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DISTRIBUTION
UNIT MANGERS' MEETING
200 AREA GROUNDWATER AND SOURCE OPERABLE UNITS

Bryan Foley ..... DOE-RL RP (A5-13)
Marvin Furman ..... DOE-RL RP (A5-13)
Ellen Mattlin ..... DOE-RL EAP (A2-15)
Mike Thompson ..... DOE-RL RP (A5-13)
Arlene Tortoso ..... DOE-RL RP (H0-12)
Lisa Treichel ..... DOE-HQ (EM-442)

Dennis Faulk ..... EPA (B5-01)

Brenda Becker-Khaleel ..... WDOE (Kennewick) (B5-18)
Zelma Maine ..... WDOE (Kennewick) (B5-18)
Matt Mills ..... WDOE (Kennewick) (B5-18)
John Price ..... WDOE (Kennewick) (B5-18)
Tina Masterson-Heggen ..... WDOE (Kennewick) (B5-18)

Greg Mitchem ..... BHI (H0-19)
Chloe Brewster ..... BHI (H0-19)
Garrett Day ..... BHI (H0-19)
Bruce Ford ..... BHI (H0-19)
Lynn Curry ..... BHI (H0-19)
Joan Woolard ..... BHI (H0-02)

Tim Lee ..... CHI (H9-02)
Virginia Rohay ..... CHI (H0-19)
L. Craig Swanson ..... CHI (H9-02)
Mary Todd ..... CHI (H9-03)
Curtis Wittreich ..... CHI (H9-03)

Stuart Luttrell ..... PNNL (K6-96)
Mark Sweeney ..... PNNL (K6-81)

Administrative Record (2) ..... BHI (H0-09)

Please inform Susan Roach – BHI (372-9377)
of deletions or additions to the distribution list.

Meeting Minutes Transmittal/Approval
Unit Managers' Meeting
200 Area Groundwater and Source Operable Units
3350 George Washington Way, Richland, Washington
November 2000

088000

APPROVAL: _____ Date 2/27/01
Bryan Foley, 200 Area Unit Manager, DOE/RL (A5-13)

APPROVAL: _____ Date 2/27/01
Arlene Tortoso, Groundwater Unit Manager, DOE/RL (H0-12)

APPROVAL: _____ Date 3-6-01
Dennis Faulk, 200 Area Unit Manager, EPA (B5-01)

APPROVAL: _____ Date 3-21-01
John Price, 200 Area Unit Manager, Ecology (B5-18)

Meeting minutes are attached. Minutes are comprised of the following:

Attachment 1	--	Agenda
Attachment 2	--	Attendance Record
Attachment 3	--	200 Area Current Action Log
Attachment 4	--	200 Area UMM Minutes – November 2000
Attachment 5	--	FY01 – 200-CW-1 Gable Mtn./B-Pond & Ditches
Attachment 6	--	Step 7 (Sampling Design)
Attachment 7	--	FY01, 200-PQ-1, DQO Process
Attachment 8	--	Comparison of Maximum Carbon Tetrachloride Rebound Concentrations
Attachment 9	--	2001 Documents for the 200 Area Remedial Action Project

Prepared by: Susan Roach Date 2/21/01
Susan Roach, BHI GW/VZ Integration Project (H0-19)

Concurrence by: Bruce Ford Date 2/22/01
Bruce Ford, BHI GW/VZ Integration Project (H0-19)

Attachment 1

UNIT MANAGERS' MEETING AGENDA

3350 George Washington Way
November 16, 2000

2:30 – 3:30 p.m. 200 Area Room 2B-59

General (10 minutes)

- Outstanding Action Items (attached)
- Passive Neutron Tool Demonstration Report
- Update of five-year Review
- 200 Area Site Tour

200-CW-1 Gable/B Pond and Ditches Cooling Water OU (10 minutes)

- IDW Status
- RI Report Ecology Review Status
- Feasibility Study/Closure Plan Schedule

200-CS-1 Chemical Sewer OU (10 minutes)

- Fieldwork Planning
  - Complete 216-S-10 Ditch Borehole as Groundwater Well - Integration Activity
  - Air Monitoring Plan
  - Waste Control Plan Approval

200-TW-1 Scavenged and 200-TW-2 Tank Waste OUs (10 minutes)

- Work Plan Ecology/EPA Review Status
  - BC Crib Borehole Strategy
  - Eco-assessment Strategy
  - Draft TPA Change Package

200-PW-2 Uranium-Rich Process Waste OU (5 minutes)

- Work Plan Schedule
  - Status DQO Report
  - Draft A Work Plan submittal by 12/29/00; Regulator Review 1/01 – 1/31/01

200-PW-1 Plutonium/Organic-Rich Process Waste OU (10 minutes)

- 200-PW-1/200-PW-2 TPA Change Package Status
- DQO Schedule

200-UP-1 (5 minutes)

- Status Operational Update
- Uranium Investigation

200-ZP-1 (5 minutes)

- Status Operational Update
- Carbon Tetrachloride Investigation

200-ZP-2 (5 minutes)

- Status Monitoring Data Evaluations

Groundwater and Source Operable Units Unit Managers' Meeting
Official Attendance Record – 200 Area
November 16, 2000

Please print clearly and use black ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Chris Cearlock	CHI	CS-1	372-9639
Mary Todd	CHI	TW-1, TW-2, CW-1	372-9631
Dennis Faulk	EPA	RPM	376-8671
Matt Mills	Ecology	CS-1	736-5721
Stuart Luttrell	PNNL - GW Mon	GW Mon.	376-6023
Mary Furman	DOE - GW/VZ	GW. Mon	373-9630
Bruce Ford	BHI	200 Area	372-9242
Curt Wittreich	CHI	200 Area	372-9586
John Price	Ecology	Proj. Mgr.	736-3029
John Ludowise	CHI	PW-1	372-9324
B.L. Foley	DOE-RL	200 Area	376-7987
Arlene Tortoso	DOE-RL	200 Area GW Remediation	373-9631
Jeff Armatrout	BHI	BHI/GW	372 9381
Greg Mitchem	BHI	GW/VZ Project PE	372-9620
Craig Swanson	CHI	ZP1/UP-1 PATGW	372-9353
Timothy A. Lee	CHI	GW Lead	372 9362

200 Area Unit Managers' Meeting
OPEN ACTION ITEMS & TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Date Complete	Status
1	Ecology Approval of 200-CW-1 Work Plan, Rev. 0	John Price, Ecology	Bryan Foley, RL	8/24/00				Open
2	Submittal of Ecology Review Comments on the 200-CW-1 Remedial Investigation Report, Draft A	John Price, Ecology	Bryan Foley, RL	8/24/00	9/15/00			Open
4	Submittal of Ecology Review Comments on the 200-TW-1 and 200-TW-2 Work Plan, Draft A	John Price, Ecology	Bryan Foley, RL	8/24/00	9/20/00	11/?/00		Open
5	Submittal of Ecology Review Comments on the 200-PW-2 DQO Summary Report	John Price, Ecology	Bryan Foley, RL	8/24/00				
7	Submittal of EPA Review Comments on the 200-TW-1 and 200-TW-2 Work Plan, Draft A	Doug Sherwood, EPA	Bryan Foley, RL	8/24/00	9/20/00	11/?/00		Open
8	200-PW-1 and 200-PW-4 TPA Change Package Approval by EPA & Ecology	Doug Sherwood, EPA John Price, Ecology	Bryan Foley, RL					

Attachment 3

200 Area Unit Managers' Meeting
CLOSED ACTION ITEMS

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Date Complete	Status
3	Ecology Approval of 200-CS-1 Work Plan, Rev. 0	John Price, Ecology	Bryan Foley, RL	8/24/00			10/30/00	Closed
6	EPA Approval of 200-CW-5 Work Plan, Rev. 0	Doug Sherwood, EPA	Bryan Foley, RL	8/24/00			9/28/00	Closed

MEETING MINUTES
200 AREA GROUNDWATER AND SOURCE OPERABLE UNITS
UNIT MANAGERS' MEETING -- 200 AREA
November 16, 2000

Agenda: See Attachment #1

Attendees: See Attachment #2

Topics of Discussion from Agenda:

1. General:

   - A change to the agenda was noted in that the 200-CS-1 waste control plan would not be available for approval (see 200-CS-1 below).
   - Outstanding action items – The action item list was reviewed and adjusted due dates assigned as agreed to by appropriate parties (see attached).
   - Passive neutron tool demonstration report – Copies of the report were request by U.S. Environmental Protection Agency (EPA), Stuart Luttrell, Pacific Northwest National Laboratory (PNNL) and the STCG members (via email).
   - Update of five-year review – Dennis Faulk reported that the 5 year review will contain an action item table with due dates. EPA will be transmitting the report to DOE. EPA will be transmitting the report to DOE and Ecology for their formal review the week of December 2, 2000. EPA would like to have concurrence from DOE and Ecology that they agree with the findings so this can go out under TPA letterhead.
   - 200 Area site tour – A tour is scheduled for Monday, 11/20/00, for Ecology and Ron Gerton (RL).

2. 200-CW-1 Gable/B Pond and Ditches Cooling Water OU:

   - IDW status – Approval for disposal of the investigation-derived waste (IDW) was received and the IDW was disposed of. Dennis Faulk advised that EPA still has a moratorium in place on IDW.
   - RI report ecology review status - It was noted during the review of the action items that lack of Ecology comments/approval on the remedial investigation (RI) report (action item 2) is impacting other activities, i.e., risk assessment, land use, ARARs, PRGs, volume estimates and removal activities, feasibility study (FS), modeling work (to begin in December), etc., which ultimately impacts the TPA milestone. Dennis Faulk requested status on the results of the risk assessment. Mary Todd will schedule a separate meeting on this.
   - Feasibility study/closure plan schedule – A colored schedule was provided and reviewed, highlighting the critical dates.

3. 200-CS-1 Chemical Sewer OU:

- Complete 216-S-10 Ditch Vadose characterization borehole as groundwater well – The potential to use this borehole as a dual use well has been discussed with the RCRA Groundwater Monitoring Project.
- Air monitoring plan – Near-field air monitoring stations will be used. Air monitoring plans will be submitted for review in early January. Dennis Faulk noted that the Department of Health (DOH) does not have regulatory authority on CERCLA sites, so EPA will work with DOH to obtain their concurrence on EPA lead sites. EPA will formally approve the plans. John Price, Ecology, will have DOH signoff.
- Waste control plan – Changes are still being incorporated, and therefore, this document is not available at this meeting for approval.

4. 200-TW-1 Scavenged and 200-TW-2 Tank Waste OUs:

- Work plan Ecology/EPA review status – Dennis Faulk (EPA) noted that Doug Sherwood (EPA) wants individual waste control plans and sampling and analysis plans. John Price (Ecology) thought it was previously agreed not to separate them. Doug Sherwood also wants the data included from the BC control area. Mary Todd, CH2M HILL, Hanford, Inc. (CHI) reported that this data is currently being incorporated. John Price reported that his comments will be that there should have been more coordination/evaluation with the tank farms (no action will be required at this time) and deficiencies in ecological monitoring. EPA will send a letter next week clarifying these comments. Mary Todd (CHI) reported the project is currently planning for the field work and at risk, due to lack of comments/approval of the work plan. Procurement activities and the contract for drilling will be impacted shortly. Bryan Foley (RL) would like an okay from EPA and Ecology on go-ahead. Dennis Faulk will advise Dough Sherwood of this request.
- BC Crib borehole strategy – US Ecology data and ILAW well data have been gathered and reviewed. A meeting was conducted with PNNL and will be scheduled with Ecology and EPA to review the data in detail. If a stratigraphic borehole is required, it could be completed as a monitoring well and this approach will be documented in the work plan.
- Eco-assessment strategy – Currently in development.
- Draft TPA change package – Bryan Foley will resend the TPA change package to Dennis Faulk but also requests comments within the next couple of weeks.

5. 200-PW-2 Uranium-Rich Process Waste OU:

- Status DQO report – Page changes to the DQO summary report were provided.

John Price (Ecology) wants changes highlighted. Bruce Ford took the action to email the highlighted file to John Price.

- Draft A work plan – although the current schedule is for submittal by 12/29/00, Bryan Foley wants this out before Christmas.

6. 200-PW-1 Plutonium/Organic Rich Process Waste OU:

- 200-PW-1/200-PW-4 (not –2) TPA change package status – Bryan Foley reported that this change package was signed.
- DQO schedule – The schedule was distributed and reviewed. Dennis Faulk noted that he will be out of the office during 12/6 and 12/7 but would be available on 12/5 to participate in the decision maker interviews. He also advised that he would not be providing detailed comments on the DQO report as he approves the work through the RI/FS work plan.

7. 200-UP-1 OU:

- Status operational update – The pump and treat is running 100% so far. Plan to install a new well.
- Uranium investigation - MSE was provided a draft scope of work to provide uranium test plan expectations. They will be producing a modeling plan on the transport/mobility of uranium. Arlene Tortoso (RL) noted that Dib and Zelma (Ecology) participated. Information should feed back into the model that will be accepted by Ecology. Dib has concerns with current model. MSE is funded by EM-50. A DQO with MSE will be scheduled.

8. 200-ZP-1 OU:

- Status operational update – The pump and treat is up and running. Adding a new well inside the fence. It was suggested to ensure the Plutonium Finishing Plant is advised and okays this. The new well will be designed for characterization, but could be an extraction/production well. A DQO will need to be scheduled for this activity.
- Carbon tetrachloride investigation – Two wells will be deepened for soil vapor extraction. A DQO will be scheduled for this activity.
- Regarding the extraction well planned for shutdown (well 299-W15-37), it was noted that the previous minutes need to be signed before this well can be shut off. The minutes will be the documentation needed for shutoff.

9. 200-ZP-2 OU:

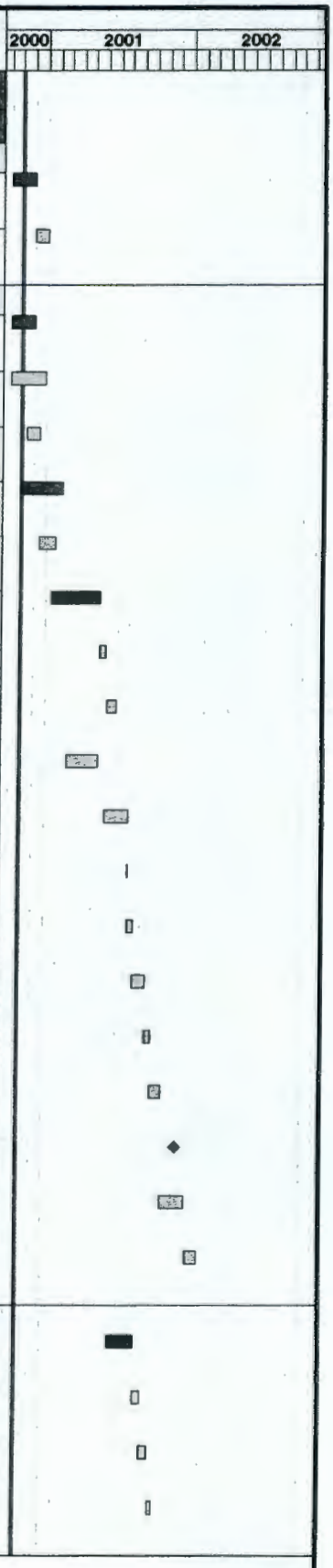
   - Status monitoring data evaluations – Monthly monitoring data was provided and reviewed. The decline in concentrations at 2 wells in October was due to the well caps being removed to allow access for downhole video surveys to support the Partitioning Interwell Tracer Test. The current plan is to start the system back up, due to the cancellation of the Partitioning Interwell Tracer Test.

Other Items:

1. Stuart Luttrell (PNNL) reported that PNNL will do a number of wells, mostly around the 200 West Area tank farms, to meet Milestone M-24.

2. A handout on 2001 Documents for the 200 Area Remedial Action Project was provided that lists upcoming documents with regulatory review periods and final/issue dates.

Activity ID	COA	Activity Description	Orig Dur	Early Start	Early Finish
Fiscal Year 2001					
200-CW-1 GABLE MTN./B-POND & DITCHES					
RI REPORT					
R2000871	B20CW1D10C	REGULATOR REVIEW DRAFT A RI	22	02OCT00A	30NOV00
R2000880	B20CW1D10C	FINALIZE RI REPORT	20	01DEC00	02JAN01
FS / CP					
R2000902	B20CW1H00C	DEVELOP STRATEGY	40	02OCT00A	28NOV00
R2000904	B20CW1H00C	SITE BACKGROUND/CONTAMINANT	60	02OCT00A	28DEC00
R2000906	B20CW1H00C	IDENTIFY/SCREEN TECHNOLOGIES	20	13NOV00	12DEC00
R2000908	B20CW1H00C	ARARs/PRGs/PAOs	70	30OCT00	09FEB01
R2000910	B20CW1H00C	DEVELOP/SCREEN ALTERNATIVES	30	13DEC00	26JAN01
R2000912	B20CW1H00C	DETAILED ANALYSIS	88	15JAN01	17MAY01
R2000914	B20CW1H00C	COMPARATIVE ANALYSIS	10	18MAY01	01JUN01
R2000916	B20CW1H00C	CONCLUSIONS	20	04JUN01	29JUN01
R2000918	B20CW1H00C	CLOSURE PLAN	54	27FEB01	11MAY01
R2000920	B20CW1H00C	DOCUMENT PREP	42	31MAY01	30JUL01
R2000930	B20CW1H00C	ISSUE INTERNAL DRAFT FS/CP TO ERC	1	31JUL01	31JUL01
R2000940	B20CW1H00C	ERC REVIEW INTERNAL DRAFT FS/CP	10	01AUG01	14AUG01
R2000945	B20CW1H00C	REVISE & ISSUE DECISIONAL DRAFT FS/CP TO RL	20	15AUG01	12SEP01
R2000950	B20CW1H00C	DOE REVIEW DECISIONAL DRAFT FS/CP	10	13SEP01	26SEP01
R2000951	B20CW1H00C	REVISE DRAFT A FS/CP	20	27SEP01	24OCT01
R2000955	B20CW1H00C	PROPOSED TPA MILESTONE: SUBMIT DRAFT A TO REGS	0		30NOV01A
R2000960	B20CW1H00C	REGULATOR REVIEW DRAFT A FS/CP	40	25OCT01	21DEC01
R2000970	B20CW1H00C	FINALIZE FFS/CP	20	26DEC01	23JAN02
PROPOSED PLAN / PROPOSED PERMIT MOD					
R2000977	B20CW1J3WC	PREPARE DRAFT PP/PPM & ISSUE INTERNAL DRAFT	48	18JUN01*	23AUG01
R2000981	B20CW1J3WC	ERC REVIEW PP/PPM	10	24AUG01	07SEP01
R2000982	B20CW1J3WC	REVISE & ISSUE DECISIONAL DRAFT PP/PPM TO RL	15	10SEP01	28SEP01
R2001002	B20CW1J3WC	DOE REVIEW PP/PPM	10	01OCT01	12OCT01



Project Start 01OCT00
Project Finish 09OCT02
Data Date 30OCT00
Run Date 20NOV00

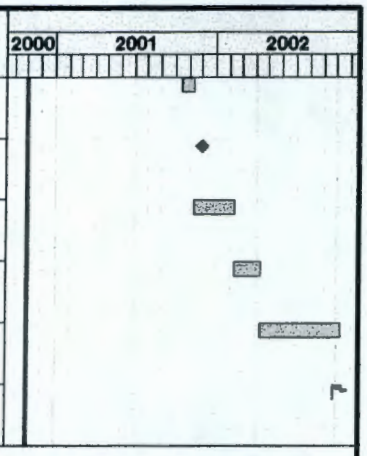
Early Bar
Progress Bar

CW01

Sheet 1 of 2

Classic Schedule Layout

Activity ID	COA	Activity Description	Orig Dur	Early Start	Early Finish
R2001022	B20CW1J3WC	REVISE DRAFT A PP/PPM	20	15OCT01	09NOV01
R2001042	B20CW1J3WC	PROPOSED TPA MILESTONE: ISSUE DRAFT A	0		30NOV01A
R2001062	B20CW1J3WC	REGULATORY REVIEW & ISSUANCE OF REV 9 PP/PPM	60	12NOV01	08FEB02
R2001082	B20CW1J3WC	PUBLIC REVIEW & DOCUMENT REVISION PP/PPM	41	11FEB02	09APR02
R2001102	B20CW1J3WC	ROD PROCESS	128	10APR02	09OCT02
R2001122	B20CW1J3WC	RECEIVE ROD	0		09OCT02



- Evaluate soil sample results, geophysical logs of boreholes, and physical property analyses to determine whether conceptual contaminant distribution models need refinement.

7.4 SAMPLING DESIGN

7.4.1 Summary of Sampling Activities

A summary of the sampling activities is presented in Table 7-4.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
216-A-19 Trench		
Surface geophysical surveys (GPR and EMI)	Perform GPR and/or EMI over the general trench area. Contingency – If GPR/EMI cannot ascertain the location of the trench then geophysical logging of a small diameter Geoprobe casing may be used to locate radiological contamination for placement of a borehole.	Geophysics techniques are expected to distinctly identify the trench and subsurface features to distinguish the 216-A-19 Trench from the 216-A-20 Trench.
Borehole characterization	Install one vadose borehole near the center of the trench. The location will be based upon interpretation of the surface or downhole geophysical results. The borehole will be drilled to the water table. Begin with a sample at 14.5-17 ft bgs in the backfill. At the bottom of the trench collect samples every 5 ft in the zone of expected highest contamination (17.5–20 ft, 22.5-25 ft, and 27.5-30 ft). The sample at 27.5-30 ft also represents a change in lithology from H1 to H2 sequences. At the transition from high to medium contamination zones (32.5-35 ft) and at the transition from medium to low contamination zones (47.5-50 ft) take additional samples.	The center of the trench was selected since there is no apparent "head end". Install a borehole for soil sampling and to support geophysical logging with spectral gamma and neutron moisture tools. Soil samples will be used to determine COC concentrations beneath the trench and in the vadose zone. Sampling provides data for remedial action decision making, to verify the preliminary conceptual contaminant distribution model, and to support numerical modeling.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
	Within the zone of expected lower contamination the sample interval is increased to 50 ft and one sample is taken at 97.5-100 ft. Below 100 ft bgs the sample interval is increased to approximately 100 ft, or samples are taken at anticipated changes in lithology at the base of the H2 sequence (207.5-210 ft), the base of the Ringold Unit E (242.5-245 ft), and at the top of the water table (248.5-251 ft) in the Ringold Lower Mud. (Field screening will be used in conjunction with the guidance provided above to determine actual sample depths.)	The soil sample at 14.5-17 ft bgs is critical. Samples at five ft intervals from the base of the trench to 35 ft are required to support the conceptual model expectation that contamination levels are predicted to drop off rapidly with increasing depth. Changes in contamination levels with depth are expected to decrease thereby allowing the sampling interval to increase with depth.
	Collect bulk density and grain-size distribution samples at major changes in lithology. Collect moisture samples with the other physical property samples.	Soil physical properties (e.g., moisture content, grain-size distribution, and bulk density) will be used to support contaminant transport modeling, if needed.
	Perform spectral logging for the entire length of the borehole.	SGL provides a continuous gamma-emitting radiological contaminant distribution profile with depth that will be used as supplemental information to soil samples. All of this information will be used to refine the preliminary conceptual contaminant distribution model.
	Perform neutron moisture logging for the entire length of the borehole.	Collect soil moisture data to determine the residual amount of moisture in the vadose zone, and to support numerical modeling efforts, if needed.
216-B-12 Crib		
Borehole characterization	Perform spectral logging and neutron moisture logging down existing boreholes within the crib: • 299-E28-64 • 299-E28-65 • 299-E28-66.	SGL will be used to develop gamma contamination profiles beneath the crib. This information will also be used to specify the location of the new borehole (i.e., in the area of greatest contamination) and to guide borehole soil sample location depths.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
	Contingency approach for borehole placement – If SGL results are not conclusive one borehole will be placed near the front of the crib between the first and second wooden box structures. The borehole will be drilled to the water table.	Drill the borehole to support soil sampling and geophysical logging with spectral gamma and neutron moisture tools.
	Begin with a sample at 14.5-17 ft bgs in the backfill. At the base of the crib collect samples at approximately 10 ft intervals within the zone of highest contamination (30-32.5 ft, 40-42.5 ft, and 50-52.5 ft). At the transition from high to medium contamination zones (62.5-65 ft) and at the transition from medium to low contamination zones (94.5-97 ft) take additional samples. Within the zone of expected lower contamination the sample interval is increased to every 100 ft and one sample is taken at 197.5-200 ft. Below this depth samples are taken at a change in lithology at the bottom of the H2 sequence (247.5-250 ft) and at the top of the water table (294.5-297 ft). (Field screening will be used in conjunction with the guidance provided above to determine actual sample depths.)	Soil samples will be used to determine COC concentrations beneath the crib and in the vadose zone. Sampling provides data for remedial action decision making, to verify the preliminary conceptual contaminant distribution model, and to support numerical modeling The soil sample at 14.5-17 ft bgs is critical. Samples at ten ft intervals from the base of the crib to approximately 65 ft are required to support the conceptual model expectation that contamination levels are predicted to drop off rapidly with increasing depth. Changes in contamination levels with depth are expected to decrease thereby allowing the sampling interval to increase with depth.
	Collect bulk density and grain-size distribution samples at major changes in lithology. Collect moisture samples with the other physical property samples.	Soil physical properties (e.g., moisture content, grain-size distribution, and bulk density) will be used to support contaminant transport modeling, if needed.
	Perform spectral logging for the entire length of the borehole.	SGL provides a continuous gamma-emitting radiological contaminant distribution profile with depth that will be used as supplemental information to soil samples. All of this information will be used to refine the preliminary conceptual contaminant distribution model.
	Perform neutron moisture logging for the entire length of the borehole.	Collect soil moisture data to determine the residual amount of moisture in the vadose zone, and to support numerical modeling efforts, if needed.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
Borehole spectral logging in existing wells	Perform borehole spectral logging in accessible boreholes and groundwater wells near the crib. BHI well status records indicate that the following wells may be accessible and are appropriately configured for geophysical logging: • 299-E28-71 • 299-E28-76.	These wells represent data collection points within 7.6 m (25 ft) of the waste site. Logging of these wells will provide additional current site-specific information on contaminant distribution, both laterally and vertically for comparison to previous surveys.
216-U-8 Crib		
Existing data collected as part of the 200-UP-2 LFI are sufficient to support the RI/FS decision process. SGL will be performed down existing boreholes (299-W19-70 and 299-W19-71) for comparison to pre-existing data and to assess changes in gamma-emitting contamination. Neutron moisture logging will also be conducted to collect soil moisture data in support of numerical modeling, if needed.		
216-U-12 Crib		
The 216-U-8 Crib waste is analogous to that found in the 216-U-12 Crib. Sufficient data collected as part of the 200-UP-2 LFI have already been collected at the 216-U-8 Crib to support the RI/FS decision process. SGL will be performed down an existing borehole (299-W22-75) for comparison to pre-existing data and to assess changes in gamma-emitting contamination. Neutron moisture logging will also be conducted to collect soil moisture data in support of numerical modeling, if needed.		
216-A-10 Crib		
Borehole spectral gamma logging (SGL) along the length of the crib	Perform borehole spectral logging, or comparable method, in up to six locations along the length of the crib. Drive casings, a cone penetrometer, or geoprobe boring to a maximum depth of approximately 30.5 m (100 ft.) bgs will be utilized.	SGL, or comparable method, will be used to determine the distribution of gamma radiation along the length of the crib (96.3 m (316 ft)) and to a maximum depth of 16.8 m (55 ft) beneath the bottom of the crib. The data will be used to locate the borehole in the area of greatest contamination, and guide subsequent borehole soil sampling. The first drive casing will be placed approximately midway along the length of the crib and to a maximum depth of 30.5 m (100 ft). Other casings will be driven at each end of the central pipeline and along the east side of the central pipeline midway between it and the newer pipeline to the east.
Borehole characterization	Install one vadose borehole within the crib boundaries at the hot spot location indicated by SGL, avoiding subsurface structures. The borehole will be drilled to the water table.	Drill a borehole to allow soil sampling with depth and to support geophysical logging with spectral gamma and neutron moisture tools.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
	Begin with a sample at 14.5-17 ft bgs in the backfill. At the base of the crib collect samples at approximately 10 ft intervals within the zone of highest contamination (45-47.5 ft, 52.5-55 ft, 62.5-65 ft, and 72.5-75 ft). At the transition from high to medium contamination zones (87.5-90 ft) and at the transition from medium to low contamination zones (127.5-130 ft) take additional samples. Within the zone of expected lower contamination the sample interval is increased and one sample is taken at 197.5-200 ft. Below this depth samples are taken at anticipated changes in lithology at the base of the H2 sequence (287.5-290 ft), in the Ringold Lower Mud (292-294.5 ft), and at the top of the water table (318.5-321 ft) in the Ringold Unit A sequence. (Field screening will be used in conjunction with the guidance provided above to determine actual sample depths.)	Soil samples will be used to determine type and concentration of COCs beneath the crib in the vadose zone. Sampling provides data for remedial action decision making, to confirm the preliminary conceptual contaminant distribution model, and to support numerical modeling. The soil sample at 14.5-17 ft bgs is critical. Samples at approximately 10 ft intervals from the base of the crib to 90 ft are required to support the conceptual model expectation that contamination levels are predicted to drop off rapidly with increasing depth. Changes in contamination levels with depth are expected to decrease thereby allowing the sampling interval to increase with depth.
	Collect bulk density and grain-size distribution samples at major changes in lithology. Collect moisture samples with the other physical property samples.	Soil physical properties (e.g., moisture content, grain-size distribution, and bulk density) will be used to support contaminant transport modeling, if needed.
	Perform spectral logging for the entire length of the borehole.	SGL provides a continuous gamma-emitting radiological contaminant distribution profile with depth that will be used as supplemental information to soil samples. All of this information will be used to refine the preliminary conceptual contaminant distribution model.
	Perform neutron moisture logging for the entire length of the borehole.	Collect soil moisture data to determine the residual amount of moisture in the vadose zone, and to support numerical modeling efforts, if needed.
Borehole spectral logging in existing wells	Perform borehole spectral logging and neutron moisture logging in accessible boreholes and groundwater wells near the crib. BHI well status records indicate that the following wells may be accessible and are appropriately configured for geophysical logging: • 299-E17-1 • 299-E17-20 • 299-E24-160.	These wells represent data collection points within 30.5 m (100 ft) of the waste site. Logging of these wells will provide additional current site-specific information on contaminant distribution, both laterally and vertically for comparison to previous surveys.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
216-A-36B Crib		
Borehole characterization	Drill one borehole to groundwater at the north end of the crib, as close as possible to the 216-A-36A Crib. Begin with a sample at 14.5-17 ft bgs in the backfill. At the base of the crib collect a sample (24-26.5 ft). In the zone of highest contamination take a sample at 30-32.5 ft and then increase the sampling interval to approximately 10 ft and take samples at 40-42.5 ft and 53.5-56 ft. (The 53.5-56 ft sample also corresponds to the anticipated change from high to medium zones of contamination.) The next sample at 89.5-92 ft corresponds to the transition from medium to low zones of contamination. In the low contamination zone the sampling frequency is increased to 100 ft and the next sample is taken at 197.5-200 ft. Below this depth samples are taken at anticipated changes in lithology at the base of the H2 sequence (287.5-290 ft), in the Ringold Lower Mud (292-294.5 ft), and at the top of the water table (318.5-321 ft) in the Ringold Unit A sequence. (Field screening will be used in conjunction with the guidance provided above to determine actual sample depths.) Collect bulk density and grain-size distribution samples at major changes in lithology. Collect moisture samples with the other physical property samples.	Drill a borehole to allow sampling with depth and to support geophysical logging with spectral gamma and neutron moisture tools. The location of the borehole at the north end is where contamination is expected to be the greatest and maximizes the effects that contaminants from the adjacent 216-A-36A Crib will have on the vadose zone. Soil samples will be used to determine COC concentrations beneath the crib and in the vadose zone. Sampling provides data for remedial action decision making, to verify the preliminary conceptual contaminant distribution mode, and to support numerical modeling. The soil sample at 14.5-17 ft bgs is critical. Samples at approximate 10 ft intervals from the base of the crib to about 56 ft are required to support the conceptual model expectation that contamination levels are predicted to drop off rapidly with increasing depth. Changes in contamination levels with depth are expected to decrease thereby allowing the sampling interval to increase with depth. Soil physical properties (e.g., moisture content, grain-size distribution, and bulk density) will be used to support contaminant transport modeling, if needed.
	Perform spectral logging for the entire length of the borehole.	SGL provides a continuous gamma-emitting radiological contaminant distribution profile with depth that will be used as supplemental information to soil samples. All of this information will be used to refine the preliminary conceptual contaminant distribution model.
	Perform neutron moisture logging for the entire length of the borehole.	Collect soil moisture data to determine the residual amount of moisture in the vadose zone, and to support numerical modeling efforts, if needed.

Table 7-4. Key Features of the 200-PW-2 Sampling Design. (7 Pages)

Sample Collection Methodology	Key Features of Design	Basis for Sampling Design
Borehole spectral logging in existing wells	Perform borehole spectral logging and neutron moisture logging in accessible boreholes and groundwater wells near the crib. BHI well status records indicate that the following wells may be accessible are appropriately configured for geophysical logging: • 299-E17-5 • 299-E17-11 • 299-E17-51.	These wells represent data collection points within 7.6 m (25 ft) of the waste site or are within the waste site boundary. Logging of these wells will provide additional current site-specific information on contaminant distribution, both laterally and vertically for comparison to previous surveys.

7.5 POTENTIAL SAMPLE DESIGN LIMITATIONS

- Drilling impediments (e.g., boulders) may be encountered and/or insufficient sample volumes may be retrieved from the split-spoon samplers. The list of analytes will be prioritized in the SAP to account for insufficient sample volume.

- The 216-B-12 Crib has the potential for cave-in. Safety considerations associated with borehole installation may require additional equipment (e.g., a bridge structure or relocation of the borehole to a safer zone not directly through the crib structure), which may impact sampling location and quality.

- Because the potential exists for significant concentrations of radiological COCs, samples may need to be analyzed in an onsite laboratory. In this case, expected impacts include high analytical costs, degradation of detection limits, reduced analyte lists, and long turnaround times. Sample volumes may be reduced if the radiation levels are high for the samples.

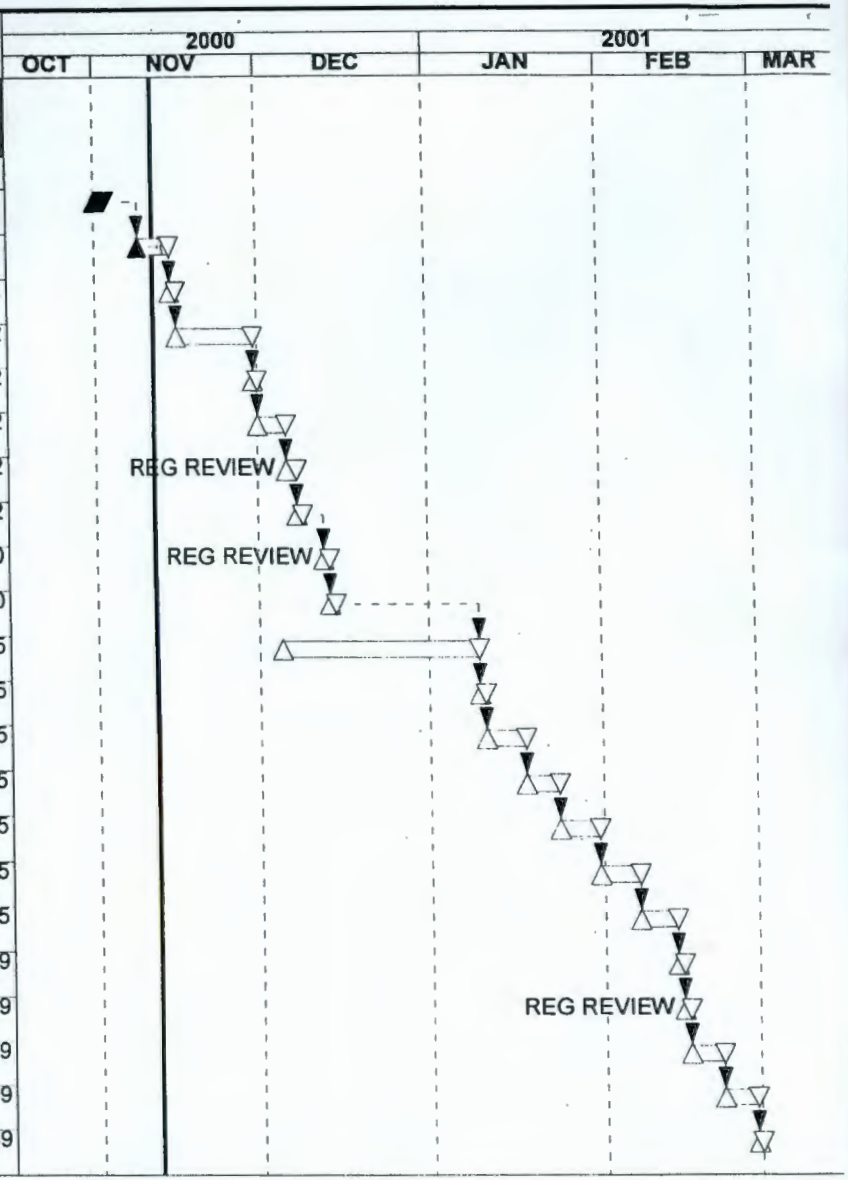
- Geophysical logging of existing boreholes is dependent on accessibility and configuration of the boreholes. If the specified boreholes are not properly configured or available for logging, other boreholes may be considered or the logging program may be reduced.

Fiscal Year 2001

200-PW-1 PLUTONIUM-RICH PROCESS WG

DQO

Activity ID	Activity Description	Rem Dur	% CPL	Early Start	Early Finish	Total Float
0090	PLANNING MEETING	0	100	01NOV00A	02NOV00A	
0100	PREPARE SCOPING CHECKLIST	2	80	09NOV00A	14NOV00	32
0120	SCOPING MEETING	1	0	15NOV00	15NOV00	32
0140	COMPILE SUMMARY RPT	8	0	16NOV00	29NOV00	32
0160	SCOPING REVIEW MTG	1	0	30NOV00	30NOV00	32
0180	PREPARE SCOPING SUMMARY RPT	3	0	01DEC00	05DEC00	32
0220	CONDUCT DECISION MAKER INTERVIEWS	2	0	06DEC00	07DEC00	32
0240	BRIEF TEAM ON INTERVIEWS / GLOBAL ISSUES	1	0	08DEC00	08DEC00	32
0300	GLOBAL ISSUES MTG W/ REGULATORS	1	0	13DEC00*	13DEC00	30
0320	DOCUMENT GLOBAL ISSUES MTG	1	0	14DEC00	14DEC00	30
0340	PREPARE DQO STRAWMAN	23	0	05DEC00*	09JAN01	15
0360	CONDUCT INTERNAL DQO PROCESS MEETING	1	0	10JAN01	10JAN01	15
0380	PREP INTERNAL REVISED REPORT DRAFT	5	0	11JAN01	17JAN01	15
0400	EDIT DRAFT	4	0	18JAN01	23JAN01	15
0440	ERC INTERNAL REVIEW	5	0	24JAN01	30JAN01	15
0460	INCORP COMMENTS	5	0	31JAN01	06FEB01	15
0480	DEVELOP DRAFT-A REPORT	5	0	07FEB01	13FEB01	15
0500	CONDUCT RL BRIEFING	1	0	14FEB01	14FEB01	149
0520	CONDUCT EXTERNAL DQO BRIEFING	1	0	15FEB01	15FEB01	149
0540	REVISE DRAFT-A REPORT	3	0	16FEB01	21FEB01	149
0560	EDIT REV-0	4	0	22FEB01	27FEB01	149
0580	ISSUE REV-0	1	0	28FEB01	28FEB01	149



Attachment 7

Project Start	01OCT00
Project Finish	28SEP01
Data Date	12NOV00
Run Date	16NOV00

Early Bar
Progress Bar
Critical Activity

PW1A

200-PW-1

DQO PROCESS

Comparison of Maximum Carbon Tetrachloride Rebound Concentrations Monitored at 200-ZP-2 Soil Vapor Extraction Sites FY 1997 - FY 2001

200-ZP-2 Location (Well or Probe) /feet bgs	Site	Zone	November 1996 - July 1997 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	October 1997 - September 1998 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	July 1998 - September 1999 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	July 1999 - October 2000 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound
79-03/ 5 ft	Z-18	1	0	8	0	3	0	12		
79-06/ 5 ft	Z-1A	1	not measured		not measured		1.4	12		
79-11/ 5 ft	Z-1A	1	0	8	0	6	2.9	12		
86-05/ 5 ft	Z-9	1	not measured		not measured		0	3		
86-05-01/ 5 ft	Z-9	1	not measured		not measured		0	3		
86-06/ 5 ft	Z-9	1	1.3	8	0	9	1.9	6		
87-05/ 5 ft	Z-1A	1	not measured		0	3	1.0	12		
87-09/ 5 ft	Z-1A	1	not measured		1.5	3	2.6	12		
94-02/ 5 ft	Z-9	1	0	8	not measured		1.4	3		
95-11/ 5 ft	Z-9	1	0	8	2.1	9	2.5	6		
95-12/ 5 ft	Z-9	1	1.1	8	1.5	9	1.3	6		
95-14/ 5 ft	Z-9	1	not measured		not measured		0	3		
CPT-13A/ 9 ft	Z-1A	2	not measured		0	6	1.0	12		
CPT-16/ 10 ft	Z-9	2	not measured		0	9	1.5	6		
CPT-17/ 10 ft	Z-9	2	not measured		4.2	9	5.1	6	5.1	16
CPT-18/ 15 ft	Z-9	2	not measured		6.5	9	5.0	6	5.2	16
CPT-31/25 ft	Z-1A	2	not measured		0	6	0	12		
CPT-16/ 25 ft	Z-9	2	not measured		not measured		not measured		1.8	16
CPT-32/ 25 ft	Z-1A	2	not measured		9.1	6	10	12	9.4	13
CPT-30/ 28 ft	Z-18	2	not measured		not measured		3.2	12	1.4	13
CPT-13A/ 30 ft	Z-1A	2	2.2	8	not measured		not measured		3.4	13
CPT-7A/ 32 ft	Z-1A	2	not measured		2.3	6	5.4	12	6.2	13
CPT-27/ 33 ft	Z-9	2	1.2	8	not measured		not measured		1.8	16
CPT-1A/ 35 ft	Z-18	2	2.0	8	1.4	3	3.0	12	4.3	13
CPT-33/ 40 ft	Z-1A	2	not measured		2.0	3	2.6	12		
CPT-34/ 40 ft	Z-18	2	2.3	8	not measured		1.7	12		
CPT-21A/ 45 ft	Z-9	2	65.6	8	52.7	9	57	3	122	16
W15-220ST/ 52 ft	Z-9	2	2	8	not measured		1.6	3		
CPT-28/ 60 ft	Z-9	2	not measured		1.5	0	3.7	3		
CPT-9A/ 60 ft	Z-9	2	45.5	8	41.1	0	44	3	68	16
CPT-30/ 68 ft	Z-18	2	1.7	8	not measured		3.0	12		
CPT-13A/ 70 ft	Z-1A	2	5.2	8	not measured		5.6	12		
CPT-24/70 ft	Z-9	2	not measured		3.2	9	3.6	3		
W15-219SST/ 70 ft	Z-9	2	14.6	8	not measured		7.6	3		
CPT-31/ 76 ft	Z-1A	2	4.0	8	not measured		4.2	12		
CPT-33/ 80 ft	Z-1A	2	5.8	8	not measured		9.2	12		
W15-82/ 82 ft	Z-9	2	28.9	8	5.5	9	46	6	43	16
W15-95/ 82 ft	Z-9	2	not measured		15.3	9	39	6	30	16
CPT-21A/ 86 ft	Z-9	2	221	8	206	9	148	6	195	16
CPT-34/ 86 ft	Z-18	2	36.3	8	5.9	3	0	12		
W15-218SST/ 86 ft	Z-9	2	not measured		not measured		0	3		
CPT-28/ 87 ft	Z-9	2	280	8	230	9	203	6	214	16
CPT-1A/ 91 ft	Z-18	2	3.9	8	not measured		4.2	12		
CPT-4A/ 91 ft	Z-1A	2	not measured		7.7	3	14	12		
CPT-9A/ 91 ft	Z-9	2	103	8	34.5	9	72	3		
W18-252SST/ 100 ft	Z-1A	2	38.2	8	17.8	3	24	12		
W18-152/ 113 ft	Z-12	2	46.8	8	11.1	3	33	12	25	13
W15-217/ 115 ft	Z-9	3	797	8	630	9	561	6	442	16
CPT-24/ 118 ft	Z-9	3	44.6	8	37.7	9	37	6		
W15-220SST/ 118 ft	Z-9	4	21.9	8	not measured		36	3		
W18-158L/ 123 ft	Z-1A	3	not measured		143	3	492	12	196	13
W18-167/ 123 ft	Z-1A	3	323	8	79.7	3	228	12	248	13
W15-219SST/ 130 ft	Z-9	4	298	8	not measured		47	3		
W18-249/ 134 ft	Z-18	3	206	8	20.4	3	215	12	176	13
W18-248/ 136 ft	Z-1A	3	288	8	86.3	3	177	12	202	13
W15-219SST/ 155 ft	Z-9	5	59.6	8	not measured		24	3		
W15-220SST/ 185 ft	Z-9	5	14.5	8	not measured		13	3		
W15-6L/ 189 ft	Z-9	6	22.6	8	17.8	9	1.3	6		
W15-9L/ 189 ft	Z-9	6	18.3	8	15.0	9	15	6	20	16
W18-7/ 200 ft	Z-1A	6	28.5	8	17.3	3	29	12		
W18-6L/ 208 ft	Z-1A	6	36	8	31.3	6	15	12		
W18-12/ 210 ft	Z-18	6	not measured		3.8	3	19	12		

* - based on location (Z-1A/18/12 or Z-9) of monitoring point; specific points may be beyond SVE zone of influence during particular operating configurations

- Z-18 and Z-12 wells off-line Oct 96 - Apr 98
- CPT-1A, CPT-9A, and possibly CPT-7A appeared to be beyond SVE zone of influence in Oct 96 based on differential pressure (BHI-01105, p. 6-1)
- CPT-9A, CPT-21A, CPT-28 beyond SVE zone of influence in May 96 based on CCl4 concentrations and airflow modeling based on measured vacuums (BHI-01105, p. 6-1)

Carbon Tetrachloride Rebound Concentrations
Monitored at 200-ZP-2 Soil Vapor Extraction Sites
July 1999 - October 2001

200-ZP-2																	
Location			07/30/99	09/14/99	9/28/99	10/26/99	11/30/99	12/29/99	01/25/00	03/07/00	06/02/2000	06/27/2000	07/24/2000	08/29/2000	09/25/2000	10/31/2000	11/1/2000
(Well or Probe)	Site	Zone														(b)	(c)
/feet bgs			CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4
			(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)
CPT-17/ 10 ft	Z-9	2	2.1	2.6	2.3	1.7	3.1	2.6	2.9	1.7	5.1	3.4	4.2	4.6	4.4	4.3	
CPT-18/ 15 ft	Z-9	2	1.3	3.5	0	1.8	1.6	4.3	2.8	2.6	5.2	3.8	2.0	4.1	3.2	1.7	
CPT-16/ 25 ft	Z-9	2				0	0	0	0	0	0	1.6	1.4	1.8	1.7	1.0	
CPT-32/ 25 ft	Z-1A	2				0	0	1.5	3.8	9.4	8.6	7.2	8.1	6.6	6.4	6.3	
CPT-30/ 28 ft	Z-1A	2				0	1.0	1.4	0	0	0	0	0	0	1.0	0	
CPT-13A/ 30 ft	Z-1A	2				0	0	1.6	1.1	2.1	2.5	3.4	2.5	3.4	2.6	2.4	
CPT-7A/ 32 ft	Z-1A	2				2.3	1.9	2.8	2.3	4.4	4.7	6.2	3.9	4.3	3.9	4.3	
CPT-27/ 33 ft	Z-9	2				1.1	0	1.2	1.2	1.3	1.6	1.3	1.2	1.8	1.6	0	
CPT-1A/ 35 ft	Z-12	2				2.5	3.1	2.8	4.1	3.3	4.2	3.7	3.7	4.3	4.0	3.7	
CPT-21A/ 45 ft	Z-9	2	51.7	56.6	42	50.3	78	70.4	81.6	54.0	94	88.7	91.4	122	96.4	80.8	
CPT-9A/ 60 ft	Z-9	2	----- (a)	43.9	44.0	32.9	39.3	43.5	38.1	33.2	43.9	67.6	40.3	41.6	42.2	38.1	
W15-82/ 82 ft	Z-9	2	----- (a)	42.5	38.1	35.7	23.4	21.2	19.0	29.8	25.5	23.5	25.5	26.5	28.7	1.2	6.1
W15-95/ 82 ft	Z-9	2	----- (a)	8.3	7.6	9.0	11.2	12.0	14.5	13.2	21.2	21.7	23.7	27.4	28.5	1.1	30.2
CPT-21A/ 86 ft	Z-9	2	66.6	12.6	123	90.7	133	123	141	113	195	186	169	189	175	164	
CPT-28/ 87 ft	Z-9	2	49.3	151	105	104	170	180	181	69.7	205	165	174	214	195	127	
W18-152/ 113 ft	Z-12	2				1.8	22.1	24.7	17.7	3.7	22.9	3.1	1.8	13.7	5.2	2.9	
W15-217/ 115 ft	Z-9	3	68.6	267	26.3	204	317	370	400	92.0	442	358	185	432	249	130	105
W18-158L/ 123 ft	Z-1A	3				79.6	103	134	132	152	134	196	186	151	141	176	
W18-167/ 123 ft	Z-1A	3				88.8	115	144	109	104	248	227	216	167	174	171	
W18-249/ 134 ft	Z-18	3				74.8	132	173	149	60.0	176	137	78.3	154	95.2	51.0	
W18-248/ 136 ft	Z-1A	3				130	96.7	85.5	110	130	183	186	170	184	202	177	
W15-9L/ 189 ft	Z-9	6	----- (a)	10.3	1.1	8.6	12.0	12.1	14.4	9.0	12.3	11.9	11.0	20.4	10.1	5.9	5.5
(a) sample pump failure																	
(b) Sampler comment: The well caps were off on wells W15-95 and W15-82. In addition, wells W15-217 and W15-9L are suspected according to sample results to be undergoing maintenance.																	
These wells will be retested on 11/01/00.																	
VJR note: Believe that well caps were off as a result of video survey conducted to support well deepening for PITT.																	
(c) Sampler comment: W15-217, W15-9L, and W15-82 show readings that are lower than expected. Well W15-95 appears to have returned to normal.																	
Well caps were back on wells on 11/01/00 during sampling.																	

2001 Documents for the 200 Area Remedial Action Project

OU	Document/Report	Doc. Type	Lead Regulator	Regulatory Review Period	Final/Issue
200-CW-1	DOE/RL-2000-35; 200-CW-1 Remedial Investigation Report	DOE/RL	Ecology	8/10/00 - TBD	TBD
200-CW-1	200-CW-1 Feasibility Study/216-B-3 Closure Plan Document	DOE/RL	Ecology	12/01/01- 12/31/01	TBD
200-CW-1	200-CW-1 Proposed Plan/Proposed Permit Modification	DOE/RL	Ecology	12/01/01- 12/31/01	TBD
200-TW-1/-2	DOE/RL-2000-38; 200-TW-1 & -2 Work Plan	DOE/RL	Ecology/ EPA	8/14/00 – 11/30/00	12/1/00 - 12/31/00
200-PW-2	DOE/RL-2000-60; 200-PW-2 Work Plan	DOE/RL	Ecology	1/01/01 - 1/31/01	2/01/01 - 2/22/01
200-PW-2	BHI-01411; 200-PW-2 DQO	BHI	Ecology	8/08/00 - TBD	TBD
200-PW-1	200-PW-1 Work Plan	DOE/RL	EPA	6/20/01 - 7/20/00	7/23/01 – 8/10/01

088000

Attachment 9