plan through agreement in the Unit Managers' Meeting. Additionally, if any of the nonradioactive sites in 100-D Area are determined to contain radioactive contamination based on additional information, this air monitoring plan will cover those sites based on concurrence from Ecology.

2.0 AIRBORNE SOURCE INFORMATION

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

2.1 INVENTORY

The radionuclide inventory and subsequent potential emissions calculations are summarized in Attachment 1. Attachment 1 is a compilation of the inventories and associated estimated dose rates from the following calculations: (1) *Total Effective Dose Equivalent for the Remedial Action of the 100-D Area Supplemental Design Sites*, Calculation 0100D-CA-V0273 (WCH 2006), (2) *Total Effective Dose Equivalent for the 100D/ DR Area Burial Grounds and Remaining Sites*, Calculation 0100D-CA-V0267 (WCH 2007); and (3) *Total Effective Dose Equivalent for the Remedial Action of the 100D Area Waste Sites-FY2008*, Calculation 0100D-CA-V0283, Rev. 1 (WCH 2010).

The waste sites are likely to contain contaminated soil or soil mixed with piping and other debris. For conservatism, it was assumed that the inventory for this material is generally in the form of particulates (soil, debris, oxides). The particulate form of the inventory, for calculation purposes,

is assumed to have rubbed off into the soil and a release fraction of 1.0×10^{-3} is applied. For calculation purposes, it is conservatively assumed that tritium and krypton-85 are present as a gas and a release fraction of 1 is applied. There is the potential that objects may need to be size-reduced prior to transportation to ERDF. In addition, it is conservatively assumed that all size reduction for most waste sites will be accomplished with a cutting torch or shears. A release fraction of 1 is applied for torch cutting and would represent 0.21% of the overall inventory (for size reduction in 10 ft lengths), and 0.12% of the overall inventory (for size reduction in 17 ft lengths).

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

The potential for spent nuclear fuel elements is possible. It is assumed that 99.9% of the fuel element is metal with a release fraction of 1.0×10^{-6} and 0.1% is an oxide with a release fraction of 1.0×10^{-3} .

The CAP88-PC model (Version 2 or Version 3.0, depending on when the calculation was prepared) was used to determine the annual total effective dose equivalent (TEDE) to the maximally exposed individual (MEI). The appropriate release fraction was applied to the inventory of the various wastes to calculate the potential-to-emit. The calculated potential-to-emit (curries per year) was the input used for the computer model, and the model generated the annual unabated dose. The distance to the MEI used in the model was approximately 9,713 m west-northwest. The CAP88-PC model summary and synopsis are presented in calculations cited above in the first paragraph of this section. The calculated total unabated annual TEDE to the MEI for the inventory in the combined calculations is $8.79 \text{ E-01 mrem/yr}$. This dose estimate is conservative because it assumes all the waste sites will be remediated in 1 year. Additionally, some of the waste sites have already been remediated.

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) should be performed of the contaminated soils and debris that remain inactive for greater than 1 month. Re-application of fixatives or other control measures shall be performed if warranted by the periodic monitoring.
- Fixatives will be applied to contaminated soils and debris that will be inactive less than 24 hours at the end of work operations if the sustained wind speed is predicted overnight to be

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

- Appropriate documentation on the application of fixatives to comply with BARCT shall be maintained (e.g., logbook or other project-specific documentation).
- The haul trucks will be covered to contain the materials while in transit to ERDF.
- Vacuum cleaners and ventilated enclosures for radiological work will be used when needed and are equipped with HEPA filters, which are considered BARCT for radioactive emissions at the Hanford Site. HEPA filters are efficiency tested upon installation and on an annual basis thereafter, and must be demonstrated to have a 99.95% removal efficiency.
- Additional measures for controlling small debris in waste piles may be prudent based on waste site conditions as determined by project personnel. Additional measures that may be used are as follows: (1) application of a thin layer of contaminated soil from the same waste site (that is free of debris) on the surface and follow normal fixative application, (2) apply a thin layer of uncontaminated soil on the surface and follow normal fixative applications, (3) apply bonded fiber fixative, and (4) cover the area containing small debris that is easily re-suspended with a tarp or other appropriate material.

4.0 MONITORING

Monitoring activities will consist of establishing near-facility (NFM) monitoring stations upwind and downwind of the 100-D Area. There will be four downwind air monitors. The locations of these monitors (Figure 1) are based on the predominant wind directions. The existing air monitoring station at the Yakima Barricade (not shown in Figure 1) will be used as the upwind air monitoring station. The existing air monitor located northeast of 628-3 will be moved west of 628-3 once remediation of that site is complete as depicted in Figure 1.

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). 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, americium-241, plutonium-238, plutonium-239/240, and isotopic uranium. Environmental soil samples will be collected before, during, and after remediation near the downwind air monitors and analyzed for GEA, strontium-90, isotopic plutonium-238, plutonium-239/240, and isotopic uranium. The soil samples will be taken to evaluate the long-term trends in the environmental accumulation of radioactivity. The data from these activities will be included in the appropriate annual reports prepared for the Hanford Site.

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

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

Air monitor downtime will be minimized and all air monitors shall be operated as described in the following text. However, if a downwind air monitor is out of operation for more than 48 hours during normal work operations (e.g., excavating and loading radioactive contaminated material), Ecology will be notified. If two or more air monitors are out of operation during normal work operations, excavation and loading activities shall be temporarily suspended until operation of at least 3 downwind air monitors are restored or backup equipment is deployed. Normal work operations are not allowed if two downwind monitors are not operating. Air monitoring will no longer be required when excavation of the waste sites has been completed.

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

5.0 REFERENCES

40 CFR 61, "Protection of Environment," *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*, DOE/RL-91-50, as revised, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1999, *Interim Action Record of Decision*, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6 and 200-CW-3, U.S. Environmental Protection Agency, July 13, 1999.

EPA, 2000, *Declaration of the Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2 and 100-KR-2*, U.S. Environmental Protection Agency, September 25, 2000.

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

WCH, 2006, *Total Effective Dose Equivalent for the Remedial Action of the 100-D Area Supplemental Design Sites*, Calculation 0100D-CA-V0273, Rev. 0, Washington Closure Hanford, Richland, Washington

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

WCH, 2010, *Total Effective Dose Equivalent for the Remedial Action of the 100D Area Waste Sites-FY2008*, Calculation 0100D-CA-V0283, Rev. 1, Washington Closure Hanford, Richland, Washington

ATTACHMENT 1

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

Isotope	0100D-CA-V0283, Rev. 1	0100D-CA-V0267, Rev. 1	0100D-CA-V0273, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr) ¹			
Ac-228	8.40E-08			8.40E-08
Ag-108m				0.00E+00
Am-241	2.44E-05	1.53E-01	2.65E-04	1.53E-01
Ba-133		3.12E-04	2.32E-05	3.35E-04
Ba-137m	4.63E-06	9.32E-10	4.16E-04	4.21E-04
Bi-212	2.52E-08			2.52E-08
Bi-214	1.72E-07			1.72E-07
C-14	8.24E-05	6.06E-05	4.13E-06	1.47E-04
Ca-41		3.43E-09	2.36E-10	3.67E-09
Cd-113m		0.00E+00		0.00E+00
Co-60	4.96E-06	4.80E-01	4.22E-02	5.22E-01
Cs-134	9.96E-09	1.65E-08		2.65E-08
Cs-137	1.83E-04	5.55E-02	1.25E-04	5.58E-02
Eu-152	4.35E-06	3.13E-02	3.01E-03	3.43E-02
Eu-154	2.47E-07	2.52E-02	2.60E-03	2.78E-02
Eu-155	2.77E-09	1.12E-05		1.12E-05
H-3 ²	1.84E-06	2.03E-02	6.78E-05	2.04E-02
I-129	7.91E-08			7.91E-08
K-40	2.76E-05	1.36E-03	5.92E-05	1.45E-03
Kr-85 ²		1.73E-06		1.73E-06
Na-22		2.24E-06		2.24E-06
Nb-94		2.35E-04		2.35E-04
Ni-59		3.46E-05	1.69E-06	3.63E-05
Ni-63	6.46E-07	5.50E-03	2.21E-04	5.72E-03
Pa-234	3.13E-10			3.13E-10
Pa-234m	1.05E-08			1.05E-08
Pb-210	6.03E-08			6.03E-08
Pb-212	1.51E-08			1.51E-08
Pb-214	2.86E-08			2.86E-08
Pd-107		2.22E-13		2.22E-13
Po-214	9.42E-12			9.42E-12
Po-216	1.82E-12			1.82E-12

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

Isotope	0100D-CA-V0283, Rev. 1	0100D-CA-V0267, Rev. 1	0100D-CA-V0273, Rev. 0	COMBINED TOTAL
	Unabated TEDE to the MEI (mrem/yr) ¹			
Po-218	1.03E-12			1.03E-12
Pu-238	1.80E-06	7.28E-03		7.28E-03
Pu-239 ³	4.48E-05	1.83E-02	1.73E-04	1.85E-02
Pu-240 ³		7.19E-05		7.19E-05
Pu-241	1.01E-06	4.15E-05		4.25E-05
Ra-224	6.03E-08			6.03E-08
Ra-226	1.37E-05	1.70E-04	9.45E-06	1.93E-04
Ra-228	1.48E-05		6.12E-06	2.09E-05
Rn-220	2.42E-16			2.42E-16
Rn-222	2.94E-16			2.94E-16
Se-79		0.00E+00		0.00E+00
Sm-151		7.68E-09		7.68E-09
Sr-90	3.57E-04	4.50E-03	3.38E-04	5.20E-03
Tc-99	4.54E-08	2.47E-05	1.88E-06	2.66E-05
Th-228	8.70E-05		1.55E-04	2.42E-04
Th-231	1.16E-10			1.16E-10
Th-232	6.83E-05		2.62E-04	3.30E-04
Th-234	1.18E-08			1.18E-08
Tl-208	1.20E-07			1.20E-07
U-233 ³	7.79E-06	1.28E-03	1.22E-03	2.51E-03
U-235	4.46E-07	2.86E-03	1.51E-05	2.88E-03
U-238	6.76E-06	1.79E-02	1.24E-03	1.91E-02
Y-90	1.31E-06	9.73E-06	7.38E-07	1.18E-05
Zr-93		7.82E-11		7.82E-11
TOTAL	9.39E-04	8.25E-01	5.24E-02	8.79E-01

¹ The annual unabated total effective dose equivalent was determined using the CAP88-PC. The potential to emit (Ci/yr) was input to the model, and the model generated the annual unabated dose. The distance to the MEI for the 100-D Area is 9,714 m west-northwest.

² Release fraction for H-3 and Kr-85 is assumed to be 1 in all cases.

³ For some sites, the MAR calculations presented combined data (i.e., Pu-239/Pu-240); all Pu-239/Pu-240 and U-233/U-234 combined values are assumed to be Pu-239 and U-233 respectively.

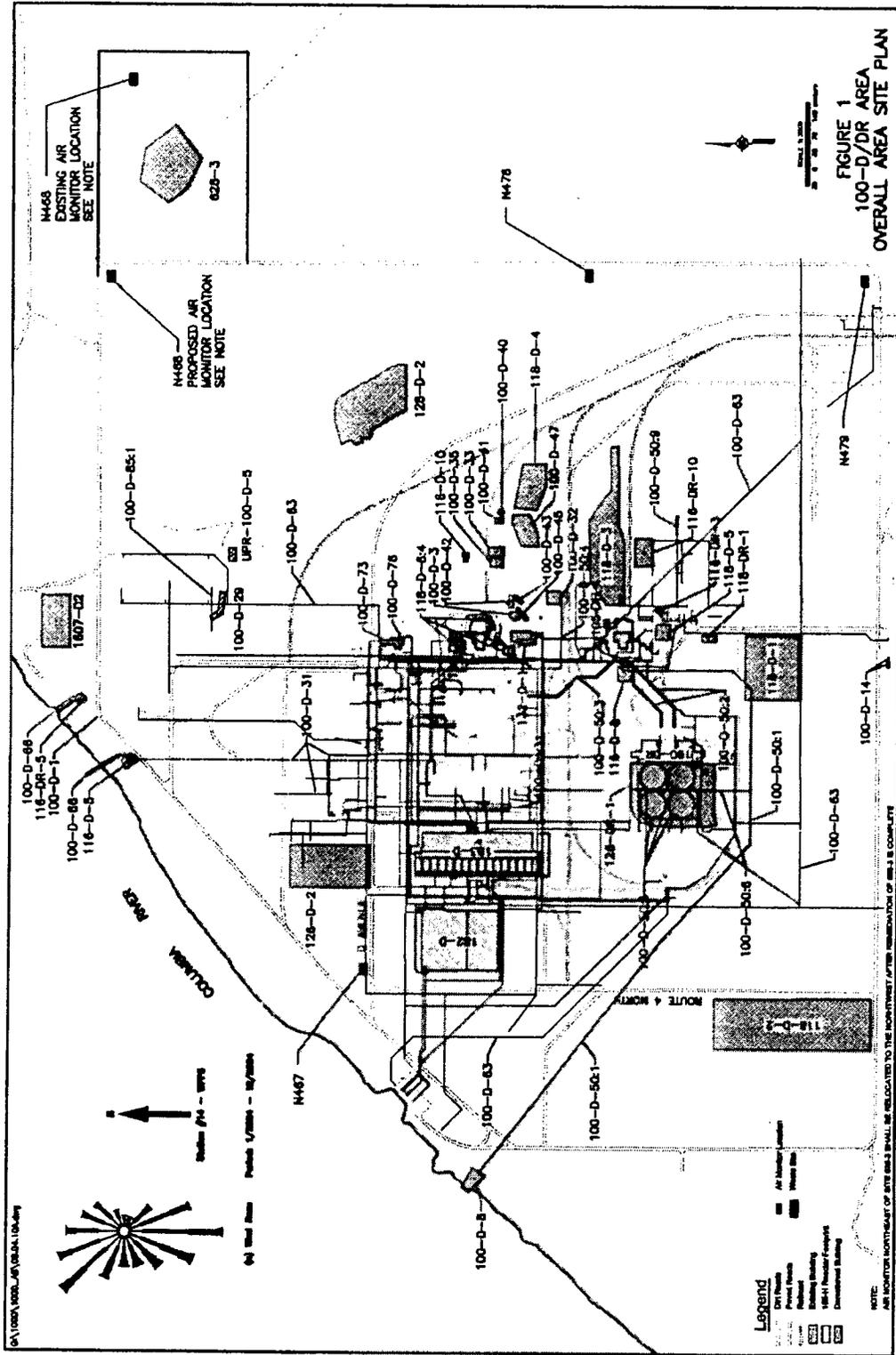
MAR = Material at Risk

MEI = Maximally Exposed Individual

RF = Release Fraction

TEDE = Total Effective Dose Equivalent

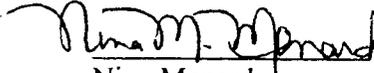
Figure 1. 100-D/DR Area Overall Site Plan.



Concurrence:


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

10/21/10
Date


Nina Menard
Washington State Department of Ecology

10-25-10
Date

Distribution:

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Dan Saueressig	N3-30
Steve Wilkinson	X4-08

Attachment 10

100 Area D4/ISS Status

November 4, 2010

D4 (WCH)

100-N River Structures (181-N, 181-NE, 1908-N, 1908-NE): WCH conducted a meeting with the ARARs agencies (i.e., U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Washington Department of Natural Resources (DNR), and National Marine Fisheries Service (NMFS)), Ecology and DOE to resolve comments concerning D4 plans. Completion of the cultural resources review remains on track for December 10, 2010. Bids to support D4 activities have been received, reviewed, and a subcontractor has been selected. In the meantime, equipment removal at the 181-N River Pumphouse has continued with the removal of additional travelling screens and pumps.

1310-N/1322-N Facilities: Below grade demolition and load out is complete. The excavations will be turned over to FR after they have been examined and surveyed in accordance with D4 project plans.

182-N High Lift Pumphouse: Scaffolding erection has resumed and limited asbestos removal is being conducted to support scaffolding completion.

105-N Fuel Storage Basin (FSB): D4 plans to begin tapping and draining pipes in the FSB lift station and preparing the transfer bay for demolition.

1909-N Waste Disposal Valve Pit: Excavation and backfill is complete. Surveying is complete with the exception of a radiological survey. The radiological survey will be completed as part of a much larger excavation that will engulf this excavation in the future.

116-N Air Exhaust Stack (Substructure): Mobilization is complete and demolition has begun.

MO-417 Office Trailer (F Area): Scheduled for demolition and disposed of within the next month.

ISS/SSE (Dickson):

105-N Reactor Building: North side demolition is complete with excavation now partially backfilled. GPERS surveys identified contamination in the soil under the former tunnels. Additional GPERS surveys and excavations have been completed on the north slope of the excavation to remove soil contamination found there. The C elevator has been grouted in accordance with the 105-N/109-N RAWP and its drain pipe has been drained. The below grade pipe tunnel on the west side of the SSE has been opened up (roof removed), cleaned out, and samples of the concrete floor have been collected in accordance with a DOE/Ecology agreement (CCN 153055).

109-N Heat Exchanger Building: Structural steel erection on 109-N roof structure and sealing of penetrations in SSE walls ongoing and proceeding as planned.

Attachment 11

AIR MONITORING PLAN FOR THE 100-N AREA REMEDIAL ACTION

JULY 2010

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*.

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 such as 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-13, 100-N-14, 100-N-25, 100-N-26, 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-63, 100-N-64, 100-N-82, 116-N-2, 116-N-4, 118-N-1, 124-N-4, 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-11, 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.

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 (surface sampling, potholing, etc.) 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 *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites*, Calculation 0100N-CA-V0091, Rev. 0 (WCH 2008).

The waste sites are likely to contain contaminated soil or soil mixed with piping and other debris. For conservatism, it was assumed that the inventory for this material is generally in the form of particulates (soil, debris, oxides). The particulate form of the inventory, for calculation purposes, is assumed to have rubbed off into the soil, and a release fraction of 1.0×10^{-3} is applied. For calculation purposes, it is conservatively assumed that 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 1.0×10^{-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 assumed that 0.1% of the particulate inventory will be picked up through a HEPA-filtered vacuum for the sites identified in WCH (2008). A release fraction of 1 is applied to the HEPA vacuum inventory.

The CAP88-PC model (Version 2.0) 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 for are presented in the *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites*, Calculation 0100N-CA-V0091, Rev. 0 (WCH 2008). The calculated total unabated annual TEDE to the MEI is 5.14E-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 one (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. Four of the waste sites (100-N-13, 100-N-14, UPR-100-N-11, and 100-N-82) that are to be remediated are outside the perimeter of the existing monitors. However, the radiological inventory is low and these waste sites are 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 these four waste sites; 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 two 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, "Protection of Environment," *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 Record of Decision for the 100-NR-1 and 100-NR-2 Operable Units of the Hanford 100-N Area, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington, September 30, 1999.

EPA, 2000, *Interim Remedial Action Record of Decision for the 100-NR-1 Operable Unit of the Hanford 100-N Area, 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**

Isotope	TOTAL VALUES							Unabated TEDE to the MEI ³ (mrem/yr)
	Inventory ¹ (Ci/yr)			Potential to Emit (Ci/yr)				
	Particulates	Torch Cutting	HEPA Vacuum	Particulates (1E-3 RF) ²	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

¹ Inventory taken from Determination of Material at Risk and Hazard Screening for 100-N Waste Sites (Calculation 0100N-CA-V0091, Rev. 0 [WCH 2008]).

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

³ 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 meters west northwest. The CAP88-PC model summary and synopsis are presented in Calculation 0100N-CA-V0091, Rev. 0, *Total Effective Dose Equivalent for the Remedial Action of the 100-N Area Waste Sites* (WCH 2008).

⁴ 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.

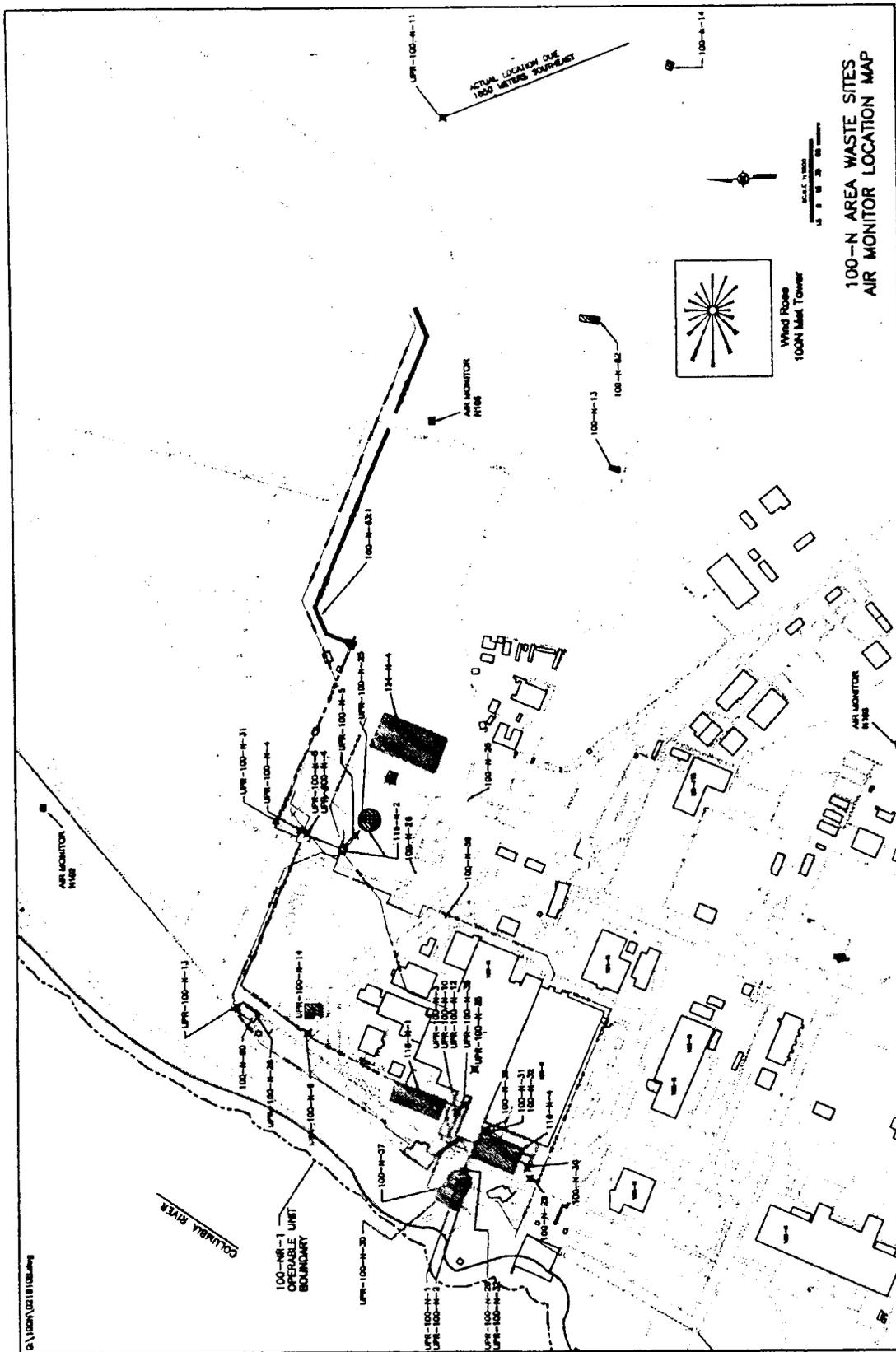
MAR = material at risk

MEI = maximally exposed individual

TEDE = total effective dose equivalent

RF = release fraction

Figure 1. Proposed Locations of Air Monitors.



Concurrence:

Mark French 7/9/10
M. S. French Date
U.S. Department of Energy,
Richland Operations Office

Nina Menard 7-14-10
Nina Menard Date
Washington State Department of Ecology

Distribution:

Administrative Record	H6-08
Alicia Boyd	H0-57
Mark Buckmaster	X9-08
Joanne Chance	A3-04
Nina Menard	H0-57
Dan Saueressig	N3-30
Steve Wilkinson	X4-08
Joan Woolard	H4-21

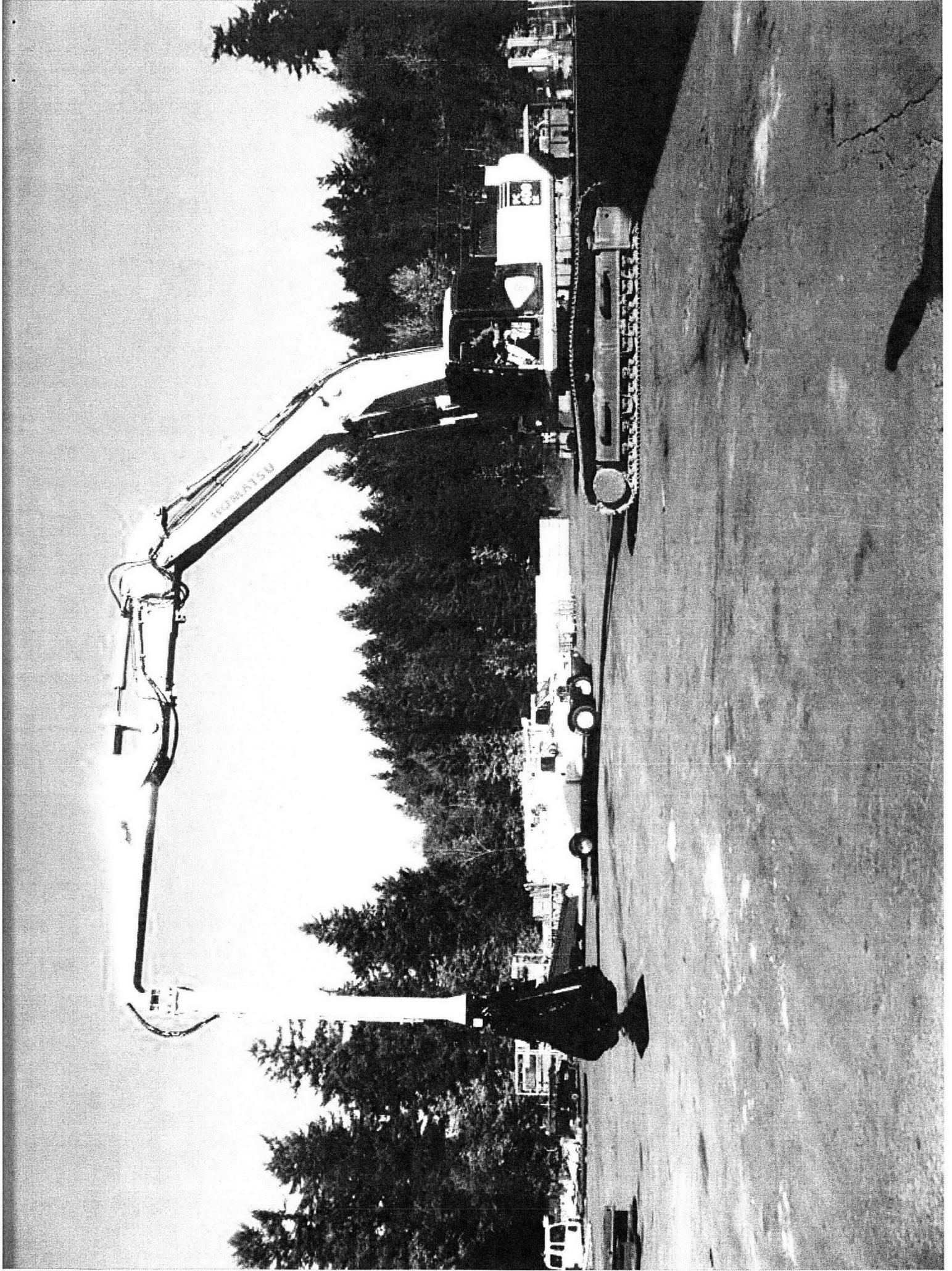
Attachment 12

Aerial-Photo February 2010

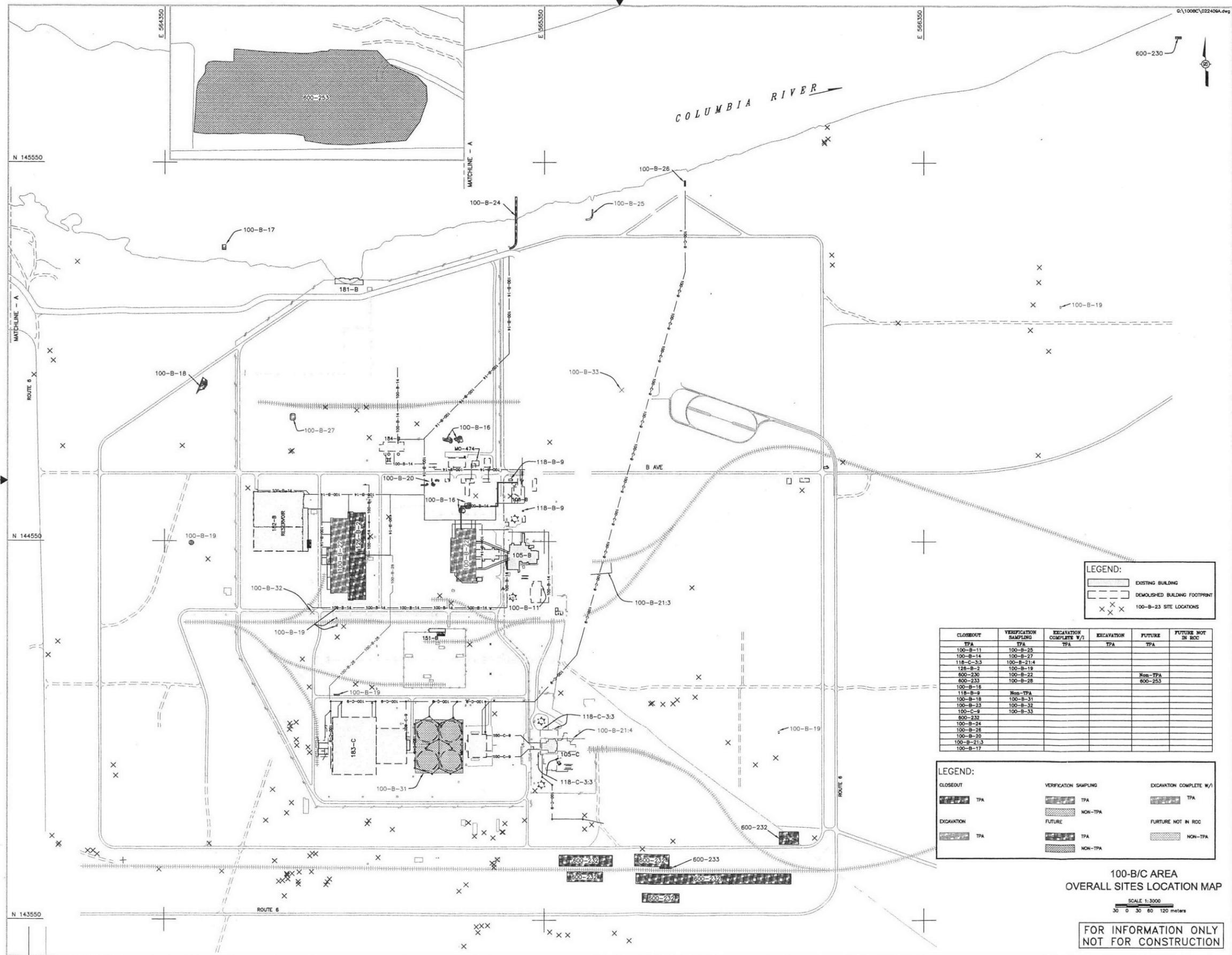
118-K-1 Burial Ground



Attachment 13



Attachment 14



LEGEND:
 [Solid line] EXISTING BUILDING
 [Dashed line] DEMOLISHED BUILDING FOOTPRINT
 [X] 100-B-23 SITE LOCATIONS

CLOSOUT	VERIFICATION SAMPLING	EXCAVATION COMPLETE W/	EXCAVATION	FUTURE	FUTURE NOT IN ROC
TPA	TPA	TPA	TPA	TPA	
100-B-11	100-B-23				
100-B-14	100-B-27				
118-C-3.3	100-B-21.4				
128-B-2	100-B-19				
600-235	100-B-22				
600-233	100-B-28				Non-TPA 600-253
100-B-16					
118-B-9	Non-TPA				
100-B-18	100-B-31				
100-B-23	100-B-32				
100-C-2	100-B-33				
600-232					
100-B-24					
100-B-26					
100-B-29					
100-B-21.3					
100-B-17					

LEGEND:

TPA	TPA	TPA
TPA	NON-TPA	NON-TPA
NON-TPA	FUTURE	FUTURE NOT IN ROC
NON-TPA	TPA	TPA
NON-TPA	NON-TPA	NON-TPA

100-B/C AREA
OVERALL SITES LOCATION MAP

SCALE 1:3000
30 0 30 60 120 meters

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

Attachment 15

TRI-PARTY AGREEMENT

Change Notice Number TPA-CN- 392	TPA CHANGE NOTICE FORM	Date: 10/25/2010
Document Number, Title, and Revision: DOE/RL-2009-44, <i>Sampling and Analysis Plan for the 100-BC-1, 100-BC-2, and 100-BC-5 Operable Units Remedial Investigation/Feasibility Study</i> , Rev. 0		Date Document Last Issued: March 23, 2010
Originator: Jon McKibben/Nathan Bowles		Phone: 373-4677/373-0377

Description of Change:
 This change replaces pages 3-19 and 3-20 with the attached. These changes are in addition to those issued in TPA CN-348 and TPA CN-351. The change allows for Well #6 to be completed as a 4-inch well, rather than a 6-inch well, screened in the uppermost water-bearing unit of the Ringold Formation (Fm) Upper Mud Unit.

Briant Charboneau and Laura Buelow agree that the proposed change
DOE **Lead Regulatory Agency**
 modifies an approved workplan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*, and not Chapter 12.0, *Changes to the Agreement*.

Note: Include affected page number(s)

Justification and Impacts of Change:
 The change allows for Well 6 to be completed as a 4-inch well screened in the uppermost water-bearing unit within the Ringold Fm Upper Mud Unit. There is no need to have a 6-inch completion within the RUM, and reducing this requirement to a 4-inch completion will reduce waste generation and reduce the overall cost of the drilling activity. This change will not adversely impact the quality of data obtained.

Approvals:

	10-27-2010	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
DOE Project Manager	Date	
	10/29/10	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
EPA Project Manager	Date	

3.5.2 Groundwater Characterization

Groundwater characterization, including well activities, identification of wells to be sampled, well depth and screen placement, and well drilling and completion procedures, is discussed in this section.

3.5.2.1 New Groundwater Wells

Table 3-1 summarizes groundwater monitoring well activities. From the new well screened in the Ringold Fm Upper Mud Unit, slug testing and pump testing will be performed to characterize hydraulic conductivity.

Well Depth and Screen Placement

Well 1 will be screened at the top of the aquifer. Wells 2, 3, 4, and 5 will be screened in the unconfined aquifer, and the screen length and placement will be determined after initial aquifer samples are reviewed.

For the one new groundwater well in 100-BC to be drilled into the uppermost water-bearing unit within the Ringold Fm Upper Mud Unit (well 6), the screen length and placement will be determined based on the thickness and ability to produce water in the water-bearing Ringold Fm Upper Mud Unit.

Well Drilling and Completion Procedures

Well drilling will be performed in accordance with WAC 173-160. For the five new groundwater wells in the unconfined aquifer in 100-BC, the wells will be drilled using 25-cm (10 in.) diameter (or larger) casing to total depth. For the one new groundwater well in 100-BC to be drilled into the uppermost water-bearing unit within the Ringold Fm Upper Mud Unit, the well will be drilled using 20-cm (8-in.) diameter (or larger) casing to total depth. The drilling method will be determined based on discussions between the drilling lead and drilling contractor. The wells completed within the unconfined aquifer will be constructed as 15.24 cm (6-in.) wells and the well completed within the Ringold Fm Upper Mud Unit will be constructed as a 10 cm (4-in.) well. All wells will be constructed with Schedule 10, Type 304 or 316 stainless steel, V-slot continuous wire wrap screen, atop a 0.6 m (2 ft) long stainless steel sump with end cap. A Schedule 10 stainless steel riser will be used to extend the permanent well into the vadose zone, with Schedule 10 stainless steel casing through the vadose zone to ground surface. Colorado silica sand will be used for the sand pack; sodium bentonite pellets and/or natural sodium bentonite chunks, crumbles, or powdered bentonite will be used for bentonite sealing material; and Type I/II Portland cement will be used for cement grout.

Surface construction consisting of protective casing, protective guard posts, and cement pad must be in place before job completion. The protective casing will be a minimum of 5 cm (2 in.) larger in diameter than the permanent casing. Protective casing will rise approximately 0.9 m (3 ft) above the ground surface. Permanent casing will rise to approximately 0.3 m (1 ft) below the top of the protective casing. Protective casing will have a lockable well cap extending approximately 38.1 cm (15 in.) above the top of the protective casing.

Final well design, including screen placement and length, will be determined by concurrence of the field geologist, drilling lead, and operable unit lead based on field conditions.

Well Sampling During Drilling

Soil samples will be collected during well drilling for vadose zone characterization, as described in Section 3.5.1. Groundwater samples will be collected during drilling of borings and groundwater monitoring wells as described in Table 3-1. Generally, samples will be collected at 5 ft intervals throughout the unconfined aquifer and below the water table. Less sampling is required for wells 1 and 6, which are adjacent to recently-installed wells with full characterization data.

After completion, samples will be collected from the groundwater wells installed under the scope of this SAP quarterly for the first year, with a reduction in frequency for subsequent years, if warranted. These

sampling and analysis activities will be conducted as part of DOE/RL-2003-38, *100-BC-5 Operable Unit Sampling and Analysis Plan*, Rev 1.

Columbia River Pore Water Sampling

Additional groundwater upwelling (pore water) samples will be collected in the Columbia River. Samples will be collected from established upwelling locations, and the focus will be on sites where contamination was detected in previous pore water sampling conducted under the *Remedial Investigation Work Plan for Hanford Site Releases to the Columbia River* (DOE/RL-2008-11). At a minimum, attempts will be made to collect samples at ten of the 100-BC locations that were selected for Phase III sampling under the RI Work Plan for the Hanford Site Releases to the Columbia River (DOE/RL-2008-11). Exact sample locations will be identified in the field using the procedures for identification of favorable flow conditions relating to temperature and conductivity, as outlined in the RI Work Plan for the Hanford Site Releases to the Columbia River (DOE/RL-2008-11). Additional sampling location requirements will be determined through a collaborative process with DOE and EPA.

Laboratory analysis from pore water will include, at a minimum, hexavalent chromium (Cr(VI)) and total chromium. Additionally, those contaminants detected above either aquatic protection levels or drinking water standards (whichever is most restrictive) during the Phase III sampling described above will be sampled for from selected locations as indicated by the Phase III results. This need for additional analytes will be determined through a collaborative process with DOE and EPA.

3.5.2.2 Groundwater Network to Evaluate Spatial and Temporal Uncertainty

Table 3-1 summarizes groundwater monitoring activities to address spatial and temporal uncertainties. Table 3-2 presents the wells to be sampled. Multiple rounds of groundwater samples will be collected for analysis to support the remedial investigation in the existing groundwater wells for each contaminant identified in Table 1-3.

Table 3-2. Spatial and Temporal Uncertainty Groundwater Monitoring Well Network

C7505 (new)	199-B3-46	199-B4-4	199-B5-1	C7665 (new)	199-B9-3	699-67-86
199-B2-13	199-B3-47	C7507 (new)	199-B5-2	699-65-83	699-65-72	699-71-77
199-B3-1	C7506 (new)	199-B4-8	199-B8-6			

To determine the spatial and temporal risk uncertainty for potential human and ecological receptors, the RI process requires that the groundwater be sampled, providing representative data of aquifer conditions, both spatially and temporally. It is required that the groundwater be sampled throughout an area without regard to the location of surface facilities or known groundwater plumes. If there are temporal changes in groundwater conditions, samples must be collected to capture these varying stages to properly delineate temporal risk uncertainties to potential receptors. The resulting well network data will be used to evaluate the groundwater risk information presented in DOE/RL-2007-21, *Risk Assessment Report for the 100 Area and 300 Area Component of the River Corridor Baseline Risk Assessment*. Observations and conclusions regarding the data collected and the DOE/RL-2007-21 evaluation will be documented in the RI report (e.g., risk uncertainties associated with temporal and spatial representativeness, verifying groundwater risk conclusions, ensuring no contaminants were inadvertently overlooked, and establishing a "present condition" dataset that can be used to measure the progress of future cleanup actions).

Sampling Frequency

To capture baseline aquifer conditions fully, it is required that samples represent not only spatial variations but also changes that occur over time. Near the river, these varying conditions are observed as changes in groundwater flow, both direction and rate, causing temporary movement of contaminants through different portions of the unconfined aquifer. For areas bordering on the Columbia River, the

Attachment 16

^WCH Document Control

From: Saueressig, Daniel G
Sent: Wednesday, October 27, 2010 4:34 PM
To: ^WCH Document Control
Subject: FW: 100-B AIR CALCULATION

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

Dan Saueressig
521-5326

-----Original Message-----

From: Buelow.Laura@epamail.epa.gov [mailto:Buelow.Laura@epamail.epa.gov]
Sent: Wednesday, October 27, 2010 1:33 PM
To: Saueressig, Daniel G
Subject: Re: 100-B AIR CALCULATION

Hi Dan,

Sorry- I thought I got back to you on that. I'm good with it.

Laura Buelow, Environmental Scientist
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

From: "Saueressig, Daniel G" <dgsauere@wch-rcc.com>
To: Laura Buelow/R10/USEPA/US@EPA
Date: 10/27/2010 01:31 PM
Subject: 100-B AIR CALCULATION

Hi Laura, did you have a chance to review the TEDE calculation I sent you a while back? Was hoping you would approve of doing the confirmatory sampling work at 118-B-8:3 under the existing air monitoring plan.

Thanks,

Dan

Attachment 17

Environmental Protection Mission Completion Project
November 4, 2010

Orphan Sites Evaluations

- RL and EPA comments on the Draft A 400 Area Orphan Sites Evaluation Report are currently being incorporated. The document will be issued in late-November.
- Finalizing the Draft A 100-F/IU-2/IU-6 Area - Segment 3 Orphan Sites Evaluation Report. The report will be transmitted to RL and EPA review later in November.
- Continue with the field investigation task for the 100-F/IU-2/IU-6 Area – Segment 4.
- Continue the historical review task for 100-F/IU-2/IU-6 – Segment 5.

Long-Term Stewardship

- Continued working with RL, MSA, and CHPRC in regards to the Segment 1 turnover package to support transition of interim surveillance and maintenance responsibilities between contractors.

River Corridor Baseline Risk Assessment

- Volumes 1 (ecological) and 2 (human health) of the risk assessment report are being developed to reflect RL pre-concurrence review comments.
- The Draft B Human Health risk assessment report is currently being transmitted to RL for processing and subsequent submittal to EPA and Ecology for review.

Remedial Investigation of Hanford Releases to Columbia River

- The data summary report is under development and anticipated to be issued in late-November 2010.
- Continuing to develop Human Health and Ecological risk assessments. The WCH internal review of the ecological risk assessment is scheduled to be in mid-November.

Document Review Look-Ahead

Document	Regulator Review Start	Duration
River Corridor Baseline Risk Assessment - Human Health Report	November 2010	45 days
River Corridor Baseline Risk Assessment – Ecological Report	December 2010	45 days
100-F/IU-2/IU-6 Area – Segment 3 Orphan Sites Evaluation Report	November 2010	45 days